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**

PUNTLAND STATE

Carmo, Qardho, Garowe, and Galkacyo North Districts — 4 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	4 sites: 2 water catchment rehabilitation sites — Eldahir (Carmo District) and Ado (Qardho District), Bari Region — and 2 borehole sites — Bixin (Garowe District, Nugaal Region, rehabilitation) and Gacnafale (Galkacyo North District, Mudug Region, new construction)

DECLARATION PAGE

This Environmental and Social Impact Assessment (ESIA) Report has been prepared for the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project in Puntland State, covering two water catchment rehabilitation sites in Carmo and Qardho Districts (Bari Region) and two borehole sites in Garowe District (Nugaal Region) and Galkacyo North District (Mudug 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	Organisation	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 - Puntland Component
Proponent / Borrower	Ministry of Agriculture and Irrigation (MoAI), Federal Republic of Somalia
Financier	African Development Bank (AfDB)
Controlling AfDB E&S Category	Category 2 under the African Development Bank Integrated Safeguards System (ISS, 2023).
Geographic Scope	4 sites across Carmo, Qardho, Garowe and Galkacyo North Districts
Infrastructure	2 water-catchment rehabilitation sites and 2 borehole sites
Project Sites	Eldahir (Carmo); Ado (Qardho); Bixin / Garwowe_Bixin (Garowe); Gacnafale / Galkacyo North borehole site (Galkacyo North).
Applicable AfDB Safeguards	OS1, OS2, OS3, OS4, OS7 and OS10; precautionary controls under OS5, OS6 and OS8; OS9 not applicable
Field Verification	December 2025 - February 2026
Implementation Period	Puntland works phased within the wider 48-month BBS project period
Safeguards Budget	USD 245,971 over four years as the controlling indicative ESMP budget, exclusive of contractor ESHS costs priced 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 Puntland component addresses chronic water insecurity in four dryland districts where pastoral, agro-pastoral and peri-urban communities depend on seasonal rainwater harvesting and groundwater.

The four-site package combines two intervention typologies. Eldahir in Carmo District and Ado in Qardho District are existing water catchments requiring rehabilitation because sedimentation, embankment deterioration and infiltration losses have reduced effective storage. Garwowe_Bixin in Garowe District and Galkacyo North are borehole sites where additional or rehabilitated groundwater infrastructure is intended to improve reliable water access. The project rationale is therefore twofold: restore seasonal surface-water storage in dryland rangelands and improve controlled groundwater access where existing sources are insufficient.

Puntland has a more established institutional framework than several other BBS state components, including a functioning water-sector regulator and state ministries; however, district-level groundwater monitoring, environmental oversight and safeguards systems remain limited. The component also includes a socially sensitive Galkacyo North site, where inter-clan dynamics, IDP presence and security conditions require conflict-sensitive implementation.

2. Purpose, Scope and Approach of the ESIA

The ESIA assesses environmental and social risks and impacts across the four Puntland sites and defines the mitigation, monitoring, institutional and financing arrangements required for implementation. It covers pre-construction and

mobilisation, construction and rehabilitation, commissioning and handover, operation and maintenance, and demobilisation/reinstatement of temporary works.

The assessment draws on site screening, field verification undertaken between December 2025 and February 2026, consultations with Puntland institutions and project communities, available engineering and project information, SWALIM and other secondary datasets, and project instruments on labour, gender, climate, monitoring and training.

Where a site-specific parameter depends on final hydrogeology, engineering, water-quality testing, security, land access or contractor method, this ESIA assigns it to a binding C-ESMP/pre-construction requirement rather than adopting an unsupported assumption.

3. Project Components and Locations

Site	District	Infrastructure	Latitude	Longitude	Principal Works / Qualification
Eldahir	Carmo	Water catchment rehabilitation	10.5982	49.0264956	Desilting/reshaping, embankment/bund repair, liner where justified, inlet/outlet/silt control, troughs and reinstatement.
Ado	Qardho	Water catchment rehabilitation	9.459488	49.034234	Same rehabilitation typology, tailored to site condition and hydrology.
Garwowe_Bixin	Garowe	Borehole drilling/rehabilitation	N9.01530	E46.39217	Hydrogeology-led borehole development/rehabilitation, solar pumping, wellhead protection, kiosk and livestock trough.
Galkacyo North	Galkacyo North	Borehole drilling/rehabilitation	To be field/GPS verified before mobilisation	To be field/GPS verified before mobilisation	Borehole infrastructure in a semi-urban and conflict-sensitive setting; final coordinate requires validation against the approved Master List/design package.

Regional hydrogeological information indicates that borehole depths may vary substantially. No fixed drilling depth is adopted by this ESIA. Final aquifer target, depth, yield, pump duty, sustainable abstraction and water-quality requirements shall be established by the approved site-specific hydrogeological assessment and engineering design.

4. AfDB Environmental and Social Categorization and Operational Safeguards

The Puntland component is classified as Category 2 under the AfDB Integrated Safeguards System (ISS, 2023). This classification applies consistently to all four sites and to the ESMP, procurement and C-ESMP requirements.

Operational Safeguard	Status	Application to Puntland
OS1 - Assessment and Management of E&S Risks and Impacts	Applicable	Overall ESIA/ESMP, readiness screening, hydrogeological and catchment assessments, cumulative water/climate risk, associated facilities and change management.
OS2 - Labour and Working Conditions	Applicable	Worker terms, age verification, Workers' GRM, drilling and excavation OHS, heat stress, remote work and emergency response.

Operational Safeguard	Status	Application to Puntland
OS3 - Resource Efficiency and Pollution Prevention	Applicable	Groundwater sustainability, salinity and water quality, drilling fluids/waste, fuel/chemical controls, erosion, sediment, waste and O&M monitoring.
OS4 - Community Health, Safety and Security	Applicable	Open excavations, drilling, traffic, safe water commissioning, SEA/SH, security and emergency response.
OS5 - Land Acquisition / Restrictions / Resettlement	Precautionary	Temporary access and land-use arrangements, crop/asset loss compensation and stop-work/reassessment if screened assumptions are exceeded.
OS6 - Biodiversity and Living Natural Resources	Precautionary	Footprint limits and reinstatement in dryland rangeland; no sensitive habitat identified at the four screened sites.
OS7 - Vulnerable Groups	Applicable	Women, female-headed households, nomadic women, IDPs, minority-clan households, poor pastoral households, youth and persons with disabilities.
OS8 - Cultural Heritage	Precautionary	Chance Finds Procedure for all drilling, excavation and earthworks.
OS9 - Financial Intermediaries	Not applicable	No FI structure.
OS10 - Stakeholder Engagement and Information Disclosure	Applicable	Four-district engagement, disclosure, GRM, WUA governance and differentiated outreach.

5. Policy, Legal and Institutional Framework

The Puntland component is governed by the applicable Federal Republic of Somalia legal and policy framework for environment, water resources, labour, climate, gender and public health, together with Puntland State legal, regulatory and administrative arrangements.

PSAWEN / the competent Puntland water authority is the principal water-sector counterpart for borehole permitting, groundwater oversight and joint monitoring. The PIU shall use the current official institutional title in implementation records and permits.

The principal institutional gaps are limited systematic groundwater monitoring, limited district-level environmental presence and non-standardised formal GRM and worker-protection systems. The ESMP addresses these through AfDB safeguards requirements, pre-works technical studies, formal contractor obligations, monitoring, capacity building and PIU supervision.

6. Analysis of Alternatives and Design Rationale

The alternatives analysis considers the no-project option, site/location choices, technology and design, and construction approaches. The no-project option is rejected because communities would continue to depend on deteriorated catchments and unreliable groundwater sources in a drought-prone setting.

Issue	Alternatives	Preferred Approach
Carmo/Qardho catchment lining	Compacted soil vs geomembrane where infiltration losses are high	Use liner only where condition/design assessment demonstrates a material benefit.
Borehole power	Diesel generator vs solar-powered pump	Solar preferred where confirmed in the approved engineering design because it reduces fuel cost, supply-chain risk and operational pollution.
Borehole depth/aquifer	Fixed regional depth assumption vs hydrogeology-led design	Hydrogeological investigation must control aquifer target, depth, yield and pump sizing.

Issue	Alternatives	Preferred Approach
Construction sequencing	Simultaneous work fronts vs district/site readiness sequencing	Phased mobilisation preferred to maintain OHS, security, groundwater and community supervision.
Galkacyo North implementation	Standard mobilisation vs conflict-sensitive/security-led sequencing	Conflict-sensitive mobilisation and flexible scheduling required.

7. Environmental and Social Baseline

7.1 Physical Environment

The four project districts are arid to semi-arid dryland environments with no permanent rivers, highly variable Gu and Deyr rainfall, prolonged Jilaal and Hagaa dry seasons, high temperatures and very high evapotranspiration. Available regional information indicates annual rainfall broadly in the range of 150-350 mm and potential evapotranspiration of approximately 2,000-3,000 mm/year.

Carmo and Qardho depend heavily on seasonal runoff captured by existing community catchments. Garowe and Galkacyo North rely on groundwater in fractured and sedimentary formations with variable depth, yield and quality. Both borehole sites therefore require approved pre-works hydrogeological assessment.

The project areas are primarily degraded arid and semi-arid shrubland/rangeland. No designated protected area, Ramsar wetland or critical habitat is identified at the four screened project sites; OS6 is therefore applied on a precautionary basis through footprint control, vegetation protection and reinstatement.

7.2 Social, Livelihood and Vulnerability Context

Puntland's project areas include rural pastoral and agro-pastoral communities in Carmo and Qardho, the Garowe capital hinterland and the more complex urban/peri-urban Galkacyo North context. Livelihoods are dominated by livestock, small-scale cultivation, petty trade, remittances and wage labour. IDP populations are significant around Garowe and Galkacyo North.

Vulnerable groups relevant to the project include poor pastoral households, female-headed households, nomadic and semi-nomadic women, IDPs and returnees, persons with disabilities, youth and minority-clan households.

7.3 Security and Data Limitations

Security conditions are relatively stable in Garowe and generally manageable in Carmo and Qardho, but remote-site access can be difficult. Galkacyo North has the highest security and conflict sensitivity because of its inter-clan context, IDP presence and historical administrative boundary dynamics. Site-specific security assessment is therefore a mobilisation condition.

The principal site-specific information to be confirmed before the affected works proceed comprises hydrogeological parameters for both boreholes, the controlled Galkacyo North coordinate, approved water-quality and salinity criteria, site-specific groundwater monitoring triggers, the final Heat Stress Management Plan and the catchment O&M trigger.

8. Stakeholder Engagement and Key Issues Raised

Consultations were undertaken across all four districts with Puntland institutions, district administrations, community leaders and elders, women and female-headed households, pastoral and agro-pastoral users, youth, existing water-

management structures and IDP representatives in Galkacyo. Key concerns related to equitable access, women's participation, local employment, maintenance sustainability, security, IDP inclusion, pastoral routes, drought and groundwater quality.

Issue Raised	ESIA / ESMP Response
Equitable water access	Inclusive WUAs at all four sites, public non-discriminatory access rules, GRM, balanced representation and PIU oversight.
Women's participation and safety	At least 30% women in WUA membership and leadership, women-only engagement, female CLOs, safe water-point design and confidential reporting.
Local employment	Transparent recruitment; project targets at least 80% local unskilled labour, 20% youth and 30% women in appropriate roles.
Maintenance sustainability	WUA formation and O&M training, manuals/tools, catchment/borehole monitoring and first-year PIU/PSAWEN follow-up.
Galkacyo North security	Site-specific security assessment, Security Management Plan, local authority coordination and flexible scheduling.
IDP inclusion	No clan/tenure/residence exclusion from WUA eligibility; proactive engagement of IDP settlements before WUA formation.
Pastoral routes	Pre-construction route documentation and phasing to maintain access.
Groundwater / salinity concern	Pre-works hydrogeology and baseline EC/water-quality evidence, monitoring and adaptive abstraction.

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

Risk / Impact	Applicability	Pre-Mitigation	Residual	Key Control / Qualification
Soil erosion from catchment earthworks	Carmo/Qardho	Moderate	Minor	Minimum footprint, erosion/sediment controls, rainfall-sensitive scheduling and rapid reinstatement.
Dust from earthworks	Catchment/construction	Minor	Negligible	Water suppression and site housekeeping.
Unproductive / poor-quality borehole	Garowe/Galkacyo North	Major	Minor	Pre-drilling hydrogeological survey; final depth/yield/quality set by approved design.
Groundwater contamination from drilling	Borehole sites	Moderate	Minor	Wellhead/source protection, bunded fuel/chemical storage, drilling-waste controls and post-development quality tests.
Worker OHS - heat/excavation/drilling	All sites	Major	Minor-Moderate	Competent OHS plan, heat protocol, PPE, drilling/excavation controls, first aid and emergency response.
Community safety	All construction	Moderate	Minor	Barriers, Somali signage, speed controls, notification and work-front security.
SEA/SH from worker-community interaction	All construction	Moderate	Minor-Moderate	Codes of Conduct, training, confidential channel, female CLOs and referral pathways.
Temporary water-access disruption	Existing water infrastructure	Minor-Moderate	Minor	Advance notice, documented alternative supply and rapid restoration.

Risk / Impact	Applicability	Pre-Mitigation	Residual	Key Control / Qualification
Inter-clan / water-access conflict	Especially Galkacyo North	Moderate-Major	Moderate	Conflict-sensitive WUA governance, community engagement, public rules and GRM.
Groundwater over-abstraction	Borehole O&M	Moderate	Moderate	Sustainable-yield design, pumping controls, water-level monitoring and adaptive reduction.
Catchment sedimentation / deterioration	Carmo/Qardho O&M	Moderate	Minor-Moderate	Seasonal inspection, silt-trap clearance and desilting/repair trigger.
Security risk	Galkacyo North priority	Moderate-Major	Moderate	Security assessment/SMP, community acceptance, local coordination and flexible supervision.
Climate risk	All sites	High/Very High hazard context	Moderate residual climate risk	Climate-resilient catchments, sustainable groundwater abstraction, solar pumping and adaptive O&M.

10. Positive Project Impacts and Development Benefits

- Improved reliability of seasonal stored water in Carmo and Qardho through restored catchment capacity and improved hydraulic/erosion controls.
- Improved groundwater access at Garowe and Galkacyo North where hydrogeological assessment demonstrates sustainable and acceptable sources.
- Improved drought resilience for pastoral, agro-pastoral and peri-urban households.
- Reduced livestock water stress and potentially reduced drought-related livelihood losses.
- Reduced water-collection burden for women and girls. Where the project retains a quantified time-saving target, a credible baseline and follow-up monitoring shall be established before the target is used for performance reporting.
- Local employment, training and skills benefits during construction and O&M.
- More inclusive water governance through WUAs, transparent allocation rules, female participation and GRM access.
- Reduced reliance on diesel through solar pumping where the final engineering design confirms solar systems.

11. Climate, Cumulative and Induced Effects

Drought, high temperatures, high evapotranspiration and episodic intense rainfall are the dominant climate hazards. Drought and heat are assessed as Very High risks, while flash flooding is material to catchment infrastructure. Climate-resilience measures therefore focus on storage performance, runoff/sediment control, sustainable groundwater abstraction, solar pumping where confirmed by design, and adaptive O&M.

For this ESIA, the relevant climate pathways are drought, extreme heat, groundwater recharge stress and flash flooding. Unsupported coastal or non-Puntland template descriptions are not used in the assessment.

The approved hydrogeological assessment shall establish the site-specific groundwater monitoring frequency and action trigger, while the commissioning and O&M water-quality protocol shall establish the applicable EC/salinity and potability criteria.

12. Mitigation Hierarchy and Priority Safeguards Commitments

- No borehole drilling or rehabilitation before an approved hydrogeological assessment confirms aquifer viability, baseline water quality, sustainable-yield basis and monitoring requirements.
- Do not use a regional borehole-depth assumption as a construction specification; final depth and pump sizing shall be controlled by the approved hydrogeological investigation and engineering design.
- Complete pre-works condition assessments for the Eldahir and Ado catchments and incorporate actual sediment, embankment, liner, inlet/outlet, spillway and erosion requirements into final design/method statements.
- Apply minimum-footprint earthworks, controlled spoil and drilling waste, fuel/chemical containment, wellhead protection, erosion/sediment measures and reinstatement.
- Use a competent OHS Plan for drilling, excavation, heat, traffic, flash flood, machinery/electrical work and emergency response. The C-ESMP shall contain a Heat Stress Management Plan defining potable-water provision, acclimatisation, workload-based work/rest arrangements, shade, heat triggers, first aid and emergency response consistent with GIIP.
- Maintain barriers, signage, traffic controls and safe access around drilling and catchment works, especially in the semi-urban Galkacyo North setting.
- Apply Codes of Conduct, SEA/SH induction, confidential reporting, female CLO access and mapped survivor-centred referral pathways.
- Use non-discriminatory WUAs with at least 30% women in membership and leadership, explicit IDP/minority inclusion and publicly communicated water-access rules.
- Apply the Land Access Protocol, document pastoral routes and actual land/resource users, reinstate temporary footprints and compensate verified project-caused crop/asset losses at replacement cost.
- Maintain site-specific security assessment and Security Management Plan controls, especially at Galkacyo North.
- Monitor groundwater levels, abstraction, EC/water quality and catchment condition through O&M and implement adaptive pumping/maintenance when approved triggers are reached.
- Screen and control all temporary/associated support sites before use and close/reinstate them after construction.

13. Environmental and Social Management Plan

Chapter 9 provides the complete ESMP management architecture, including Operational Safeguard-based implementation matrices, procurement clauses, ESHS hold points, stakeholder engagement, GRM, monitoring standards, institutional roles, capacity assessment, training, implementation schedule, safeguards financing, risk management, KPIs and associated management plans.

13.1 Monitoring and Reporting

Topic	Indicator	Frequency	Trigger / Action
Construction ESHS	ESMP/OHS/GRM compliance	Weekly Supervision; monthly PIU audit	Corrective action and suspension for serious breaches.

Topic	Indicator	Frequency	Trigger / Action
Borehole hydrogeology	SWL, pumping/yield, approved aquifer indicators	Baseline then frequency defined by approved hydrogeological plan	Adaptive abstraction if approved trend trigger is reached.
Water quality / EC	Bacteriological, physical and chemical parameters including EC	Before commissioning; regular O&M; additional after incident	No potable release before approved quality pass; trend deterioration triggers technical review.
Catchment condition	Storage, sediment, embankment, liner, inlet/outlet and spillway	Seasonal/post-rainfall and annual	Desilting/repair when approved condition trigger is reached.
WUA / inclusion	Women in membership/leadership, IDP/minority inclusion, meeting/access records	At formation; 3, 6, 12 months and annually	At least 30% women; exclusion/conflict trends trigger governance review.
GRM	Cases, resolution time, category and satisfaction	Monthly	At least 80% of grievances resolved within 30 days; recurring themes trigger management review.
OHS	Fatalities, LTIs, heat illness, near misses and investigations	Continuous / monthly	Zero fatalities; LTIFR and related indicators monitored against the approved project OHS KPI framework.
Security	Incidents, restrictions and work suspensions	Continuous	Serious event triggers halt and security/SMP review.

13.2 Institutional Responsibilities

Actor	Principal ESMP Role
MoAI PIU	Overall ESMP ownership, approval of C-ESMPs and technical studies, mobilisation/commissioning decisions, incident management, safeguards budgeting, corrective action and quarterly AfDB reporting.
Puntland E&S Officer	Day-to-day oversight across all four sites/districts, inspections, GRM, stakeholder engagement, WUA support, security and monitoring follow-up.
PSAWEN / relevant Puntland water authority	Borehole/water permitting and technical oversight, hydrogeological/water-quality coordination, groundwater monitoring support and WUA registration/capacity assistance.
Puntland environmental authority / MoECC	Environmental permitting/review and state environmental oversight.
District Administrations	Access, community liaison, security coordination and local dispute-resolution support.
Contractors	Implement C-ESMP, OHS, labour, pollution, SEA/SH, community-safety and security obligations and maintain site records.
Supervision Consultant	Independent compliance verification, technical/ESHS QA, corrective-action close-out and commissioning/handover checks.
WUAs / Community Committees	O&M, water-access rules, routine maintenance, monitoring records and grievance reporting after handover.
AfDB	External safeguards oversight, report review and corrective-action requirements.

14. Stakeholder Engagement, GRM and SEA/SH

The Puntland SEP provides for community meetings, women-only sessions, nomadic pastoral outreach, focus groups, WUA meetings, traditional-leader engagement, site notices, radio announcements and key-informant coordination.

Communications must be accessible to low-literacy, mobile and vulnerable groups. IDP and minority-clan households require proactive inclusion, particularly around Garowe and Galkacyo North.

The GRM uses a tiered process comprising site-level resolution, appropriate district/xeer-based mediation for non-sensitive grievances, PIU review and external AfDB/judicial recourse.

The ESMP requires worker Codes of Conduct, pre-mobilisation SEA/SH training, female CLO/focal access and verified survivor-centred referral pathways.

15. Land Access, Vulnerable Groups and Benefit Inclusion

No involuntary permanent land acquisition or physical displacement is anticipated under the screened four-site footprint. A Land Access Protocol applies to all works and temporary support areas. Actual land/resource users, pastoral routes and temporary access needs must be documented before mobilisation. Verified project-caused crop or asset loss is compensated at replacement cost. Any material displacement or livelihood impact outside the screened assumptions triggers stop-work and OS5 determination.

Gender and social-inclusion measures require at least 30% women in WUA membership and leadership, at least 30% women's participation in consultations and training, female CLO/focal access, proactive IDP/minority-clan inclusion, mobile outreach to nomadic women and at least 20% youth within the unskilled construction workforce.

16. Safeguards Budget and Financing

For this final ESIA, the detailed and arithmetically reconciled ESMP budget of USD 245,971 is adopted as the controlling indicative safeguards budget. The earlier summary estimate and standalone SEP/training estimates are not additional amounts and shall not be added to the ESMP total unless separately approved through the annual work plan and financing process.

Budget Position	Amount (USD)	Control Note
Controlling indicative ESMP budget	245,971	Detailed four-year ESMP table; itemised and arithmetically reconciled.
SEP and training implementation	Within relevant ESMP/annual work-plan lines	Standalone estimates are treated as planning inputs and are not added to the ESMP total unless separately approved.
Contractor ESHS costs	Additional	C-ESMP, ESHS/OHS staffing, PPE, drilling/erosion/waste controls and other works obligations are priced in works contracts.

17. Conditions for Mobilisation, Commissioning and Operation

17.1 Before Mobilisation

- Apply Category 2 consistently in the ESMP, procurement and C-ESMP documentation.
- Validate the Galkacyo North coordinate against the approved BBS Master List and final engineering package.
- Complete and approve hydrogeological assessments for Garwowe_Bixin and Galkacyo North, including baseline SWL, EC/water quality, sustainable-yield basis, pump sizing and monitoring plan.
- Complete condition assessments for Eldahir and Ado catchments and incorporate findings into final rehabilitation design and contractor methods.

- Document land/access and pastoral-route arrangements and screen all support/borrow/spoil/construction-water sites.
- Complete security assessment for every site and a specific Security Management Plan for Galkacyo North where required.
- Approve C-ESMP, OHS Plan, waste/spill plan, community H&S plan, labour/Workers' GRM, SEA/SH arrangements, Chance Finds Procedure and task-specific drilling/earthworks methods.
- Establish the four-district community GRM, confidential SEA/SH pathway and female CLO arrangements.
- Before the affected activity proceeds, incorporate the approved site-specific OHS, groundwater, water-quality, catchment-maintenance and incident-management criteria into the C-ESMP and monitoring plan.

17.2 Before Commissioning and Handover

- Water intended for potable community use passes the approved pre-commissioning laboratory criteria.
- Borehole baseline and operational monitoring records are established and sustainable abstraction/pumping limits documented.
- Catchment embankment, liner where present, inlet/outlet, spillway, silt controls and safety arrangements are inspected and defects closed.
- Temporary and support sites are reinstated and waste/spoil removed.
- Inclusive WUA/community management structures are established and trained with documented access/allocation rules, at least 30% women in membership and leadership, and appropriate IDP/minority inclusion.
- O&M manuals, maintenance responsibilities, GRM, monitoring and escalation arrangements are handed over and demonstrated to be functional.

18. C-ESMP and Pre-Construction Confirmation Requirements

Requirement	Assessment Position	C-ESMP / Pre-Construction Action
AfDB categorisation	The Puntland component is Category 2.	Apply Category 2 consistently in all contract, C-ESMP and supervision documents.
Galkacyo North site control	The final construction coordinate requires field verification.	Verify GPS and issue a signed controlled site register before design setting-out or mobilisation.
Borehole design basis	Final depth cannot be established from regional information.	The approved hydrogeological assessment and drilling design shall establish target aquifer, depth, completion, yield and pump duty.
Groundwater monitoring	Site-specific trigger and monitoring frequency depend on aquifer conditions.	The hydrogeological assessment shall define one controlling monitoring frequency and action trigger per borehole and the C-ESMP shall apply it.
Water-quality and salinity criteria	Potability and operational salinity response must be based on approved laboratory criteria.	The commissioning/O&M protocol shall define the approved parameter set, acceptance limits and response to non-compliance.
Heat-stress management	A fixed litres-per-worker value is not adopted by this ESIA.	The C-ESMP Heat Stress Management Plan shall define potable-water provision, acclimatisation, work/rest, shade, heat triggers and emergency response consistent with GIIP.

Requirement	Assessment Position	C-ESMP / Pre-Construction Action
Heat-work timing	Work timing shall respond to actual heat conditions and workload.	The Heat Stress Management Plan shall define site/season-specific scheduling and stop-work criteria.
OHS performance KPI	One consistent OHS KPI framework is required.	Use zero fatalities and the approved project LTIFR/leading-indicator framework in contractor and supervision reporting.
Catchment O&M trigger	The O&M trigger shall be based on the accepted post-works condition baseline.	The O&M plan shall establish one inspection frequency and desilting/repair trigger before handover.
Climate-risk basis	Only drought, heat, groundwater recharge stress and flash flooding are used in this ESIA.	C-ESMP and O&M plans shall apply these verified climate pathways and site-specific design requirements.
Stakeholder and training scope	Puntland implementation covers four sites/four districts.	Controlled SEP, training and C-ESMP records shall use the four-site/four-district scope.
Safeguards financing	USD 245,971 is the controlling indicative ESMP budget.	Incorporate the detailed budget into annual work planning; avoid double counting with standalone SEP/training planning estimates; price contractor ESHS separately.

19. Overall Environmental and Social Conclusion

The ESIA concludes that the four-site Puntland component is environmentally and socially feasible as an AfDB Category 2 operation provided the identified pre-works studies, design controls and ESMP commitments are implemented in full. Most construction-phase impacts can be reduced to Minor or Minor-Moderate through established controls. The principal residual management issues are groundwater sustainability at the two borehole sites, equitable water-access governance, Galkacyo North security/conflict sensitivity, SEA/SH prevention and long-term infrastructure maintenance.

Environmental and social clearance should remain conditional on completion of the hydrogeological assessments, catchment condition assessments, final site/coordinate verification, security and land-access readiness, approved contractor safeguards plans, functioning GRM/SEA-SH systems, compliant water-quality commissioning, inclusive WUA readiness and reconciliation of the technical thresholds and safeguards budget.

With those conditions met, the expected benefits - improved water reliability, drought resilience, livestock and household water security, reduced water-collection burden, local employment and stronger inclusive water governance are expected to outweigh the temporary and localised adverse effects of construction and rehabilitation.

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CHAPTER 1: INTRODUCTION AND SCOPING

1.1 Background and Project Context

The Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project is an initiative of the Federal Republic of Somalia, led by the Ministry of Agriculture and Irrigation (MoAI) and financed by the African Development Bank (AfDB). The project seeks to improve water security, agricultural and livestock productivity, and climate resilience through targeted rehabilitation and development of water infrastructure.

This ESIA addresses the Puntland State component: four sites across Carmo, Qardho, Garowe and Galkacyo North Districts, comprising two water-catchment rehabilitation sites and two borehole sites. The component therefore requires two principal safeguards pathways: dryland catchment earthworks and groundwater/borehole development.

Category 2 is the controlling AfDB classification for the Puntland component and is applied consistently in this ESIA. Site-specific parameters that depend on final coordinate verification, hydrogeology, water-quality criteria, catchment condition, OHS planning or contractor method are assigned to binding C-ESMP/pre-construction hold points.

1.2 Purpose and Objectives of the ESIA

The purpose of this ESIA is to assess the environmental and social risks and impacts of the four Puntland interventions, establish a proportionate management framework, and support AfDB, MoAI, Puntland institutions and affected communities in decision-making. The objectives are to:

- confirm the four-site scope, intervention types and areas of influence;
- establish the relevant environmental and social baseline for Carmo, Qardho, Garowe and Galkacyo North using field verification, consultation and available secondary information;
- identify and evaluate construction, commissioning and O&M risks using transparent significance criteria;
- apply the mitigation hierarchy and define design, pre-works, contractor and O&M controls;
- establish stakeholder-engagement, grievance, labour, SEA/SH, security, capacity-building, monitoring and institutional requirements;
- identify site-specific information that must be confirmed through pre-construction studies, C-ESMP requirements and monitoring rather than assumption; and
- provide a comprehensive Chapter 9 ESMP in the established Hirshabelle-format architecture.

