



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

SOUTHWEST STATE

HUDUR, MARKA, AND QANSAX DHERE DISTRICTS - 22 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	South West State - Hudur District (Bakool region), Marka District (Lower Shabelle region), and Qansax Dhere District (Bay region) - 22 sites total

DECLARATION PAGE

This Environmental and Social Impact Assessment (ESIA) Report has been prepared for the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project in Southwest State, covering 22 water infrastructure sites across Hudur District (Bakool region), Marka District (Lower Shabelle region), and Qansax Dhere District (Bay 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	
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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 – South West State Component
Proponent / Borrower	Ministry of Agriculture and Irrigation (MoAI), Federal Republic of Somalia
Financier	African Development Bank (AfDB)
AfDB E&S Categorization	Category 2 under the African Development Bank Integrated Safeguards System (ISS, 2023).
Geographic Scope	Hudur District (Bakool Region), Marka District (Lower Shabelle Region) and Qansax Dhere District (Bay Region)
Project Sites	22 sites: 8 water catchments, 7 irrigation canals, 6 boreholes and 1 dug well
Works Status	16 rehabilitation works and 6 new works (5 boreholes and 1 dug well)
Field Verification	December 2025 - February 2026, supplemented by project screening, stakeholder consultation and final project-scope verification.
Indicative Safeguards Budget	USD 262,900 over four years, exclusive of contractor ESHS costs to be 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 South West State component addresses chronic water insecurity, drought and food-security stress in the dryland interior, deterioration of groundwater and rainwater-harvesting infrastructure, and impaired irrigation performance in the Lower Shabelle riverine corridor. These conditions are compounded by recurrent climate shocks, displacement, weak service and market systems, and security constraints that affect both livelihoods and project implementation.

The component covers 22 sites in Hudur, Marka and Qansax Dhere and is the most typologically diverse of the state-level BBS packages reflected in the ESIA. Hudur combines dryland water catchments, boreholes and a dug well; Marka combines seven irrigation-canal rehabilitation sites and three water catchments in the Lower Shabelle setting; and Qansax Dhere combines two water catchments and one new borehole. The package therefore requires a safeguards approach that differentiates dryland groundwater and catchment risks from riverine irrigation, flood, water-allocation and security risks.

2. Purpose, Scope and Approach of the ESIA

The ESIA supports environmental and social decision-making by the AfDB, MoAI, South West State institutions, district administrations and affected communities. It identifies and evaluates environmental and social risks and impacts, applies the mitigation hierarchy, defines management and monitoring measures, identifies pre-construction studies and hold points, and establishes responsibilities and financing through the

Environmental and Social Management Plan (ESMP). The assessment covers pre-construction and mobilization, construction, commissioning, operation and maintenance, and demobilization and reinstatement of temporary works.

Where final hydrogeological, hydraulic, land-access, coordinate or site-specific parameters depend on pre-construction verification, this ESIA assigns them to binding C-ESMP, technical-assessment and hold-point requirements that must be completed before the affected works proceed.

3. Project Components and Locations

DISTRICT / REGION	SITES	INFRASTRUCTURE	SITES / VILLAGES
Hudur – Bakool	9	3 water catchment rehabilitations; 5 boreholes (4 new, 1 rehabilitation); 1 new dug well	Warjanaay, Salah-bib, Wardhoto, Waneey, Sheikh Aways, Godow, Gomoro, Banjanay and Laame Looshe
Marka – Lower Shabelle	10	7 irrigation-canal rehabilitations; 3 water catchment rehabilitations	Sar Adde Canals 19 & 20; Kaaytoy Canals 21 & 22; Doobis Canals 23 & 24; Kamirow Canal; Bufow Ba’ad Catchments 26, 27 & 28
Qansax Dhere – Bay	3	2 water catchment rehabilitations; 1 new borehole	Raydable, Aydura and Ceel Hindi

4. AfDB Environmental and Social Categorization and Operational Safeguards

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

OPERATIONAL SAFEGUARD	STATUS	SOUTH WEST STATE RELEVANCE
OS1	Applicable	Overall assessment and management, screening, climate/security considerations, cumulative effects, mitigation, monitoring and adaptive management.
OS2	Applicable	Labour and working conditions, including drilling, dug-well/confined-space, canal, excavation, heat and contractor-worker management.
OS3	Applicable	Groundwater sustainability, construction water, sediment/spoil, drilling fluids, fuel/chemicals, waste, water quality and resource efficiency.
OS4	Applicable	Community health, safety and security, water safety, traffic, vectors, SEA/SH-related community protection, emergency response and the Lower Shabelle security context.
OS5	Precautionary / site-specific	Five new boreholes, one new dug well and temporary access/support areas; screening and documented access required, with reassessment if displacement or material livelihood loss is identified.
OS6	Precautionary / verification	No critical habitat is identified in the available screening as a defining project feature; footprint, riparian and vegetation controls remain required.
OS7	Applicable	Women, female-headed households, IDPs/returnees, minority clans, poor agro-pastoral/farming households, pastoralists, youth and tail-end irrigation users.

OPERATIONAL SAFEGUARD	STATUS	SOUTH WEST STATE RELEVANCE
OS8	Precautionary / verification	Chance-find risk from drilling, excavation, desilting and other earthworks; project Chance Finds Procedure applies.
OS9	Not applicable	No financial intermediary structure is involved.
OS10	Applicable	Consultation, disclosure, grievance redress, conflict-sensitive engagement and differentiated outreach.

5. Policy, Legal and Institutional Framework

The project is governed by the Federal Republic of Somalia environmental, labour, water, land, public-health and sector policy framework; South West State and district administrative arrangements; relevant international obligations; and the AfDB ISS 2023. The ESIA identifies important implementation gaps, including the absence of a complete modern land-acquisition framework equivalent to OS5, limited modern OHS provisions in the Labour Code, a still-developing environmental permitting system, the absence of a functioning comprehensive abstraction-licensing regime, and limited project-level national requirements for continuous stakeholder engagement and grievance redress. The AfDB safeguards and project instruments therefore operate as the minimum binding project standard where the national or state framework is less specific.

Institutional responsibilities are shared among the MoAI PIU, relevant federal institutions, South West State ministries and district administrations, contractors, the Supervision Consultant, Community Liaison Officers, Water User Associations and water-user groups. Lower Shabelle additionally requires close coordination on security and conflict-sensitive implementation, while the groundwater and catchment districts require technical capacity for hydrogeology, water quality, source sustainability and water-point maintenance.

6. Analysis of Alternatives and Design Rationale

The alternatives analysis considers the no-project option, location and siting, technology/design, construction methods and scheduling, and environmental and social risk-avoidance choices. The no-project option would leave deteriorated catchments, groundwater infrastructure and irrigation canals in service with continued water losses, unreliable supply, sedimentation, inadequate storage and persistent livelihood vulnerability. The preferred project alternative therefore remains rehabilitation of viable existing assets together with the six confirmed new groundwater works, subject to siting and safeguards verification.

The preferred design approach uses intervention-specific measures: catchment rehabilitation focused on restoring storage and erosion/sediment control; borehole and dug-well systems subject to hydrogeological confirmation, source protection and sustainable-yield management; and canal rehabilitation focused on hydraulic function, bank and structure integrity, continuity of irrigation supply and head-to-tail equity. The design chapter also requires climate-resilient design, functional separation of domestic and livestock use where provided, safe public access, and confirmation of final dimensions and technical parameters before construction. Detailed design values are not extrapolated from one site to another without an approved drawing.

7. Environmental and Social Baseline

7.1 Environmental Setting

The project spans two contrasting agro-ecological contexts. Hudur and Qansax Dhere lie in the semi-arid Bay-Bakool dryland setting, where water security depends on seasonal rainfall, water catchments and groundwater and where drought, high evaporation and reduced recharge are major constraints. Marka lies in the Lower Shabelle riverine floodplain, where irrigated agriculture depends on established canal systems and where Shabelle flooding, sedimentation, irrigation access and security conditions are material baseline factors.

The project climate assessment characterises overall climate risk as Very High. Agricultural drought and extreme heat/evaporation are rated Very High, groundwater stress is rated Very High, and Shabelle riverine flooding is rated High. The project therefore treats groundwater yield, drought resilience, heat safety and Lower Shabelle flood exposure as controlling design and management considerations. The climate assessment indicates residual climate risk remains Moderate after adaptation measures are applied.

7.2 Livelihoods, Vulnerability and Fragility

Hudur is characterised in the qualitative production assessment as a rain-fed agro-pastoral setting with sorghum, maize and cowpea and relatively weak market connectivity. The Lower Shabelle/Janaale corridor is an irrigated and more commercially connected setting in which maize, sesame, vegetables and banana are identified among priority crops, but performance remains constrained by water governance, input costs, pests and trader dominance. Across the project area, livelihoods remain highly sensitive to water availability, climate shocks, insecurity and infrastructure condition.