1.3 Scope of the ESIA

1.3.1 Geographic and Intervention Scope

The ESIA covers Eldahir Water Catchment in Carmo District, Ado Water Catchment in Qardho District, Garwowe_Bixin Borehole in Garowe District, and the Galkacyo North Borehole site. It also covers temporary access routes, lay-down/storage areas, borrow/spoil sites, construction-water sources, worker welfare facilities and any other associated support areas used by the works.

1.3.2 Spatial Area of Influence

The area of influence is defined by the actual project activity and receptor pathway. The direct area covers the works and support footprint; the broader influence area includes community access, pastoral movement, groundwater users, security-sensitive receptors and other users potentially affected by the project.

1.3.3 Temporal Scope

The assessment covers pre-construction and mobilisation, construction/rehabilitation, commissioning and handover, operation and maintenance, and demobilisation/reinstatement of temporary works. Seasonal factors include Gu and Deyr rainfall, which influence flash-flood and erosion exposure, and Jilaal/Hagaa dry periods, when disruption to existing water access and groundwater stress may be more significant.

1.4 ESIA Methodology

Where site-specific evidence depends on final design, hydrogeology, land/access, security or contractor method, the requirement is assigned to a pre-works technical assessment, C-ESMP hold point or monitoring programme.

1.5 Environmental and Social Scoping

1.5.1 Site-Specific Priority Issues

Site / District	Intervention	Priority Environmental and Social Issues
Eldahir — Carmo	Water catchment rehabilitation	Erosion and sediment during earthworks; catchment condition and storage loss; flash-flood exposure; heat and remote OHS; pastoral access; water-quality protection and long-term maintenance.
Ado — Qardho	Water catchment rehabilitation	Erosion and sediment; embankment/inlet/outlet/spillway condition; flash-flood exposure; community safety; equitable access across pastoral groups; maintenance sustainability.
Garwowe_Bixin — Garowe	Borehole drilling or rehabilitation	Aquifer viability and sustainable yield; water quality; drilling waste and fuel/chemical contamination; drilling rig and heat OHS; peri-urban/community safety; WUA governance and IDP inclusion where relevant.
Galkacyo North	Borehole drilling or rehabilitation	Groundwater sustainability and quality; drilling/community safety; inter-clan water-access governance; IDP inclusion; security and conflict sensitivity; SEA/SH and equitable benefit access.

1.5.2 Cross-Cutting Issues

- groundwater viability, sustainable abstraction and water quality at the two borehole sites;
- catchment erosion, sediment, drainage, embankment and spillway performance at Carmo and Qardho;
- heat stress, drilling, excavation, plant, electrical/solar and remote emergency-response OHS;
- community safety, traffic, construction access and continuity of existing water supplies;
- land access, pastoral routes, customary water governance and potential exclusion or elite capture;
- Galkacyo North security and inter-clan sensitivity, including IDP and minority-clan inclusion;
- SEA/SH prevention, confidential reporting and worker-community conduct;
- waste, drilling mud/cuttings, fuels, chemicals and source protection;
- climate risks from drought, declining recharge, extreme heat and short-duration intense rainfall; and

- stakeholder engagement, low-literacy communication, GRM and post-handover WUA capacity.

1.5.3 Issues of Limited Relevance and Verification Triggers

No designated protected area or critical habitat is identified at the four screened sites; OS6 is precautionary and managed through footprint control, vegetation protection and reinstatement.

1.6 Stakeholder Engagement During ESIA Preparation

ESIA preparation included engagement with Puntland state institutions, PSAWEN and water-sector counterparts, district administrations, community leaders and elders, women and female-headed households, pastoral/agro-pastoral households, youth, water-management structures and IDP representatives in the Galkacyo area.

1.7 C-ESMP and Pre-Construction Confirmation Requirements

Requirement	C-ESMP / Pre-Construction Treatment
AfDB categorisation	Apply Category 2 consistently in all project, tender, C-ESMP and supervision documents.
Galkacyo North coordinate	Field-verify the GPS location and issue a signed controlled site register before setting-out/design/mobilisation.
Borehole hydrogeology	Complete site-specific hydrogeological assessments before borehole works; establish the aquifer, baseline, yield, quality, pump basis and monitoring.
Groundwater monitoring	The approved hydrogeological assessment shall define the site-specific monitoring frequency and action trigger.
Water quality / salinity	Use only site-specific baseline and approved water-quality criteria. Unsupported coastal/template descriptions are not part of this ESIA.
Heat-stress management	The C-ESMP Heat Stress Management Plan shall define hydration and work/rest controls consistent with GIIP; no conflicting fixed quantity is adopted.
Controlled implementation scope	All controlled Puntland instruments shall use four sites/four districts and the actual catchment/borehole typologies.
Safeguards budget	Use the detailed USD 245,971 ESMP budget as the controlling indicative budget; avoid double counting with standalone SEP/training planning estimates and price contractor ESHS separately.

1.8 Structure of the ESIA

The revised report structure is: 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; and Chapter 10 Conclusion and Recommendations.

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Purpose and Application

This chapter defines the legal, policy, institutional and AfDB safeguards framework governing the four Puntland interventions. It establishes the compliance basis for design, permitting, procurement, mobilisation, construction, commissioning and O&M without repeating project activities or impact findings addressed in later chapters.

2.2 Federal Legal, Regulatory and Policy Framework

Instrument	Lead / Relevant Institution	Relevance to the Puntland Component
Provisional Federal Constitution (2012), including Articles 43–45	Federal Government of Somalia	Constitutional principles for land, natural resources and environmental protection.
National Transformation Plan 2025–2029	Federal planning institutions	Development, resilience, productive-sector and service-delivery context.
National Environment Policy (2020) and Environment Law (2019)	Federal environment authority	Environmental assessment, protection and civil-works compliance basis.
Water Resources Law / national water-resources framework	Federal water-sector authority	Water rights, groundwater regulation, allocation and source management relevant to boreholes and catchments.
National Climate Change Policy, NAP and related instruments	Federal climate/environment authorities	Climate adaptation and resilience mainstreaming for drought-, heat- and flood-sensitive water infrastructure.
Labour law and employment framework	Federal / Puntland labour authorities	Worker terms, OHS and labour protection, supplemented by AfDB OS2 and the project LMP.
National gender policy and CEDAW commitments	Federal gender/human-rights institutions	Gender equality, participation, non-discrimination and SEA/SH-related protections.
Public health / drinking-water requirements	Health and water-sector institutions	Public-health and water-quality basis for commissioning and O&M monitoring.

2.3 Puntland State Legal and Institutional Framework

Puntland is an established Federal Member State with state ministries and administrative structures. The project requires coordination between the federal MoAI PIU and the competent Puntland institutions responsible for agriculture, water, environment, labour, local administration and security.

Institution / Actor	Role in Project	Key ESIA / ESMP Interface
MoAI PIU	Overall implementing agency and AfDB safeguards accountability	Approves ESIA/C-ESMP/hold points, manages monitoring, incidents, corrective action and AfDB reporting.
Puntland state agriculture counterpart	State project and livelihood coordination	Supports state-level coordination, community and agricultural/pastoral linkages.
PSAWEN / competent Puntland water authority	Water-resource regulation, borehole/well permitting and groundwater oversight	Pre-drilling approvals, groundwater and water-quality monitoring, WUA technical/O&M support.
Puntland environment authority / MoECC	Environmental permitting/review and oversight	Environmental clearance, monitoring and coordination on catchment protection/climate issues.
Puntland labour/social affairs authority	Labour-law oversight	Labour compliance and worker-protection coordination where applicable.
Carmo, Qardho, Garowe and Galkacyo North District Administrations	Local access, liaison, security coordination and dispute-resolution support	Site readiness, land/access documentation, community engagement, GRM escalation.

Institution / Actor	Role in Project	Key ESIA / ESMP Interface
Traditional leaders / oday / religious leaders	Customary legitimacy and non-sensitive dispute resolution	Water-access engagement, pastoral-route coordination and GRM mediation.
WUAs / community water-management committees	O&M and water governance	Access/allocation rules, maintenance, monitoring records and GRM after handover.
Contractors / Supervision Consultant	Works implementation and independent compliance verification	C-ESMP/OHS implementation, monitoring, quality hold points, reporting and corrective action.
AfDB	Financier and external safeguards oversight	Review, supervision, periodic reporting and corrective-action requirements.

2.4 International Conventions and Good International Practice

Applicable international commitments include the UN Framework Convention on Climate Change and Paris Agreement, UN Convention to Combat Desertification, Convention on Biological Diversity, Convention on the Elimination of All Forms of Discrimination Against Women, ILO fundamental principles and conventions, and relevant human-rights instruments.

2.5 AfDB Integrated Safeguards System 2023

The Puntland component is Category 2 under the AfDB Integrated Safeguards System (ISS, 2023). The following safeguard determination applies:

Operational Safeguard	Status	Application
OS1 — Assessment and Management of Environmental and Social Risks and Impacts	Applicable	Overall ESIA/ESMP, site readiness, hydrogeology, catchment condition, climate risk, associated facilities and change screening.
OS2 — Labour and Working Conditions	Applicable	LMP, worker terms, child/forced labour prohibition, Workers' GRM and OHS for heat, drilling, excavation and remote work.
OS3 — Resource Efficiency and Pollution Prevention and Management	Applicable	Groundwater sustainable abstraction, water quality, drilling waste, fuels/chemicals, catchment erosion/sediment and resource use.
OS4 — Community Health, Safety and Security	Applicable	Drilling/earthworks safety, first-use water safety, traffic, SEA/SH, Galkacyo North security and emergency response.
OS5 — Land Acquisition / Restrictions / Involuntary Resettlement	Precautionary	Temporary access, pastoral routes, compensation for verified loss, reassessment if physical/economic displacement exceeds screening assumptions.
OS6 — Habitat and Biodiversity Conservation	Precautionary	Minimum footprint, vegetation protection and reinstatement; reassess if unexpected sensitive habitat occurs.
OS7 — Vulnerable Groups	Applicable	Women, female-headed households, IDPs/returnees, minority clans, poor pastoral households, youth and persons with disabilities.
OS8 — Cultural Heritage	Precautionary	Chance Finds Procedure for all ground disturbance.
OS9 — Financial Intermediaries	Not applicable	No financial-intermediary structure.
OS10 — Stakeholder Engagement and Information Disclosure	Applicable	Four-district engagement, disclosure, GRM, WUA governance and differentiated outreach.

2.6 Gap Review: Puntland Framework and AfDB Requirements

Area	Framework / Implementation Gap	Project Response

Area	Framework / Implementation Gap	Project Response
Groundwater oversight	District-level monitoring systems are limited and aquifer data sparse.	Hydrogeological assessment before works; defined sustainable-yield basis; water-level/quality monitoring and PSAWEN/competent-water-authority involvement.
Environmental oversight	State capacity exists but district field presence and routine monitoring are limited.	PIU retains AfDB safeguards accountability; Puntland E&S Officer and Supervision provide field assurance.
Labour/OHS	State procedures may not define all project-specific high-risk controls.	Apply project LMP, AfDB OS2 and competent OHS plans as minimum project standard.
GRM / SEA/SH	Formalised grievance systems and referral access vary by district.	Project multi-channel GRM, Workers' GRM, female CLO/focal arrangements and confidential survivor-centred SEA/SH pathway.
Water governance	Customary allocation can exclude women, IDPs or minority groups.	Inclusive WUA constitutions, public access rules, representation targets and PIU oversight.
Security	Galkacyo North has greater inter-clan and armed-actor sensitivity.	Site-specific assessment, Security Management Plan where required, conflict-sensitive engagement and stop/resequence authority.
Climate resilience	Drought/heat/flood hazards can exceed historical design assumptions.	Site-specific catchment and borehole design evidence, adaptive monitoring and O&M maintenance.

2.7 Permits, Approvals and Compliance Hold Points

- AfDB environmental and social clearance for the ESIA/ESMP as required by the financing process;
- applicable Puntland environmental approval/permit for civil works;
- borehole/water-resource permit or no-objection from the competent Puntland water authority for Garowe and Galkacyo North;
- land/access and community-use documentation for all work and support areas;
- site-specific security clearance before mobilisation, with particular attention to Galkacyo North;
- approved contractor ESHS plans and high-risk method statements before physical works; and
- pre-commissioning water-quality and WUA-readiness confirmation before community use.

2.8 Legal and Institutional Implementation Controls

All controlled Puntland implementation instruments shall use Category 2, the four-site/four-district scope, the actual catchment/borehole typologies and the current official titles of the competent Puntland institutions.

CHAPTER 3: ANALYSIS OF ALTERNATIVES

3.1 Purpose and Approach

The alternatives analysis compares reasonable options for achieving the project objective while avoiding or reducing environmental and social risk. It considers the no-project alternative, site and micro-siting choices, intervention/design alternatives, construction methods and sequencing, and O&M implications.

3.2 No-Project Alternative

Under the no-project alternative, the Eldahir and Ado catchments would remain affected by sedimentation and reduced storage, while communities around Bixin/Garowe and the Gacnafale/Galkacyo North borehole area would continue to face groundwater-access constraints. The no-project alternative is not preferred because it would leave the identified water-security and climate-resilience needs unaddressed.

3.3 Location and Micro-Siting Alternatives

The Galkacyo North/Gacnafale borehole coordinate shall be field-verified and entered in the controlled site register before final micro-siting and construction setting-out.

3.4 Catchment Design Alternatives — Carmo and Qardho

Design Issue	Alternative A	Alternative B	Preferred / Conditional Approach
Catchment lining	Compacted soil / no liner	Geomembrane liner	Use geomembrane only where the condition/infiltration assessment demonstrates material benefit; do not assume blanket lining.
Desilting method	Fully mechanised	Combined mechanised and labour-based	Use machinery for bulk desilting and labour-based finishing/reinstatement where safe and technically suitable, balancing quality and local employment.
Embankment/spillway standard	Historic/standard repair	Climate-resilient repair/design	Use verified runoff, condition and design evidence to strengthen spillway/embankment against flash-flood risk; generic regional climate percentages are not design values.
Spoil use	Uncontrolled nearby dumping	Screened reuse / approved disposal	Reuse suitable material only where technically appropriate; otherwise use screened disposal with erosion/access/reinstatement controls.

3.5 Borehole and Water-Supply Design Alternatives — Garowe and Galkacyo North

Issue	Alternative A	Alternative B	Preferred / Conditional Approach
Energy source	Diesel generator	Solar-powered pump	Solar is preferred because it reduces recurring fuel dependency and pollution risk, subject to final yield/pump sizing and security/design requirements.
Aquifer target / drilling depth	Use regional assumed depth	Hydrogeology-led target depth and completion	Hydrogeological assessment controls aquifer target, drilling depth, sustainable yield and pump design; a regional depth estimate is not a construction specification.
Groundwater abstraction	Unrestricted operational pumping	Sustainable-yield and pumping-hour controls	Use approved safe/sustainable-yield basis and adaptive monitoring before commissioning and during O&M.

Issue	Alternative A	Alternative B	Preferred / Conditional Approach
Water access arrangement	Uncontrolled direct wellhead access	Protected wellhead with kiosk/trough separation	Protected collection/distribution and livestock separation preferred where included in final design because it improves safety, hygiene and governance.
Water quality / salinity response	Assume water suitable	Baseline and commissioning quality verification	Do not commission an unsuitable source; final salinity/quality criteria must follow the approved laboratory/technical standard, not unapproved or inconsistent thresholds.

3.6 Construction and Sequencing Alternatives

District/site readiness-based work packaging is preferred. A phased approach allows hydrogeological and catchment evidence to be confirmed before each package, reduces the burden on safeguards supervision, and allows security and seasonal conditions to be incorporated.

3.7 Associated Facilities and Resource-Sourcing Alternatives

Borrow areas, spoil sites, construction-water sources, fuel/storage areas and temporary access are not fixed at ESIA stage. The preferred approach is to use existing licensed/screened sources and existing access where feasible; any new temporary site requires E&S screening, land/access documentation, pollution and erosion controls, and reinstatement.

3.8 Preferred Alternative

The preferred alternative is the four-site project as scoped: rehabilitation of the Eldahir and Ado catchments with site-specific condition-led design, and hydrogeology-led borehole drilling/rehabilitation with solar pumping at Garwowe_Bixin and Galkacyo North. Phased implementation, pre-works evidence, protected water-source design, inclusive WUA governance and adaptive groundwater/catchment monitoring are integral to the preferred alternative.

3.9 Alternatives and Design Parameters to be Confirmed through the C-ESMP

Requirement	Pre-Construction / C-ESMP Control
Galkacyo North GPS coordinate	Field/GPS verify the final site and use the controlled coordinate for design, consultation and mobilisation.
Borehole depth/yield/pump sizing	The approved hydrogeological assessment controls target aquifer, drilling depth, yield, completion and pump sizing.
Water-quality and salinity criteria	The approved commissioning/O&M protocol controls potability, EC/salinity parameters and response to non-compliance.
Heat-stress work/rest/hydration	The C-ESMP Heat Stress Management Plan defines the site/season-specific hydration and work/rest regime.
Catchment liner/spillway dimensions	The approved condition assessment and engineering design control liner, spillway, storage and embankment requirements.

CHAPTER 4: DESIGN MEASURES

4.1 Purpose and Design-Safeguards Interface

This chapter identifies environmental and social measures that must be embedded in final engineering and work planning before construction. Where only project-standard reference details are available, they are presented as typical arrangements rather than as site-specific construction drawings; approved site designs govern implementation.

4.2 Design Control Principles

- use the verified four-site register and approved engineering package as the design basis;
- complete hydrogeological assessment before final borehole design and catchment condition assessment before final catchment quantities;
- avoid unnecessary footprint expansion, pastoral-route obstruction and sensitive community access conflicts;
- design for source protection, safe access, O&M maintainability and climate resilience;
- separate human and livestock access where the final design includes kiosks/troughs;
- ensure temporary construction arrangements do not become unmanaged permanent impacts; and
- apply formal change screening if design, site or intervention type materially changes.

4.3 Water Catchment Design Measures — Eldahir and Ado

4.3.1 Pre-Design Condition Assessment

Before final quantities and methods are fixed, each catchment requires a condition assessment covering sediment depth/volume, effective storage, basin geometry, embankment/bund integrity, erosion and runoff pathways, inlet/outlet and silt-control condition, spillway function, liner condition/need, livestock/domestic access and downstream receptors. The approved assessment is the design input for rehabilitation rather than generic template dimensions.

4.3.2 Erosion, Sediment and Hydraulic Resilience

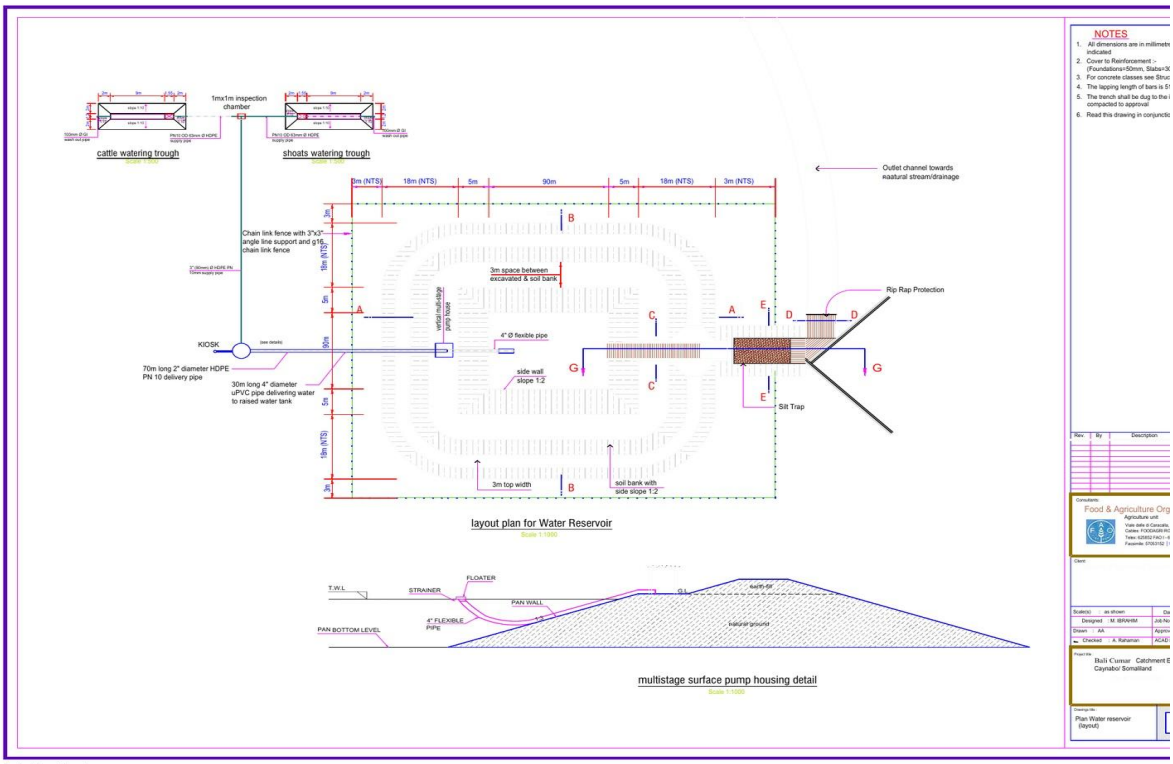
Extreme-rainfall intensity and flash flooding are material climate concerns, but final design discharge, embankment and freeboard requirements shall be established by the competent engineering design and site condition assessment.

4.3.3 Lining and Water-Retention Measures

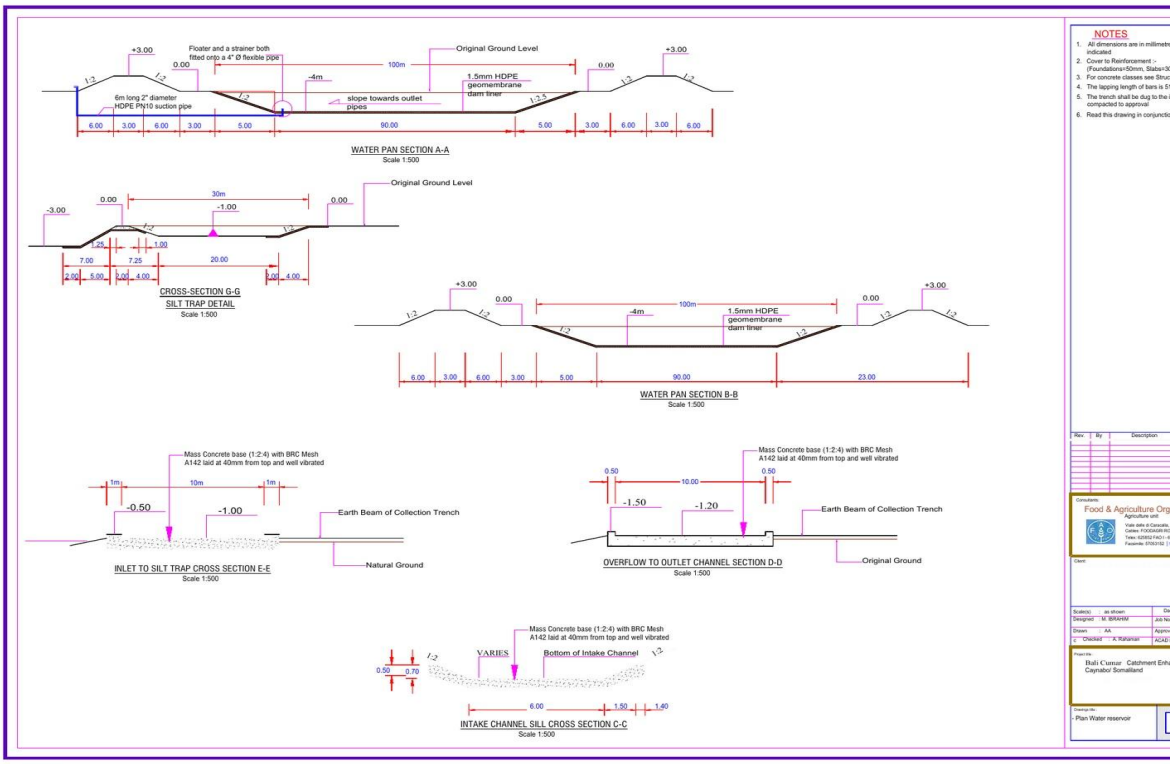
Geomembrane lining is conditional, not universal. The final design should document whether infiltration losses justify lining, the area and detail of any liner, interface/protection measures, and maintenance/repair requirements. Liner selection should not create inaccessible, unsafe or unmaintainable features for community operators.

4.3.4 Livestock and Domestic Access

Where troughs or domestic draw-off arrangements are provided, the design should reduce direct livestock contact with domestic collection areas, limit erosion around high-use points, provide drainage of overflow, and maintain safe user access. Final layout should be reviewed with women and other primary water users.



(a) Project-standard catchment layout



(b) Catchment section / structures

Figure 4-1: Project-Standard BBS Water Catchment Rehabilitation Arrangement (Reference Design for Eldahir and Ado)

Reference engineering arrangement for ESIA purposes only. Final Eldahir and Ado geometry, quantities, liner extent, inlet/outlet, spillway and structural details shall be taken from the approved site-specific engineering design and incorporated into the C-ESMP.

4.4 Borehole Design Measures — Garwowe_Bixin and Galkacyo North

4.4.1 Hydrogeological Design Basis

A site-specific hydrogeological assessment is required before drilling or rehabilitation. It must confirm the viable aquifer target, expected yield, baseline static water level, water-quality characteristics, sustainable abstraction basis and monitoring arrangements. Pump selection, final drilling depth and operational pumping limits must be derived from this evidence. No regional depth range is adopted as a project design value; final depth is hydrogeology-led.

4.4.2 Wellhead and Source Protection

The C-ESMP shall establish a protective fuel/chemical exclusion and containment arrangement around the wellhead based on source-protection requirements and site conditions; refuelling and contaminant drainage toward the wellhead are prohibited.

4.4.3 Solar Pumping and Distribution

Solar-powered submersible pumping, protected wellhead infrastructure, storage/distribution and livestock watering are the preferred configuration where confirmed by the approved site-specific engineering design.

4.4.4 Water Quality and Commissioning

The final commissioning protocol shall define one approved water-quality parameter set and acceptance criterion based on the competent water authority/project standard. No source shall be commissioned for potable use unless it passes the approved criteria.

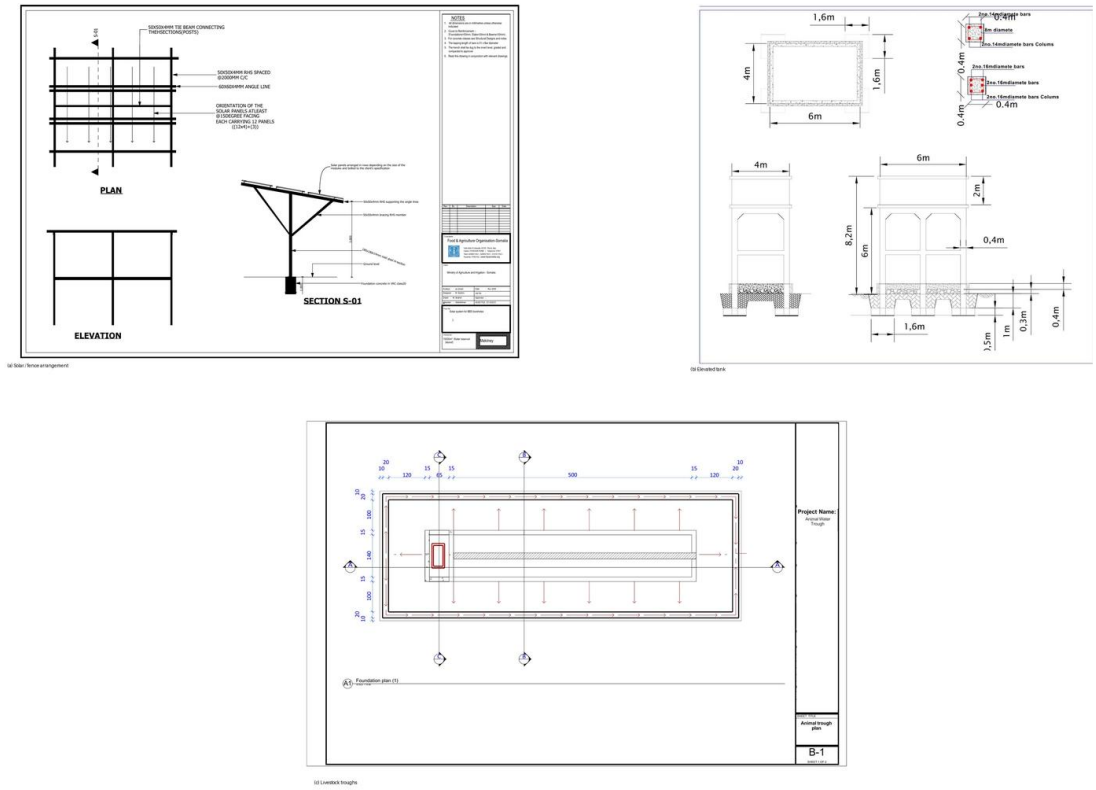


Figure 4-2: Project-Standard BBS Borehole Infrastructure Details - Solar Array, Elevated Storage and Livestock Trough

Reference engineering details for ESIA purposes only. These are not site-specific Puntland construction drawings. Final Bixin/Garowe and Gacnafale/Galkacyo North pump, solar, storage, kiosk, trough and protection details shall be confirmed by the approved site-specific design and incorporated into the C-ESMP.

4.5 Climate-Resilient Design

Drought and heat are dominant climate hazards and flash flooding is material to catchments. Design responses include restoring effective storage, liners where justified, robust drainage/silt control, flood-resilient catchment repair, solar pumping where confirmed by design, and operation based on sustainable groundwater yield.

4.6 Community Safety, Gender and Accessibility by Design

- provide safe pedestrian/community access around active and completed infrastructure;
- provide barriers/fencing/signage appropriate to catchments, boreholes and electrical/solar equipment;
- review collection/kiosk/trough layout with women and primary users and incorporate privacy/safety or lighting only where the final site design and energy arrangement justify it;
- avoid creating barriers to pastoral movement and community roads;
- provide access features reasonably usable by persons with disabilities where practicable; and
- ensure maintenance points can be safely reached by trained WUA/operators.

4.7 Design Measures for Associated Facilities and Temporary Works

Temporary access routes, borrow/spoil areas, fuel/chemical storage, camps or welfare facilities must be identified by the contractor and screened before use. Design/planning should prevent drainage blockage, contamination of water sources, unsafe excavation, land disputes and unreinstated borrow/spoil areas. Their close-out requirements should be defined before they are opened.

4.8 Design Verification and Hold Points

Design / Readiness Item	Required Evidence Before Works
Eldahir and Ado catchments	Approved site condition assessment and final rehabilitation design/BoQ.
Garwowe_Bixin and Galkacyo North boreholes	Approved hydrogeological assessment, baseline water quality/SWL, water permit/no-objection and final drilling/pump design.
Galkacyo North location	Verified coordinate and signed controlled site register.
Land/access	Written works/support-site access arrangements and pastoral-route review where relevant.
Security	Current site-specific assessment; Security Management Plan where required.
Water continuity	Alternative supply arrangement before any planned interruption to a relied-upon source.
Water-quality standard	One approved commissioning and O&M monitoring parameter/trigger schedule.
Heat/OHS parameters	Approved C-ESMP Heat Stress Management Plan defining potable-water provision, acclimatisation, workload-based work/rest arrangements, heat triggers, first aid and emergency response.

CHAPTER 5: PROJECT DESCRIPTION

5.1 Project Overview

The Puntland component of the BBS Project comprises four water-infrastructure sites across four districts: two existing water catchments for rehabilitation and two borehole sites for drilling or rehabilitation. The project is intended to improve water security, climate resilience and productive livelihoods for pastoral, agro-pastoral and farming communities.

5.2 Confirmed Project Site Register

No.	District	Village / Site	Infrastructure Type	Controlled Coordinate / Status	Status / Control Note
118	Carmo	Eldahir	Water Catchment	10.5982° N; 49.0264956° E	Catchment rehabilitation.
119	Qardho	Ado	Water Catchment	9.459488° N; 49.034234° E	Catchment rehabilitation.
120	Garowe	Bixin / Garwowe_Bixin	Borehole	9.01530° N; 46.39217° E	Borehole rehabilitation / development; final scope follows the approved technical package.
121	Galkacyo North	Gacnafale / Galkacyo North borehole site	Borehole	To be field/GPS verified before mobilisation	New borehole construction; controlled coordinate and setting-out point required before design/mobilisation.

5.3 Water Catchment Rehabilitation

At Eldahir and Ado, rehabilitation activities comprise desilting and reshaping of existing catchment basins; embankment/bund repair and reinforcement; geomembrane lining where justified by site condition; improvements to inlet, outlet and silt-control structures; livestock watering facilities; and revegetation/reinstatement. Final quantities and dimensions are controlled by the approved condition assessment, BoQ and engineering design.

5.4 Borehole Drilling or Rehabilitation

At Bixin/Garowe and the Gacnafale/Galkacyo North borehole site, works comprise borehole rehabilitation or drilling to a viable aquifer; installation of the approved pumping/power system; wellhead protection including apron, drainage and fencing; and associated distribution/water-use infrastructure. Final depth, yield, completion, pump size and abstraction regime are controlled by the approved hydrogeological assessment and site design.

5.5 Construction Methods and Sequencing

Works will be organised by district or work package and should proceed only at sites that have passed the Chapter 9 readiness hold points. Catchment works involve controlled mechanical/manual desilting, earthworks, embankment/bund repair, structures, lining where required and reinstatement. Borehole works involve drilling/rehabilitation, development, testing, wellhead/solar/distribution installation and commissioning. Catchment earthworks should avoid peak Gu/Deyr rainfall where practicable, while borehole/catchment rehabilitation affecting current supply requires continuity arrangements before shutdown.

5.6 Workforce and Labour Profile

Workforce size will depend on the contractor, intervention type, sequencing and final BoQ. The contractor mobilisation plan shall provide the actual labour profile and shall apply the project local-employment, youth, women, labour and OHS requirements.

5.7 Construction Support Activities and Associated Facilities

These support sites are not fixed at ESIA stage and shall be entered in an Associated Facilities and Support-Sites Register, screened and approved before use, with land/access, pollution, erosion, security and reinstatement controls.

5.8 Resource Requirements

Project resources include earthworks equipment, aggregate/borrow material, cement, geomembrane where required, piping and wellhead materials, solar and pump equipment, fencing, construction water and fuel/chemicals associated with machinery and drilling. Resource sourcing should avoid competition with critical community water supply and use screened/approved sources and suppliers.

5.9 Land Requirements and Access

The project is expected to use existing community water-point footprints where rehabilitation is proposed, and no physical displacement is anticipated under the screened scope. Temporary work areas, access routes and support sites shall nevertheless be documented with actual users before mobilisation.

5.10 Operation and Maintenance Concept

All four sites are to be handed over to inclusive WUAs or strengthened community water-management committees. WUAs are expected to manage day-to-day water access, minor maintenance, allocation rules and fee collection where applicable. Catchment responsibilities include silt-trap clearance and structural/safety inspection; borehole responsibilities include pump/system operation, wellhead protection, pumping/groundwater monitoring records and escalation of technical faults. PSAWEN or the competent Puntland water authority and the PIU provide technical and oversight support.

5.11 Project-Description Controls

Control Item	Requirement
Scope	Four sites only: two catchments and two boreholes. Remove template references to shallow wells, pipeline canals, 68 sites or 68 WUAs unless separately approved by formal change.
Category	Apply Category 2 consistently in all project, tender, C-ESMP and supervision documents.
Galkacyo North location	Field/GPS verify the Gacnafale/Galkacyo North borehole location and use one controlled coordinate before design/mobilisation.
Borehole technical parameters	Hydrogeological assessment and final design/BoQ control depth, yield, pump and sustainable abstraction.
Catchment technical parameters	Condition assessment and final design/BoQ control desilting, embankment, liner and hydraulic quantities.
Temporary facilities	Contractor identifies and PIU screens/approves before use and close-out.
Water quality / salinity	Apply one approved commissioning and O&M monitoring standard established by the competent water authority/project protocol.

Control Item	Requirement
Schedule	Account for rainfall, water continuity, security and safeguards supervision capacity.

CHAPTER 6: PROJECT BASELINE

6.1 Baseline Methodology and Evidence Base

Baseline conditions are derived from field verification undertaken between December 2025 and February 2026, consultations with Puntland institutions and communities, SWALIM and other regional environmental datasets, FSNAU and population/poverty information, regional hydrogeological literature and secondary review. Site-level groundwater and some community socioeconomic information shall be completed through pre-construction studies and monitoring where required.

6.2 Geographic and Topographic Setting

The project districts span Puntland's interior dryland terrain. Carmo and Qardho are in Bari Region, Garowe lies within the Nugaal valley setting, and Galkacyo North lies on the central Mudug plains. The main baseline chapter describes all four as non-riverine dryland settings with seasonal/episodic drainage. Elevation and local drainage vary by site; final engineering relies on verified site topography rather than generic ranges.

6.3 Physical Environment

6.3.1 Climate and Meteorology

The project area has arid to semi-arid conditions with bimodal Gu and Deyr rainfall, prolonged dry periods and high temperatures. Annual rainfall is approximately 150-350 mm across the four districts and potential evapotranspiration approximately 2,000-3,000 mm/year at regional scale.

6.3.2 Soils, Erosion and Drainage

Soils range from shallow rocky profiles in elevated ground to deeper materials in valley bottoms and plains. Sparse cover and surface crusting can produce runoff, rill/gully erosion and sediment mobilisation when disturbed. This is particularly relevant to the Eldahir and Ado catchment earthworks and to temporary borehole/site-support areas.

6.3.3 Land Use and Rangeland

Land use is dominated by pastoral and agro-pastoral livelihoods, with settlements concentrated around water points and limited rainfed cultivation. Galkacyo North has additional peri-urban land-use complexity, market activity and IDP settlements. Water points are socially important common-resource assets, so changes in reliability or governance can affect both settled and mobile users.

6.3.4 Surface Water and Catchments

Final post-sedimentation storage and condition parameters for Eldahir and Ado shall be established through the approved pre-works condition assessment.

6.3.5 Groundwater — Garowe and Galkacyo North

Groundwater data for the two project borehole sites are sparse. Site-specific hydrogeological assessment is therefore a mandatory pre-construction requirement. The assessment shall establish aquifer conditions, baseline water levels, yield, quality and sustainable abstraction.

6.3.6 Water Quality

Bacteriological and physico-chemical testing, including EC where relevant, is required for the project water sources. Baseline and commissioning criteria shall be established through one approved water-quality protocol.

6.3.7 Biodiversity, Flora and Fauna

The project landscape is degraded arid to semi-arid shrubland and grassland affected by grazing and drought. No designated protected areas, Ramsar wetlands or known critical habitats are identified at the four screened sites.

6.4 Social Baseline

6.4.1 Population and Settlement

Garowe is the Puntland state capital, Galkacyo North is a major urban centre, and Carmo/Qardho are more rural and pastoral in character. Site-level beneficiary and household counts shall be established through implementation-stage registration where required for monitoring.

6.4.2 Livelihoods and Poverty

Available poverty information is regional rather than a site-level household survey and is used only to establish the vulnerability context.

6.4.3 Vulnerable Groups

Vulnerable groups relevant to the project include poor pastoral households, female-headed households, IDPs and returnees, minority-clan households, persons with disabilities, unemployed youth and nomadic/semi-nomadic women.

6.4.4 Gender

Women and girls bear the primary household water-collection burden and are under-represented in traditional water-management structures. Project monitoring shall establish a credible baseline where quantified water-collection-time outcomes are retained.

6.4.5 Education, Health and Communication

Education and health services are stronger in Garowe/Galkacyo than in remote pastoral areas but remain constrained for rural and mobile communities. Low literacy supports use of spoken Somali, visual materials, radio and community intermediaries. Health risks relevant to the project include poor water quality, heat exposure, injuries in remote settings and SEA/SH referral-access limitations outside major towns.

6.4.6 Land Tenure and Water Governance

No physical displacement is anticipated under the screened footprint; however, access, crop/asset damage, pastoral routes and informal/IDP water use shall be documented through site-level engagement and the Land Access Protocol.

6.4.7 Security and Conflict Context

Garowe is described as relatively secure, Carmo and Qardho generally stable with remote-access constraints, and Galkacyo North as the highest-security-sensitivity site because of historic inter-clan and Puntland–Galmudug boundary dynamics. Security is dynamic and requires site-specific reassessment before mobilisation and when conditions change.

6.5 District and Site Baseline Profiles

Site	Key Baseline Characteristics Relevant to Assessment
Eldahir — Carmo	Rural dryland catchment; pastoral/agro-pastoral use; erosion/flash-flood and heat exposure; reduced storage/sedimentation; remote OHS/access considerations.
Ado — Qardho	Interior catchment setting; pastoral water dependence; erosion/sedimentation and maintenance concerns; multiple pastoral-user access considerations.
Garwowe_Bixin — Garowe	Borehole/growing-settlement hinterland context; sparse hydrogeological data; community/IDP inclusion and water-quality/sustainable-yield monitoring needs.
Galkacyo North	Borehole in semi-urban/urban-adjacent setting; IDP presence; complex inter-clan access governance; highest project security sensitivity; hydrogeological and water-quality evidence required.

6.6 Climate Risk Context

Drought and heat are Very High risks and flash flooding is material to catchment performance. Increasing evapotranspiration and reduced recharge can affect groundwater sustainability, while intense rainfall can damage embankments and accelerate sedimentation.

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

Information to be Confirmed	C-ESMP / Pre-Construction Requirement
Borehole aquifer characteristics	Complete hydrogeological assessment for both borehole sites and establish baseline SWL, yield, water quality, sustainable abstraction and monitoring.
Galkacyo North coordinate	Field/GPS verify the Gacnafale/Galkacyo North site and issue the corrected controlled register.
Catchment storage and condition	Quantify storage/sediment, embankment, liner, hydraulic and safety condition before final design and incorporate findings into the C-ESMP.
Water-quality / EC thresholds	Use one approved laboratory and competent-water-authority parameter set for commissioning and O&M.
Climate annex geography	Apply only the verified drought, heat, recharge-stress and flash-flood pathways used by this ESIA.
Household outcome indicators	Establish a baseline where quantified beneficiary, inclusion or women's time-saving indicators are retained.
Security	Update the site-specific security assessment before mobilisation and major phases; incorporate controls into the C-ESMP/SMP.
Institutional titles / annex scope	Use the current official institutional titles and the four-site/four-district implementation scope in controlled project instruments.

CHAPTER 7: ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

7.1 Purpose and Assessment Approach

This chapter evaluates the environmental and social risks and impacts of the four Puntland interventions using the baseline in Chapter 6 and the significance framework adopted in this ESIA. It distinguishes the two catchment sites from the two borehole sites, assesses cross-cutting worker/community and social risks, and identifies residual effects after mitigation.

Where a residual rating depends on site-specific hydrogeology, water quality, security or other pre-construction evidence, the assessment adopts the more conservative management position until the approved evidence supports a lower residual risk.

7.2 Project Phase and Impact Pathways

Project Phase	Principal Activities	Main Environmental and Social Pathways
Pre-construction / mobilisation	Surveying, site confirmation, hydrogeology, catchment assessment, access arrangements, contractor mobilisation, security review	Land/access expectations; community expectations; security exposure; inadequate design if studies are incomplete; temporary support-site footprint.
Construction — catchments	Desilting, earthworks, embankment/bund repair, lining/structures/troughs, spoil handling	Erosion/sediment, dust, noise, community/open-excavation risk, heat/OHS, water interruption, waste/fuel pollution, labour and SEA/SH.
Construction — boreholes	Drilling/rehabilitation, development/testing, pump/solar/wellhead/kiosk/trough works	Drilling waste and source contamination, unproductive/poor-quality aquifer, rig/excavation/electrical OHS, community safety, traffic, water-access expectations, labour and SEA/SH.
Commissioning / handover	Testing, water-quality verification, reinstatement, WUA training and allocation rules	Unsafe water use if testing fails; defective asset handover; inequitable allocation; insufficient O&M capacity.
Operation and maintenance	Catchment maintenance and water governance; borehole pumping and groundwater monitoring	Sedimentation, groundwater decline, water-quality deterioration, safety defects, inequitable access, social conflict, poor maintenance and climate stress.

7.3 Pre-Construction and Mobilisation Risks

7.3.1 Inadequate Site or Design Verification

Drilling to an unproductive or poor-quality aquifer is assessed as Major before mitigation and Minor residual after an approved pre-drilling hydrogeological assessment.

7.3.2 Land, Access and Community Expectations

Although physical displacement is not anticipated, temporary access, support sites, pastoral routes and community expectations can create disputes if not documented before mobilisation. Galkacyo North has additional sensitivity because water access intersects with inter-clan and IDP concerns. A standalone land-access significance rating is not assigned because the screened footprint does not anticipate displacement; risk is managed through precautionary OS5 and OS10 controls.

7.3.3 Security and Conflict Sensitivity

Security conditions vary by district. Galkacyo North is the highest-sensitivity location because of historic inter-clan and boundary dynamics. Security risk is rated Moderate–Major before mitigation and Moderate residual in the residual impact assessment. The consequence is not limited to worker safety: restricted access can also reduce supervision quality, delay corrective action and affect perceptions of equitable benefit distribution.

7.4 Construction Impacts — Eldahir and Ado Catchments

7.4.1 Soil Erosion, Sediment and Land Disturbance

Soil erosion is assessed as Moderate before mitigation and Minor residual.

7.4.2 Dust, Noise and Nuisance

Dust is assessed as Minor before mitigation and Negligible residual

7.4.3 Occupational Health and Safety

Residual OHS risk is assessed as Minor-Moderate.

7.4.4 Community Health and Safety

Community safety is assessed as Moderate before mitigation and Minor residual

7.4.5 Temporary Water-Access Disruption

Temporary water-access disruption is assessed as Minor-Moderate before mitigation and Minor residual

7.5 Construction Impacts — Garwowe_Bixin and Galkacyo North Boreholes

7.5.1 Groundwater / Soil Contamination During Drilling

Groundwater contamination is assessed as Moderate before mitigation and Minor residual

7.5.2 Aquifer Viability and Water Quality

The risk of drilling to an unproductive or poor-quality aquifer is assessed as Major before mitigation and Minor residual after approved hydrogeological assessment. The actual aquifer depth, yield, quality and possible salinity are not established in the ESIA. Later annex statements on salinity are internally inconsistent with the main geographic baseline, so salinity should be treated as a parameter to test rather than a verified site condition.

7.5.3 Drilling Rig, Excavation and Electrical / Solar OHS

Drilling OHS is assessed as Major before mitigation and Minor-Moderate residual.

7.5.4 Community Safety in Peri-Urban / Settlement Settings

Active drilling, equipment movement, excavations and electrical/solar infrastructure create community-safety risk. Community safety is assessed as Moderate before mitigation and Minor residual with barriers, signs, vehicle controls and inspection. Galkacyo North requires particular attention to dense/complex community access and security-sensitive mobilisation.

7.6 Labour, SEA/SH and Social Risks Across All Sites

7.6.1 Labour and Employment

Local employment is a positive opportunity but can generate grievances if hiring is opaque or perceived as clan-biased. The project LMP sets local, youth and women participation targets and prohibits child/forced labour. Non-compliance can create both worker-rights impacts and community tension, particularly in multi-clan areas.

7.6.2 SEA/SH

Worker-community interaction creates a Moderate pre-mitigation SEA/SH risk at both catchment and borehole sites; residual risk is assessed as Minor to Minor-Moderate depending on site context. Women's groups explicitly raised safety concerns during consultations. Risk pathways include worker behaviour, power differentials, employment expectations and limited referral access outside major towns.

7.6.3 Vulnerable-Group Exclusion

Female-headed households, IDPs, minority clans, nomadic users, poor pastoral households, youth and persons with disabilities may be excluded from consultation, employment or water benefits if project processes rely only on dominant customary structures. Implementation shall place particular emphasis on IDP inclusion in Garowe/Galkacyo North and on outreach to nomadic women in Carmo and Qardho.

7.7 Operation and Maintenance Impacts

7.7.1 Inequitable Water Access and Social Conflict

Inequitable water access and social conflict are assessed as Moderate-Major before mitigation and Moderate residual.

7.7.2 Catchment Sedimentation and Structural Deterioration

Catchment sedimentation and structural deterioration are assessed as Moderate before mitigation and Minor-Moderate residual.

7.7.3 Groundwater Over-Abstraction

Because groundwater sustainability depends on site-specific aquifer evidence, the ESIA retains a continuing Moderate residual management risk until the approved hydrogeological assessment demonstrates that a lower residual rating is justified.

7.7.4 Water Quality and Salinity

Water-quality and salinity risk shall be managed through baseline, commissioning and O&M monitoring against the approved project/competent-water-authority standard.

7.7.5 Safety Around Infrastructure

Operational infrastructure safety is assessed as Moderate before mitigation and Minor residual.

7.8 Climate, Cumulative and Induced Effects

7.8.1 Climate Risk

Increasing drought frequency, extreme heat, higher evapotranspiration and intense short-duration rainfall are material hazards. Drought can reduce catchment inflow and groundwater recharge; heat raises worker and livestock water demand; and intense rainfall can damage catchment structures and cause sedimentation.

7.8.2 Cumulative Groundwater Effects

Aquifer connectivity between the Bixin/Garowe and Gacnafale/Galkacyo North boreholes and other abstractions is not established at ESIA stage. Where the hydrogeological assessments identify a shared or stressed aquifer, cumulative abstraction shall be incorporated into the sustainable-yield determination and monitoring.

7.8.3 Induced Social Effects

Induced migration is not quantified. Potential induced pressure shall be monitored through WUA membership, access grievances, pastoral-use observations and infrastructure-demand trends.

7.9 Positive Environmental and Social Impacts

- improved water reliability and drought resilience at all four communities;
- restored catchment storage and improved maintenance systems at Eldahir and Ado;
- improved groundwater access where the two borehole sources are hydrogeologically viable and safely operated;
- reduced dependence on diesel through solar pumping at borehole sites;
- improved livestock health and pastoral/agro-pastoral livelihood resilience;
- potential reduction in women's water-collection burden, subject to baseline and outcome monitoring;
- local employment and skills opportunities during construction and O&M; and
- more transparent and inclusive water governance through WUA formation and GRM access.

7.10 Consolidated Significance Summary

Risk / Impact	Pre-Mitigation	Residual / Management Significance	Assessment Basis / Qualification
Soil erosion — Carmo/Qardho	Moderate	Minor	Assessment rating applied in this ESIA.
Dust — catchment earthworks	Minor	Negligible	Assessment rating applied in this ESIA.
Catchment OHS	Major	Minor–Moderate	Residual rating assumes implementation of the approved C-ESMP Heat Stress Management Plan.
Community safety — catchments	Moderate	Minor	Assessment rating applied in this ESIA.
Temporary water-access disruption	Minor–Moderate	Minor	Assessment rating applied in this ESIA.
Drilling contamination	Moderate	Minor	Assessment rating applied in this ESIA.
Unproductive / poor-quality aquifer	Major	Minor	Residual rating is conditional on approved hydrogeology.
Drilling OHS	Major	Minor–Moderate	Assessment rating applied in this ESIA.
Social conflict — Galkacyo North	Moderate–Major	Moderate	Assessment rating applied in this ESIA.

Risk / Impact	Pre-Mitigation	Residual / Management Significance	Assessment Basis / Qualification
SEA/SH	Moderate	Minor to Minor–Moderate	Residual range reflects site context; apply the more protective C-ESMP controls.
Inequitable water access	Moderate–Major	Moderate	Assessment rating applied in this ESIA.
Catchment sedimentation	Moderate	Minor–Moderate	Assessment rating applied in this ESIA.
Groundwater over-abstraction	Moderate	Moderate pending hydrogeological confirmation	Moderate residual management risk retained until approved hydrogeology demonstrates a lower risk.
Security — Galkacyo North	Moderate–Major	Moderate	Assessment rating applied in this ESIA.
Water quality / salinity	Not consistently rated	Data-dependent	Water-quality significance remains data-dependent and is governed by the approved baseline/commissioning/O&M standard.

7.11 Impacts Requiring Continuing Management Attention

The impact assessment identifies four priority residual management themes: groundwater sustainability and water quality at Garwowe_Bixin and Galkacyo North; equitable and conflict-sensitive water governance across all four sites, particularly Galkacyo North; OHS/SEA-SH performance during construction; and climate-resilient catchment maintenance at Eldahir and Ado. These themes are carried into Chapters 8 and 9 as design, hold-point, monitoring and O&M requirements.

CHAPTER 8: MITIGATION MEASURES

8.1 Purpose and Mitigation Hierarchy

This chapter translates the risks assessed in Chapter 7 into avoidance, minimisation, restoration, compensation and enhancement measures. It identifies what must be done to reduce risks but does not repeat the detailed implementation responsibilities, frequencies, costs and contractual controls contained in Chapter 9.

8.2 Pre-Construction Avoidance and Readiness Measures

Risk / Decision Point	Required Mitigation / Avoidance Measure
Incorrect or unverified site data	Verify the Galkacyo North coordinate and the final four-site register before design/mobilisation; screen any site or intervention change before implementation.
Unviable borehole source	Complete hydrogeological assessment at Garwowe_Bixin and Galkacyo North before drilling/rehabilitation; confirm aquifer target, baseline SWL, expected yield, water quality, sustainable abstraction and monitoring.
Poorly targeted catchment rehabilitation	Complete condition assessment at Eldahir and Ado before final works: sediment/storage, embankment, liner, inlet/outlet, spillway, erosion and access/safety.
Land/access dispute	Document work areas, temporary access, pastoral routes and support-site use with actual users before mobilisation; avoid involuntary displacement.
Security exposure	Complete a site-specific security assessment before mobilisation at every site and a specific conflict-sensitive plan for Galkacyo North where required.
Community water interruption	Agree and document alternative supply before taking an existing relied-upon source out of service.
Contractor preparedness	Approve C-ESMP, OHS, waste/spill, community H&S, labour/Workers' GRM, SEA/SH and security arrangements and high-risk method statements before mobilisation.
Inadequate safeguards coverage	Make GRM, CLO/female contact and GBV/SEA-SH referral pathways operational before works in each district.

8.3 Catchment Rehabilitation Mitigation — Eldahir and Ado

8.3.1 Erosion, Sediment and Earthworks

- limit the work footprint to the approved rehabilitation area and screened support sites;
- phase desilting and earthworks and establish downslope erosion/sediment controls before disturbance;
- place spoil only in approved stable areas and prevent blockage of drainage, roads, grazing access or domestic water routes;
- schedule major earthworks outside peak Gu/Deyr rainfall where practicable and maintain weather/flash-flood awareness;
- compact, stabilise and reinstate disturbed surfaces promptly and repair any rainfall-induced erosion before the work front advances; and
- protect or promptly restore inlet/outlet, spillway, liner and silt-control functions identified in the approved design.

8.3.2 Dust, Traffic and Community Safety

- use water suppression or other appropriate dust control during dry/high-dust conditions without creating competition for critical community supply;

- enforce approved traffic routes, roadworthy vehicles, trained drivers and settlement speed restrictions;
- barrier/sign excavations and hazardous work areas and prevent unguarded hazardous excavations overnight;
- maintain safe crossings or alternative access for people and livestock; and
- notify communities in advance of earthworks, haulage and water-access changes.

8.3.3 Water Access and Quality

- activate the agreed alternative supply before planned interruption and minimise downtime;
- protect domestic collection areas from contaminated runoff, machinery and livestock concentration during works;
- complete final water-quality verification before returning a supply point to potable community use; and
- provide hygiene and source-protection information at handover.

8.4 Borehole Mitigation — Garwowe_Bixin and Galkacyo North

8.4.1 Hydrogeology and Sustainable Abstraction

- do not drill/rehabilitate until the approved hydrogeological assessment demonstrates a viable target and defines the sustainable-yield basis;
- base final pump size and operating hours on the approved yield and demand assessment;
- establish baseline static water level, yield and water-quality records before commissioning;
- maintain pumping/operating logs and groundwater-level monitoring during O&M; and
- reduce/modify abstraction and investigate if the approved groundwater trigger is reached or progressive decline/quality deterioration is observed.

8.4.2 Pollution Prevention and Drilling Waste

- locate fuel and chemical storage away from the wellhead in approved bunded containment and apply the wellhead source-protection exclusion distance established by the approved C-ESMP/site design;
- use drip trays, spill kits and controlled refuelling and prohibit disposal of oils/chemicals near the water source;
- collect and manage drilling mud/cuttings at a designated screened disposal/management area and reinstate it after works;
- provide sanitation and waste facilities that do not contaminate the wellhead or drainage; and
- complete source protection and post-development water-quality testing before potable commissioning.

8.4.3 Drilling, Electrical and Mechanical Safety

- use competent/certified drilling supervision and verify rig stability before operation;
- establish exclusion zones around rotating/moving equipment and lifting activities;
- use task-specific PPE and lock-out/isolation for electrical/solar/pump work;
- control excavation and any confined-space/well-entry activity through an approved permit/method and rescue arrangements where applicable;
- prohibit lone working during high-risk drilling tasks; and

- maintain first aid, communications, emergency transport/referral and security arrangements for each work front.

8.5 Heat Stress and Worker Welfare

Heat is a priority OHS risk at all four sites. The C-ESMP shall include a competent Heat Stress Management Plan defining workload- and climate-appropriate potable-water provision, work/rest arrangements, acclimatisation, shade, buddy observation, heat-illness first aid, emergency response and modified work timing. No fixed conflicting hydration quantity is adopted by this ESIA.

8.6 Labour, Employment and Worker Grievance Measures

- provide written terms and age verification before work and prohibit all construction employment under 18;
- prohibit forced labour, document retention, recruitment fees and discrimination;
- use transparent local recruitment and monitor the project targets for local unskilled labour, youth and women in safe and appropriate roles;
- avoid clan-based exclusion, especially in multi-clan areas;
- maintain a separate Workers' GRM with anonymous/confidential channels and no retaliation; and
- flow labour/OHS/Code of Conduct requirements to subcontractors and primary supply arrangements as applicable.