The social baseline identifies women and female-headed households, IDPs and returnees, minority-clan households, poor agro-pastoral and farming households, pastoralists, youth, persons with disabilities and tail-end irrigation users as groups that may face differentiated risks or barriers. Women and youth face structural constraints in land, finance, technical training, market participation and decision-making; women and girls also carry substantial water-collection responsibilities. Security is a material contextual condition, particularly in Lower Shabelle, and can constrain supervision, mobility, maintenance and emergency response.

7.3 Baseline Data Gaps

These limitations do not justify unsupported assumptions. They are managed through binding pre-construction and C-ESMP requirements, including Qansax Dhere site verification, groundwater investigations, canal/catchment condition assessments and confirmation of site identities and coordinates before the affected works proceed.

8. Stakeholder Engagement and Key Issues Raised

Stakeholder engagement was integrated into the ESIA and was conducted across the three districts during field verification and subsequent scope confirmation. Engagement included South West State and district authorities, community leaders and elders, farmers and water-user groups, women and female-headed households, IDPs and returnees, minority-clan households, pastoral and agro-pastoral households, youth

representatives and existing water-management committees. For the Marka canals, engagement specifically addressed irrigation scheduling and head-to-tail distribution. The process was undertaken in a conflict-sensitive manner consistent with OS10.

ISSUE	ESIA / ESMP RESPONSE
Water reliability and continuity	Avoid unplanned interruption during rehabilitation; agree continuity arrangements and notify users in advance.
Groundwater sustainability	Complete hydrogeological assessment and manage abstraction within the approved sustainable yield.
Equitable irrigation allocation	Document head-to-tail allocation rules and maintain a dedicated grievance route for allocation complaints.
Security and access	Use current site-specific security assessments, conflict-sensitive engagement and flexible scheduling; no mobilisation without clearance.
Women and vulnerable groups	Use targeted outreach, inclusive WUA governance, female CLO access and non-discriminatory allocation.
Land and siting of new works	Document access and siting arrangements; compensate verified project-caused losses at replacement cost; reassess if displacement occurs.
O&M sustainability	Form/strengthen WUAs, train operators and maintain post-handover oversight and monitoring.

9. Key Environmental and Social Risks and Significance

The assessment distinguishes between inherent/pre-mitigation significance and the expected residual significance after the design and ESMP controls are applied. The highest inherent risks are concentrated around security, groundwater sustainability, potentially fatal worker hazards and climate exposure. Governance-dependent residual effects, particularly water allocation and groundwater sustainability, require continued management beyond construction.

RISK / IMPACT	APPLICABILITY	PRE-MITIGATION	RESIDUAL	KEY CONTROL / QUALIFICATION
Security / conflict-sensitive implementation	All sites; Lower Shabelle priority	Major	Moderate	Current security assessment, clearance, supervision continuity and suspension authority.
Groundwater depletion / source reliability	Groundwater sites	Major (provisional)	Moderate	Final sustainable-yield determination and drawdown/abstraction monitoring.
Confined-space dug-well works	Gomoro / final dug-well site	Major	Minor–Moderate	Permit-to-work, atmospheric testing, ventilation and rescue capability.
Borehole drilling and plant safety	Hudur and Ceel Hindi / final borehole sites	Major	Minor–Moderate	Competent operation, exclusion zones, OHS controls and emergency response.
Canal-bank / excavation collapse	Marka canals and excavations	Major	Minor–Moderate	Task-specific excavation/bank-stability controls, barriers and supervision.

RISK / IMPACT	APPLICABILITY	PRE-MITIGATION	RESIDUAL	KEY CONTROL / QUALIFICATION
Heat stress / remote emergency response	All active works	Major	Minor–Moderate	Heat-stress controls, work planning, welfare and emergency arrangements.
Water / irrigation disruption	Existing sources and Marka canals	Moderate–Major	Minor–Moderate	Continuity plan, advance notice and alternative supply where required.
Water quality contamination	Water-supply points and relevant canals	Moderate–Major	Minor–Moderate	Source protection, construction controls and pre-commissioning quality clearance.
Water-allocation / access conflict	Community-managed assets; Marka canals priority	Moderate–Major	Moderate	Inclusive WUA/water-user governance, documented rules, GRM and PIU oversight.
SEA/SH	All districts	Moderate	Minor–Moderate	Codes of Conduct, training, confidential channel, female CLOs and referral pathways.
Land access / new-work siting	Six new works and temporary access	Moderate (provisional)	Minor*	*Conditional on OS5 screening confirming no displacement requiring a separate instrument.
Erosion, sediment and spoil	Catchments and canals	Moderate	Minor	Earthworks controls, drainage/silt controls, spoil management and reinstatement.
Pest / vector amplification	Standing-water environments	Moderate	Minor–Moderate	P/VMP, drainage/source reduction and seasonal disease/vector coordination.
Climate damage / service reliability	All sites	Major climate exposure	Moderate	Climate-resilient design, adaptive management and post-event maintenance.

10. Positive Impacts and Development Benefits

POSITIVE PATHWAY	EXPECTED EFFECT	ASSESSMENT
Improved water reliability	Rehabilitated catchments and irrigation assets, together with new/rehabilitated groundwater infrastructure, can improve domestic, livestock and productive water reliability where current infrastructure is degraded or insufficient.	Major positive where source sustainability and equitable access are achieved.
Improved irrigation performance	Canal rehabilitation can restore conveyance and reduce physical constraints on irrigated agriculture.	Major positive for users served, conditional on head-to-tail equity and maintenance.
Climate resilience	More reliable water infrastructure, climate-resilient design and monitoring can reduce exposure to drought, heat and flood-related service interruption.	Moderate–Major positive, while regional climate risk remains.
Local employment and skills	Construction, supervision and O&M create local labour and practical skills opportunities.	Moderate positive; distribution depends on transparent recruitment and labour standards.

POSITIVE PATHWAY	EXPECTED EFFECT	ASSESSMENT
Inclusive water governance	WUA formation/strengthening, women's participation, targeted outreach and grievance systems can improve transparency and access.	Moderate positive where participation and representation are sustained.

11. Cumulative, Climate and Induced Considerations

Potential cumulative effects include interaction among multiple groundwater sources in drought-stressed dryland settings, aggregate changes in water availability and land use, improved irrigation reliability and possible intensification of agricultural input use, and interaction between canal rehabilitation and existing floodplain and water-governance pressures in Lower Shabelle.

Climate risk remains a cross-cutting driver rather than a stand-alone construction impact. Very High drought, heat and groundwater stress and High Lower Shabelle flooding influence infrastructure design, work scheduling, community sensitivity and O&M requirements. Residual climate risk is assessed as Moderate after adaptation, meaning long-term monitoring and maintenance remain necessary.

12. Mitigation Hierarchy and Priority Management Measures

- No mobilization without written PIU confirmation that the applicable site-readiness and ESHS hold points are closed.
- Reconcile the final 22-site register, site names, coordinates, engineering drawings and BoQs before the relevant works package starts.
- Complete current site-specific security assessment and clearance for every site; prepare a Security Management Plan where indicated and suspend/resequence works when required.
- Complete hydrogeological survey and sustainable-yield determination before groundwater construction/rehabilitation and before commissioning; operate within approved abstraction limits and monitor groundwater response.
- Complete OS5 siting and land-access screening for the five new boreholes and one new dug well, and document access for temporary construction areas.
- Complete pre-works condition assessment for each catchment and canal and incorporate findings into final design and contractor method statements.
- Use task-specific OHS controls for drilling, confined-space work, excavation/canal-bank hazards, heat, traffic and emergency response.
- Maintain water and irrigation continuity as far as practicable; provide advance notice and alternative supply where interruption cannot be avoided.
- Use canal-specific head-to-tail equity arrangements and document allocation rules before Marka canal works and operation.
- Protect water quality through source protection, waste/spill controls, drainage and pre-commissioning testing; do not commission until applicable quality requirements are met.

- Implement Codes of Conduct, SEA/SH induction, a confidential reporting pathway, female CLO access and survivor-centred referral arrangements.
- Apply the Land Access Protocol, compensate verified project-caused crop/asset losses at full replacement cost, and suspend/reassess if displacement or material livelihood loss occurs.
- Implement the project-wide Pest and Vector Management Plan, including standing-water source reduction and safe pesticide/vector-management practices where applicable.
- Form and train inclusive WUAs/water-user structures before handover and maintain post-commissioning PIU oversight.

13. Environmental and Social Management Plan

Chapter 9 provides the operational ESMP for all 22 sites and associated support areas. It translates the assessment into procurement, contractual, supervision, monitoring and O&M obligations for the PIU, contractors, the Supervision Consultant, South West State and district counterparts, CLOs, WUAs and water-user groups. Contractor ESHS obligations must be included in bidding documents, BoQs, contracts, approved C-ESMPs and method statements. Hard ESHS hold points prevent mobilisation or commissioning until required studies, approvals and controls are in place.