8.7 Community Health, Safety and Security

- physically separate communities from drilling, excavation, moving plant, electrical/solar and other high-risk work fronts;
- use Somali-language signs and advance community notification;
- maintain safe access around water points, settlements, roads and pastoral routes;
- implement site-specific traffic controls and safe driver/vehicle requirements;
- complete security assessment before mobilisation and update it as conditions change;
- at Galkacyo North, use conflict-sensitive engagement, community acceptance, inclusive recruitment and coordination with relevant Puntland/local authorities; and
- allow the PIU/contractor to suspend or resequence work if acceptable security and supervision cannot be maintained.

8.8 SEA/SH Prevention and Response

- all workers, drivers, security personnel and subcontractors sign a Code of Conduct prohibiting SEA/SH before starting work;
- deliver induction and periodic refresher training and publicly communicate zero tolerance without disclosing survivor information;
- make a confidential reporting channel available before mobilisation, including access through female CLO/focal arrangements;
- confirm survivor-centred health, psychosocial and other referral pathways for each district and Garowe-level services where local services are unavailable;

- exclude SEA/SH complaints from ordinary WUA/elder/community mediation; and
- manage worker accommodation and community interaction to reduce exposure and retaliation risk.

8.9 Land Access, Pastoral Routes and Livelihood Protection

Temporary land and access are managed through written agreements with actual users. Pastoral routes and community roads are documented and kept functional through phasing or alternative access. Verified project-caused crop or asset damage is compensated at replacement cost under the project process. Any physical displacement or material livelihood loss beyond the screened assumptions triggers suspension and OS5 determination before the affected activity continues.

8.10 Vulnerable Groups, Gender and Equitable Water Governance

- use differentiated outreach for nomadic women, female-headed households, IDPs/returnees, minority clans, youth, poor pastoral households and persons with disabilities;
- form/strengthen WUAs before commissioning with transparent, non-discriminatory eligibility and allocation rules;
- apply at least 30% women in WUA membership and leadership, subject to verification in WUA constitutions and monitoring;
- proactively include IDPs/minority users in Garowe/Galkacyo North governance and avoid clan or tenure eligibility barriers;
- publish or visibly communicate water access/allocation rules and fees where applicable; and
- use the GRM and PIU post-handover oversight to identify elite capture or persistent tail-end/exclusion complaints.

8.11 Operation and Maintenance Mitigation

8.11.1 Catchments

- clear silt traps after significant runoff and inspect embankments, inlet/outlet, spillway, liner and safety features on the approved seasonal schedule;
- establish a post-construction storage/condition baseline and one approved inspection/desilting trigger in the O&M plan before handover;
- repair structural/safety defects promptly and maintain fencing/signage and trough drainage; and
- maintain O&M records and escalate defects beyond WUA capability to the PIU/technical authority.

8.11.2 Boreholes

- operate to the hydrogeologically approved sustainable-yield/pumping regime;
- maintain static-water-level, pumping/yield and water-quality records at the frequency defined by the approved hydrogeological monitoring plan;
- use adaptive pumping reduction and technical assessment if the controlling trigger is reached;
- maintain wellhead protection, drainage, fencing, pump/solar equipment and kiosk/trough hygiene; and
- apply the approved water-quality and salinity-response standard established for commissioning and O&M;

8.12 Climate Resilience and Enhancement Measures

- use catchment design/maintenance that retains storage while safely passing intense runoff and limiting sediment;
- use solar pumping at borehole sites where confirmed by the approved engineering design, reducing routine fuel dependency;
- use seasonal climate information and drought planning in WUA O&M where feasible;
- monitor groundwater and catchment functionality during extended drought and after major rainfall events;
- prioritise local employment and WUA skills development to strengthen community ownership; and
- monitor women's time-saving and water-access outcomes where a credible baseline has been established.

8.13 C-ESMP and Pre-Construction Confirmation Requirements

Requirement	C-ESMP / Pre-Construction Action
AfDB categorisation	Apply Category 2 consistently in all implementation and contractual instruments.
Galkacyo North coordinate	Field/GPS verify and issue a signed controlled site register before setting-out/mobilisation.
Heat-stress management	The C-ESMP Heat Stress Management Plan shall define a competent work/rest/hydration regime consistent with GIIP.
Groundwater monitoring	The approved hydrogeological assessment shall define the controlling monitoring frequency and action trigger per borehole.
Water quality / EC	The commissioning/O&M protocol shall define one approved parameter set, acceptance standard and response to non-compliance.
Catchment maintenance	The O&M plan shall establish one inspection frequency and desilting/repair trigger based on the accepted post-works baseline.
OHS performance	Use zero fatalities and the approved project LTIFR/leading-indicator framework consistently.
Incident management	The C-ESMP shall apply the controlling AfDB/Financing Agreement incident reporting protocol.
Controlled scope	All controlled Puntland instruments shall use the four-site/four-district scope and actual project typologies.

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

Project code	P-SO-A00-003	**AfDB category**	Category 2
Location	Carmo, Qardho, Garowe and Galkacyo North Districts	**Project sites**	4 sites — 2 water catchments and 2 boreholes
Applicable safeguards	OS1, OS2, OS3, OS4, OS7 and OS10	**Precautionary safeguards**	OS5, OS6 and OS8; OS9 not applicable
Primary residual priorities	Groundwater sustainability; equitable water access; OHS/SEA-SH; Galkacyo security	**ESMP budget**	USD 245,971 controlling indicative four-year ESMP budget; contractor ESHS costs additional.

9.1 ESMP Objectives and Scope

This ESMP defines the environmental and social management measures, monitoring requirements, institutional arrangements, implementation schedule and financing provisions for the four Puntland BBS sites. It follows the same ESMP architecture used in the Hirshabelle State ESIA and converts Chapters 7 and 8 into auditable implementation requirements for the PIU, Puntland institutions, district administrations, contractors, the Supervision Consultant and WUAs/community water-management structures.

The ESMP covers Eldahir Catchment in Carmo, Ado Catchment in Qardho, Garwowe_Bixin Borehole in Garowe and the Galkacyo North Borehole, together with associated temporary facilities and support areas. It applies from pre-construction through O&M. Any material change in site, intervention type, borehole design, catchment footprint, temporary facility or risk context must be screened before implementation.

Site-specific technical and implementation parameters that depend on final hydrogeology, catchment condition, water-quality testing, OHS planning, security, site verification or contractor method are controlled through C-ESMP/pre-construction hold points. Category 2 and the four-site/four-district scope apply consistently throughout implementation.

9.2 Summary of Environmental and Social Risks and Impacts

Risks arising from project activities.

Catchment rehabilitation creates erosion and sediment, dust, excavation and plant OHS, community-safety and water-access disruption risks. Borehole works add aquifer viability, drilling-rig, drilling-waste, fuel/chemical, source-contamination and electrical/solar hazards. Cross-cutting risks include heat stress, labour rights, SEA/SH, traffic, land/access issues and security. During operation, the priority risks are groundwater over-abstraction and water-quality deterioration at the two boreholes, catchment sedimentation and structural degradation at Eldahir and Ado, inequitable water access across all sites, and Galkacyo North conflict/security sensitivity.

Risks arising from associated facilities.

Borrow areas, spoil/disposal areas, construction-water sources, worker facilities, fuel/chemical storage, lay-down areas and temporary access routes may create erosion, pollution, land/access, traffic, community-safety and security impacts. Each must be entered in an Associated Facilities and Support-Sites Register and screened/approved before use.

Cumulative and induced impacts.

Aquifer connectivity and cumulative drawdown are not established at ESIA stage. Where site hydrogeology shows interaction with other abstractions, cumulative pumping shall be incorporated into sustainable-yield design and monitoring.

Vulnerable groups and land.

Women, female-headed households, nomadic users, IDPs/returnees, minority-clan households, poor pastoral households, unemployed youth and persons with disabilities may face unequal access to information, jobs or water benefits. No physical displacement is anticipated under the screened footprint, but temporary access and verified project-caused losses require written management; any displacement outside screening assumptions triggers OS5 determination.

9.3 Mitigation, Compensation and Enhancement Measures

9.3.1 Pre-Construction and Mobilisation Phase

Table 9: AfDB Operational Safeguards Applicability and ESMP Cross-Reference — Puntland

Operational Safeguard	Applicability	Puntland ESMP Application
OS1 — Assessment and Management of Environmental and Social Risks and Impacts	Applicable	Overall ESIA/ESMP; site readiness; hydrogeological/catchment assessments; associated-facility screening; climate/cumulative effects; change screening and corrective action.
OS2 — Labour and Working Conditions	Applicable	LMP; written terms; age verification; Workers' GRM; heat, drilling, excavation, plant/electrical and remote-work OHS; welfare and emergency response.
OS3 — Resource Efficiency and Pollution Prevention and Management	Applicable	Groundwater sustainable abstraction; water quality; drilling waste; fuel/chemical controls; erosion/sediment; catchment and borehole O&M.
OS4 — Community Health, Safety and Security	Applicable	Drilling/excavation/traffic safety; first-use water safety; SEA/SH; security; emergency response; Galkacyo conflict-sensitive management.
OS5 — Land Acquisition / Restrictions / Involuntary Resettlement	Precautionary	Temporary access, pastoral routes, reinstatement and replacement-cost compensation; stop-work if screened displacement assumptions are exceeded.
OS6 — Habitat and Biodiversity Conservation	Precautionary	Minimum footprint, vegetation protection and reinstatement; reassessment if unexpected sensitive habitat is identified.
OS7 — Vulnerable Groups	Applicable	Women/female-headed households, IDPs/returnees, minority clans, poor pastoral households, youth, nomadic women and persons with disabilities.
OS8 — Cultural Heritage	Precautionary	Chance Finds Procedure for all ground-disturbing works.
OS9 — Financial Intermediaries	Not applicable	No financial-intermediary structure.
OS10 — Stakeholder Engagement and Information Disclosure	Applicable	Four-district engagement, disclosure, mobile pastoral outreach, GRM and transparent WUA/access governance.

9.3.2 Construction Phase

Table 10: Comprehensive ESMP Implementation Matrix — Puntland (all 4 sites)

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
OS1 — Assessment and Management of Environmental and Social Risks and Impacts					
Pre-construction — all 4 sites	Works begin without verified readiness	PIU site-readiness checklist: controlled site/location; access/community notification; security clearance; relevant hydrogeological or catchment condition assessment; approved contractor plans; GRM/SEA-SH pathway; permits/no-objections. Written PIU mobilisation release.	PIU / Puntland E&S Officer	Once per site; 4/4 written releases before mobilisation.	PIU safeguards administration
Pre-construction — Garowe/Galkacyo boreholes	Unproductive/poor-quality/unsustainable borehole	Complete hydrogeological assessment: aquifer target, baseline SWL, expected yield, water quality, sustainable abstraction basis and monitoring. Incorporate into final drilling/pump design.	PIU / Technical Consultant / competent water authority	2/2 approved hydrogeological assessments; baseline data before works.	ESMP budget: USD 8,000 hydrogeological surveys
Pre-construction — Eldahir/Ado catchments	Inadequate catchment rehabilitation design	Condition assessment: storage/sediment, embankment, liner need, inlet/outlet/spillway, silt control, erosion, downstream receptors and access/safety. Incorporate findings in design/BoQ/method.	PIU / Technical Consultant	2/2 approved condition assessments before works.	Technical/project preparation budget
Pre-construction — Galkacyo North	Uncertain coordinate/site or conflict context	Verify actual GPS/site register; complete conflict-sensitive security and community-context assessment before authorisation.	PIU / Technical / Puntland E&S Officer	Verified controlled coordinate/register; valid security clearance.	PIU / project administration
All phases	Uncontrolled material change	Screen any material site, design, temporary-facility or operating change before implementation; update ESMP/C-ESMP and approvals as required.	PIU	Change register monthly; zero material unassessed changes.	PIU administration

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Construction close-out	Temporary sites left disturbed/unsafe	Remove waste/facilities; close borrow/spoil/drilling-waste areas; reinstate access and disturbed land; close safety hazards before handover.	Contractor	Supervision close-out inspection/photos and Associated Facilities Register closure.	Works contract
OS2 — Labour and Working Conditions					
Pre-construction / construction	Child/forced labour; unfair terms; worker grievances	Apply LMP to contractor/subcontractors: written terms, worker register, age verification, wages/hours, non-discrimination, no recruitment fees/document retention, Workers' GRM and Code of Conduct.	Contractor	Monthly labour audit; 100% contracts/age verification; zero workers under 18.	Works contract
Pre-construction	Untrained workers assigned to high-risk work	Mandatory site induction before assignment; competency confirmation for drilling, lifting, electrical/solar, excavation and plant operations; daily toolbox talks for active risks.	Contractor; Supervision verifies	100% induction; competency records for specialist tasks.	Works contract
Construction — all sites	Heat illness and remote emergency delay	C-ESMP Heat Stress Management Plan: workload-based work/rest, adequate potable water, shade, acclimatisation, buddy checks, first aid, heat-trigger criteria, adjusted timing and district emergency referral/transport/communications.	Contractor	Daily heat/OHS log; weekly Supervision; heat cases and control compliance.	Works contract
Construction — boreholes	Drilling rig, lifting, high-pressure, electrical and confined-space hazards	Certified/competent drilling supervision; rig stability; guarded moving parts; exclusion zones; lifting plan; lock-out/isolation; task PPE; confined-space/well-entry permit/rescue where applicable; no lone high-risk drilling.	Contractor	Daily drilling checklist; weekly Supervision; incidents/near-misses.	Works contract

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Construction — catchments	Excavation/earthworks collapse, falls and plant interaction	Assess excavation stability; barriers; safe access/egress; shoring/support where required by approved method; plant-pedestrian separation; competent supervision; weather/flash-flood controls.	Contractor	Daily earthworks/excavation inspection; unsafe condition = stop work.	Works contract
OS3 — Resource Efficiency and Pollution Prevention and Management					
Construction — borehole sites	Fuel/chemical/drilling-fluid contamination	Keep fuel/chemicals away from wellhead in approved bunded containment; apply the approved wellhead source-protection setback and bunded containment; drip trays/spill kits; no wellhead refuelling; prompt spill cleanup.	Contractor	Daily containment check; spill log; weekly Supervision.	Works contract
Construction — boreholes	Drilling mud/cuttings and wastewater contamination	Collect/manage drilling waste in designated screened area; prevent uncontrolled discharge; remove chemical containers; reinstate disposal area; document volume/disposal.	Contractor	Per borehole waste log; close-out verification.	Works contract
Construction — catchments	Erosion, sediment and embankment instability	Minimum footprint; phased desilting; downslope erosion/silt controls; safe spoil placement; avoid peak rainfall where practicable; rapid compaction/stabilisation; post-rain inspection and repair.	Contractor	Weekly and after significant rain; no uncontrolled sediment discharge.	Works contract
Construction — all sites	Dust, waste and hazardous materials	Dust suppression as needed; segregated/labeled waste; approved disposal; sanitation; spill controls; no dumping in drainage, grazing/access or water-source areas.	Contractor	Weekly site checks; monthly PIU audit.	Works contract

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Construction	Competition for community water	Approve construction-water source; do not use sole/critical community supply without documented agreement and alternative arrangement.	Contractor / PIU / WUA	Construction-water source approval before use; complaints and supply interruption monitored.	Works contract
O&M — boreholes	Groundwater over-abstraction / quality decline	Operate within approved sustainable yield and pumping schedule; maintain SWL, pumping/yield and water-quality records; adaptive reduction/technical review if approved trigger reached.	WUA / competent water authority / PIU	Frequency/trigger set by approved hydrogeological plan; site-specific values defined by the approved hydrogeological plan.	O&M / monitoring budget
O&M — catchments	Re-sedimentation and structural deterioration	Seasonal/post-rainfall silt-trap maintenance; inspect storage, embankment, inlet/outlet/spillway/liner; desilt/repair at the final reconciled trigger; maintain records.	WUA / PIU technical oversight	Approved seasonal/annual schedule; approved O&M trigger established from the post-works baseline.	O&M / WUA
O&M — all supply points	Water-quality deterioration	Maintain source protection, drainage, trough/kiosk hygiene; pre-commissioning and periodic laboratory tests; additional testing after contamination/flood/complaint.	WUA / PIU / lab / water authority	Pre-commissioning pass; periodic O&M test; non-compliance = investigate/restrict use.	ESMP water-quality budget USD 16,000 total
OS4 — Community Health, Safety and Security					
Construction — all sites	Community/child injury from works	Physical barriers and Somali-language signs; safe crossings/access; no unguarded hazardous excavation overnight; community notification; safe separation from rig, plant and electrical/solar work.	Contractor / CLO	Daily barrier/access check; complaints/incidents tracked.	Works contract

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Construction — transport	Vehicle collision/dust/access conflict	Approved routes; competent/licensed drivers; roadworthy vehicles; maximum 30 km/h in settlements unless a lower site-specific limit applies; safe reversing/pedestrian separation; community notices.	Contractor	Driver/vehicle records; weekly checks; incidents investigated.	Works contract
Construction — rehabilitation	Temporary loss of existing water access	Agree shutdown/disruption schedule; activate alternative source/tanker before interruption; minimise outage; confirm safe water before resumed potable use.	Contractor / PIU / WUA	Daily during interruption; zero unplanned outage beyond agreed arrangement.	Works / PIU contingency
Pre-construction / construction — Galkacyo North	Security/inter-clan tension	Site-specific security/conflict assessment; community acceptance; inclusive local engagement and hiring; coordination with competent Puntland/local authorities; halt/evacuation/resequence thresholds.	PIU / Contractor	Valid assessment/clearance; continuous incident/security log.	Project / works resources
Commissioning	Unsafe first use	Hydraulic/system checks as applicable; water-quality pass before potable use; physical safety/fencing/drainage completed; PIU release.	PIU / Supervision / accredited lab	Commissioning certificate; no community use until pass.	Works + water-quality monitoring
OS5 — Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement					
Pre-construction / construction	Land/access dispute; pastoral route obstruction; crop/asset loss	Confirm work/support-site footprint and actual users in writing; document pastoral/community routes; phase/maintain access; reinstate; compensate verified project-caused loss at replacement cost. Stop/reassess if displacement assumptions exceeded.	PIU / District / Contractor	Access records before mobilisation; GRM/compensation/reinstatement register.	Works / compensation as applicable
OS6 — Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources					

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Construction / associated facilities	Unnecessary vegetation/rangeland disturbance	Keep works within approved footprint; avoid unnecessary clearing/new access; screen borrow/spoil areas; reinstate disturbed surfaces; reassess if unexpected sensitive habitat occurs.	Contractor	Monthly footprint/reinstatement inspection; zero unauthorised clearing.	Works contract
OS7 — Vulnerable Groups					
Pre-construction / O&M	Women, IDPs, minority clans, nomadic users or poor households excluded	Inclusive WUA and non-discriminatory access rules; ≥30% women membership/leadership project target; proactive IDP/minority engagement in Garowe/Galkacyo; mobile outreach for nomadic users; accessible communication.	PIU / CLO / WUA	Membership/participation records before handover; 3/6/12-month and annual oversight; GRM trends.	WUA capacity/community engagement budget
Construction	Employment exclusion / clan tension	Transparent recruitment, local hiring preference, at least 80% local unskilled labour, at least 20% youth and at least 30% women in appropriate roles; no clan-based hiring; employment grievance access.	Contractor / PIU	Monthly workforce records disaggregated by location, age, sex and relevant inclusion indicators.	Works contract
OS8 — Cultural Heritage					
Construction — ground disturbance	Chance find damaged/removed	Immediate stop work; secure ~20 m radius; no handling; record; notify supervisor, PIU/Puntland E&S and competent cultural authority within Chance Finds Procedure; resume only after written clearance.	Contractor / PIU	Chance-find log; induction records; authority clearance.	Works contract
OS10 — Stakeholder Engagement and Information Disclosure					

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST / FUNDING
Pre-construction / construction	Communities unaware of schedule, impacts, jobs or entitlements	Site-level disclosure in accessible Somali/oral formats; mixed and women-only meetings; mobile pastoral outreach; explain works, hiring, access, safety, water disruption, GRM and handover/O&M.	PIU / CLO / Contractor	Meeting/attendance/issues log; stakeholder-disaggregated records.	Community engagement budget

9.3.3 Commissioning and Operation and Maintenance Phase

Commissioning is an environmental and social hold point. Boreholes are not released for community use until the approved development/test and water-quality criteria are satisfied, the hydrogeological operating/monitoring regime is documented, physical safety/source protection is complete and the WUA is ready. Catchments are not handed over until structural, drainage/silt-control, access/safety and reinstatement defects are closed and the WUA has maintenance responsibilities and tools/records in place.

Commissioning and Handover Controls — Puntland

Control	Applies To	Required Evidence / Condition	Release Authority
Technical/hydrogeological commissioning	Garwowe_Bixin and Galkacyo North	Approved borehole completion/development records, yield/pumping basis, baseline SWL and monitoring schedule.	PIU / Technical Engineer / competent water authority
Water-quality clearance	All potable-use supply points	Approved laboratory pass against the single controlled project standard.	PIU / accredited laboratory
Catchment structural/safety completion	Eldahir and Ado	Embankment, liner where present, inlet/outlet/spillway/silt controls, trough/drainage/access/fencing/signage inspected; defects closed.	Supervision / PIU
Reinstatement	All sites and support areas	Waste/spoil/support sites closed, disturbed surfaces reinstated and residual hazards removed.	Supervision / PIU
WUA readiness	All 4 sites	WUA/committee formed or strengthened, training complete, inclusive membership/access rules documented, GRM and O&M records/tools in place.	PIU / Puntland E&S Officer

9.3.4 Land Access Protocol

The screened project does not anticipate permanent land acquisition or physical displacement. A Land Access Protocol applies to all main and temporary works. Before mobilisation, the PIU records the work/support-site footprint, access route, actual land/resource users and relevant pastoral/community routes; confirms temporary access and reinstatement; and establishes the project process for verified crop/asset damage. Any involuntary physical displacement or material livelihood loss outside the screened assumptions is a stop-work trigger and requires OS5 determination and any additional instrument required by AfDB before the affected activity proceeds.

9.3.5 SEA/SH Prevention and Response

- all workers, drivers, security staff and subcontractors sign an individual Code of Conduct before work;
- worker induction and periodic refresher training cover prohibited conduct, non-retaliation, confidential reporting and disciplinary consequences;
- a confidential SEA/SH channel is operational before mobilisation and managed through the PIU social/GBV function; ordinary WUA/elder/district mediation does not handle SEA/SH cases;
- at least one accessible female liaison/focal arrangement per district is confirmed in the final implementation plan;
- survivor-centred referral pathways are mapped and verified before mobilisation, distinguishing district-level and Garowe-level services where needed; and
- worker accommodation and community interaction are managed to reduce exposure, harassment and retaliation risks.

9.4 Environmental and Social Clauses for Procurement and Contracts

- approved C-ESMP and site/activity-specific method statements before mobilisation;
- pre-works hydrogeological and catchment-condition findings incorporated into technical specifications/BoQs before affected work;
- competent contractor ESHS/OHS staffing and supervision proportionate to the active work fronts;
- LMP requirements, worker register/age verification, Workers' GRM and Code of Conduct flowed down to subcontractors;
- activity-specific OHS controls for drilling, excavation, plant, electrical/solar, lifting, heat, traffic and remote emergency response;
- waste, drilling-cuttings, fuel/chemical and spill-control obligations, including source protection;
- community safety, water-continuity, access and land/reinstatement obligations;
- SEA/SH confidential channel/referrals and Security Management Plan requirements where needed;
- monitoring, recordkeeping, incident reporting and corrective-action obligations;
- hold points for drilling, high-risk tasks, backfill/close-out where applicable, commissioning and handover; and
- contractual use only of the final reconciled technical thresholds, not contradictory values appearing in the project annexes.

9.5 Environmental, Occupational Health and Safety Requirements (ESHS Hold Points)

ESHS Hold Points — Puntland

Hold Point	Applies To	Minimum Evidence Required	Release Authority
HP-1 Site readiness	All 4 sites	Controlled site/location; land/access; community notification; security clearance; approved C-ESMP/plans; GRM/SEA-SH pathway; applicable studies/permits.	PIU
HP-2 Hydrogeology	2 boreholes	Approved hydrogeological assessment, baseline SWL/water quality, sustainable-yield/pump design basis.	PIU / Technical / water authority
HP-3 Catchment condition	Eldahir and Ado	Approved storage/sediment, embankment, liner, hydraulic/erosion and safety assessment.	PIU / Technical
HP-4 Galkacyo site control	Galkacyo North	Verified GPS/site register and current conflict/security assessment.	PIU
HP-5 High-risk work	Drilling, excavation, lifting, electrical/solar	Approved task method/permit, competent crew, PPE/rescue/emergency arrangements and current security clearance.	Supervision / PIU
HP-6 Water interruption	Any relied-upon source	Signed/recorded disruption arrangement and alternative supply before shutdown.	PIU / WUA
HP-7 Water-quality commissioning	Potable-use source	Approved laboratory results against the final controlled standard.	PIU
HP-8 Handover	All 4 sites	Safety/defects/reinstatement closed; WUA trained; access rules, O&M and GRM operational.	PIU
HP-9 Pre-construction technical control	Before affected activity / commissioning	Controlled Category 2 scope; verified coordinate; approved Heat Stress Management Plan; hydrogeological monitoring criteria; approved water-quality protocol; catchment O&M trigger; project OHS KPI framework; controlling incident procedure.	PIU E&S / Design / Procurement

9.6 Stakeholder-Engagement Measures

Stakeholder engagement continues under the Puntland SEP and covers state institutions, district administrations, community leaders/elders, women, pastoral/agro-pastoral households, youth, IDPs in Galkacyo, WUAs and other vulnerable groups.

Before each site mobilises, the PIU/contractor discloses scope, schedule, local recruitment, land/access, water-disruption arrangements, safety measures, GRM and O&M implications. During O&M, WUA meetings, posted/communicated allocation rules, grievance trends and PIU oversight visits provide the main feedback mechanism.

The controlled Puntland SEP shall use the four-district/four-site scope and shall be aligned with the final site register and C-ESMP before mobilisation.

9.7 Project-Level Grievance Redress Mechanism

The community GRM is separate from the Workers' GRM and must be operational before mobilisation in each district. It provides in-person, CLO/WUA/district, suggestion-box, hotline/SMS, traditional-leader, written and anonymous options. Ordinary grievances may use traditional/xeer mediation at district level; SEA/SH cases bypass ordinary community structures and use the confidential survivor-centred pathway.

GRM Escalation Framework — Puntland

Level	Purpose / Responsible Level	Target Timeframe
Receipt	CLO / WUA / District focal point logs and acknowledges complaint.	Acknowledgement within 48 hours.
Site resolution	Contractor + CLO address minor project/construction issue.	Within 7 days.
District mediation	District focal point + traditional elders/oday; xeer-based mediation for appropriate non-sensitive disputes.	Within 14 days.
PIU review	Formal review/investigation and written determination.	Within 14 days.
External recourse	AfDB Independent Recourse Mechanism and/or judicial recourse.	Per applicable process.
O&M water-allocation track	WUA/CLO/PIU response to allocation or access dispute.	Resolve at WUA/PIU level within 14 days where practicable; unresolved matters escalate through the GRM.
SEA/SH confidential track	PIU GBV/social function; no ordinary mediation; survivor-centred referral.	Immediate/priority response; Bank notification per controlling incident procedure.