13.1 Monitoring and Reporting

The monitoring system combines construction compliance, environmental and social performance, water-reESMP monitoring, governance and O&M indicators. Supervision inspections are undertaken weekly during active works, with more frequent task-specific checks for high-risk activities; the PIU/South West State safeguards function undertakes monthly reviews and corrective-action tracking; and periodic environmental and social reports are submitted to AfDB quarterly. Commissioning requires water-quality clearance where applicable. Groundwater levels and abstraction, catchment/canal condition, erosion and spoil, WUA governance, inclusion, grievances, OHS incidents, security events, pest/vector conditions and infrastructure safety are monitored against defined thresholds. Post-handover oversight visits are planned at 3, 6 and 12 months, followed by annual review where project arrangements continue.

14. Institutional Responsibilities

ACTOR	PRINCIPAL ESMP ROLE
MoAI PIU	Overall ESMP ownership; approval of C-ESMPs and hold points; safeguards coordination; incident management; AfDB reporting; compensation/land-access oversight; technical and institutional coordination.
South West State E&S Officer / CLO support	Day-to-day safeguards oversight across the three districts; inspections; GRM; inclusion/WUA support; security and monitoring verification; monthly reporting.
South West State and District Authorities	Permitting/administrative coordination, site access, water governance, community liaison, security coordination and local dispute-resolution support.
Contractors	Implement C-ESMP and task-specific method statements; provide competent ESHS staff; labour/OHS, waste, community safety, SEA/SH and security controls; incident reporting and corrective action.

ACTOR	PRINCIPAL ESMP ROLE
Supervision Consultant	Independent/technical verification of works and ESHS compliance; weekly inspections; high-risk activity checks; commissioning verification; corrective-action reporting.
WUAs / water-user groups	O&M, water allocation, groundwater/catchment/canal inspection, maintenance, community accountability, grievance reporting and inclusive governance.
AfDB	Safeguards oversight, review of periodic reporting, corrective-action requirements and Independent Recourse Mechanism access.

15. Stakeholder Engagement, Grievance Redress and SEA/SH

The Stakeholder Engagement Plan applies throughout implementation and requires disclosure, consultation and differentiated outreach in Hudur, Marka and Qansax Dhere. A multi-channel GRM must be operational before mobilisation in each district. Uptake channels include CLOs, suggestion boxes, phone/SMS, community and traditional referral, farmer/water-user structures and written or anonymous submissions. The escalation framework moves from site-level resolution to district mediation, PIU review and external recourse. Canal head-to-tail allocation complaints have a dedicated accelerated route. SEA/SH allegations are handled only through the confidential PIU social/GBV pathway and are not mediated through WUAs, traditional forums or other ordinary grievance channels.

16. Land Access, Livelihood Protection and Inclusion

A Land Access Protocol applies throughout the South West State component, with particular attention to the six new works and temporary construction-support areas. Working areas and access corridors must be documented before use; eligibility for compensation is based on verified project-caused loss rather than formal title alone; crop or asset damage must be compensated at full replacement cost; and any physical displacement or material economic displacement beyond the screening assumptions triggers suspension and formal OS5 determination before works continue.

Differentiated measures include targeted outreach to women, IDPs/returnees, minority-clan households, pastoral/mobile users and poor households; accessible female CLO support; transparent local recruitment; non-discriminatory water-access and irrigation-allocation arrangements; and verification of inclusive WUA governance. The ESMP sets a minimum 30% target for women in WUA membership and leadership, to be verified at formation and during oversight.

17. ESMP Budget and Financing

The ESMP provides an indicative four-year safeguards budget of USD 262,900. Contractor ESHS costs are additional and shall be priced through works contracts and BoQs.

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL (USD)
SWS E&S Officer + district CLO support	20,000	17,000	15,000	13,000	65,000
Security assessment & conflict-sensitive engagement	11,000	7,000	5,500	4,500	28,000

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL (USD)
Community engagement – 3 districts + IDP/returnee outreach	8,000	5,500	4,500	3,500	21,500
GRM operation – 3 districts	5,500	3,800	3,200	3,000	15,500
Hydrogeological surveys & sustainable-yield tests	13,000	3,000	2,000	2,000	20,000
Water-quality monitoring	5,500	4,200	4,200	4,200	18,100
Canal continuity & head-to-tail equity facilitation – Marka	6,500	3,500	2,500	2,000	14,500
Catchment condition assessments & erosion controls	4,500	2,000	1,500	1,500	9,500
WUA capacity building & training	11,000	7,000	5,000	4,000	27,000
SEA/SH prevention & GBV referral mapping	4,500	2,800	2,200	2,200	11,700
Pest and vector management	2,800	1,800	1,800	1,800	8,200
SUBTOTAL	92,300	57,600	47,400	41,700	239,000
Contingency (10%)	9,230	5,760	4,740	4,170	23,900
TOTAL	101,530	63,360	52,140	45,870	262,900

18. Conditions for Mobilization, Commissioning and Operation

18.1 Before Mobilization

- Confirm the final approved site register, names, coordinates and design package for each works contract.
- Complete current security assessment/clearance and prepare an SMP where required.
- Complete hydrogeological and sustainable-yield assessments for groundwater works.
- Complete OS5 siting and land-access screening for the six new works and document temporary access arrangements.
- Complete catchment and canal condition assessments required to finalize rehabilitation scope.
- Approve the C-ESMP, OHS Plan, Waste/Spill Plan, Community H&S Plan, labour measures, SEA/SH arrangements and task-specific method statements.
- Establish the district GRM, confidential SEA/SH pathway and female CLO access.
- For Marka, agree irrigation-continuity and head-to-tail equity arrangements before canal works.
- Confirm emergency, medical and GBV referral arrangements and confirm the remaining site-specific design and implementation information through the applicable C-ESMP and pre-construction hold points affecting the work package.

18.2 During Construction

- Implement approved contractor safeguards plans and maintain supervision/corrective-action tracking.
- Suspend work where a hard hold point, safety requirement or security condition is breached.
- Maintain agreed water and irrigation continuity and advance notification.

- Implement labour, Code of Conduct, worker GRM and SEA/SH prevention requirements.
- Control erosion, sediment, spoil, drilling waste, fuels, chemicals and construction waste.
- Maintain accessible engagement and grievance uptake, including targeted outreach to vulnerable groups.
- Report and investigate incidents according to the ESMP and applicable AfDB requirements.

18.3 Commissioning and Operation

- Commission water-supply facilities only after applicable water-quality tests pass.
- Form/strengthen the responsible WUA or water-user structure and complete O&M training before handover.
- Confirm groundwater operating abstraction limits and establish groundwater-level/abstraction monitoring.
- Confirm and post irrigation-access and head-to-tail allocation rules where applicable.
- Put in place routine inspection, desilting, structural maintenance, safety and pest/vector management responsibilities.
- Maintain the GRM, inclusion monitoring and PIU oversight after handover.

19. C-ESMP and Pre-Construction Confirmation Requirements

REQUIREMENT	C-ESMP / PRE-CONSTRUCTION ACTION
AfDB categorization	The South West State component shall be implemented as Category 2. All contractor, supervision and C-ESMP documents shall apply the Category 2 safeguards requirements consistently.
Site identity and engineering cross-reference	Before mobilisation of each works package, the PIU shall issue a signed site register linking the final site name, verified coordinates, intervention type, screening record, approved drawing and BoQ. The C-ESMP shall use only this controlled register.
Groundwater design and operating basis	For each borehole and the dug-well site, the approved hydrogeological assessment shall confirm location, aquifer conditions, baseline levels/quality, sustainable yield, pump duty and monitoring thresholds. These values shall be incorporated into the approved C-ESMP before the affected work proceeds.
Gomoro dug-well design	The approved site-specific engineering design shall confirm the final construction method, excavation depth, lining/ring details, access/fall protection, pump arrangement and water-use facilities. The C-ESMP shall apply the confirmed design and confined-space/excavation controls.
Marka canal hydraulic and continuity basis	Before canal works, the relevant work package shall confirm the final canal identity/alignment, condition, hydraulic requirements, continuity arrangements and head-to-tail allocation plan and incorporate them into the C-ESMP and method statement.
Qansax Dhere site baseline	Before mobilisation, complete site screening, GPS/photographic record, land and water-use verification, nearby-receptor identification, vulnerable-user engagement and the groundwater baseline required for Ceel Hindi. Findings shall be incorporated into the C-ESMP.
Monitoring and incident-management thresholds	The C-ESMP and project monitoring plan shall use the formally approved AfDB/Financing Agreement incident-reporting protocol and one approved OHS KPI framework. Site-specific groundwater and technical thresholds shall be established through the approved technical assessments.

20. Overall Environmental and Social Conclusion

The ESIA concludes that the BBS Project interventions in South West State are environmentally and socially feasible provided the design measures, ESMP, associated management instruments, pre-mobilisation hold points and monitoring commitments are implemented as binding project requirements. The project is expected to deliver substantial positive outcomes through improved water reliability, restored irrigation performance, enhanced climate resilience, local employment and stronger community water governance. The principal adverse risks are manageable but require disciplined implementation, particularly for Lower Shabelle security, groundwater sustainability, potentially fatal OHS hazards, water and irrigation continuity, equitable allocation, SEA/SH prevention and the siting of new works.