9.8 Monitoring and Reporting Plan

Table 12: Monitoring Plan — Puntland (4 sites, Construction and O&M)

Parameter	Indicator / Method	Frequency	Responsible	Reporting	Threshold / Action
Construction ESHS compliance	C-ESMP checklist; OHS; waste/spill; workforce; GRM; corrective actions	Weekly Supervision; monthly PIU audit	Supervision / Puntland E&S Officer	Monthly to PIU; quarterly AfDB	Non-compliance → time-bound CAP; serious breach may suspend work

Parameter	Indicator / Method	Frequency	Responsible	Reporting	Threshold / Action
Catchment erosion / earthworks	Erosion/sediment controls, spoil, embankment stability, reinstatement	Weekly during earthworks; after significant rain	Contractor / Supervision	Weekly site report	Erosion/sediment escape or instability → immediate repair/method review
Catchment condition — O&M	Storage/sediment, embankment, liner, inlet/outlet/spillway, safety	Seasonal/post-rainfall and annual schedule established in the O&M plan	WUA / PIU technical	Condition report	Approved post-works storage/condition trigger -> desilting/repair and maintenance action
Borehole groundwater level	Static water level, seasonal trend, pumping/yield records	Final frequency set by approved hydrogeological plan	WUA / water authority / PIU	Groundwater monitoring report	Action trigger and response defined by the approved hydrogeological monitoring plan
Borehole / source water quality	Approved physical, bacteriological and chemical parameters incl. EC where relevant	Baseline/pre-commissioning; periodic O&M; after incident/flood/complaint	PIU / accredited lab / water authority	Test certificates/results	No potable commissioning/use if final approved standard not met
Drilling waste / pollution	Cuttings/mud disposal, fuel/chemical containment, spills	Per borehole; weekly active drilling; monthly audit	Contractor / Supervision	Waste/spill log	Zero uncontrolled discharge/untreated spill
Water access continuity	Alternative supply in place; duration of outage	Daily during any interruption	Contractor / WUA / PIU	Site log	Unplanned outage beyond agreement → immediate corrective action
WUA governance / inclusion	Membership, women in leadership, IDP/minority inclusion, meetings, access disputes	Formation; 3, 6, 12 months; annual	PIU / Puntland E&S Officer	Oversight report	≥30% women membership/leadership project target; exclusion trend → governance CAP
GRM	Cases by type/district, resolution time, satisfaction; SEA/SH aggregated separately	Monthly	Puntland E&S Officer / PIU	Monthly / quarterly AfDB	At least 80% resolved within 30 days; recurring themes -> management review
Labour / employment	Contracts, local/youth/women rates, wages/hours, age checks	Monthly construction	Contractor / Supervision / PIU	Monthly labour data	At least 80% local unskilled, 20% youth, 30% women in appropriate roles; zero workers under 18
OHS	Fatalities, LTIs, first aid, near miss, heat/drilling/excavation events	Continuous; monthly summary	Contractor / Supervision	Incident notice / monthly report	Zero fatalities; LTIFR and leading indicators monitored against the approved project OHS KPI framework
Security	Security incidents, access restrictions, work suspensions	Continuous; reassess before mobilisation/phase	PIU / Contractor	Immediate escalation / periodic summary	Deterioration beyond approved threshold → suspend/resequence

Parameter	Indicator / Method	Frequency	Responsible	Reporting	Threshold / Action
Stakeholder engagement	Meetings/outreach, sex/stakeholder disaggregation, issues/actions	Per SEP schedule	PIU / CLO	Quarterly	Planned four-district engagement completed; no retaliation
Associated facilities	Register, approvals, pollution/erosion/access/reinstatement	Before use; monthly active; close-out	Contractor / PIU	Register / close-out	No unapproved support site; 100% close-out before release

Table 13: Numeric Performance Standards and Thresholds — Puntland

Parameter	Numeric / Decision Standard	Implementation Basis
Worker age	No construction worker under 18.	Project LMP / AfDB OS2
Local unskilled labour	At least 80% local unskilled labour, subject to transparent recruitment and competency requirements.	LMP / workforce plan
Youth employment	At least 20% of the unskilled workforce, age 18-30.	LMP / social inclusion measures
Women in appropriate construction roles	At least 30% in safe and appropriate roles, subject to skills and task requirements.	LMP / Gender and Social Inclusion measures
Women in WUA membership and leadership	At least 30% in membership and at least 30% in leadership.	WUA / Gender and Social Inclusion measures
Community GRM	At least 80% of grievances resolved within 30 days; unresolved cases tracked and escalated.	Controlled GRM procedure
WUA allocation grievances	Target resolution within 14 days at WUA/PIU level, with escalation where unresolved.	O&M governance / GRM
Vehicle speed	Maximum 30 km/h in settlements unless a lower site-specific limit is required; other site-road limits governed by the Traffic Management Plan.	C-ESMP Traffic Management Plan
Catchment desilting	Inspection frequency and desilting/repair trigger established in the approved O&M plan using the accepted post-works baseline.	Catchment O&M Plan
Groundwater decline	Site-specific action trigger and monitoring frequency established by the approved hydrogeological assessment.	Hydrogeological monitoring plan
EC / salinity	Apply the approved water-quality and salinity criteria established by the competent water authority/project protocol.	Commissioning/O&M water-quality protocol
Heat hydration / rest	C-ESMP Heat Stress Management Plan defines potable-water provision, acclimatisation, workload-based work/rest arrangements, shade, heat triggers, first aid and emergency response.	C-ESMP Heat Stress Management Plan
LTIFR	Zero fatalities; LTIFR and related leading indicators monitored against the approved project OHS KPI framework.	C-ESMP OHS Plan
Chance Finds	Stop work; ~20 m cordon; supervisor ≤1 h; PIU/Puntland E&S ≤4 h; cultural authority ≤24 h.	Chance Finds Procedure
Water quality	Potable source must pass approved project/water-authority standard before use.	Commissioning/O&M water-quality protocol

9.9 Institutional Arrangements

Table 14: Roles and Responsibilities — Puntland ESMP

Actor	Key Responsibilities — Puntland ESMP	Reporting / Interface

Actor	Key Responsibilities — Puntland ESMP	Reporting / Interface
PIU (MoAI)	Overall ESMP ownership; approve plans/hold points; contract technical studies; audits; incident/corrective action; budget; quarterly AfDB reporting; coordination with Puntland institutions.	Reports to AfDB / MoAI
Puntland E&S Officer	Day-to-day oversight across four districts; inspections; GRM; stakeholder engagement; land/access and WUA follow-up; security monitoring; monthly reports.	Reports to PIU Environmental/Social safeguards function
PIU Technical / Water Engineer	Review hydrogeology, borehole completion, pump/sustainable-yield basis, catchment rehabilitation design, commissioning and O&M technical data.	Works with Supervision and competent water authority
PIU Social / GBV function	Vulnerable-group engagement, confidential SEA/SH pathway/referrals, social inclusion and sensitive grievance oversight.	Confidential PIU safeguards interface
PSAWEN / competent Puntland water authority	Borehole/water permits, groundwater/water-quality oversight, technical monitoring support and WUA/O&M coordination.	Coordinates with PIU
Puntland environment authority	Environmental permitting/review and oversight.	Coordinates with PIU / state institutions
Carmo, Qardho, Garowe and Galkacyo North District Administrations	Local access/community liaison, security coordination and non-sensitive dispute-resolution support.	PIU/Puntland E&S interface
Traditional leaders / oday	Community legitimacy, pastoral-route coordination and appropriate xeer-based non-sensitive mediation.	Engaged through district/CLO arrangements
Contractors	Implement C-ESMP, OHS, waste/pollution, labour, SEA/SH, community safety, security and records; monthly reporting and immediate incident notices.	Reports to Supervision / PIU
Supervision Consultant	Independent construction ESHS and technical compliance verification; weekly inspections; quality/commissioning and corrective-action close-out.	Reports to PIU
WUAs / community committees	O&M, access/allocation rules, pumping/catchment maintenance, water-quality/safety and grievance records after handover.	Accountable to users; supported by PIU/state/district
AfDB	External safeguards oversight, report review, supervision and corrective-action requirements.	External financier oversight

9.9.1 Incident Management and Reporting

Serious incidents shall be reported immediately to the PIU and notified to AfDB within the controlling Financing Agreement/current Bank timeframe. The C-ESMP shall use one approved incident procedure consistently in induction, contractor plans and reporting templates.

At site level, any serious event requires immediate scene control, emergency response, PIU notification, investigation and corrective action. SEA/SH cases follow confidential survivor-centred handling. Security incidents may require suspension/resequencing and coordination with competent authorities. Significant spills or water-quality failures require source protection, investigation and restricted use as appropriate.

9.10 Institutional Capacity Assessment

Puntland has established state institutions, while district groundwater monitoring, environmental field presence, formalised grievance systems and safeguards capacity remain implementation constraints.

Priority capacity needs are: hydrogeological and groundwater/water-quality monitoring support; catchment O&M and erosion/sediment oversight; contractor OHS/drilling supervision; four-district CLO/GRM coverage; Galkacyo conflict-sensitive engagement/security capability; WUA governance/financial/O&M training; and field

mobility/communication. If simultaneous work fronts exceed the verified safeguards/supervision capacity, the PIU should phase mobilisation or add field support.

9.11 Capacity Development and Training

Table 15: Capacity Building and Training Plan — Puntland

Training Topic	Target Participants	Key Content	Frequency	Responsible
ESMP implementation and reporting	PIU, Puntland E&S Officer, Supervision, Contractor ESHS	ESMP obligations, OS mapping, hold points, inspection/reporting, corrective action, four-site scope	Start-up; quarterly refreshers	PIU / Supervision
OHS and worker induction	All workers/supervisors	Site hazards, PPE, emergency, heat, excavation, plant/electrical, first aid, incident reporting	Day 1; toolbox talks; periodic refresher	Contractor / Supervision
Borehole drilling environmental/OHS controls	Drilling crew, supervisors	Rig stability, source protection, drilling waste, spills, lifting, electrical/solar, well-entry/confined-space controls	Before each borehole campaign	Contractor / PIU technical
Catchment earthworks/erosion control	Earthworks crews/supervisors	Phased desilting, embankment/liner protection, silt/erosion controls, spoil, reinstatement, flood awareness	Before catchment works	Contractor / Supervision
Groundwater monitoring	WUA technical members, water authority, PIU/CLO	SWL, pumping/yield logs, water-quality/EC monitoring, approved trigger response and escalation	Before handover; periodic refresher	Water authority / PIU / specialist
SEA/SH prevention and response	All workers; PIU social/GBV; CLOs	Code of Conduct, confidential reporting, non-retaliation, referral pathways and survivor-centred response	Before mobilisation; refreshers	PIU / Contractor
GRM implementation	Puntland E&S Officer, district focal points, CLO/WUA contacts	Channels, logging, timelines, escalation, xeer appropriate cases, SEA/SH separation and reporting	Before mobilisation; 6-month refresher	PIU
WUA governance and inclusive water allocation	WUA members / district/water officers	Roles, ≥30% women project target, non-discrimination, IDP/minority inclusion, allocation, records, fees, GRM	Before commissioning; annual refresher	PIU / state/district support
Technical O&M — boreholes and catchments	WUA technical committees / water officers	Pump/solar/wellhead maintenance; catchment silt/structural maintenance; safety inspections; fault escalation	Before handover; first-year mentoring	Contractor/Supervision / water authority
Gender and social inclusion	CLOs, WUAs, district focal points, PIU	Nomadic women outreach, IDP/minority inclusion, disability accessibility, gender-disaggregated monitoring	Before mobilisation; periodic coaching	PIU / specialist support
Security and conflict sensitivity	PIU, Supervision, contractor supervisors	Site security, movement, community acceptance, incident/halt protocol, Galkacyo inter-clan sensitivity	Before mobilisation; update by phase	PIU / security function

Training activities shall be financed within the relevant ESMP capacity-building, engagement and contractor budget lines and annual work plans. Standalone training estimates shall not be added to the ESMP total unless separately approved, avoiding both double counting and funding gaps.

9.12 Implementation Schedule

Table 16: Implementation Schedule and Reporting Calendar — Puntland

Activity	Timing / Trigger	Responsible	Output

Activity	Timing / Trigger	Responsible	Output
Controlled four-site register and technical criteria	Before procurement / mobilisation of affected package	PIU E&S / Design / Procurement	Controlled site register and approved C-ESMP/technical criteria
Hydrogeological surveys — 2 boreholes	Before borehole works	PIU / Technical Consultant	Approved assessment per borehole
Catchment condition assessments — 2	Before catchment works	PIU / Technical Consultant	Approved condition assessment per catchment
Galkacyo North coordinate verification	Before Galkacyo design/mobilisation	PIU / Technical Consultant	Verified coordinate and updated register
Water/environment permits/no-objections	Before affected works	PIU / competent Puntland authorities	Permit/no-objection file
Land/access/support-site approvals	Before use/mobilisation	PIU / District / Contractor	Written records / Associated Facilities Register
Security assessments	Before site mobilisation; update by phase	PIU / Contractor	Valid clearance / SMP where required
C-ESMP and ESHS plans	Before on-site mobilisation	Contractor / PIU	Written approval
GRM and SEA/SH pathway	Before mobilisation in each district	PIU / Puntland E&S Officer	Tested channels/referrals
Pre-works community meetings	Before each site	PIU/CLO/Contractor	Minutes and attendance
Worker induction	Before first assignment	Contractor / Supervision	Signed records
Weekly construction inspections	Weekly active sites	Supervision	Inspection reports
Pre-commissioning water-quality tests	Before potable community use	PIU / accredited lab	Test certificate / release
WUA formation and training	Before handover	PIU / Puntland E&S Officer	Membership/rules/training records
Quarterly safeguards reports	Quarterly	PIU	Report to AfDB
Post-handover WUA oversight	3, 6, 12 months; annually	PIU / Puntland E&S Officer	Oversight report
Groundwater/catchment O&M monitoring	Per final controlled monitoring plan	WUA / PIU / water authority	Periodic monitoring/condition records

9.13 Cost Estimates and Sources of Financing

The detailed ESMP budget below is adopted as the controlling indicative four-year safeguards budget for Puntland because its itemised lines reconcile arithmetically to the annual totals. Standalone SEP and Training Plan estimates are treated as planning inputs and are not additional to this total unless separately approved. Contractor ESHS costs remain additional and shall be priced through works contracts.

Table 17: Indicative ESMP Budget - Puntland (USD)

Cost Item	Year 1	Year 2	Year 3	Year 4	Total
Puntland E&S Officer (dedicated)	36,000	37,080	38,192	39,338	150,610
Community engagement — 4 districts	6,000	5,000	4,000	4,000	19,000
GRM operation — 4 districts	4,000	3,000	3,000	3,000	13,000
Water quality monitoring — 2 boreholes + 2 catchments	4,000	4,000	4,000	4,000	16,000
Hydrogeological surveys — 2 borehole sites	8,000	—	—	—	8,000
WUA capacity building and training — 4 sites	8,000	4,000	3,000	2,000	17,000
Contingency (10%) — as printed	6,600	5,308	5,219	5,234	22,361

Cost Item	Year 1	Year 2	Year 3	Year 4	Total
DETAILED-TABLE ANNUAL TOTAL	72,600	58,388	57,411	57,572	245,971

Budget reconciliation requirement: before final ESIA clearance and procurement, the PIU must approve one itemised budget and financing plan that reconciles the Executive Summary estimate, detailed ESMP table, SEP estimate and Training Plan; identifies which costs are additional versus overlapping; and confirms contractor ESHS items in the works BoQ/contracts. No unsupported replacement total is introduced in this revision.

9.14 ESMP Implementation Matrix

Table 18: ESMP Implementation Matrix — Puntland

Code	Impact / Risk	Measure / Activity	Management Requirement	Deadline	Cost / Funding	KPI	Implementation	Monitoring
PUN-01	Unready mobilisation	Site readiness	All applicable studies, access, security, plans and GRM verified; PIU written release.	Before each mobilisation	PIU admin	4/4 written releases	PIU / Puntland E&S	Pre-mobilisation verification
PUN-02	Unviable/unsustainable borehole	Hydrogeological assessment	Aquifer, SWL, yield, quality, sustainable abstraction and monitoring.	Before 2 borehole works	USD 8,000 ESMP line	2/2 approved assessments	PIU / Technical	Water authority / PIU
PUN-03	Poor catchment design	Condition assessment	Storage/sediment/embankment/liner/hydraulic/erosion/safety assessment.	Before 2 catchments	Technical project cost	2/2 approved assessments	PIU / Technical	PIU / Supervision
PUN-04	Galkacyo site/security error	Coordinate/security verification	Verify GPS and current conflict/security assessment.	Before Galkacyo mobilisation	PIU admin	Verified register + clearance	PIU	PIU/security review
PUN-05	Erosion/sediment	Earthworks controls	Minimum footprint, silt/erosion, spoil, weather sequencing, prompt stabilisation.	Construction	Works	No uncontrolled sediment/erosion	Contractor	Weekly/after rain
PUN-06	Drilling contamination	Source/pollution controls	Fuel/chemical containment, drilling-waste management, wellhead protection, spills.	Construction	Works	Zero uncontrolled discharge/spill	Contractor	Supervision/PIU
PUN-07	Worker injury/heat	OHS plan	Competent heat regime; drilling/excavation/plant/electrical/lifting and emergency controls.	Before/during	Works	Zero fatalities; final LTIFR KPI	Contractor	Supervision/PIU
PUN-08	Community injury	Community H&S	Barriers/signage, access, traffic, electrical/rig separation, notification.	Construction	Works	Zero unguarded high-risk work area	Contractor / CLO	Daily/weekly

Code	Impact / Risk	Measure / Activity	Management Requirement	Deadline	Cost / Funding	KPI	Implementation	Monitoring
PUN-09	Water disruption	Continuity plan	Alternative supply before shutdown, minimise outage, safe water before reuse.	Before/during rehab	Works / contingency	Zero unplanned outage	Contractor / PIU / WUA	Daily during outage
PUN-10	SEA/SH	CoC/confidential referral	100% CoC, training, female access, confidential pathway/referrals.	All phases	Works / PIU	100% CoC; pathway active	Contractor / PIU GBV	Confidential review
PUN-11	Land/pastoral access	Land Access Protocol	Written access, route protection, reinstatement, replacement-cost compensation, OS5 trigger.	Before/during	Works / compensation	100% access records	PIU / District / Contractor	GRM/close-out
PUN-12	Security/inter-clan risk	Security/conflict plan	Galkacyo priority; community acceptance, inclusive engagement, halt/resequence.	All phases	Project/works	Valid assessment; events tracked	PIU / Contractor	Continuous
PUN-13	Groundwater decline	Sustainable abstraction	Pumping regime/logs, SWL/yield/quality monitoring and adaptive reduction per approved hydrogeology.	O&M	O&M / monitoring	No trigger without documented action	WUA / water authority	Per hydrogeology plan
PUN-14	Catchment deterioration	Catchment O&M	Seasonal inspection, silt clearing, structural/safety repair, reconciled storage-loss trigger.	O&M	O&M	2/2 current condition records	WUA	PIU technical
PUN-15	Water-quality failure	Testing/source hygiene	Pre-commissioning pass and periodic O&M tests; wellhead/catchment protection.	Commissioning/O&M	USD 16,000 ESMP line	100% potable-use sites pass	PIU / lab / WUA	Water authority / PIU
PUN-16	Exclusion/water conflict	Inclusive WUA	At least 30% women in WUA membership and leadership; IDP/minority inclusion; public access rules; GRM.	Before handover/O&M	USD 17,000 WUA line	4/4 WUA readiness	PIU / WUA	3/6/12m + annual

Code	Impact / Risk	Measure / Activity	Management Requirement	Deadline	Cost / Funding	KPI	Implementation	Monitoring
PUN-17	GRM failure	Multi-channel GRM	Four-district channels, xeer appropriate cases, SEA/SH separate, no retaliation.	Before mobilisation/all phases	USD 13,000 ESMP line	≥80% within controlled timeframe	Puntland E&S / PIU	Monthly/quarterly
PUN-18	Weak engagement	SEP implementation	Mixed/women/nomadic/IDP/minority engagement, disclosure and feedback.	All phases	USD 19,000 community engagement line; implemented within the controlling ESMP budget.	Four-district records	PIU / CLO	Quarterly
PUN-19	Support-site impacts	Associated Facilities Register	Screen, access/permit, pollution/erosion/security controls and close-out.	Before use/closeout	Works	100% support sites approved/closed	Contractor / PIU	Monthly register review
PUN-20	Pre-construction technical control	C-ESMP / controlled standards	Apply Category 2, verified coordinate, approved Heat Stress Management Plan, hydrogeological monitoring criteria, water-quality protocol, catchment O&M trigger, OHS KPI framework and controlling incident procedure.	Before affected procurement / activity / handover	PIU admin	Controlled approved criteria in place	PIU E&S / Design / Procurement	Management review

9.15 Environmental Monitoring Matrix

Section 9.8 is the controlling environmental and social monitoring matrix. Supporting records include the site-readiness register, hydrogeological assessments, groundwater/pumping logs, water-quality results, catchment condition records, contractor inspection and waste/spill records, workforce/training data, Associated Facilities Register, GRM database, incident register and WUA oversight reports.

9.16 Risk-Management Matrix

Table 19: ESMP Implementation Risk-Management Matrix — Puntland

Implementation Risk	Rating	Consequence	Management Response	Owner
Hydrogeological evidence delayed/inconclusive	High	Borehole works cannot be safely/efficiently authorised	Hard hold point; redesign/defer/drop source if viable sustainable supply not demonstrated.	PIU / Technical / water authority
Groundwater monitoring criteria remain inconsistent	High	Unsound pumping decisions and delayed response	Hydrogeologist issues one final monitoring/trigger schedule before commissioning.	PIU / water authority
ESMP financing is not incorporated into annual work planning	High	Monitoring, engagement or training may be underfunded	Use the controlling USD 245,971 budget; assign financing by annual work plan; price contractor ESHS separately.	PIU / Finance / Procurement
Galkacyo security/inter-clan conditions deteriorate	High	Worker/community risk; weak supervision; conflict over benefits	Update assessment; suspend/resequence; conflict-sensitive liaison and inclusive governance.	PIU / Contractor
Galkacyo North location remains unverified	High	Wrong site, design or stakeholder basis	No Galkacyo mobilisation until GPS/register verification.	PIU / Technical
Contractor weak OHS / heat performance	Moderate-High	Serious injury/fatality	Competent OHS staff, daily controls, supervision, CAP/suspension; final heat standard reconciled.	Contractor / Supervision
WUA capture by dominant group	Moderate-High	Persistent exclusion and water conflict	Inclusive constitution/rules, women/IDP/minority inclusion, GRM and PIU oversight.	PIU / WUA
Catchment maintenance weak	Moderate	Rapid re-sedimentation / asset deterioration	Training/tools, clear condition/desilting trigger and first-year mentoring.	WUA / PIU
Water-quality protocol not approved before commissioning	Moderate-High	Unsafe or unjustified commissioning decision	Approve one laboratory/water-authority protocol before commissioning.	PIU / water authority
Controlled instruments are not aligned to the four-site scope	Moderate	Wrong scope or requirements may be applied	PIU document-control review before issue/use of each implementation instrument.	PIU E&S

9.17 Key ESMP Implementation Indicators

- 4/4 sites with written PIU readiness authorisation before mobilisation;
- 2/2 borehole sites with approved hydrogeological assessments and baseline SWL/water-quality data;
- 2/2 catchments with approved condition assessments before earthworks;
- Galkacyo North verified GPS/site register and current security assessment before mobilisation;
- 100% active contractor work fronts covered by approved C-ESMP/OHS and competent ESHS supervision;
- 100% workers inducted, age-verified and signed Code of Conduct; zero child/forced labour;

- zero fatalities and all serious incidents investigated/corrective actions tracked;
- 100% potable-use sources released only after approved water-quality pass;
- 4/4 WUAs trained before handover with at least 30% women in membership and leadership and non-discriminatory access rules;
- GRM operational in all four districts and ≥80% of cases resolved within the controlled procedure timeframe;
- groundwater monitoring completed to the approved hydrogeological schedule with adaptive action at triggers;
- catchment seasonal/annual inspections and desilting/repair completed to the final controlled trigger;
- all associated/support sites approved before use and formally closed/reinstated;
- weekly Supervision inspections, monthly PIU audits and quarterly AfDB reports completed; and
- one controlled Category 2/site register and approved technical, monitoring and incident criteria in place before the affected activity, with the USD 245,971 ESMP budget incorporated into annual work planning.

9.18 Integration of the ESMP into Project Design, Planning, Procurement, Budget and Implementation

- Design: hydrogeological and catchment-condition findings, water quality, access and security are reflected in final drawings/specifications/BoQs and site methods.
- Planning: mobilisation is sequenced by readiness, Gu/Deyr conditions, water continuity, security and safeguards-supervision capacity.
- Procurement: Sections 9.3–9.5 are inserted into tender/contract documents, including staffing, training, monitoring, records, reinstatement and suspension provisions.
- Budget: the controlling indicative USD 245,971 PIU safeguards budget finances project-delivered studies, monitoring, engagement and capacity; contractor ESHS is priced separately in works contracts.
- Implementation: no site passes a hard hold point without written release; non-compliance is managed through corrective action and suspension where necessary.
- Supervision/reporting: daily/weekly controls, monthly PIU audits and quarterly AfDB reporting provide the compliance trail and support adaptive management.
- Handover: commissioning includes technical, water-quality, safety, reinstatement and WUA-readiness evidence.
- O&M: access rules, groundwater/catchment monitoring, maintenance, GRM and escalation are transferred into WUA/O&M records and post-handover oversight.

9.19 Associated Management Plans

The following management instruments are required for implementation. Each shall be controlled to the four-site Puntland scope before use:

- Stakeholder Engagement Plan — Puntland;
- Community Grievance Redress Mechanism — Puntland and separate Workers' GRM;
- Labour Management Procedures — Puntland / project-wide applicable LMP;
- Gender and Social Inclusion / vulnerable-group measures;

- Contractor Environmental and Social Management Plan and site/activity-specific method statements;
- Occupational Health and Safety Plan and emergency response arrangements;
- Waste Management and Spill Prevention Plan, including drilling-waste controls;
- Community Health and Safety / Traffic Management arrangements;
- SEA/SH Prevention and Response arrangements and Code of Conduct;
- Security Management Plan(s), with Galkacyo North priority;
- Land Access Protocol and access/compensation/reinstatement records;
- Chance Finds Procedure;
- Climate Risk Assessment — Puntland;
- Environmental and Social Monitoring Plan — Puntland;
- Environmental, Social and Capacity-Building Training Plan — Puntland;
- Associated Facilities and Support-Sites Register; and
- groundwater, water-quality and WUA O&M monitoring records required by commissioning and operation.

No standalone resettlement or biodiversity plan is required under the currently screened footprint. If implementation changes trigger involuntary acquisition/displacement, material livelihood loss or unassessed sensitive-habitat impacts, the relevant additional assessment/instrument must be prepared and approved before the affected activity proceeds.

CHAPTER 10: CONCLUSION AND RECOMMENDATIONS

10.1 Overall Conclusion

The ESIA concludes that the four interventions can be implemented in an environmentally and socially acceptable manner as an AfDB Category 2 component, provided the pre-works evidence, mitigation, ESMP, monitoring and institutional controls defined in this revised ESIA are implemented as binding project requirements.

The controlling scope is four sites: rehabilitation of the Eldahir Water Catchment in Carmo District and Ado Water Catchment in Qardho District, and borehole drilling or rehabilitation at Garwowe_Bixin in Garowe District and Galkacyo North. The two catchment sites are dominated by erosion, sediment, flash-flood, OHS, community-safety and maintenance risks. The two borehole sites add aquifer viability, groundwater sustainability, source-protection, drilling, water-quality and long-term pumping risks. Across all four sites, equitable water access, SEA/SH, labour performance, vulnerable-group inclusion and security especially at Galkacyo North require continuing management.

Most construction impacts can be reduced to Negligible, Minor or Minor–Moderate where the defined controls are applied. Because the site-specific aquifer evidence is not yet available, this ESIA treats groundwater sustainability as a continuing Moderate management risk until the approved hydrogeological assessments demonstrate that the residual risk can be reduced further.

10.2 Basis for Environmental and Social Acceptability

The basis for acceptability is the limited number and footprint of project sites, the rehabilitation nature of the two catchment interventions, the availability of site-specific design and management controls, and the strong development rationale in a drought-prone water-scarce environment. The two borehole interventions can be acceptable where hydrogeological evidence demonstrates a viable and sustainable source and water quality suitable for the intended use.

This conclusion is conditional. No site should mobilise simply because it appears in the project list. Each site must pass its applicable readiness and technical hold points. Borehole works require hydrogeological evidence, permits/no-objections and an approved drilling/pump/monitoring basis. Catchment works require an approved condition assessment and rehabilitation design. All sites require land/access and community arrangements, security review, contractor ESHS readiness, an operational GRM/SEA-SH pathway, and adequate safeguards supervision. Commissioning requires technical, safety, water-quality and WUA-readiness evidence.

10.3 Conditions to be Satisfied Before Mobilisation

- Issue one controlled four-site register and correct the Galkacyo North GPS coordinate notation before design or mobilisation relies on it.
- Apply Category 2 consistently in all tender, contract, C-ESMP and supervision documentation.
- Complete and approve a site-specific hydrogeological assessment for Garwowe_Bixin and Galkacyo North, including baseline static water level, viable aquifer target, expected yield, water quality, sustainable abstraction basis and monitoring requirements.

- Complete and approve a condition assessment for Eldahir and Ado covering storage and sediment, embankment/bund condition, liner need, inlet/outlet/spillway and silt-control condition, erosion/drainage and access/safety.
- Obtain the applicable Puntland environmental and water-resource approvals/no-objections for the relevant work package.
- Document land, temporary access, associated support sites and pastoral/community routes with actual users before works; establish the project process for verified crop/asset loss and reinstatement.
- Complete site-specific security assessment before mobilisation at each site and a conflict-sensitive Security Management Plan for Galkacyo North where required.
- Approve the C-ESMP, OHS Plan, high-risk method statements, Waste/Spill Plan, Community H&S/traffic arrangements, labour and Workers' GRM measures, SEA/SH Code of Conduct/referral arrangements and Chance Finds Procedure.
- Establish and test the community GRM, district/CLO contacts and confidential SEA/SH pathway in each district before works.
- Agree and document alternative water supply before any rehabilitation activity interrupts a relied-upon community source.
- Confirm the site-specific C-ESMP and pre-construction criteria in Section 10.6 before the affected activity proceeds.

10.4 Conditions During Construction

- Implement the approved C-ESMP and task method statements at every work front, with weekly Supervision verification and monthly PIU safeguards audit.
- Apply competent OHS controls for drilling, excavation, plant, lifting, electrical/solar work, traffic, extreme heat and remote emergency response; unsafe high-risk work is a stop-work condition.
- Protect boreholes and surrounding soils from fuels, chemicals and drilling wastes through source setbacks, containment, spill response and controlled waste management.
- Control erosion and sediment at Eldahir and Ado through minimum-footprint work, phased desilting, approved spoil placement, rainfall/flash-flood awareness and prompt stabilisation/reinstatement.
- Maintain community safety with barriers, Somali-language signs, traffic controls, safe access and advance notification; no hazardous excavation or active drilling area should be left unsecured.
- Where water access is interrupted, activate the agreed alternative supply before shutdown and restore service as rapidly as practicable, with appropriate water-quality confirmation before potable use.
- Maintain written worker terms, age verification, Workers' GRM, local/inclusive recruitment monitoring and individual Codes of Conduct, including SEA/SH prevention and non-retaliation.
- Use only screened and approved borrow, spoil, construction-water, storage, camp/welfare and other support sites and reinstate them before close-out.
- Maintain current security and community-acceptance arrangements, particularly at Galkacyo North; suspend or resequence works where safe access and safeguards supervision cannot be maintained.

- Apply the Chance Finds Procedure to all excavation and ground-disturbing works.

10.5 Conditions for Commissioning and Operation

- Do not commission any borehole or other potable community supply until the approved water-quality tests have passed and the PIU has documented the commissioning release.
- Establish the approved baseline and operational groundwater-monitoring regime for each borehole, including static water level, pumping/yield and water-quality records and the hydrogeologically defined sustainable-yield/pumping limits.
- Do not hand over Eldahir or Ado until catchment structures, silt controls, liner where present, trough/drainage, access and safety features have passed inspection and defects are closed.
- Confirm that each WUA or community management structure is established or strengthened and trained before handover, with documented non-discriminatory access/allocation rules and at least 30% women in membership and leadership.
- Maintain groundwater, water-quality, catchment-condition, infrastructure-safety, WUA governance, GRM and inclusion monitoring throughout O&M.
- Apply adaptive pumping reduction and technical review if groundwater monitoring reaches the approved hydrogeological action trigger or indicates progressive decline, poor yield or deteriorating water quality.
- Apply the final reconciled catchment inspection and desilting trigger and complete repairs before defects threaten safety or functionality.
- Maintain PIU/state post-handover oversight at 3, 6 and 12 months and periodically thereafter, with attention to Galkacyo North access conflict and vulnerable-group inclusion.

10.6 C-ESMP and Pre-Construction Confirmation Requirements

The following site-specific and method-dependent requirements are assigned to the C-ESMP and pre-construction 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.

Requirement	Assessment Position	C-ESMP / Pre-Construction Action
AfDB categorisation	The Puntland component is Category 2.	Apply Category 2 consistently in all implementation and contract instruments.
Galkacyo North site control	The final borehole setting-out coordinate requires field verification.	Field/GPS verify the Gacnafale/Galkacyo North site and issue a signed controlled register before design/mobilisation.
Groundwater monitoring	Monitoring criteria are site-specific and depend on aquifer behaviour.	The approved hydrogeological assessment shall define one controlling frequency and action trigger per borehole.
Water quality / EC / salinity	Commissioning and O&M require one approved water-quality protocol.	Confirm the competent-water-authority/project parameter set and actual baseline before commissioning.
Catchment O&M	Maintenance trigger is to be based on the accepted post-works baseline.	Approve one inspection and desilting/repair regime before handover.

Requirement	Assessment Position	C-ESMP / Pre-Construction Action
Heat-stress management	A fixed conflicting hydration quantity is not adopted.	The C-ESMP Heat Stress Management Plan shall define a defensible site/season-specific hydration and work/rest regime.
OHS KPI framework	One consistent OHS performance framework is required.	Apply zero fatalities and the approved project LTIFR/leading-indicator framework.
Incident reporting	One controlling project incident protocol is required.	Apply the current Financing Agreement/AfDB reporting requirement in all C-ESMP and reporting templates.
Controlled implementation scope	Puntland comprises four sites/four districts and catchment/borehole typologies.	Align all controlled SEP, training, C-ESMP and monitoring instruments to that scope.
Safeguards financing	USD 245,971 is the controlling indicative ESMP budget.	Incorporate the detailed ESMP budget into annual work planning; standalone SEP/training estimates are not additional unless separately approved; contractor ESHS remains separate.
Institutional nomenclature	Implementation shall use the current competent Puntland institutions.	Confirm and use current official institutional titles in permits, C-ESMP and reporting.

10.7 Recommendations

- Make Chapter 9 ESMP and its pre-works hold points enforceable through design, tender, contract, supervision, payment and handover processes.
- Prioritise hydrogeological investigations and groundwater monitoring as the critical technical safeguard for Garwowe_Bixin and Galkacyo North; do not treat regional depth or annex salinity statements as site evidence.
- Use the catchment condition assessments to define site-specific desilting, embankment, lining, silt-control and spillway works at Eldahir and Ado rather than generic template quantities.
- Complete the Galkacyo North coordinate and security/conflict verification before mobilisation and maintain an adaptive community-acceptance approach throughout implementation.
- Strengthen safeguards and technical field capacity if simultaneous work fronts exceed the inspection capability of the Puntland E&S Officer and Supervision Consultant.
- Establish inclusive WUAs with transparent water-access rules, proactive IDP/minority engagement in Garowe/Galkacyo North, women's representation and a functioning GRM before commissioning.
- Require the C-ESMP Heat Stress Management Plan, approved project OHS KPI framework and approved commissioning/O&M water-quality protocol before the affected activities proceed.
- Implement the controlling USD 245,971 ESMP budget through annual work planning, avoiding double counting of standalone SEP/training planning estimates and ensuring contractor ESHS costs are priced separately.
- Review the ESMP annually and update groundwater, catchment, climate, security and social-governance measures based on monitoring results and project changes.
- Ensure every controlled implementation instrument uses the same four sites, four districts, intervention typologies, Category 2 classification and institutional roles.

10.8 Final Statement

Subject to closure of the pre-mobilisation and C-ESMP requirements identified above, the Puntland component of the BBS Irrigation Project is considered environmentally and socially feasible as an AfDB Category 2 operation. The expected benefits of improved water security, drought resilience, livestock and household wellbeing, local employment and more inclusive water governance are expected to outweigh the temporary and localised adverse impacts of construction and rehabilitation.

This conclusion remains dependent on evidence-based site readiness. The two borehole investments should proceed only where hydrogeological and water-quality evidence supports a viable, sustainable source; the two catchments should proceed only with condition-led design; all sites require safe contractor implementation, transparent access governance and functioning grievance systems; and residual groundwater, water-allocation, climate and Galkacyo security risks require continuing monitoring and adaptive management through operation.

APPENDICES VOLUME

PUNTLAND

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	Carmo, Qardho, Garowe and Galkacyo North Districts
Project Scope	4 sites: 2 water catchments and 2 boreholes
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: Environmental and Social Screening Forms — Puntland

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
Eldahir	Water catchment rehabilitation	No separate screening form located	— | — | Cat. —	Missing	Source ESIA contains a blank screening template, but no completed form was located in the 117-form archive or reviewed Drive searches.
Ado	Water catchment rehabilitation	No separate screening form located	— | — | Cat. —	Missing	Complete/confirm before works if not held elsewhere.
Garwowe_Bixin	Borehole	No separate screening form located	— | — | Cat. —	Missing	Complete/confirm before works if not held elsewhere.
Gacnafale / Galkacyo North	Borehole	No separate screening form located	— | — | Cat. —	Missing	Final coordinate/site identity and completed screening must be confirmed before mobilisation.

Screening coverage summary: 4 controlled final sites are listed. Separate screening forms were not located for 4 final sites in the reviewed pooled screening archive. Original forms are supplied in the accompanying sorted screening folder.

Annex 1B: Blank Pre-Construction E&S Screening Template — Puntland

To be completed for each site before works commence.

Site Reference Number:	**District (Carmo, Garowe, Qardho & Galkacyo North):**
Site Name / Community Name:	GPS Coordinates (N) / (E):
Intervention Type:	☐ Water Catchment Rehabilitation ☐ Borehole Rehabilitation ☐ New Borehole ☐ Shallow Well Rehabilitation ☐ Pipeline Canal ☐ Other: _____
Number of infrastructure units at site:	Estimated construction duration:
Estimated number of direct beneficiaries:	Estimated % women beneficiaries:
Name of Contractor (if assigned):	Screening completed by (name, role):
Date of screening:	PIU E&S Officer approval date:

FORM B: ENVIRONMENTAL SCREENING —PUNTLANDSITES

Screen each environmental factor by checking the applicable box and providing site-specific notes.

Ref	Screening Factor	Questions to Answer	Rating / Action
B1	**Groundwater / aquifer availability and depth**	What is the estimated depth to water table? Is there any known seasonal variability? Has a hydro-	☐ Adequate ☐ Marginal ☐ Unknown — survey required

Ref	Screening Factor	Questions to Answer	Rating / Action
		geological survey been conducted?	
B2	**Salinity risk (priority for Carmo)**	Is the site within 10 km of the coast? Are there any reports of saline water in nearby wells or boreholes? Has baseline EC been measured?	☐ Low ☐ Moderate ☐ High — baseline EC measurement required before works
B3	**Soil erosion and land degradation**	What is the slope and soil type at the site? Is there evidence of existing erosion (rills, gullies)? Are there bare or degraded areas adjacent to the site?	☐ Low ☐ Moderate ☐ High — erosion controls required
B4	**Vegetation and rangeland disturbance**	What vegetation type will be disturbed? Is any clearing required beyond the direct infrastructure footprint? Is the vegetation heavily grazed or degraded?	☐ Minimal ☐ Moderate ☐ Significant — mitigation plan required
B5	**Dust and air quality during construction**	What is the proximity of the site to settlements? Is the site in an area of high wind exposure?	☐ Low ☐ Moderate — dust suppression measures required
B6	**Drainage and flash flood risk**	Is the site in or adjacent to a seasonal wadi? Is the site in a low-lying area? Are there upstream catchments that could generate runoff?	☐ Low ☐ Moderate ☐ High — flood protection design required
B7	**Water quality — construction contamination risk**	Are there any watercourses or existing water points within 200m of planned excavation or fuel storage? Is drilling mud management required?	☐ Low risk ☐ Moderate — mitigation measures required
B8	**Hazardous materials and waste**	What hazardous materials will be used or generated (fuel, cement, drilling chemicals)? What is the disposal route for drilling cuttings?	☐ Low ☐ Moderate — waste management plan required
B9	**Cultural heritage / chance find risk**	Is there any known cultural heritage, historical site, burial ground, or religious structure within or adjacent to the site?	☐ No known heritage risk ☐ Known feature present — heritage assessment required
B10	**Proximity to protected or sensitive natural habitats**	Is the site within 5 km of any designated protected area, wetland, or critical habitat? Have any protected species been recorded in the area?	☐ No ☐ Yes — biodiversity assessment required

FORM C: SOCIAL SCREENING — PUNTLAND SITES

Ref	Screening Factor	Questions to Answer	Rating / Required Action
C1	**Land access and tenure**	Is the site on communal, private, or government land? Are there any existing users or claimants whose access or use will be affected? Are there any disputes over the site?	☐ No issues ☐ Potential issue — community agreement documentation required ☐ Dispute — land access assessment required
C2	**Displacement or loss of livelihood**	Will any households or businesses need to be relocated, even temporarily? Will any crops, trees, or productive assets be permanently lost?	☐ No displacement ☐ Temporary — compensation plan required ☐ Permanent — RAP required
C3	**Water access disruption during construction**	Will construction temporarily interrupt access to an existing water source that the community depends on? Is there an alternative water source available during works?	☐ No disruption ☐ Temporary disruption — temporary water provision plan required
C4	**Community and pastoral route disruption**	Does the construction footprint intersect any pastoral routes, seasonal migration paths, or community access roads?	☐ No ☐ Yes — route documentation and construction phasing plan required
C5	**Vulnerable groups — IDP and minority clan presence**	Are there IDP settlements, returnee communities, or minority clan households in or adjacent to the project area? Are they currently accessing the existing water infrastructure?	☐ None identified ☐ Present — targeted inclusion measures required; WUA non-discrimination criteria confirmed
C6	**Women's access and safety at water points**	Is the existing water access point considered safe for women and girls? What are the current	☐ Safe and accessible ☐ Safety concerns — design modification and/or

Ref	Screening Factor	Questions to Answer	Rating / Required Action
		distances women travel for water? Are there any safety concerns at the site location?	lighting required
C7	**Clan tensions and conflict risk**	Are there any known inter-clan disputes related to water access, land, or grazing in the project area? Has any prior conflict occurred at or near the site?	☐ None ☐ Low ☐ Elevated — conflict-sensitive design and engagement required
C8	**GBV and SEA/SH risk**	What is the level of worker influx expected at this site? Are women present as water users, farmers, or community members near the construction area?	☐ Low influx — standard CoC sufficient ☐ Moderate/High influx — GBV mitigation plan and referral pathways required
C9	**Child labour risk**	Are there children in the project area who might be engaged for informal labour? Is there a school in the community that could be affected by construction timing?	☐ Low risk ☐ Moderate — age verification and child safeguarding measures required
C10	**Community consent and support**	Have community meetings been held to explain the project and seek community input? What is the level of community support? Are there any objections from community members?	☐ Strong support ☐ Mixed — additional engagement required ☐ Opposition — escalate to PIU

FORM D: SCREENING OUTCOME AND REQUIRED ACTIONS

Based on Forms B and C, summarise the screening outcome and required actions before works commence at this site.

Overall Environmental Risk Rating: ☐ Low ☐ Moderate ☐ High

Overall Social Risk Rating: ☐ Low ☐ Moderate ☐ High

Salinity baseline measurement required before works (Carmo): ☐ Yes ☐ No

Site-specific OHS risk assessment required: ☐ Yes (complete before mobilisation) ☐ Standard measures sufficient

Community consent documentation on file: ☐ Yes ☐ No — obtain before works

Land access documented and agreed: ☐ Yes ☐ No — resolve before works

Temporary water provision plan required during construction: ☐ Yes ☐ No

Pastoral/community route documentation required: ☐ Yes ☐ No

GBV referral pathways confirmed operational: ☐ Yes ☐ No — confirm before mobilisation

Chance Finds Procedure briefed to site crew: ☐ Yes ☐ No — complete during induction

Special design requirements identified (flood protection, covered storage, wellhead sealing, etc.):

Other pre-works actions required:

Site cleared for works to commence: ☐ Yes ☐ No — outstanding actions listed above must be resolved first

PIU E&S Officer sign-off (name and date):

Supervision Consultant E&S Officer sign-off (name and date):

Annex 2: Stakeholder Engagement Plan — Puntland

This Stakeholder Engagement Plan (SEP) has been prepared for the Puntland component of the BBS Irrigation Project (Carmo, Qardho, Garowe, and Galkacyo North districts — 4 sites), in accordance with the AfDB ISS 2023, OS10. This SEP is a living document that will be updated throughout the project lifecycle. It is consistent with the project-wide SEP and provides Puntland-specific stakeholder identification, engagement methods, and implementation arrangements reflecting the distinct institutional context of Puntland and its pastoral livelihoods setting.

Key objectives include:

i. Informing affected communities about the BBS Project;
ii. Providing meaningful opportunities for stakeholder input; ensuring vulnerable groups participate meaningfully and benefit equitably;
iii. Establishing accessible grievance mechanisms; preventing retaliation against stakeholders who raise concerns; and
iv. maintaining transparent coordination with Puntland state institutions.

PROJECT OVERVIEW —PUNTLAND COMPONENT

The BBS Project will rehabilitate and improve water infrastructure at 4 sites in Puntland state. The project supports pastoral and agropastoral communities with no access to perennial rivers, whose water security depends entirely on groundwater, seasonal runoff capture, and wadi-based systems. The Puntland component is the smallest by site count across the BBS Project and operates in a more stable institutional environment than Federal Member States, with established government ministries and a functioning institutions.

STAKEHOLDER IDENTIFICATION

Project-Affected Parties

Stakeholder	Description	Key Interests / Concerns
Farming and agropastoral households	Smallholder farmers, agropastoral households using boreholes and water catchments for irrigation and household water	Water availability, rehabilitation quality, construction disruption, equitable access to rehabilitated infrastructure
Pastoral and nomadic communities	Livestock herders dependent on boreholes, catchments, and shallow wells; seasonally mobile.	Livestock watering access, pastoral route protection, seasonal access protocols, equity with settled communities in WUA governance
Women and girls	Women and girls responsible for household water collection; women farmers; women's groups	Water collection distance/time reduction, safety at water points, WUA participation, GBV risk during worker influx
Nomadic women (specific subgroup)	Women in seasonally mobile pastoral households; limited access to fixed engagement mechanisms	Mobile outreach, communication in Somali through female elders, seasonal access to water points
Youth	Young men and women in project communities	Employment opportunities, skills training, representation in WUA governance, transparent hiring processes
IDPs and returnees	Displaced persons and returnees settled near project sites	Non-discriminatory water access, inclusion in WUA membership, protection from exclusion
Minority clan households	Clan groups with less political voice in clan-	Equitable access to water infrastructure,

Stakeholder	Description	Key Interests / Concerns
	based resource allocation systems	representation in WUA governance, protection from discrimination
Water User Associations (WUAs)	Existing or newly formed WUAs for infrastructure management and O&M	Capacity building, governance support, clear O&M responsibilities, water allocation frameworks
Shallow well individual owners	Individual household owners of shallow wells being rehabilitated	Rehabilitation terms, temporary access arrangements, ownership documentation

Other Interested Parties

Stakeholder	Role and Interest
Federal Government (MoAI — PIU)	Implementing agency; overall project management; safeguards oversight; reporting to AfDB
Puntland Ministry of Water	State-level institutional partner; coordination of water governance; regulatory oversight for boreholes and water points; co-facilitating implementation
Puntland MoECC	Environmental regulatory oversight; climate risk coordination; catchment protection standards
Puntland MoAI	Agricultural extension coordination; agropastoral livelihood support linkages
District Administrations	Local coordination; site access facilitation; traditional leader liaison; GRM Level 3 mediation support
Traditional leaders / Oday / Islamic leaders (Sheikhs)	Community legitimacy, conflict prevention, xeer-based dispute resolution, communication to pastoral communities
NGOs and civil society — Puntland	CARE International, Norwegian Refugee Council, Danish Refugee Council active in Puntland; GBV referral, livelihoods, WASH coordination
Contractors	Site-level community relations; local hiring; safety management; compliance with LMP and Code of Conduct
Supervision Consultant	Safeguards compliance monitoring; engagement verification; PIU advisory support
African Development Bank (AfDB)	Project financier; safeguards compliance oversight; Independent Recourse Mechanism

Vulnerable Groups —Puntland Specific

Groups requiring differentiated engagement measures in thePuntland context:

- Nomadic and semi-nomadic women: Seasonal mobility, limited access to fixed community meetings, low literacy, communication constraints — require mobile outreach through female elders and community liaisons
- Female-headed households: Higher water collection burden, social vulnerability during drought, limited land tenure — require targeted outreach and priority WUA membership support
- IDPs and returnees — particularly in Galkacyo North: Insecure tenure, social marginalization, exclusion from clan-based resource allocation — require explicit non-discrimination measures and proactive engagement
- Minority clan members: Historical exclusion from community decision-making and resource access — require inclusive WUA governance frameworks and monitoring for elite capture
- Youth — unemployed men: Social tensions if employment expectations are unmet — require transparent hiring communication and youth WUA representation

- Persons with disabilities: Physical and communication access barriers — require accessible venues, home visits, and oral communication
- Low-literacy community members: Limited access to written information — require oral and visual communication, radio announcements in Somali, and community elder intermediaries

ENGAGEMENT DURING ESIA PREPARATION

Consultations were conducted in all Four Puntland project districts (December 2025 — January 2026) using community meetings (mixed and single-sex), focus group discussions, key informant interviews, and site walk-throughs at representative sites across . A detailed consultation log with attendance records is in the Consultation Log (Annex 4 of the Puntland Annexes).

Key Issues Raised and Project Responses — Puntland

Issue Raised	Project Response
Drought pressure; catchments silting rapidly; need for long-term maintenance	Annual desiltation included as mandatory WUA O&M responsibility; covered catchment storage where feasible; climate adaptation measures integrated into design
Water point governance — risk of contested access if management unclear	WUA formation with clear water allocation protocols; multi-user (livestock and household) access rules co-designed with community; clan-inclusive WUA membership
Women's safety and fairness in water access	Water point locations reviewed with women's groups; separate domestic access points where feasible; female CLO appointed per district; safety features in design
Youth employment — concerns about outsiders being prioritised	Transparent local hiring process (80%+ unskilled local); community announcement before contractor mobilisation; youth employment target (20%) in contractor BoQ
Individual shallow well ownership —	Individual owner engagement and rehabilitation terms confirmed before works; temporary water provision during rehabilitation documented
Pastoral route protection — Carmo, Qardho, Garowe,	Pastoral routes documented pre-construction; construction phasing adjusted; access maintained throughout works
IDP inclusion in WUA governance — Galkacyo	Non-discriminatory WUA membership criteria adopted; IDP settlements targeted in community mobilisation; no clan-based eligibility requirement
GBV risks from construction worker influx	GBV referral pathways mapped usingPuntland NGO network (CARE, NRC, DRC) before mobilisation; worker CoC; female CLOs; zero-tolerance communicated
Salinity concerns for coastal wells — Carmo	Baseline EC measurement before rehabilitation; regular salinity monitoring; alert thresholds and abstraction suspension protocol defined

ENGAGEMENT DURING IMPLEMENTATION

Engagement Methods and Schedule

Method	Purpose	Target Groups	Frequency
Community meetings — mixed	Project updates, construction schedules, WUA formation progress, feedback	All community members at and near project sites	Before works; mid-construction; before O&M handover; annually
Women-only meetings	Gender-specific feedback, safety concerns, WUA participation, water access issues	Women and girls in project communities	Minimum at each milestone; facilitated by female CLO
Nomadic pastoral outreach — mobile	Reach seasonally mobile populations not reachable through fixed meetings	Nomadic pastoral households and women	Per pastoral season (Gu and Deyr)

Method	Purpose	Target Groups	Frequency
Focus group discussions	In-depth feedback from specific groups on targeted issues	Women, youth, IDPs, minority clans	Minimum annually per district
WUA meetings	O&M planning, water allocation governance, conflict resolution	WUA members (min. 30% women)	Monthly (O&M phase)
Traditional elder / oday meetings	Community acceptance, xeer-based conflict prevention, pastoral route coordination	Clan elders, Religious leaders	At project milestones; as needed for disputes
Site notice boards	Construction schedules, GRM contacts, employment openings, safety notices	All site visitors and community members	Continuously updated throughout construction
Radio announcements — Somali language	Broad public information reaching pastoral and rural communities	General public in all three districts	Key project milestones; employment openings
Key informant interviews	Coordination with government, NGO, institutional stakeholders	District officials,Puntland Ministry staff, NGO representatives	Quarterly

Measures for Vulnerable Groups

- **Nomadic women:** Mobile outreach sessions at seasonal watering points; engagement through female elders; SMS-based information where mobile coverage exists; timing aligned with pastoral calendar
- **Women (general):** Women-only meetings facilitated by female CLO; meeting times accommodating domestic duties; childcare arrangements for longer sessions; female facilitators
- **Youth:** Youth representatives in WUA committees; transparent employment process communicated pre-mobilisation; targeted employment and vocational training opportunities
- **IDPs and returnees:** Proactive outreach to IDP settlements near project sites; non-discriminatory WUA membership confirmed before formation; IDP representation in consultations
- **Minority clans:** Ensure representation in all consultations; monitor WUA membership for equitable clan inclusion; flag elite capture to PIU if detected
- **Persons with disabilities:** Accessible venues; home visits for those unable to attend; verbal/visual communication formats
- **Low literacy populations:** All communication in spoken Somali; visual aids and demonstrations; community elder intermediaries; radio

Prevention of Retaliation

- Anonymous complaint channels (suggestion boxes, SMS hotline) available and publicised
- Complainant identity disclosed only with their express consent
- Clear communication that raising concerns is protected and encouraged — stated at every community meeting
- Monitoring by female CLO andPuntland E&S Officer for any evidence of social pressure or retaliation through clan structures

- Any act of retaliation investigated and subject to disciplinary action or sanctions

INFORMATION DISCLOSURE

Information	Timing	Method and Location
ESIA / ESMP non-technical summary (Somali language)	Before AfDB appraisal; minimum 30 days for review	PIU website;Puntland Ministry of Water Development offices; district offices; community meetings; radio announcement
Stakeholder Engagement Plan (this document)	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	Minimum 2 weeks before works at each site	Community meetings; site notice boards; village elder notification; radio
GRM details — channels, contacts, process	Before works commence at each site; ongoing	Community meetings; site notice boards; radio; handouts at water points; elder networks
Employment opportunities — local hiring	Before contractor mobilisation in each district	Community meetings; district administration notice boards; elder networks; radio
WUA formation process and membership criteria	3 months before O&M handover	Community meetings; CLO outreach; visual guide distributed in Somali

Disclosure will be timely, accessible (Somali language, non-technical, oral formats for low-literacy communities), culturally appropriate, and comprehensive. Nomadic and pastoral communities will receive information through seasonal outreach aligned with livestock movement patterns.

GRIEVANCE REDRESS MECHANISM — PUNTLAND STATE

A community Grievance Redress Mechanism (GRM) will receive and resolve complaints from project-affected persons across 4 sites. This is separate from the Workers' GRM in the Labour Management Procedures. The full GRM procedures forPuntland are set out in thePuntland Annexes, noting the specific integration of Puntland's xeer-based traditional dispute resolution at Level 3, and the water allocation grievance track for the O&M phase.

Scope and Uptake Channels

The GRM addresses grievances related to environmental impacts, social impacts, project benefits, contractor conduct, and SEA/SH (confidential pathway). Uptake channels include: in-person via CLOs, WUAs, and district focal points; sealed suggestion boxes at all sites; dedicated phone/SMS hotline; traditional leaders/oday; written submissions to district offices or PIU.

Grievance Resolution Process — Summary

Level	Description	Responsible	Timeframe
1. Receipt	Grievance logged; acknowledgement to complainant	CLO / WUA / District Focal Point	Within 48 hours
2. Site Resolution	Contractor and CLO engage complainant; direct resolution	Contractor + CLO	Within 7 days
3. District	Facilitated with traditional elders (oday) and district	District Focal Point +	Within 14 days

Mediation	authority; xeer-based mediation integrated	Elders	
4. PIU Review	Formal review; independent investigation if needed; written determination	PIU Safeguards Officer	Within 14 days
5. External Recourse	AfDB IRM orPuntland judicial system	Complainant's choice	Per IRM / judicial procedures

RESOURCES AND RESPONSIBILITIES

Roles

Entity	Responsibilities
PIU /Puntland E&S Officer	Overall SEP implementation; centralised GRM register; disclosure management; AfDB reporting; annual SEP review; coordination withPuntland state
PIU Safeguards	Quality oversight ofPuntland E&S Officer; Level 4 grievance handling; SEA/SH case oversight; AfDB interface
CLOs — (at least 1 female per district)	First community contact; grievance logging; women-only and mobile outreach; monthly reporting toPuntland E&S Officer; WUA formation support
Contractors	Site-level community liaison (Level 2 GRM); suggestion box maintenance; employment community communication; CoC compliance
District Focal Points	Level 3 mediation; traditional leader coordination; formal district authority liaison
WUAs	Community water governance; O&M phase GRM first contact for water issues; community feedback on project performance
Puntland Ministry of Water	Institutional oversight; coordination on water governance disputes; state regulatory backstop

Budget —Puntland SEP Implementation

Activity	Estimated Cost/Year	Frequency	Budget Source
Community meetings (4 districts × 2/year)	$4,800	Annually	PIU Operational
Nomadic pastoral mobile outreach sessions	$2,400	Bi-annually	PIU Operational
Information materials, radio, notice boards (3 districts)	$3,000	One-time + updates	PIU Operational
Vulnerable group outreach (IDPs, minority clans, women)	$1,500	As needed	PIU Operational
GRM operation (hotline, suggestion boxes, tracking)	$4,500	Continuous	PIU Operational
District focal point support (4 districts)	$4,500	Continuous	PIU Operational
Training (CLOs, WUAs, focal points)	$3,000	Annual	PIU Operational
GBV referral mapping and NGO coordination	$1,500	One-time + updates	PIU Operational
TOTAL (annual estimate)	~$25,200	—	—

MONITORING AND REPORTING

Monitoring Indicators —PUNTLAND SEP

Indicator	Target	Frequency	Source
Community meetings held per district	≥2/year	Annually	CLO records
Women's participation in consultations (mixed sessions)	≥30%	Per event	CLO records

Nomadic women reached through mobile outreach	Track; ≥1 session/district/season	Bi-annually	Female CLO records
Vulnerable group consultations (IDPs, minority, youth)	≥1/district/year	Annually	CLO records
Grievances received and resolved within timeframe	≥80% within timeframe	Monthly	GRM register
Women's grievances as % of total	Track	Monthly	GRM register
Disclosure materials distributed at all sites	All 68 sites before works	Pre-construction	Supervision Consultant
SEA/SH referral pathways operational	Before mobilisation (binary milestone)	Pre-construction	PIU Safeguards Officer

Reporting

Stakeholder engagement activities and grievance data will be included in quarterly E&S reports to AfDB, covering: activities conducted, attendance (sex-disaggregated, including nomadic vs settled), key issues raised, grievance statistics and resolution status, and SEP updates.Puntland state reporting to MoWD will occur quarterly. This SEP will be reviewed annually and updated as needed.