Environmental and social acceptability is therefore conditional rather than automatic. No site should proceed merely because it is included in the project list. Each work package must satisfy the applicable technical, land-access, security, stakeholder, contractor-readiness and safeguards hold points before mobilisation; commissioning must be linked to water-quality, governance and O&M readiness; and residual groundwater, water-allocation, security and climate risks require continued monitoring and adaptive management through operation.

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CHAPTER 1: INTRODUCTION

1.1 Background and Project Context

Somalia's agricultural and rural water systems operate in an environment characterized by recurrent drought, variable rainfall, periodic flooding, chronic water insecurity, infrastructure deterioration, displacement, and institutional and security constraints. These conditions affect the reliability of water for domestic use, livestock, and agricultural production and increase the vulnerability of rural households whose livelihoods depend on seasonal water availability and functioning irrigation and water-supply infrastructure. The Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project responds to this wider development challenge by investing in priority water and irrigation infrastructure intended to improve water security, agricultural productivity, and climate resilience.

The BBS Project is an initiative of the Federal Republic of Somalia, implemented through the Ministry of Agriculture and Irrigation (MoAI) and financed by the African Development Bank (AfDB). The Project is classified as an AfDB Category 2 operation. This Environmental and Social Impact Assessment (ESIA) addresses the South West State component of the Project and provides the state-specific environmental and social assessment required to inform project design, approval, procurement, implementation, supervision, operation, and monitoring.

South West State comprises the Bay, Bakool, and Lower Shabelle regions, with Baidoa as the state capital. The three project districts represent distinct environmental and livelihood settings. Hudur District in Bakool and Qansax Dhere District in Bay are predominantly dryland agro-pastoral settings where reliable groundwater and rainwater-harvesting infrastructure is particularly important. Marka District in Lower Shabelle includes riverine and irrigated agricultural areas linked to the Shabelle system, alongside water-catchment interventions. These different settings mean that the South West State component cannot be assessed as a single uniform intervention: environmental and social pathways differ between groundwater development, catchment rehabilitation, and riverine canal works, and the assessment therefore distinguishes them throughout the report.

The South West State component comprises 22 project sites across Hudur, Marka, and Qansax Dhere Districts. The intervention portfolio consists of eight water-catchment rehabilitation sites, seven irrigation-canal rehabilitation sites, six borehole sites, and one dug-well site. Of the 22 sites, 16 involve rehabilitation of existing infrastructure and six are new works comprising five new boreholes and one new dug well. Detailed site names, coordinates, engineering scope, layouts, and design parameters are presented in the Project Description chapter and are not repeated in this introductory chapter.

This ESIA has been prepared in accordance with the environmental and social assessment requirements applicable to the Project, including the African Development Bank Integrated Safeguards System (ISS, 2023). It is intended to provide a proportionate and site-responsive assessment of the South West State component while maintaining consistency with the overall BBS safeguards framework. The chapter is deliberately limited

to the context, purpose, scope, assessment approach, stakeholder-engagement approach, and organization of the report. Detailed legal requirements, alternatives, engineering design, baseline conditions, impact findings, mitigation measures, management arrangements, consultation records, and monitoring commitments are addressed once, in the relevant subsequent chapters and associated project instruments, to avoid duplication.

1.2 Purpose and Objectives of the ESIA

The purpose of this ESIA is to identify and assess the environmental and social risks and impacts associated with the proposed BBS interventions in South West State, determine the significance of those risks and impacts, and establish the measures and implementation arrangements needed to avoid, minimise, mitigate, manage, monitor, and, where applicable, compensate for adverse effects while enhancing project benefits. The assessment is also intended to support informed decision-making by MoAI, South West State institutions, AfDB, district administrations, affected communities, and other stakeholders.

The specific objectives of the ESIA are to:

- a. Define the environmental and social assessment boundary for the South West State component and confirm the relationship between the 22 project sites, the three district settings, and the four intervention typologies.
- b. Establish a clear and evidence-based framework for describing the physical, biological, social, livelihood, health, safety, security, and climate conditions relevant to the Project's area of influence.
- c. Identify direct, indirect, induced, and cumulative environmental and social risks and impacts across the project life cycle, taking account of differences between rehabilitation works and new infrastructure and between dryland and riverine settings.
- d. Evaluate impact significance using transparent criteria and identify the receptors and groups most sensitive to project-related changes, including women, vulnerable households, displaced and returnee populations, minority groups, pastoral and agro-pastoral users, farmers, water users, workers, and communities located around project infrastructure.
- e. Apply the mitigation hierarchy by prioritizing avoidance and prevention, followed by minimization, mitigation, restoration, and compensation where relevant, and identify opportunities to enhance positive environmental and social outcomes.
- f. Define the environmental and social requirements that must be incorporated into detailed design, procurement documents, contractor obligations, construction supervision, commissioning, operation, maintenance, and institutional oversight.
- g. Document how stakeholder engagement informed the assessment and establish the basis for continued disclosure, consultation, participation, and grievance management throughout implementation.

- h. Provide the foundation for a practical and costed Environmental and Social Management Plan (ESMP), including mitigation, monitoring, institutional responsibilities, capacity-building, reporting, incident management, and implementation arrangements consistent with AfDB requirements.

1.3 Scope of the ESIA

The ESIA covers the full South West State component of the BBS Project and is structured to assess the component at a level proportionate to the nature and scale of the proposed works. The scope is defined geographically, technically, temporally and thematically, while the material issues and areas of influence are established through the assessment methodology and carried forward into the relevant chapters.

1.3.1 Geographic Scope

The geographic scope includes all 22 project sites in Hudur District (Bakool Region), Marka District (Lower Shabelle Region), and Qansax Dhere District (Bay Region). It extends beyond the immediate physical footprint where project activities may reasonably influence water access, irrigation performance, land use, community movement, livelihoods, public and worker safety, resource use, or other environmental and social receptors. Site-specific areas of influence are defined through the project description, baseline and impact assessment.

1.3.2 Technical Scope

The technical scope covers the four intervention types included in South West State: rehabilitation of water catchments; rehabilitation of irrigation canals; borehole works comprising both new construction and rehabilitation; and construction of a new dug well. The ESIA considers the activities reasonably associated with these interventions, including site preparation, earthworks, excavation or drilling, construction and rehabilitation of water-control and access features, use of temporary work areas and access routes, materials and waste handling, commissioning, and routine operation and maintenance. Detailed engineering quantities and methods are reserved for the Project Description and Design Measures chapters.

1.3.3 Temporal Scope

The assessment covers the project life cycle from pre-construction and mobilization through construction and rehabilitation, commissioning and handover, operation and maintenance, and demobilization and reinstatement of temporary work areas. Where risks are seasonal, the assessment takes account of the timing of rainfall, drought, river-flow and flood conditions, and periods of high dependence on existing water and irrigation services. Any longer-term effects arising from operation, maintenance, induced use, or cumulative interaction with other activities are assessed in the relevant impact chapters.

1.3.4 Environmental and Social Scope

The ESIA addresses the environmental and social themes relevant to the Project under the AfDB safeguards framework and the applicable national and state context. These include water resources and water quality; soils, erosion, sediment and waste; pollution prevention and resource efficiency; biodiversity and ecosystem considerations; climate risk and resilience; labour and working conditions; occupational health and safety;

community health, safety and security; land access and potential restrictions on land use; livelihoods and access to water and irrigation; vulnerable individuals and groups; gender and SEA/SH risk; cultural heritage and chance finds; stakeholder engagement and grievance management; security and conflict sensitivity; and cumulative, induced and positive development effects. The depth of assessment applied to each theme reflects the identified project activity, receptor sensitivity and available evidence.

1.3.5 Assessment Boundaries and Avoidance of Duplication

This chapter does not reproduce the detailed evidence that belongs in later parts of the ESIA. The legal and institutional framework is addressed in its dedicated chapter; alternatives and design choices are assessed separately; site descriptions and technical details are consolidated in the Project Description; baseline evidence and data limitations are presented in the Baseline chapter; impact ratings and pathways are presented in the impact assessment; mitigation is consolidated in the Mitigation Measures chapter; and responsibilities, monitoring, budget, reporting, stakeholder-management requirements, and associated management instruments are consolidated in the ESMP and associated project instruments. This separation is intended to keep the report concise, auditable, and internally consistent.

1.4 ESIA Approach and Methodology

The ESIA applies a structured, risk-based and proportionate assessment process consistent with the AfDB ISS 2023 and the BBS safeguards framework. Because the South West State portfolio combines different intervention types and environmental settings, the assessment uses a common methodology while distinguishing typology- and district-specific impact pathways. This allows comparable assessment across the component without treating fundamentally different works as if they presented the same risks.

The principal steps in the assessment process comprise:

- a. Review of available project preparation documents, the BBS site inventory and master list, environmental and social screening outputs, technical information, and relevant project-wide safeguards instruments.
- b. Field verification and site observation to the extent practicable, supported where access was constrained by engagement with local counterparts and other available verification methods.
- c. Stakeholder engagement with relevant government institutions, district administrations, affected communities, farmers, water users, pastoral and agro-pastoral groups, women, vulnerable groups, youth, and community management structures to inform scoping, baseline interpretation, impact identification, and management measures.
- d. Establishment of baseline conditions using primary observations and consultations together with appropriate secondary environmental, social, water-resource, climate, food-security, and institutional information.
- e. Identification of project activities and credible impact pathways for each project phase and intervention type, followed by assessment of affected receptors and their sensitivity.

- f. Evaluation of impact significance using criteria including magnitude, duration, geographic extent, receptor sensitivity, reversibility, and likelihood, with consideration of both pre-mitigation and residual conditions.
- g. Application of the mitigation hierarchy and development of design, management, monitoring, institutional, and capacity-building measures, with responsibilities and implementation requirements carried into the ESMP.
- h. Identification of data gaps, uncertainties, and matters requiring confirmation before works, so that unresolved information is managed through explicit verification requirements rather than unsupported assumptions.

Impact significance is expressed using the categories Negligible, Minor, Moderate, and Major. The detailed significance methodology, including how consequence, likelihood, receptor sensitivity, mitigation effectiveness, and residual significance are determined, is presented in the Environmental and Social Risks and Impacts chapter.

1.5 Stakeholder Engagement During ESIA Preparation

Stakeholder engagement formed an integral part of ESIA preparation and was used to inform scoping, validate site and livelihood conditions, identify concerns and priorities, understand existing water-management and access arrangements, and test the practicality of proposed mitigation and implementation measures. Engagement was undertaken in a manner intended to be inclusive, culturally appropriate, accessible, and conflict-sensitive, recognising the different social and security contexts of Bay, Bakool, and Lower Shabelle.

Stakeholder categories engaged during preparation included South West State authorities and relevant line institutions; the Hudur, Marka, and Qansax Dhere District Administrations; community leaders and elders; farmers and irrigation water-user groups in the Lower Shabelle project areas; pastoral and agro-pastoral water users; existing water-management committees and Water User Associations where present; women and female-headed households; internally displaced persons and returnees; minority and otherwise marginalised households; youth representatives; and community members living in and around the proposed works.

The engagement process was designed to capture both general project concerns and issues specific to the intervention type and locality, including access to water, continuity of existing services during works, siting of new infrastructure, use of land and access routes, employment expectations, community and worker safety, participation in future water-management arrangements, and the accessibility of grievance channels. The assessment incorporates relevant stakeholder input into scoping, alternatives, design considerations, impact assessment, mitigation, and the ESMP.

This introductory section summarizes only the approach. The stakeholder analysis, consultation records, issues raised, disclosure arrangements, ongoing engagement commitments, and grievance-management procedures are presented in the Stakeholder Engagement Plan, consultation records and relevant ESMP provisions so that the full record is maintained in one place and can be updated during implementation.

1.6 Structure of the ESIA Report

To maintain consistency with the structure used for the BBS state-level assessments while avoiding duplication, the South West State ESIA is organized as follows:

- Chapter 1 - Introduction: provides the project and state context, purpose and objectives of the ESIA, assessment scope, methodology, stakeholder-engagement approach, and report organization.
- Chapter 2 - Legal and Institutional Framework: presents the applicable national and South West State policy, legal, regulatory, administrative, institutional, and international framework; the AfDB ISS 2023 requirements; institutional capacity; and the gap analysis between borrower requirements and AfDB safeguards.
- Chapter 3 - Analysis of Alternatives: assesses the no-project alternative and relevant location, siting, design, technology, construction, timing, and implementation alternatives, including environmental and social trade-offs and the justification for the preferred approach.
- Chapter 4 - Design Measures: documents environmental and social considerations incorporated into project design and shows how the mitigation hierarchy and stakeholder input have influenced design and pre-construction requirements.
- Chapter 5 - Project Description: provides the detailed South West State project scope, all 22 site locations, intervention-specific technical characteristics, life-cycle activities, construction support requirements, associated facilities, resource needs, land and access requirements, area of influence, and project maps.
- Chapter 6 - Project Baseline: describes the physical, biological, social, livelihood, health, safety, security, vulnerability, and climate baseline relevant to the three districts and four intervention types, together with the data sources, quality, limitations, gaps, and anticipated changes without the Project.
- Chapter 7 - Environmental and Social Risks and Impacts: identifies and evaluates direct, indirect, cumulative, induced, and positive impacts by project phase and intervention type; assesses relevant AfDB safeguard themes; and determines pre-mitigation and residual significance.
- Chapter 8 - Mitigation Measures: sets out the avoidance, minimization, mitigation, restoration, compensation, enhancement, differentiated vulnerability, institutional, training, and monitoring measures required to address the assessed risks and impacts.
- Chapter 9 - Environmental and Social Management Plan (ESMP): consolidates binding mitigation and monitoring measures, procurement and contractor requirements, ESHS hold points, institutional responsibilities, stakeholder engagement and grievance measures, incident management, capacity building, implementation schedule, indicators, reporting, and cost provisions, together with links to associated management plans.
- Chapter 10 - Conclusion and Recommendations: presents the overall environmental and social conclusion, conditions for implementation, and priority recommendations arising from the assessment.

The organization above is intended to ensure that each subject is addressed comprehensively once, with cross-references used where necessary rather than repeating the same description, evidence, or commitment in multiple chapters.

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Purpose and Approach

This chapter identifies the policy, legal, regulatory, institutional, international, and African Development Bank (AfDB) safeguard requirements applicable to the South West State component of the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project. It provides the compliance framework against which the environmental and social assessment, project design, implementation arrangements, and Environmental and Social Management Plan (ESMP) are developed. The analysis is tailored to the South West State scope: 22 sites in Hudur District (Bakool Region), Marka District (Lower Shabelle Region), and Qansax Dhere District (Bay Region), comprising water-catchment rehabilitation, irrigation-canal rehabilitation, borehole construction and rehabilitation, and construction of one dug well.

The chapter distinguishes between: (i) federal policy and legal requirements applicable across Somalia; (ii) South West State and district-level administrative arrangements through which those requirements are coordinated locally; (iii) international and regional obligations relevant to the Project; and (iv) the AfDB Integrated Safeguards System (ISS, 2023). Where the Borrower's legal or institutional framework does not provide an operational requirement equivalent to the AfDB standard, the ISS 2023 is applied as the governing minimum project requirement. Detailed mitigation measures, monitoring frequencies, contractor obligations, hold points, and implementation budgets are presented later in the ESMP and are not repeated here except where necessary to explain how a regulatory or safeguards gap is closed.

2.2 National Policy Framework

The BBS Project is implemented within Somalia's national policy framework for environmental protection, water-resource management, agriculture, climate resilience, public health, gender equality, food security, and productive-sector development. The principal policy instruments identified in the project documentation are summarized below. Their relevance differs by intervention type: groundwater and catchment policy considerations are particularly important in Hudur and Qansax Dhere, while irrigation, river-basin, and flood-management considerations are particularly relevant to the Marka canal sites in Lower Shabelle.

POLICY / PLANNING INSTRUMENT	LEAD INSTITUTION	RELEVANCE TO THE SOUTH WEST STATE COMPONENT
National Transformation Plan (2025-2029)	Ministry of Planning, Investment and Economic Development	Provides the national development framework for resilience, productive sectors, infrastructure, and service delivery within which the BBS investment is implemented.
National Environmental Policy (2019)	Ministry of Environment and Climate Change (MoECC)	Promotes sustainable natural-resource management and the use of environmental assessment for development activities.
National Climate Change Policy (2020)	MoECC	Provides the national framework for climate adaptation, disaster-risk reduction, and climate-resilient infrastructure, relevant to drought, heat, flash-flood, and Shabelle flood exposure.

POLICY / PLANNING INSTRUMENT	LEAD INSTITUTION	RELEVANCE TO THE SOUTH WEST STATE COMPONENT
National Adaptation Plan (NAP)	MoECC	Identifies adaptation priorities relevant to water security, resilient infrastructure, agriculture, and climate-vulnerable communities.
Nationally Determined Contribution (NDC)	MoECC	Provides national climate commitments relevant to climate-resilient water and agricultural investments.
National Water Resource Strategy (2021-2025)	Ministry of Energy and Water Resources (MoEWR)	Provides the policy basis for integrated water-resources management, including surface water and groundwater management and water-use sustainability.
National WASH Sector Policy (2018)	MoEWR / Ministry of Health	Relevant to water quality, sanitation, worker welfare, safe community water access, and operation of water-supply points.
Agriculture Sector Strategy and Plan	Ministry of Agriculture and Irrigation (MoAI)	Provides sector direction for irrigation rehabilitation, agricultural productivity, water management, and climate-smart agriculture.
National Food Security and Nutrition Policy	MoAI	Frames the food-security and nutrition rationale for water and irrigation investments in drought- and food-insecure areas.
National Gender Policy (2016; draft update 2018)	Ministry of Family and Human Rights	Supports gender equality, women's participation, equitable access to project benefits, and gender-responsive grievance and governance arrangements.
National Pesticide Policy	MoAI	Provides the basis for integrated pest management and safe pesticide handling where agricultural intensification may occur.
National Fertilizer Policy	MoAI	Relevant to safe fertilizer use and management of nutrient runoff where irrigation-supported production increases.