Contact Information

Project Implementation Unit (PIU), Ministry of Agriculture and Irrigation, Federal Government of Somalia

Puntland E&S Officer: [name and contact — to be confirmed before mobilisation]

CLO — [name and contact — to be confirmed]

CLO — [name and contact — to be confirmed]

CLO — [name and contact — to be confirmed]

Puntland Ministry of Water Development: [contact — to be confirmed]

AfDB Project Team: [contact — to be confirmed]

AfDB Independent Recourse Mechanism: www.afdb.org/irm

Annex 3: Labour Management Procedures — Puntland

This Labour Management Procedures (LMP) document applies to all workers engaged at the 4 intervention sites across Carmo, Qardho, Garowe, and Galkacyo North districts, in accordance with AfDB ISS 2023, OS2. The LMP covers direct workers (PIU staff), contracted workers (civil works contractors), primary supply workers, and community workers (WUAs).

Working conditions: Maximum 8 hours/day, 48 hours/week; overtime limited to 12 hours/week at 1.5x rate; minimum 24 consecutive hours rest per week (Friday); mandatory work stoppages during extreme heat (no outdoor physical work 12:00–15:00 during peak summer months); adequate rest breaks; wages at or above Puntland minimum wage or prevailing local rate.

Non-discrimination and equal opportunity targets: minimum 80% local hiring for unskilled labor; minimum 30% women in appropriate roles; equitable clan representation; minimum 20% youth (18–30) in unskilled workforce.

Child labour and forced labour: No workers under 18 on any construction site. Age verification via Puntland ID, birth certificate, or passport. Zero tolerance for bonded labour, trafficking, or coercion.

OHS key hazards: heat stress (priority at all sites), borehole drilling hazards (Garowe and Galkacyo), excavation and trenching, flash flood risk (Carmo and Qardho catchments during Gu/Deyr), vehicle and traffic safety, security risk (Galkacyo North).

Workers' Grievance Mechanism: separate from community GRM; uptake via direct communication, suggestion boxes, Contractor OHS Officer, Supervision Consultant, or PIU Puntland E&S Officer; SEA/SH through dedicated confidential channel.

LEGAL AND REGULATORY FRAMEWORK — PUNTLAND

This LMP is prepared in compliance with:

Puntland Applicable Framework

- Puntland Constitution (2001, amended) — establishes fundamental rights including prohibition of slavery and forced labour
- Puntland Labour Law — applicable labour legislation governing employment contracts, working hours, wages, and worker rights in Puntland
- Puntland Occupational Health and Safety standards — where established; supplemented by AfDB OS2 where national standards are less protective
- Puntland Ministry of Labour and Social Affairs oversight — the project will register with and coordinate with the Ministry on labour compliance in the three project districts

International Standards

- AfDB ISS 2023, OS2: Labour and Working Conditions
- ILO Declaration on Fundamental Principles and Rights at Work
- ILO Core Conventions: C87 (Freedom of Association), C98 (Collective Bargaining), C29 and C105 (Forced Labour), C138 (Minimum Age), C182 (Worst Forms of Child Labour), C100 (Equal Remuneration), C111 (Discrimination)
- UN Guiding Principles on Business and Human Rights
- Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
- UN Convention on the Rights of the Child

DEFINITIONS

Term	Definition
Child	Any person under the age of 18 years
Child Labour	Work depriving children of their childhood, potential, and dignity — harmful to physical or mental development. Includes work below minimum working age or hazardous work by those under 18.
Forced Labour	All work or service extracted under threat of penalty without voluntary offer. Includes bonded labour, trafficking, and document retention.
Hazardous Work	Work likely to harm health, safety, or morals — including machinery operation, work at heights, confined spaces, hazardous substances, or extreme conditions. All construction activities at BBS sites are classified as hazardous.
Migrant Worker	A worker who has migrated from another region or country for employment. Relevant for skilled drilling technicians or equipment operators sourced outside Puntland.
SEA/SH	Sexual Exploitation, Abuse, and Harassment — any actual or attempted abuse of position, vulnerability, power, or trust for sexual purposes, or unwelcome sexual conduct.
Workers' GRM	Workers' Grievance Redress Mechanism — formal process for workers to raise and seek resolution of workplace concerns, separate from the community GRM.

PROJECT LABOUR OVERVIEW — PUNTLAND

Estimated Workforce — Puntland Component

Worker Category	Estimated Number	Duration	Source
PIU / Puntland E&S Officer / CLOs (Direct)	4–6	Project duration	National (Puntland preference)
Supervision Consultant (E&S, Technical)	3–5	Construction phase	National/International
Contractor Skilled Workers (drillers, masons, welders, electricians)	15–40 per active mobilisation	Variable by site cluster	National; local preference
Contractor Unskilled Workers	20–60 per active mobilisation	Variable by site	Local priority — 80%+ from project districts
Community Workers (WUA O&M contributions)	Variable	Short-term, seasonal	Local only — voluntary

The construction phase in Puntland spans approximately 24 months, with works sequenced across 68 sites in site clusters by district. The emphasis on local hiring reduces labour influx risks and maximises community benefit.

WORKING CONDITIONS AND TERMS OF EMPLOYMENT

All project workers will receive written terms and conditions of employment in Somali before commencing work, covering: job title, contract type and duration, working hours and rest periods, wages and payment method, authorised deductions, leave entitlements, termination conditions, grievance procedures, and Code of Conduct requirements. Recruitment fees will not be charged to workers.

Working Hours and Rest Periods

- Maximum 8 hours/day, 48 hours/week for regular work
- Overtime limited to 12 hours/week; compensated at minimum 1.5× regular rate (2× for public holidays including Somali Islamic holidays)
- Minimum 24 consecutive hours rest per week (Friday)

- Mandatory work stoppages during extreme heat: No outdoor physical work between 12:00–15:00 during peak summer months at Carmo (where temperatures regularly exceed 42°C). Applies from April to September.
- Adequate rest breaks during the working day (minimum 1 hour for meals and rest in shade)
- Annual leave and sick leave in accordance with Puntland labour law
- Night work (after 20:00) avoided; where necessary, additional safeguards and premium compensation apply

Wages and Benefits

- Workers paid at or above Puntland minimum wage or prevailing local market rate (determined by wage survey before mobilisation in each district), whichever is higher
- Wages paid regularly (at minimum monthly for salaried; agreed intervals for daily workers), on time, directly to workers in legal tender or by verified mobile money transfer
- All workers paid equally for equal work regardless of gender, clan, or other personal characteristics
- Itemised pay documentation provided showing gross pay, deductions, and net amount
- Unauthorised deductions prohibited; any deduction requires written worker consent and does not reduce take-home pay below minimum wage

Non-Discrimination and Equal Opportunity

Employment decisions will not be based on gender, age (subject to minimum age), clan, ethnicity, religion, disability, marital status, family responsibilities, or health status. The project will actively promote:

- Local hiring target: Minimum 80% of unskilled labour from respective sites (respective to the site cluster)
- Women's participation target: Minimum 30% of appropriate roles filled by women; active outreach through CLOs; barrier removal (safe transport, flexible hours)
- Clan balance: Equitable representation across clans in multi-clan areas; no clan-based hiring decisions
- Youth employment: Minimum 20% of unskilled construction workforce to be youth aged 18–30 from the respective district
- Accessible recruitment: Job postings in accessible community locations; oral announcements by CLOs; elder networks used for dissemination in pastoral areas

CHILD LABOUR AND FORCED LABOUR — PUNTLAND

No workers under 18 years of age will be employed on any construction site or in any field-based BBS project activity in Puntland. All construction activities are classified as hazardous (excavation, drilling, heavy equipment, electrical installation, work at heights) and the minimum age is 18 years without exception.

Age Verification Procedures

- Request and verify Puntland National ID card (biometric ID), birth registration certificate, or passport for all workers before engagement. Copies kept in personnel files; originals with worker.
- Where documentation is unavailable (more common in pastoral communities), conduct age assessment interview with community elder witness; if doubt persists, do not engage the individual
- Report any worker found to be underage to PIU within 24 hours; remove from site; provide appropriate support referral
- Spot checks by Supervision Consultant quarterly at all active sites

Prohibition of Forced Labour

No bonded labour, human trafficking, document retention, physical confinement, or coercion of any form. Workers free to resign with reasonable notice (1–2 weeks as per contract). Community workers must be documented as voluntary with right to withdraw at any time without penalty.

OCCUPATIONAL HEALTH AND SAFETY — PUNTLAND

Key Hazards and Controls — Puntland Context

Hazard Category	Specific Hazards — Puntland	Required Controls
Heat Stress (PRIORITY — all sites; critical at Carmo & Galkacyo North)	Extreme temperatures (>42°C at Carmo); heat exhaustion and heat stroke risk for outdoor workers; dehydration	Mandatory work stoppage 12:00–15:00 at Carmo April–September; mandatory shade provision at all sites; minimum 3 litres drinking water per worker per day; trained buddy system; heat illness first aid training; acclimatisation period for new workers
Borehole Drilling Hazards	Drilling rig instability, blowouts, confined space entry for well inspection, drilling fluid exposure	Certified drilling supervisor; rig stability verification; confined space entry permit; drilling fluid PPE (gloves, eye protection, respirator); waste management plan
Excavation and Trenching	Cave-ins, falls, flooding during Deyr season, UXO risk in historically affected areas	Shoring for excavations >1.5m; competent supervision; barriers; pre-construction UXO awareness check; pumping equipment for seasonal water infiltration
Flash Flood Risk During Construction	Rapid wadi flooding during Gu and Deyr seasons; site inundation; worker entrapment	Weather monitoring; site drainage design; evacuation routes marked; no work in wadi beds during rain events; flood warning communication protocol
Wind and Dust (Carmo — northeast monsoon)	High winds damaging structures, materials, and equipment; respiratory dust exposure	Secure material storage; wind-resistant temporary structures; respiratory PPE (dust masks/respirators) during earthworks; goggles
Salinity and Chemical Exposure (Carmo)	Drilling fluid contamination; saline groundwater exposure; cement skin burns	PPE (gloves, boots, eye protection) for drilling and cement works; first aid for chemical burns; saline water not used for drinking
Traffic and Vehicle Safety	Vehicle collisions on remote roads; rollovers on rough terrain; pedestrians on site	Speed limits (40 km/h on site roads); trained and licensed drivers; vehicle maintenance checklist; seatbelt requirement; pedestrian separation; reversing alarms
Security Risk — clan tension and crime	Clan-related access disputes; equipment theft; civil unrest	Community acceptance strategy; local hiring; security risk assessment before each mobilisation; incident reporting; coordination with Puntland police

Personal Protective Equipment

All PPE provided at no cost to workers, properly fitted, maintained, and replaced when damaged. Minimum requirements: hard hats (all construction workers); safety footwear — steel-toe boots; high-visibility vests (all workers in

vehicle movement areas); gloves (task-appropriate); eye protection (concrete work, drilling, grinding, dusty conditions ; hearing protection (heavy drilling equipment); respiratory protection (dust masks for earthworks; full respirator for drilling fluid); life jackets (well and water point work); fall protection harnesses (work above 2m without guardrails).

OHS Training Requirements — Puntland

Training Topic	Content	Audience	Frequency
Site Induction (mandatory)	Site-specific hazards (heat, drilling, flash flood, dust); PPE use; emergency procedures; grievance channels; Code of Conduct	All workers before first day	Before commencing work; repeated for new workers
Heat Safety — Puntland Specific	Heat stress recognition; mandatory rest times; hydration requirements; buddy system; emergency response for heat illness	All workers; priority training for Carmo sites	Induction; monthly toolbox at Carmo during summer
Borehole Drilling Safety	Rig stability; confined space; drilling fluid hazards; waste management	Drilling crew and supervisors	Before each drilling campaign
Flash Flood Awareness	Flood warning signs; evacuation routes; no-work-in-wadi rules during rain	All site workers at catchment and borehole sites	During induction; refresher before Gu and Deyr seasons
OHS Toolbox Talks	Daily activity-specific safety reminders; incident review; weather alerts	All workers	Daily (5–10 min)
First Aid	Basic first aid and CPR; heat illness management; wound treatment; emergency contact	Designated first aider per work front (minimum 1)	Before deployment; refresher every 6 months

Incident Reporting and Investigation

Incident Type	Reporting Timeframe	Notifications	Required Actions
Fatality	Immediately to PIU; PIU to AfDB within 24 hours	PIU Director, AfDB, Puntland authorities, family	Stop work, secure scene, full investigation, report to AfDB
Serious injury (hospitalisation >24h, permanent disability)	Same day to PIU; PIU to AfDB within 48 hours	PIU, AfDB, authorities	Medical evacuation, incident report, investigation, corrective actions
Lost Time Injury	Within 24 hours to supervisor	Supervision Consultant, PIU	First aid, incident report, investigation
Near Miss	Same day to supervisor	Supervisor, CLO	Record, investigate, prevent recurrence
Environmental incident (spill, contamination, structural failure)	Immediately to supervisor; PIU within 24 hours for significant events	PIU, Puntland E&S Officer	Contain and clean up, assess damage, corrective actions
Security incident	Immediately to PIU Security Focal Point	PIU Director, Puntland authorities as appropriate	Personnel safety, incident documentation, site security review

WORKERS' GRIEVANCE MECHANISM — PUNTLAND

A Workers' Grievance Mechanism (WGM) will be established for all project workers in Puntland, separate from the community GRM. Workers can raise concerns through: direct communication with supervisor (non-sensitive issues); suggestion/complaint boxes at work sites (anonymous); Contractor OHS Officer or HR; Supervision Consultant E&S Specialist; Puntland E&S Officer or PIU Safeguards Officer (direct contact or dedicated phone). SEA/SH complaints are handled through a dedicated confidential channel (female focal point, bypasses normal reporting chain).

Workers' Grievance Process

Step	Action	Responsible	Timeframe
1. Receipt	Log grievance; acknowledge to worker (written or verbal)	Receiving party	Within 24 hours
2. Assessment	Review nature, severity, resolution pathway; assign to responsible party	Site manager / Contractor HR / PIU	Within 48 hours
3. Investigation	Gather facts; interview complainant and relevant parties; review documentation	Designated investigator	5–10 working days
4. Resolution	Determine resolution; communicate to complainant; implement actions	Site manager / Contractor / PIU	Within 15 days total
5. Appeal	If complainant unsatisfied, escalate to PIU, then AfDB IRM	Complainant initiates	As needed
6. Close-out	Document resolution; verify actions implemented; close in register; inform complainant	PIU Safeguards Officer	Within 30 days maximum

MONITORING AND REPORTING — PUNTLAND LMP

Indicator	Target	Frequency	Reported By
Local hiring rate (unskilled, from project districts)	≥80%	Monthly	Contractor → Supervision Consultant → PIU
Women's participation rate in workforce	≥30% (appropriate roles)	Monthly	Contractor
Youth employment rate (ages 18–30, local)	≥20% of unskilled	Monthly	Contractor
Workers with written contracts	100%	Monthly	Contractor
Workers completing induction before starting	100%	Monthly	Contractor E&S Officer
Lost Time Injury Frequency Rate (LTIFR)	<5 per million hours worked	Monthly	Contractor → PIU
Fatalities	0	Immediate / Continuous	Contractor → PIU → AfDB
Heat stress incidents reported (Carmo priority)	0 untreated; track all	Monthly	Contractor E&S Officer
Child labour incidents	0	Immediate / Continuous	Contractor → PIU → AfDB
Forced labour incidents	0	Immediate / Continuous	Contractor → PIU → AfDB
Worker grievances received	Track all	Monthly	Contractor → PIU
Worker grievances resolved within 30 days	≥90%	Monthly	PIU Safeguards Officer
SEA/SH allegations received and actioned	Track; 100% actioned	Monthly (confidential)	PIU Director

Annex 4: Gender Analysis — Puntland

This Gender Analysis addresses the Puntland component in accordance with AfDB ISS 2023, OS7 and OS4. It draws on field consultations (December 2025–February 2026), national and Puntland-specific gender data, and published research on gender dynamics in Puntland's pastoral economy.

Key gender issues in Puntland:

women and girls bear primary responsibility for water collection (5–15 km during dry season, 3–6 hours daily); financial exclusion (74% women-owned businesses without bank accounts); voice and representation constraints (exclusively male-dominated water management committees); nomadic women's specific vulnerabilities (seasonal mobility, limited access to fixed meetings); climate change disproportionately affecting women; GBV and SEA/SH risk from worker influx.

Project gender targets: WUA ≥30% women membership and leadership; ≥30% women's participation in consultations and training; women-only consultation sessions at each milestone per district; female CLOs appointed per district; female GRM focal point and SEA/SH reporting channel operational; GBV referral pathways documented; ≥50% women's water collection time reduction by Year 2 O&M; financial literacy training for women WUA members.

AFDB SAFEGUARDS REQUIREMENTS

- OS7 (Vulnerable Groups): Requires identification of vulnerable groups including women and female-headed households; assessment of differentiated risks and barriers to benefit access; targeted measures for equitable participation and benefit sharing
- OS10 (Stakeholder Engagement): Requires inclusive engagement reaching women and vulnerable groups; separate consultation sessions where cultural norms limit mixed participation; accessible GRM with female focal points
- OS4 (Community Health, Safety, and Security): Requires prevention of SEA/SH; GBV prevention measures; worker Codes of Conduct; confidential reporting; referral pathways to survivor support services

- **KEY GENDER ISSUES — PUNTLAND**
- **Women's Role in Water Collection and Agriculture**
- Women and girls bear primary responsibility for household water collection across all four Puntland project districts. In Carmo and Qardho, collection distances can exceed 5–15 km during the dry season (Jilaal, December–March), consuming 3–6 hours per day. This time burden directly limits women's availability for agricultural production, income generation, rest, childcare, and participation in community decision-making processes including WUA governance. Women are central to subsistence agriculture and food production — managing sowing, weeding, harvesting, and local market sales — while men dominate land preparation and export market trade (FAO & UNDP, 2024). BBS Project water infrastructure directly addresses the time burden, and is the highest stated priority for women across all four Puntland districts.

- **Access to Finance and Economic Resources**

- Financial exclusion is severe for women in Puntland. Oxfam/SomReP (2022) found that 74% of women-owned businesses in Puntland have no bank accounts and are not legally registered, though 95% have mobile money accounts. Nationally, only 44% of women cannot qualify for bank loans, 29% cite limited financial literacy, 25% note banks requiring a male guarantor, and 20% lack collateral (FAO & UNDP, 2024). Less than 10% of the adult population nationally has bank accounts (World Bank, 2024). This financial exclusion has direct implications for WUA financial governance — specifically the capacity of women WUA members to participate in fee collection, record-keeping, and O&M financial management. Financial literacy training tailored to women WUA members is explicitly included in the BBS capacity building programme.

- **Voice, Representation, and Governance**

- In all four Puntland districts, community decisions on water allocation, land access, and infrastructure management are made by clan-based committees (oday-led) that are exclusively male-dominated. Consultations (January 2026) confirmed that no women are represented in existing informal water management committees at project sites. Women's decision-making at the household level is also constrained: 45% of women nationally report that husbands alone make decisions on major household purchases (Somalia NBS, 2020). Women's labour force participation is estimated at 23.1% compared to 73.6% for men nationally (ILO, 2019 via UN Women, 2022). Women hold only 20% of seats in Somalia's House of the People — below the 24% achieved in 2016 despite a 30% quota commitment (UN Women, 2022). In Puntland, the political representation situation is similar, though Puntland's 2021 elections saw some improvement in women's candidacy rates.

- **Nomadic Women's Specific Vulnerabilities**

- Nomadic and semi-nomadic women in Carmo and Qardho represent a distinct and particularly vulnerable subgroup. Their seasonal mobility makes them the hardest to reach through standard community meeting approaches. During drought periods — which are increasingly frequent — men typically migrate with livestock while women remain as de facto household heads with limited assets, higher water stress, and lower formal support. Only 59% of nomadic women nationally have mobile phones (Somalia NBS, 2020), compared to 75% among women overall. Mobile phone internet access is 17% nationally among women and significantly lower in nomadic pastoral communities. These constraints require differentiated engagement strategies including mobile outreach at seasonal watering points, communication through female elders, and O&M designs accommodating seasonal access rather than fixed schedules.

- **Climate Change and Gender Nexus**

  Women in Puntland are disproportionately exposed to climate risks. They depend more heavily on natural resources, have fewer assets to absorb shocks, and face additional burdens during droughts when water collection distances increase dramatically. The FAO/UNDP (2024) SCALA assessment confirms women farmers are more vulnerable to climate variability and benefit less from agricultural adaptation technologies due to access and information constraints. The BBS Project's climate adaptation measures — covered catchment

storage, sustainable borehole abstraction, and ICPAC forecast integration — specifically mitigate the water scarcity burden that falls disproportionately on women.

- **GBV and SEA/SH Risk in Puntland Project Context**

  Construction worker influx into rural and pastoral communities in Carmo, Qardho, Garowe, and Galkacyo North creates a material GBV and SEA/SH risk. Women's focus groups in all four districts (January 2026) explicitly raised concerns about worker behaviour and safety of women and girls near construction sites. Puntland has a more developed GBV response ecosystem than most Federal Member States — CARE International, Norwegian Refugee Council, Danish Refugee Council, and others operate in Garowe and maintain services including safe spaces, psychosocial support, case management, and legal aid. However, service availability thins considerably at district level (Carmo, Garowe/Galkacyo North, Qardho). GBV referral pathways must be formally mapped before mobilisation, including what services are available at district level versus requiring referral to Garowe.

- **KEY GENDER INDICATORS — PUNTLAND**

Indicator	Value	Source
Women reporting lack of finance as key barrier (nationally)	71%	FAO & UNDP, 2024
Women-owned businesses in Puntland without bank accounts	74%	Oxfam & SomReP, 2022
Women with mobile money accounts (Puntland)	95%	Oxfam & SomReP, 2022
Adult population with bank accounts (national)	<10%	World Bank, 2024
Women with mobile phone ownership (overall)	75%	Somalia NBS, 2020
Rural women with mobile phones	67%	Somalia NBS, 2020
Nomadic women with mobile phones	59%	Somalia NBS, 2020
Women who have ever used the internet	17%	Somalia NBS, 2020
Husbands alone make major household decisions	45%	Somalia NBS, 2020
Women in Somalia's House of the People	20%	UN Women, 2022
Women's labour force participation (ages 15–64)	23.1%	ILO, 2019 via UN Women, 2022
Men's labour force participation (ages 15–64)	73.6%	ILO, 2019 via UN Women, 2022
Maternal mortality ratio (Somalia)	621 per 100,000 live births	WHO, 2023
Primary gross enrolment rate — Puntland	~39%	UNICEF, 2024
Female-headed households in Puntland project areas (estimated)	~30%	PIU field estimate; January 2026 consultations

PROJECT GENDER TARGETS AND COMMITMENTS — PUNTLAND

Commitment	Target	Responsible	Timing
Women's WUA membership	≥30% of members across all 4 sites	PIU / CLOs	WUA formation
Women in WUA leadership (chairperson, treasurer, secretary)	≥30%	PIU / CLOs	WUA formation
Women's participation in consultations and training	≥30% at all sessions	CLOs	All phases

Women-only consultation sessions	At each milestone per district (3 per district minimum)	Female CLOs	All phases
Female CLOs appointed per district	At least 1 per district (Carmo, Garowe/Galkacyo North, Qardho)	PIU Safeguards Officer	Before mobilisation
Female GRM focal point and SEA/SH reporting channel	Operational per district before mobilisation	PIU / female CLOs	Before mobilisation
GBV referral pathways documented and operational	All four districts; district-level and Garowe-level pathways mapped	PIU Safeguards Officer	Before mobilisation
Women's water collection time reduction	≥50% reduction vs baseline for beneficiary women by Year 2 O&M	PIU / Supervision Consultant	Year 2 O&M monitoring
Financial literacy training — women WUA members	Dedicated session in all WUA capacity building programmes	PIU / Supervision Consultant	O&M phase
Quarterly E&S reports — gender disaggregation	All monitoring data sex-disaggregated; women's participation reported against targets	PIU Safeguards Officer	Quarterly

RECOMMENDATIONS FOR PUNTLAND IMPLEMENTATION

- Access to Resources: Coordinate with Puntland Ministry of Women Development and Family Affairs and active NGOs (CARE, SomReP) to link BBS women beneficiaries with existing savings groups (VSLAs), mobile money literacy programmes, and microfinance schemes operating in the four districts
- Water Collection Burden: Prioritise water point rehabilitation at the highest-burden sites identified through women's consultations; confirm time savings impact through baseline and Year 2 monitoring using household survey
- WUA Financial Management: Include dedicated women's financial management training in WUA capacity building; appoint women as WUA treasurers and financial committee members with support and mentoring
- Nomadic Women's Engagement: Develop and implement a mobile outreach strategy for Carmo and Qardho in partnership with female elders; conduct outreach at seasonal watering points twice per year aligned with pastoral calendar
- GBV Prevention and Response: Before any construction mobilisation in Puntland, formally map and document all available GBV referral services at district and Garowe level; brief all contractors; establish the female CLO hotline and confirm it is functional
- Social Norm Change: Support community dialogues on gender equality and water governance through existing NGO networks; engage male community leaders (oday, district officials) on women's inclusion in WUAs; create safe spaces for women's voices in water governance
- Monitoring: Conduct annual household surveys on women's water collection time, WUA participation, and reported safety at water points; disaggregate all monitoring data by sex; report findings to AfDB quarterly

Annex 5: Climate Risk Assessment — Puntland

This annex presents the Climate Risk Assessment for the Puntland component of the BBS Irrigation Project (4 sites; Carmo, Garowe/Galkacyo North, Qardho districts), prepared in accordance with AfDB ISS 2023 requirements for climate risk screening and adaptation planning. The assessment identifies climate hazards specific to Puntland's distinct agro-ecological settings — arid interior rangelands (Carmo, Qardho) and semi-arid interior rangelands (Garowe and Galkacyo North) — evaluates likelihood and potential impacts on project infrastructure and agricultural/pastoral productivity, and informs climate-resilient design and adaptation measures. The Woqooyi Galbeed and Awdal risk profiles in the main BBS ESIA most closely approximate conditions in the four Puntland districts.

PUNTLAND CLIMATE CONTEXT

All four project districts are dryland, non-riverine settings with no perennial rivers. Evapotranspiration (2,000–3,000 mm/year) substantially exceeds rainfall (150–450 mm/year) across all four districts, creating a chronic and severe water deficit. Carmo and Qardho are characterised by semi-arid interior rangeland conditions with bimodal rainfall (Gu: April–June; Deyr: October–December) and extended Jilaal (December–March) and Hagaa (July–September) dry seasons. Garowe/Galkacyo North is a coastal district on the Gulf of Aden: hot, arid, influenced by dry season winds, with extreme temperatures (>42°C common), very low rainfall (~150–250 mm/year), high winds, and unique salinity risks in shallow aquifers from coastal proximity. Project infrastructure — water catchments, boreholes, shallow wells, pipeline canals — is acutely sensitive to the dominant hazards of drought, heat stress, and high evaporation.

CLIMATE PROJECTIONS — PUNTLAND DISTRICTS (2021–2040)

Parameter	Projection (RCP8.5) — Puntland
Mean temperature increase (2021–2040)	+1.0°C to +1.2°C above 1991–2020 baseline
Mean temperature increase (2040–2060)	+1.4°C to +2.0°C above baseline
Very hot days (>40°C) — Carmo / Qardho interior	+10 to +20 additional days/year by 2040
Extreme heat days (>42°C) — Garowe/Galkacyo North coastal	+15 to +30 additional days/year by 2040; higher baseline risk than interior
Evapotranspiration increase	+10% to +15% — significantly above national average given extreme baseline aridity
Rainfall — Carmo / Qardho baseline	250–450 mm/year; highly localised and erratic
Rainfall — Garowe/Galkacyo North baseline	150–250 mm/year; among lowest in region
Gu season variability (interior)	±15–25% inter-annual variation; risk of consecutive failed Gu seasons rising
Drought frequency (interior)	Shifting from 1-in-4 years to 1-in-2–3 years by 2040
Extreme rainfall intensity	+10–20% increase in heavy rainfall event intensity; increased flash flood risk
Consecutive dry days	+8 to +20 additional dry days in drought years

DISTRICT RISK SUMMARY COMPARISON — PUNTLAND

District	Infrastructure Type	Flood	Heat	Drought	Highest Risk	Temp. Change	Priority Adaptation
Carmo	Boreholes / Catchments	H	VH	VH	Drought / Groundwater	+1.1°C	Drought-proofing; sustainable abstraction

District	Infrastructure Type	Flood	Heat	Drought	Highest Risk	Temp. Change	Priority Adaptation
Garowe/Galkacyo North	Shallow Wells / Boreholes / Pipeline	M–H	VH	VH	Heat / Salinity / Groundwater	+1.2°C	Salinity monitoring; covered wells; heat-adaptive design
Qardho	Boreholes / Catchments	H	VH	VH	Drought / Flash Flood	+1.1°C	Flood-resistant design; aquifer monitoring

KEY FINDINGS

Drought and Heat Stress: Co-dominant Very High risks across all four districts. Drought frequency is increasing sharply — multi-year droughts (2010–11, 2016–17, 2021–23) have repeatedly devastated pastoral livelihoods across Carmo, Qardho, and Garowe/Galkacyo North. By 2040, moderate droughts projected to occur every 2–3 years. Combined with increasing evapotranspiration (+10–15%), the BBS infrastructure will be critical to community resilience during these stress periods.