2.3 National Legal and Regulatory Framework

The South West State component is subject to the legal and regulatory framework of the Federal Republic of Somalia. The principal instruments identified in the project documentation are presented in Table 2-2. The framework is not equally developed across all environmental and social themes. Environmental assessment requirements have recently been strengthened through the Environmental Protection and Management Act and the 2024 ESIA Regulations, while other areas - notably operational water-abstraction licensing, unified land acquisition and compensation, modern occupational health and safety regulation, and cultural-heritage protection - remain less complete or less operational. These differences are addressed through the AfDB ISS and project-specific procedures, as set out in Section 2.10.

INSTRUMENT	LEAD / COMPETENT INSTITUTION	APPLICATION TO THE PROJECT
Provisional Federal Constitution (2012), including Articles 25, 43 and 45	Federal Government of Somalia	Provides constitutional principles concerning environmental protection, land and natural resources, and sustainable use of the environment.
Environmental Protection and Management Act (2024)	MoECC	Provides the principal federal legal basis for environmental protection and environmental assessment of development activities.

INSTRUMENT	LEAD / COMPETENT INSTITUTION	APPLICATION TO THE PROJECT
ESIA Regulations (2024)	MoECC	Establish screening, assessment, review, and environmental-clearance procedures for projects requiring environmental assessment.
Natural Water Resources Law (1984)	MoEWR	A pre-1991 water statute identified in the project documents as no longer operational in practice; current water governance therefore relies heavily on policy, administrative arrangements, customary water rights, and project controls.
Somali Labour Code (Law No. 65 of 1972)	Ministry of Labour and Social Affairs	Provides basic employment and worker-protection requirements. Modern OHS, worker grievance, and contractor-management requirements are supplemented through AfDB OS2 and the project Labour Management Procedures.
Public Health and Communicable Disease Control Regulations	Ministry of Health	Relevant to public-health protection, sanitation, communicable disease and vector control, and community health around water infrastructure.
Somali Penal Code (1962) and Family Code (1975)	Ministry of Justice	Provide relevant national provisions on sexual violence and family law that form part of the legal context for SEA/SH prevention and response.
Land Administration and Local Government Instruments	Relevant federal, state and district authorities	Provide the administrative context for land access, local permissions, community coordination, and use of land under formal and customary arrangements.
Environmental Protection and Management Act (2024) - pollution and hazardous-material provisions	MoECC	Relevant to waste, effluent, fuel, chemicals, drilling materials, spoil, and pollution prevention during construction and operation.
Cultural-heritage arrangements / project Chance Finds Procedure	Relevant cultural authority / project institutions	The project documentation identifies no modern federal antiquities statute in force; chance finds are therefore managed through the project procedure and AfDB OS8.

2.3.1 Environmental Assessment and Permitting

Coordination with the relevant South West State environmental and sector counterparts shall be maintained during national review, clearance and implementation.

2.3.2 Water Resources, Irrigation, and Water Supply

Water-resource governance is particularly important for the South West State component because the Project combines groundwater development in Bay and Bakool with canal rehabilitation in Lower Shabelle. The National Water Resource Strategy (2021-2025) provides the current policy basis for integrated water-resources management. The Natural Water Resources Law (1984) is identified in the project documentation as a pre-1991 statute that is not operational in practice, and the documents do not identify a functioning federal abstraction-licensing regime comparable to those found in more developed regulatory systems.

For the borehole and dug-well sites, this regulatory gap is material because five boreholes and one dug well are new works and the wider groundwater package includes both new and rehabilitated sources. The project therefore requires hydrogeological assessment, sustainable-yield determination, abstraction control, and groundwater monitoring as project-level compliance requirements. For the seven irrigation-canal

rehabilitation sites in Marka, water governance also depends on MoAI, water-user arrangements, and local/state coordination. Detailed sustainable-yield criteria, canal-allocation arrangements, and monitoring thresholds are addressed in the technical assessment and ESMP rather than repeated in this chapter.

2.3.3 Land Access, Tenure, and Compensation

The project documentation does not identify a unified federal land-acquisition and compensation statute that provides a complete project-level framework equivalent to AfDB OS5. Land access in the project areas is influenced by formal administration and customary (xeer) tenure and dispute-resolution arrangements. This is especially relevant to the six new works - five boreholes and one dug well - whose final siting and land-access status must be confirmed before mobilization, as well as to temporary access routes, lay-down areas, borrow sites, and working corridors that may affect third-party land or productive assets.

The Project therefore applies a precautionary OS5 pathway and a Land Access Protocol. The legal and administrative framework is supplemented by documented access agreements, eligibility based on actual loss rather than title alone, and compensation for verified project-caused crop or asset damage at full replacement cost. Any unexpected physical displacement or material economic displacement requires reassessment and suspension of the affected works pending the applicable OS5 determination. The detailed procedure is presented in the ESMP.

2.3.4 Labour, Occupational Health and Safety, and Public Health

Labour relations are governed by the Somali Labour Code (Law No. 65 of 1972), which provides basic employment and worker-protection requirements. The project documents recognize that the Code contains limited modern occupational health and safety provisions and does not provide the full worker-management framework required for the BBS works. AfDB OS2 and the project Labour Management Procedures therefore supplement national requirements through written employment terms, worker registration and age verification, a workers' grievance mechanism, contractor obligations, and activity-specific OHS controls. These requirements are particularly relevant to borehole drilling, dug-well excavation and confined-space work, canal-bank and excavation activities, extreme heat, and remote emergency response.

Public-health requirements are administered through the Ministry of Health and local health structures. They are relevant to water quality, sanitation, vector control, communicable disease, worker welfare, and the protection of communities using rehabilitated or newly constructed water infrastructure. Detailed water-quality standards and health monitoring arrangements are addressed in the baseline, impact assessment, and ESMP chapters.

2.3.5 Pollution Prevention, Waste, Agrochemicals, and Biodiversity

The Environmental Protection and Management Act (2024) provides the principal legal basis for pollution control, hazardous-material management, and environmental protection. The National Pesticide Policy and National Fertilizer Policy provide additional sector guidance where irrigation or improved water availability may contribute to agricultural intensification. For the South West State component, these requirements are

relevant to drilling fluids, fuels and lubricants, construction waste, canal and catchment spoil, borrow materials, wastewater and sanitation, sediment release, water-quality protection, and the safe management of agricultural inputs during operation. Biodiversity and ecosystem protection are also addressed through the 2024 environmental framework and AfDB OS6; the present project documentation does not identify designated critical habitat as a defining feature of the 22-site scope, but site-specific verification and footprint control remain required.

2.3.6 Cultural Heritage

The project documentation identifies no modern federal antiquities statute currently in force that provides a complete project-level chance-find process. The South West State component nonetheless includes drilling, excavation, desilting, catchment earthworks, and other ground-disturbing activities. Cultural-heritage risk is therefore managed through AfDB OS8 and the project Chance Finds Procedure, which applies to all 22 sites and requires stop-work, site protection, notification, and competent review if previously unknown archaeological, historical, cultural, religious, paleontological, or burial material is encountered.

2.3.7 Security, Conflict Sensitivity, and Local Administration

The project documentation does not identify a project-specific federal security statute governing BBS implementation. Security is managed through federal, South West State, district, and project arrangements, with particular emphasis on the conflict-affected and access-constrained environment in parts of Lower Shabelle. District administrations and relevant security actors play an important coordination role in safe access, community liaison, and local incident response. The Project supplements these arrangements through site-specific security assessment before mobilization and a Security Management Plan where required. These measures are project implementation requirements under the AfDB community health, safety, and security framework rather than substitutes for the functions of public security authorities.

2.4 South West State Legal and Administrative Framework

South West State is a Federal Member State comprising the Bay, Bakool, and Lower Shabelle regions. The BBS sites are located in Hudur District, Marka District, and Qansax Dhere District. The ESIA identifies coordination between the Federal Government of Somalia, South West State authorities, South West State MoAI and line ministries, and the three district administrations as the principal state and local administrative framework for implementation.

The available project documentation does not identify a separate set of South West State environmental, water, land, labour, or cultural-heritage statutes that would supersede the federal instruments listed above. Accordingly, this ESIA applies the federal legal framework together with South West State and district administrative arrangements and customary mechanisms where relevant. Customary xeer and the role of traditional and religious leaders (guddi and xeer elders) are important for community legitimacy, local mediation, land and water disputes, and communication, but they do not replace statutory responsibilities, AfDB requirements, or the separate confidential procedures required for matters such as SEA/SH.

INSTITUTION / STRUCTURE	ROLE RELEVANT TO THE PROJECT	ADMINISTRATIVE INTERFACE
South West State MoAI and line ministries	State-level counterpart and coordination; alignment with state development priorities; support to safeguards compliance and sector oversight.	Coordination with the federal PIU and participation in implementation and oversight as relevant.
Hudur District Administration - Bakool	Local oversight for catchment, borehole, and dug-well sites; community mobilization; land-access facilitation; security coordination; support to grievance resolution.	Engaged before mobilization and throughout implementation at Hudur sites.
Marka District Administration - Lower Shabelle	Local oversight for canal and catchment sites; conflict-sensitive security coordination; farmer and water-user liaison; land/access facilitation; support to grievance resolution.	Priority coordination role because of the Lower Shabelle security environment and irrigation-water governance issues.
Qansax Dhere District Administration - Bay	Local oversight for catchment and borehole sites; community mobilization; land-access facilitation; security coordination; support to grievance resolution.	Engaged before mobilization and throughout implementation at Qansax Dhere sites.
Traditional and religious leaders (guddi / xeer elders)	Community legitimacy and culturally appropriate mediation of local land, water, access, and social disputes.	Used as a complementary community mechanism; not used to determine confidential SEA/SH complaints or to override statutory/AfDB requirements.
Water User Associations / water-user groups	Community-level water and irrigation governance, access rules, operation and maintenance, and water-allocation dispute management.	Strengthened before handover; detailed governance arrangements are addressed in the ESMP and stakeholder instruments.

2.5 International and Regional Obligations

Somalia is party to international and regional instruments relevant to environmental protection, climate change, biodiversity, labour rights, gender equality, child protection, hazardous substances and wastes, and the rights of displaced persons. The project documentation identifies the following as relevant to the BBS ESIA: the United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement; United Nations Convention to Combat Desertification (UNCCD); Convention on Biological Diversity (CBD); Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW); African Convention on the Conservation of Nature and Natural Resources; Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); Vienna Convention for the Protection of the Ozone Layer; Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; Stockholm Convention on Persistent Organic Pollutants; ILO Freedom of Association Convention No. 87 and Forced Labour Convention No. 29; Convention on the Rights of the Child; and the African Union Convention for the Protection and Assistance of Internally Displaced Persons in Africa (Kampala Convention).

For South West State, these obligations reinforce the need for climate-resilient water infrastructure, protection of natural resources, safe chemical and waste management, core labour protections, child

protection, gender equality, non-discrimination, and appropriate consideration of IDPs, returnees, and other vulnerable groups. They do not replace the national legal framework or the AfDB ISS, but provide an additional international-law and policy context for the Project.

2.5.1 International Watercourse Considerations - Lower Shabelle

The international-watercourse dimension is relevant specifically to the seven irrigation-canal rehabilitation sites in Marka because they are associated with the Shabelle River system. The project documentation identifies the Shabelle as a transboundary river whose upstream basin lies largely in Ethiopia and notes that Somalia is the downstream and effectively terminal riparian. It also identifies the principles of equitable and reasonable utilization and the obligation not to cause significant transboundary harm as the relevant customary international-water principles in the absence of a basin-wide treaty or active basin organization.

The South West State canal activities are rehabilitation works within the existing irrigation system rather than a separate project to establish a new international water-use claim. The key project relevance is therefore the responsible management of in-country water use and downstream effects within Somalia, while recognizing that upstream abstraction and climate variability can affect the water available in Lower Shabelle. Detailed hydrological, cumulative-impact, and water-allocation analysis is addressed in the baseline and impact-assessment chapters.

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

The BBS Project is classified in the project documentation as an AfDB Category 2 operation. The South West State component must therefore be implemented in accordance with the AfDB Integrated Safeguards System (ISS, 2023), including the applicable Operational Safeguards. Because the South West State component combines four intervention types and includes both rehabilitation and new works, applicability is determined by actual risk pathways rather than by applying the same safeguard profile mechanically to every site.

2.6.1 Operational Safeguards Applicability

OPERATIONAL SAFEGUARD	APPLICABILITY	SOUTH WEST STATE RATIONALE
OS1 - Assessment and Management of Environmental and Social Risks and Impacts	Applicable	Applies to the ESIA and ESMP as a whole, including screening, risk assessment, climate and security considerations, cumulative impacts, management measures, monitoring, and adaptive management.
OS2 - Labour and Working Conditions	Applicable	Applies to contractors and subcontractors and to labour associated with drilling, dug-well excavation, catchment works, canal rehabilitation, transport, and temporary support sites. The project-wide LMP is applicable.
OS3 - Resource Efficiency and Pollution Prevention and Management	Applicable	Applies to groundwater sustainability, construction-water use, canal and catchment sediment/spoil, drilling fluids, fuels and chemicals, waste, water quality, and resource-efficiency measures.

OPERATIONAL SAFEGUARD	APPLICABILITY	SOUTH WEST STATE RATIONALE
OS4 - Community Health, Safety and Security	Applicable	Applies to community exposure to excavations, drilling and canal works; water safety; traffic; vector and disease risks; SEA/SH-related community protection measures; emergency response; and the security-sensitive Lower Shabelle environment.
OS5 - Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement	Precautionary / site-specific	Particularly relevant to the five new boreholes and one new dug well, and to temporary access or support areas. Large-scale displacement is not anticipated, but siting and land-access screening are required and unexpected displacement triggers reassessment.
OS6 - Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources	Precautionary / verification	The current screening does not identify designated critical habitat as a defining feature of the 22 sites. Footprint verification, riparian protection where relevant, vegetation control, and reassessment are required if site conditions differ from screening assumptions.
OS7 - Vulnerable Groups	Applicable	Applies because the project area includes women and female-headed households, IDPs and returnees, minority clans, poor agro-pastoral and farming households, pastoralists, tail-end irrigation users, and other groups that may face barriers to access or decision-making.
OS8 - Cultural Heritage	Precautionary / verification	No known cultural-heritage feature is identified as a project driver, but drilling, excavation and earthworks create chance-find potential; the Chance Finds Procedure applies to all sites.
OS9 - Financial Intermediaries	Not applicable	The South West State component does not involve lending or investment through a financial intermediary.
OS10 - Stakeholder Engagement and Information Disclosure	Applicable	Applies throughout preparation and implementation, including inclusive consultation, information disclosure, grievance redress, conflict-sensitive engagement, and differentiated outreach to vulnerable groups.

2.7 Permits, Authorizations, and Pre-Works Compliance Requirements

The following matrix consolidates the principal approvals, authorizations, and compliance confirmations identified from the project legal framework and the South West State implementation arrangements. It distinguishes formal regulatory approvals from project-level pre-works requirements that are necessary because certain national systems are not fully operational or do not provide the level of control required by the AfDB ISS. The detailed hold-point checklist is provided in the ESMP.

REQUIREMENT	LEGAL / POLICY BASIS	RESPONSIBLE / COORDINATING AUTHORITY	TIMING	PROJECT STATUS / COMPLIANCE POSITION
Environmental clearance / ESIA approval	Environmental Protection and Management Act 2024; ESIA Regulations 2024	MoECC, in coordination with the relevant South West State counterpart	Before commencement of physical works	ESIA prepared to AfDB ISS 2023; national environmental review/clearance required before works.

REQUIREMENT	LEGAL / POLICY BASIS	RESPONSIBLE / COORDINATING AUTHORITY	TIMING	PROJECT STATUS / COMPLIANCE POSITION
Groundwater siting and sustainable-yield confirmation - boreholes and dug well	National Water Resource Strategy 2021-2025; project hydrogeological requirements; AfDB OS1/OS3	MoEWR / PIU / relevant SWS and district water authorities or counterparts	Before drilling, rehabilitation or commissioning of each groundwater source	Hydrogeological survey and sustainable-yield determination required; project documents do not identify a functioning federal abstraction-licensing regime.
Canal / irrigation works authorization - Marka	MoAI/state mandate over irrigation infrastructure; applicable local administrative arrangements	MoAI / South West State counterparts / Marka District Administration / water-user structures	Before works on each canal	Works are rehabilitation of existing canals; local access, water-continuity and coordination arrangements must be confirmed.
Catchment rehabilitation authorization and site access	Applicable environmental requirements; land/community-use arrangements	PIU / relevant SWS and district authorities / landholders or community structures	Before catchment earthworks	Condition assessment, site access, and any required land/community-use agreement to be confirmed before mobilization.
Land access - new works and temporary use	Customary xeer tenure; project Land Access Protocol; AfDB OS5	Landholders / communities / District Administration / PIU	Before mobilization or use of third-party land	Documented access required. Unexpected displacement or material loss triggers OS5 reassessment and works suspension.
Labour and occupational health and safety compliance	Somali Labour Code (Law No. 65 of 1972); AfDB OS2; project LMP	Ministry of Labour and Social Affairs / PIU / Contractor	Before workforce mobilization and throughout works	Worker register, age verification, written employment terms, workers' GRM, and approved OHS arrangements required.
Public health and water-quality compliance	Public-health regulations; National WASH Sector Policy; project water-quality requirements	Ministry of Health / relevant district health structures / PIU	Construction and before commissioning; continued during O&M	Water-supply points require quality confirmation before use; public-health and vector-control coordination continues during operation.
Borrow areas / materials extraction and temporary support sites	EPMA 2024; applicable local permissions; documented land/community-use agreements	MoECC / relevant state and district authorities / landholders	Before extraction or use	Each support site must be screened, authorized as applicable, and reinstated after use.
Waste, effluent, fuel and hazardous-material controls	EPMA 2024 pollution and hazardous-material provisions	MoECC / PIU / Contractor	Construction and O&M	Contractor plans and site controls required; no uncontrolled discharge or disposal.