Groundwater Stress: All four districts depend exclusively on groundwater. Increased extraction from BBS infrastructure combined with declining recharge during prolonged droughts creates overextraction risk. Garowe/Galkacyo North is the most acute — shallow aquifers already experience salinity intrusion. Sustainable abstraction monitoring must be operational before borehole commissioning in all four districts.

Salinity Risk — Garowe/Galkacyo North Unique: Saltwater intrusion is a Very High impact risk for Garowe/Galkacyo North's 2 borehole and borehole sites if groundwater levels decline. This could render rehabilitated infrastructure unusable within the project's operational lifetime. All 2 borehole sites (Garowe and Galkacyo North) require baseline EC salinity measurement before rehabilitation commences.

Flash Flooding: Despite the arid climate, intense short-duration rainfall during Gu and Deyr seasons causes flash flooding in wadi systems — damaging catchment infrastructure and causing sedimentation. The projected 10–20% increase in extreme rainfall intensity heightens this risk in Carmo and Qardho.

Annex 6: Gender and Social Inclusion — Puntland

This annex provides the Gender and Social Inclusion (GSI) operational plan for the Puntland component of the BBS Irrigation Project (4 sites; Carmo, Garowe/Galkacyo North, Qardho). It translates findings from the Gender Analysis (Annex 4) into specific operational measures and indicators for implementation. It has been prepared in accordance with AfDB ISS 2023, OS7 (Vulnerable Groups) and OS4 (Community Health, Safety, and Security).

GSI MEASURES AND IMPLEMENTATION PLAN — PUNTLAND

Measure	Description	Timing	Responsible
Female CLOs — all four districts	At least one female CLO per district appointed before construction mobilisation. Serves as 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 (minimum: pre-construction, mid-construction, pre-O&M handover) facilitated by female CLO. Timing to avoid domestic duty conflicts. Location in accessible, safe venues.	All phases	Female CLOs
Nomadic women's mobile outreach — Carmo and Qardho	Mobile outreach at seasonal watering points twice per year (aligned with pastoral calendar); communication through female elders; SMS information where coverage exists.	From mobilisation, bi-annually	Female CLOs / PIU
WUA ≥30% women membership and leadership	Minimum 30% women in WUA membership and in leadership (chairperson, treasurer, secretary); embedded in WUA constitution template for all 4 sites; compliance monitored quarterly.	WUA formation	PIU / CLOs
IDP and minority non-discrimination — Garowe/Galkacyo North priority	Explicit non-discrimination in WUA membership rules; no clan, tenure, or residence eligibility requirements; IDP settlements in Garowe/Galkacyo North proactively engaged before WUA formation.	WUA formation	CLO Galkacyo North / PIU
GBV prevention — contractor worker influx	Code of Conduct prohibits SEA/SH; pre-mobilisation worker awareness sessions; worker accommodation with community separation protocols; zero-tolerance communicated publicly before works.	Before mobilisation	PIU / Contractor
SEA/SH reporting and Puntland NGO referral network	GBV referral pathways formally mapped using CARE, NRC, DRC Puntland networks before mobilisation; confidential reporting channel via female CLO; all cases to PIU Director within 24 hours; district and Garowe service levels documented.	Before mobilisation	PIU Safeguards Officer / female CLOs
Safe water point design	Location and design reviewed with women's groups; adequate lighting; privacy screening where required; separate livestock and human access points to reduce safety risks for women and girls.	Design phase	PIU Design Team
Youth employment targets	Minimum 20% of unskilled construction workforce from youth (18–30) per district; employment announcements before mobilisation; youth WUA committee representatives.	Construction	Contractor / PIU
Vulnerability screening for benefits targeting	Screening tool to identify female-headed households, IDPs, minority clans, persons with disabilities for targeted WUA membership outreach and livelihood support access.	Pre-construction and O&M	CLOs / PIU

Measure	Description	Timing	Responsible
Financial literacy training — women WUA members	Dedicated session in all WUA governance training covering financial record-keeping, fee management, and bank/mobile money use; linked to Puntland women's financial inclusion programmes where available.	O&M phase	PIU / Supervision Consultant
Gender-disaggregated monitoring	All monitoring data sex-disaggregated and reported by stakeholder type (nomadic vs settled, IDP, etc.); included in quarterly E&S reports to AfDB.	All phases	PIU Safeguards Officer

GSI MONITORING INDICATORS — PUNTLAND

Indicator	Target	Frequency	Responsible
Women's WUA membership across all 4 Puntland sites	≥30%	At formation; annually	PIU / CLOs
Women in WUA leadership (chair, treasurer, secretary)	≥30%	At formation; annually	PIU / CLOs
Women's participation in community consultations (mixed)	≥30%	Per event	CLOs
Nomadic women reached through mobile outreach	Track; ≥1 session/district/pastoral season	Bi-annually	Female CLOs
Youth employment (local, ages 18–30) in construction	≥20% unskilled workforce per district	Monthly during construction	Contractor / PIU
IDP / minority clan representation — Garowe/Galkacyo North WUAs	Proportionate; no exclusion incidents	At formation; annually	CLO Galkacyo North / PIU
SEA/SH allegations received and referred to services	Track all; 100% referral within 24 hours	Monthly (confidential)	PIU Director / female CLOs
GBV referral pathways operational before construction	Binary milestone — all four districts	Pre-construction	PIU Safeguards Officer
Female-headed households accessing project benefits	Track via vulnerability screening	Semi-annually	CLOs / PIU
Average water collection time reduction for women	≥50% vs baseline by Year 2 O&M	Annually from Year 1 O&M	PIU / Supervision Consultant

Annex 7: Chance Finds Procedure

This Chance Finds Procedure applies to all BBS Project components including the 4 Puntland sites. It has been prepared in accordance with AfDB ISS 2023, OS1. A 'chance find' is any archaeological, palaeontological, cultural, historical, or religious artefact discovered unexpectedly during ground-disturbing works.

STEP-BY-STEP PROCEDURE

Step 1: Immediate Stop-Work

Any worker discovering a potential chance find must immediately stop all ground-disturbing works within a minimum 20-metre radius. All machinery is powered down. Work may continue in unaffected areas. This obligation applies to all workers including community workers and subcontractors.

Step 2: Secure the Area

Cordon off the discovery area with barrier tape. Restrict access to the discoverer and direct supervisor only. Do not move, handle, clean, or further disturb the find. Take photographs from at least 4 directions. Prepare a rough sketch map of discovery location relative to site infrastructure.

Step 3: Notify Site Supervisor

Notify Site Supervisor within 1 hour. Supervisor records in site logbook: date, time, GPS coordinates, discoverer name and role, description of find (material, dimensions, condition, context), photographs taken, and area of stop-work.

Step 4: Notify PIU E&S Officer and Puntland E&S Officer

Site Supervisor notifies PIU E&S Officer and Puntland E&S Officer within 4 hours, sharing all documentation from Steps 2–3. PIU E&S Officer notifies Supervision Consultant and logs in central register.

Step 5: Notify Puntland Cultural Authority

PIU E&S Officer notifies Puntland Ministry of Education and Higher Education within 24 hours of discovery. Written notification includes: site name and GPS coordinates, date, description of find, photographs, and current stop-work status. Federal Ministry of Education, Culture, and Higher Education also notified for federal reporting.

Step 6: Expert Inspection

Puntland Ministry of Education personnel or appointed expert must inspect the site within 7 working days of notification. PIU facilitates site access and provides all documentation. Inspector's written assessment governs all subsequent actions.

Step 7: Determination and Action

Three outcomes: (a) No significant heritage value — stop-work lifted; works resume. (b) Significant but manageable — documentation completed (photographs, drawings, context recording); protective measures defined; clearance from authority before works resume in affected area. (c) Major significance — extended stop-work; PIU commissions a cultural heritage management plan in consultation with Puntland Ministry; works do not resume until plan approved.

Step 8: Reporting

All chance finds reported in next monthly E&S report to PIU regardless of significance. Significant finds reported to AfDB within 7 days of discovery; outcome update within 30 days.

PUNTLAND-SPECIFIC CONSIDERATIONS

Puntland's long history of human habitation, ancient trade routes (Berbera–Garowe corridor and inland pastoral society connections), and Islamic cultural heritage means the probability of chance finds is not negligible, particularly during excavation. The Puntland Ministry of Education and Higher Education will be formally notified of the project's commencement before any ground-disturbing works begin. The Puntland E&S Officer maintains up-to-date contact details for the Ministry's cultural heritage division to ensure the 24-hour notification requirement can be met regardless of site location.

WORKER TRAINING

All construction workers — including subcontractors and community workers — receive Chance Finds Procedure training during induction before ground-disturbing works begin. Training covers: types of chance finds; mandatory stop-work obligation; 20m cordon; reporting chain; prohibition on touching, moving, or selling finds; Puntland cultural heritage context; disciplinary consequences of non-compliance. Attendance recorded; each worker signs acknowledgement.

PROHIBITION ON RETENTION AND SALE

Workers are strictly prohibited from retaining, handling, moving, selling, or dealing with any chance find. Violation results in immediate termination and referral to Puntland law enforcement authorities. This prohibition is included in employment contracts and the Individual Code of Conduct.

CHANCE FIND NOTIFICATION FORM

Site Name: District (Carmo / Qardho / Garowe / Galkacyo North):

GPS Coordinates (N): (E):

Date of Discovery: Time of Discovery:

Name and Role of Discoverer:

Description of Find (material, colour, dimensions, condition, depth below surface):

Context (loose in soil / embedded / associated with other items / proximity to existing structures):

Photographs taken (Yes / No): Number:

Sketch map attached (Yes / No):

Works stopped — area and radius:

Site Supervisor notified (time): Name:

PIU / Puntland E&S Officer notified (time): Name:

Puntland Ministry of Eduction, Culture, and Higher Education notified (date):

Site cleared for works to resume (date, authority clearance reference):

Annex 8: Environmental and Social Monitoring Plan — Puntland

This ESMP monitoring plan specifies indicators, methods, responsibilities, and triggers for the 4 Puntland sites (Carmo, Garowe/Galkacyo North, Qardho) during construction and operation phases.

It specifies monitoring indicators, methods, responsibilities, reporting requirements, and trigger standards for construction and operation phases. This plan supplements the project-wide ESMP in the main BBS ESIA and incorporates Puntland-specific parameters — in particular groundwater and groundwater monitoring for Garowe and Galkacyo North borehole sites, catchment sedimentation for Carmo and Qardho, and heat safety for all workers, and pastoral community social monitoring.

ENVIRONMENTAL MONITORING — PUNTLAND

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Water quality — supply points	Turbidity (NTU), pH, E. coli (CFU/100ml), total coliforms, nitrates (mg/l), electrical conductivity (EC, µS/cm)	6-monthly during O&M; within 72 hours of any contamination incident or flood event	All rehabilitated boreholes, shallow wells, and catchments across 4 sites	PIU E&S Officer / contracted Garowe laboratory	WHO drinking water guidelines; EC <750 µS/cm for drinking water; Garowe/Galkacyo North alert if EC rising above this threshold
Salinity monitoring — Garowe/Galkacyo North (PRIORITY)	EC at each well/borehole; trend analysis for progressive salinity; comparison to pre-rehabilitation baseline	Monthly Year 1; 6-monthly thereafter; additional if EC approaches threshold	All 2 borehole sites (Garowe and Galkacyo North); baseline established before works begin	Puntland E&S Officer / WUA technical committee / contracted laboratory	Alert: EC >1,500 µS/cm; Action: abstraction suspension + assessment. Pre-works baseline mandatory.
Groundwater levels — all boreholes	Static water level (SWL); seasonal trend; comparison to safe yield estimate	Quarterly (dry + wet) during construction; bi-annually during O&M	All project boreholes across 4 districts; data shared with PSAWEN	Contractor (construction); WUA + CLO (O&M); annual survey by Supervision Consultant	Alert: SWL progressive decline >0.5m/year; reduce abstraction to 60% safe yield pending assessment
Catchment sedimentation — Carmo and Qardho	Visual inspection and depth sounding of catchment storage volumes; sedimentation rate	Bi-annually (before Gu; after Deyr); spot check after major storm	All catchments (1 Carmo + 1 Qardho = 2 catchment sites)	WUA / CLO inspection; annual measurement by Supervision Consultant	Trigger desiltation if storage volume reduced >15% from post-construction baseline
Soil erosion — construction sites	Visual inspection; rill/sheet erosion on embankments; vegetation recovery on disturbed areas	Monthly during construction; quarterly during O&M	All excavation and earthworks sites; 50m buffer	Contractor E&S Officer; Puntland E&S Officer (quarterly audit)	Zero significant erosion beyond approved footprint; trigger remediation if rill erosion detected
Dust and air quality	Visual dust assessment at site boundaries; community-reported dust events; wind log at Garowe/Galkacyo North (dry season)	Weekly during active earthworks; after dust events	Site boundaries; nearest settlements within 500m; wind monitoring during dry season	Contractor E&S Officer	No persistent visible dust beyond site boundary; 3+ community complaints triggers mitigation review

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Vegetation and rangeland disturbance	Area cleared beyond approved footprint; invasive species; rangeland recovery	Pre-construction baseline; monthly during construction; annually O&M	50m buffer around all sites; wider rangeland transects in Carmo and Qardho	Supervision Consultant (baseline and annual); Contractor E&S Officer (monthly)	Zero clearance beyond approved footprint; no invasive species establishment
Borehole drilling waste (mud / cuttings)	Volume, composition, and disposal method; soil contamination at disposal site	Per borehole	All borehole drilling sites	Contractor Drilling Supervisor	100% to designated disposal site; no soil contamination confirmed before site clearance
Hazardous materials and waste	Fuel/lubricant storage and handling; spill incidents; chemical waste segregation	Monthly audit; immediate for any spill	All sites with fuel storage	Contractor E&S Officer	Zero untreated spills; spill kit present at all fuel storage; 100% waste to approved sites

SOCIAL AND LABOUR MONITORING — PUNTLAND

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Community GRM performance	Grievances received by type and district; resolution timeframe; Level at which resolved; complainant satisfaction (sample interviews)	Monthly log; quarterly analysis	GRM register; CLO monthly reports; sample complainant follow-up	Puntland E&S Officer / PIU Safeguards Officer	≥80% resolved within specified timeframe; no grievance open >60 days without written justification
Water allocation disputes — O&M phase	Disputes received by WUAs; type; resolution rate and time; escalations	Monthly during O&M	WUA dispute logs; CLO reports	WUAs / CLOs	≥90% resolved at WUA level within 14 days; escalations tracked
Labour and employment	Total workforce; % local per district; % youth (18–30); % women; wages; working hours; child labour checks	Monthly during construction	Contractor workforce records; payroll spot checks; site verification	Supervision Consultant / PIU	≥80% local unskilled; ≥20% youth; ≥30% women in appropriate roles; zero wage violations; zero workers under 18
Women's WUA participation	Women % of membership; women in leadership; attendance at WUA meetings (disaggregated)	At formation; quarterly	WUA membership registers; meeting minutes	CLOs / Puntland E&S Officer	≥30% membership; ≥30% leadership; improving trend
Nomadic women's engagement	Mobile outreach sessions per district per season; nomadic women reached; issues raised; follow-up	Bi-annually (per pastoral season)	Female CLO records; outreach logs	Female CLOs	≥1 session per district per pastoral season; issues documented
IDP and minority	IDP and minority clan	At formation;	WUA records;	CLO Galkacyo	No exclusion

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
group inclusion — Garowe/Galkacyo North	members in Garowe/Galkacyo North WUAs; water point access; exclusion complaints	annually	GRM reports; CLO field verification	North / PIU	incidents; at least proportionate IDP representation in Garowe/Galkacyo North WUAs
SEA/SH allegations	Number received; referral to services within 24 hours; outcomes (confidential register)	Monthly confidential report to PIU Director	Female CLO records; PIU SEA/SH focal point	PIU Director / female CLOs	100% referred within 24 hours; zero unaddressed reports
Heat stress incidents — Garowe/Galkacyo North priority	Heat-related illness cases; compliance with mandatory 12:00–15:00 rest period; water provision	Monthly; immediate for serious heat illness	Site incident register; Contractor OHS Officer	Contractor E&S Officer / PIU	Zero untreated heat illness cases; compliance with rest period 100% during summer
OHS incidents	Fatalities; LTIs; near misses; first aid; investigation completion	Monthly; immediate for LTI/fatality	Site incident register; contractor reports	Contractor E&S Officer / PIU	Zero fatalities; LTI rate <3/200,000 hours; 100% incidents investigated within 7 days
Child labour	Age verification records; quarterly spot checks	Monthly records; quarterly spot check	Contractor employment records; Supervision Consultant audit	Supervision Consultant / PIU	Zero workers under 18 on any site
WUA O&M performance	WUAs operational; meetings held; O&M maintenance tasks completed; fees collected; financial records maintained	Quarterly from first O&M season	WUA records; CLO verification	CLOs / Supervision Consultant	All commissioned WUAs operational at 12 months; maintenance schedule ≥80% compliant
Water access outcomes — beneficiary communities	Households with improved access; average water collection distance/time (women); % functional water points year-round	Annually from Year 1 O&M	Household sample survey (≥20 per district); CLO monitoring	PIU / Supervision Consultant	Average collection time ≥50% reduction for beneficiary women by Year 2 O&M; ≥90% functional year-round

REPORTING REQUIREMENTS

Monthly Reports: Contractor E&S Officer submits monthly E&S reports to Supervision Consultant and Puntland E&S Officer covering: environmental monitoring results; waste management; OHS incident log; workforce data (disaggregated); GRM cases; groundwater quality monitoring data (Garowe/Galkacyo North); and any Chance Find notifications.

Quarterly E&S Reports: PIU Safeguards Officer compiles quarterly E&S reports integrating all BBS components including Puntland for AfDB, covering: monitoring results against indicators; corrective actions; grievance statistics; stakeholder engagement; and ESMP updates.

Puntland State Reporting: Puntland E&S Officer provides quarterly monitoring summaries to PSAWEN (Puntland State Agency for Water, Energy and Natural Resources) and, where required, Ministry of Environment and Climate Change.

Incident Reports: Serious incidents (fatality, serious injury, significant environmental incident, SEA/SH allegation) reported to AfDB within 48 hours; full investigation report within 7 days.

Annual Review: ESMP reviewed annually by PIU and Puntland E&S Officer; updated to reflect monitoring findings, groundwater level trends (Garowe and Galkacyo North), groundwater level data, and project scope changes.

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

This Training Plan covers the Puntland component (4 sites; Carmo, Qardho, Garowe, Galkacyo North). It specifies training requirements for construction workers, CLOs, WUA members, and institutional stakeholders during construction and operation phases. Training is an essential element of the ESMP, and is tailored to Puntland's specific institutional context, pastoral livelihoods setting, extreme heat environment at Garowe/Galkacyo North, and salinity/groundwater management requirements.

TRAINING OBJECTIVES

- Ensure all construction workers comply with OHS requirements, Code of Conduct, and Labour Management Procedures before commencing works
- Prevent SEA/SH and GBV through clear prohibition communication, referral pathway awareness, and zero-tolerance enforcement
- Build capacity of 68 WUAs in Carmo, Qardho, Garowe, and Galkacyo North to govern, operate, and maintain rehabilitated water infrastructure
- Equip CLOs and focal points with skills for gender-inclusive engagement, GRM implementation, and social inclusion monitoring
- Develop specialised technical capacity for groundwater quality and level monitoring at Garowe and Galkacyo North borehole sites and groundwater monitoring at all borehole sites
- Build institutional capacity of PSAWEN (Puntland State Agency for Water, Energy and Natural Resources) and district authorities for E&S safeguards oversight

TRAINING PROGRAMME — CONSTRUCTION PHASE

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 obligation; waste management; reporting obligations	Before first day of ground-disturbing works; repeated for each new worker	Contractor E&S Officer / Puntland E&S Officer	Signed induction acknowledgement per worker; attendance register
Occupational Health and Safety	All workers, supervisors, drilling crew	Site-specific OHS hazards; PPE selection and use; emergency procedures; incident reporting; first aid; dehydration and heat stress prevention	Monthly toolbox talk; full OHS refresher quarterly; drilling safety before each borehole campaign	Contractor OHS Officer / designated first-aider	Monthly toolbox log; OHS incident register
Heat Safety — Priority: All sites; Critical at Garowe/Galkacyo North	All workers; mandatory special briefing for Garowe/Galkacyo North crew	Recognition of heat stress and heat stroke; mandatory rest 12:00–15:00 at Garowe/Galkacyo North April–September; minimum 3L water per worker per	Induction; monthly toolbox at Garowe/Galkacyo North during April–September; seasonal briefing before Jilaal and Hagaa hot	Contractor OHS Officer	Heat safety protocol posted at Garowe/Galkacyo North sites; monthly observation records

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
		day; shade requirements; emergency response; buddy system	periods		
SEA/SH Prevention and Code of Conduct	All workers, supervisors, site managers, CLOs	SEA/SH definitions and examples; Code of Conduct obligations; confidential reporting channel; consequences (immediate dismissal); community interaction norms; pastoral community protocols	Pre-mobilisation (full session); quarterly refresher	PIU Safeguards Officer / female CLO; GBV specialist from Puntland NGO network	Signed CoC per worker; training attendance record
Chance Finds Procedure	All construction and drilling workers, supervisors	What constitutes a chance find; stop-work obligation; 20m cordon; reporting chain; prohibition on touching or removing finds; Puntland cultural heritage context	During worker induction; refresher if find occurs	Contractor E&S Officer / Puntland E&S Officer	Induction sign-off; procedure awareness tested
Borehole Drilling Environmental Controls	Drilling supervisors, excavation crews, site managers	Drilling waste management (mud, cuttings); spill prevention and response; soil erosion controls; dust suppression; wellhead protection	Before each drilling campaign; before significant earthworks	Contractor E&S Officer / PIU E&S Officer	Pre-works environmental induction record; drilling waste disposal logs
GRM Worker Awareness	All workers	GRM uptake channels; how to raise workplace complaint; confidentiality; protection from retaliation; workers' GRM contacts; anonymous channels	Worker induction; GRM channel posters at all sites throughout construction	Contractor E&S Officer / CLOs	GRM poster at all sites; worker knowledge check

TRAINING PROGRAMME — COMMUNITY AND INSTITUTIONAL

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
WUA Governance and Water Management	WUA members (4 sites; ≥30% women); district water officers	WUA roles/responsibilities; water allocation rules (livestock and household); record-keeping; financial management; conflict resolution; fee collection; O&M cost recovery; referral to CLOs and focal points	Intensive 2-day formation workshop per site cluster before O&M handover; annual refresher per district	PIU / Supervision Consultant / PSAWEN extension officers	WUA formation records; training attendance (sex-disaggregated); WUA constitution adopted
Technical O&M	WUA technical	Borehole pump operation	Intensive 3-day	Supervision	O&M manual

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
— Boreholes and Catchments	committee; district water officers; PSAWEN technical staff	and maintenance; wellhead inspection; catchment desiltation procedures; minor repair; fault diagnosis; when to escalate; maintenance scheduling	hands-on before O&M handover; 12 months on-the-job mentoring in first season	Consultant / Contractor snag period; PSAWEN	distributed; training attendance; first-season O&M log reviewed quarterly
Groundwater Quality Monitoring — Garowe/Galkacyo North Specialists	WUA technical members at all 2 borehole sites (Garowe and Galkacyo North); CLO Garowe/Galkacyo North; PSAWEN district liaison	EC meter operation; recording and reporting; alert thresholds (>1,500 µS/cm) and action protocols; understanding salinity intrusion risk; escalation pathway; suspension protocol	2-day training before O&M handover at Garowe/Galkacyo North; semi-annual refresher; 6-month on-site mentoring	Puntland E&S Officer / Supervision Consultant / water quality specialist	EC meter competency assessed; monitoring log template distributed; first 6 months data reviewed
Groundwater Level Monitoring — All Boreholes	WUA technical members at borehole sites; CLOs; district water officers	SWL measurement; recording; seasonal trend interpretation; alert threshold (>0.5m/year decline); reporting to CLO and Puntland E&S Officer	1-day before O&M handover; annual refresher	Supervision Consultant / PSAWEN	SWL log template in use; first season data reviewed
SEA/SH Prevention and GBV Referral — Community	WUA members, community leaders (oday, female elders), CLOs, women's groups	Project GBV prevention commitments; how to report SEA/SH safely; available services (CARE, NRC, DRC Puntland — district and Garowe levels); community's role in monitoring worker conduct	Before construction mobilisation; at mid-construction; at O&M handover	Female CLO / PIU Safeguards Officer / Puntland NGO GBV specialist	Meeting records; GBV referral pathway document in Somali language distributed
Gender and Social Inclusion — CLOs and E&S Staff	Female and male CLOs (4 districts); Puntland E&S Officer; PIU Safeguards Officer	Gender analysis tools for Puntland pastoral context; nomadic women outreach methods; IDP inclusion; vulnerability identification; GSI monitoring indicators; data reporting accuracy	3-day intensive before mobilisation; quarterly coaching with Puntland E&S Officer	PIU Safeguards Officer / external gender specialist where available	Training completion record; GSI monitoring data quality review quarterly
GRM Implementation — CLOs and Focal Points	CLOs (4 districts); district focal points; WUA GRM liaisons	GRM tiered process; grievance logging; confidentiality; investigation steps; escalation protocols; SEA/SH separate pathway; monthly reporting to Puntland E&S Officer	2-day before mobilisation; refresher every 6 months	Puntland E&S Officer / PIU Safeguards Officer	Training record; GRM register quality review monthly
Climate-Smart Water Management and ICPAC Forecasts	WUA members (4 sites); CLOs; district water and agriculture officers; PSAWEN	Climate change impacts on Puntland water infrastructure; accessing ICPAC forecasts; drought contingency planning; early warning signs; contingency budget protocols; groundwater quality monitoring linkages	Integrated into WUA O&M training; annual refresher per district	PIU / Supervision Consultant / ICPAC liaison if feasible	Training records; evidence WUAs reference ICPAC forecasts in O&M logs from Year 2
AfDB Safeguards Awareness — Institutional	PSAWEN staff; Ministry of Environment and	AfDB ISS 2023 overview; project E&S obligations; quarterly reporting	1-day workshop before commencement;	PIU Director / AfDB project team	Workshop record; participants list; E&S report quality

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
	Climate Change; district administration; PIU Puntland staff	requirements; AfDB IRM; Puntland's coordination role	annual refresher		review

TRAINING MONITORING AND REPORTING

The Contractor E&S Officer and Puntland E&S Officer are jointly responsible for ensuring all training is delivered as scheduled and documented. A centralised training register covers: topic, date, location, facilitator, number of participants (sex-disaggregated), attendance sheets, and competency assessment results. Training performance is reported in quarterly E&S reports to AfDB. This Training Plan is reviewed annually alongside the ESMP.

TRAINING BUDGET ESTIMATE — PUNTLAND

Training Activity	Estimated Cost / Scope	Budget Source
Worker E&S induction and monthly OHS toolbox (4 districts, all sites)	Contractor cost (included in contract BoQ)	Contractor
Heat safety protocol development and toolbox materials — Garowe/Galkacyo North special	$500 (one-time materials)	PIU budget
SEA/SH prevention training — workers (Puntland NGO facilitator; 3 district sessions)	$3,000 (before mobilisation)	PIU budget
GBV referral pathway mapping and documentation — Puntland NGO network	$1,500 (one-time before mobilisation)	PIU budget
WUA governance training — 2-day workshop per district cluster (3 clusters)	$2,000 × 2 = $4,000	PIU / Supervision Consultant
Technical O&M training — 3-day hands-on per district cluster (3 clusters)	$2,500 × 2 = $5,000	PIU / Supervision Consultant
Salinity monitoring training — Garowe/Galkacyo North (2-day specialist + EC meter provision)	$1,500 + equipment	PIU budget
Groundwater level monitoring training — 1-day per district (4 districts)	$800 × 2 = $1,600	PIU budget
CLO and focal point GSI and GRM training — 3-day pre-mobilisation (4 districts)	$3,000	PIU budget
Community SEA/SH awareness sessions — 3 rounds × 4 districts	$2,500 total	PIU budget
Climate-smart water management — annual WUA refresher (4 districts)	$1,200/year	PIU O&M budget
AfDB safeguards awareness — Puntland government and PIU	$1,200 (before commencement)	PIU budget
Contingency / ad hoc training	$2,500	PIU budget
TOTAL (estimated, over project life)	~$28,000	

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
Puntland site-specific designs	Reviewed engineering archives	No dedicated Eldahir, Ado, Garwowe_Bixin or Gacnafale construction package located.	Do not present generic drawings as site-specific; confirm pre-construction design.

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.
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

Control Item	Required Evidence / Action	Responsible
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