REQUIREMENT	LEGAL / POLICY BASIS	RESPONSIBLE / COORDINATING AUTHORITY	TIMING	PROJECT STATUS / COMPLIANCE POSITION
Cultural heritage / chance finds	AfDB OS8; project Chance Finds Procedure	PIU / relevant cultural authority / District Administration	During any ground-disturbing works	Stop-work and notification procedure applies if a potential find is encountered.
Security clearance / site access confirmation	Federal/state/district security arrangements; AfDB OS4; project security requirements	Relevant South West State and district security authorities / PIU / Contractor	Before mobilization at each site and as conditions change	No site mobilization without site-specific security assessment and clearance; SMP required where indicated.

2.8 Institutional Framework

Implementation of the South West State component requires coordination between federal ministries, South West State institutions, district administrations, project implementation structures, contractors, community water institutions, and the AfDB. This section identifies the institutional roles relevant to environmental and social governance. Detailed ESMP implementation duties, inspection frequencies, reporting lines, incident procedures, and budget responsibilities are set out in Chapter 9.

2.8.1 Federal Institutions

INSTITUTION	ROLE RELEVANT TO THE SOUTH WEST STATE COMPONENT
Ministry of Agriculture and Irrigation (MoAI) / BBS PIU	Borrower implementing ministry; overall project implementation; ownership of the ESIA/ESMP; coordination of technical design, procurement, safeguards, state counterparts, and AfDB reporting.
Ministry of Environment and Climate Change (MoECC)	Federal environmental authority responsible for environmental assessment and environmental-clearance functions under the 2024 environmental framework.
Ministry of Energy and Water Resources (MoEWR)	Federal institution responsible for water-resource governance, including surface-water and groundwater management relevant to boreholes, the dug well, catchments, and the Shabelle irrigation system.
Ministry of Labour and Social Affairs	Responsible for labour administration and the national worker-protection framework.
Ministry of Health	Responsible for public-health functions relevant to water quality, communicable disease, sanitation, vector control, and community health.
Ministry of Humanitarian Affairs and Disaster Management / Somalia Disaster Management Agency (SoDMA)	Relevant to drought, flood, disaster-risk coordination, and emergency-management interfaces affecting the project areas.
Ministry of Planning, Investment and Economic Development	National planning and development-policy coordination, including the National Transformation Plan.
Ministry of Finance	Relevant to project financing, budgeting, and broader government financial oversight.

2.8.2 South West State and District Institutions

South West State institutions provide the principal state-level interface between the federal PIU and the project districts. The ESIA study identifies South West State MoAI and line ministries, the dedicated South West State E&S Officer, the three district administrations, traditional leadership structures, and water-user

organizations as the key local implementation and governance actors. Their roles are differentiated by district because the intervention types and risk profiles differ substantially between Hudur, Marka, and Qansax Dhere.

INSTITUTION / STRUCTURE	PRINCIPAL PROJECT ROLE
South West State MoAI and line ministries	State-level coordination and sector oversight; liaison with the PIU; support to implementation, safeguards compliance, and alignment with state priorities.
South West State E&S Officer	Day-to-day safeguards coordination across the 22 sites; liaison with district counterparts, contractors, community structures, and the PIU. Detailed inspection/reporting functions are specified in the ESMP.
Hudur District Administration	Access and local coordination for catchment, borehole, and dug-well works; community mobilization; land-access support; security coordination; local grievance and dispute support.
Marka District Administration	Access and coordination for canal and catchment works; conflict-sensitive security coordination; farmer and water-user liaison; local dispute and grievance support; coordination on irrigation continuity.
Qansax Dhere District Administration	Access and local coordination for catchment and borehole works; community mobilization; land-access support; security coordination; local grievance and dispute support.
Traditional and religious leaders (guddi / xeer elders)	Support culturally appropriate consultation and mediation of local land, water, and social disputes, while remaining outside the confidential SEA/SH pathway.
WUAs / water-user groups	Community-level water and irrigation governance; equitable access and allocation; O&M; maintenance planning; local water-related grievance management and escalation.

2.8.3 Project Delivery and Oversight Entities

ENTITY	ROLE
Works Contractors and Subcontractors	Implement construction-phase environmental, social, health and safety requirements through approved C-ESMPs, method statements, labour and OHS arrangements, community-safety controls, waste controls, and required security measures.
Supervision Consultant	Provides independent day-to-day verification of contractor compliance, construction quality, and environmental and social performance and reports to the PIU.
Community Liaison Officers / District Focal Points	Support disclosure, consultation, grievance uptake, vulnerable-group outreach, and liaison between communities, district institutions, contractors, and the PIU.
African Development Bank	Provides external environmental and social oversight; reviews and clears required safeguards instruments and reports; monitors compliance with the ISS and may require corrective action.

2.9 Institutional Capacity and Implementation Considerations

The available South West State project documentation does not provide a stand-alone, quantified institutional capacity assessment for every state or district institution. It does, however, identify the need for a dedicated South West State E&S Officer, district-level Community Liaison Officer support, contractor ESHS personnel, a Supervision Consultant, WUA capacity building, safeguards training for state and district institutions, and project-level security, groundwater, stakeholder-engagement, and grievance-management

systems. These requirements indicate that effective implementation cannot rely solely on routine regulatory enforcement and requires structured project support and clear contractual obligations.

The institutional challenge is also shaped by the diversity and geographic dispersion of the 22 sites. Hudur and Qansax Dhere require capacity for groundwater sustainability, borehole and well safety, catchment maintenance, and pastoral water access; Marka additionally requires irrigation-water governance, canal safety, Shabelle flood awareness, and conflict-sensitive implementation in Lower Shabelle. The Project addresses these implementation needs through dedicated safeguards staffing, approved contractor management plans, independent supervision, community water institutions, training, grievance systems, and pre-works verification. Detailed capacity-building measures and costs are addressed in the ESMP and training annex rather than repeated here.

2.10 Gap Analysis: Borrower Framework and AfDB ISS 2023

The purpose of the gap analysis is not to replace the national framework, but to identify where project implementation requires an additional or more explicit standard to meet the AfDB ISS 2023. The comparison is made against the legal and institutional arrangements identified in the project documents and is tailored to the South West State intervention mix. Where national and AfDB requirements differ, the more protective project requirement is applied for BBS implementation.

THEME	BORROWER / NATIONAL FRAMEWORK POSITION	AFDB REQUIREMENT / GAP	PROJECT RESPONSE
Environmental assessment and permitting	The Environmental Protection and Management Act (2024) and ESIA Regulations (2024) establish environmental assessment and clearance requirements, but the framework is recent and state-level implementation arrangements are not fully detailed in the project documents.	OS1 requires a proportionate, integrated assessment and management system throughout the project life cycle.	Apply the full ESIA/ESMP and AfDB review requirements; obtain national environmental clearance before works; maintain project-level supervision and adaptive management.
Water abstraction and groundwater sustainability	The project documents identify no functioning comprehensive federal abstraction-licensing regime; the 1984 water law is not operational in practice.	OS1/OS3 require sustainable resource use and prevention of depletion or unacceptable impacts.	Hydrogeological assessment and sustainable-yield determination for groundwater sites; abstraction control and monitoring; canal water governance and continuity arrangements in Marka.
Land acquisition, access, and compensation	No unified federal land-acquisition and compensation framework equivalent to OS5 is identified; customary xeer and local administrative arrangements remain important.	OS5 requires avoidance/minimization of displacement, documented rights and impacts, replacement-cost compensation, and due process.	Precautionary OS5 screening for the six new works and temporary land use; documented access agreements; compensation for verified losses; stop/reassess if displacement occurs.

THEME	BORROWER / NATIONAL FRAMEWORK POSITION	AFDB REQUIREMENT / GAP	PROJECT RESPONSE
Labour and occupational health and safety	The 1972 Labour Code provides basic protections but limited modern OHS requirements and does not provide the full project worker-management framework.	OS2 requires labour management, safe and healthy working conditions, non-discrimination, worker GRM, and contractor controls.	Project-wide LMP; worker register and age verification; written employment terms; workers' GRM; contractor OHS plans and activity-specific safety procedures.
Community health, safety, and security	Public-health rules exist, but the project context includes drilling, excavations, canals, extreme heat, water-related hazards, and conflict-sensitive areas not covered by a single project-specific national framework.	OS4 requires assessment and management of community H&S and security risks, including emergency preparedness and security-provider conduct where applicable.	Community H&S plans; water-quality and vector controls; site security assessment before mobilization; SMP where required; emergency and incident procedures.
Biodiversity and natural-resource protection	Environmental legislation provides a general protection framework; current screening does not identify critical habitat as a defining project feature.	OS6 requires screening, application of the mitigation hierarchy, habitat protection, and reassessment where risk changes.	Maintain footprint limits and site-specific verification; protect riparian areas and vegetation where relevant; reassess if screening assumptions change.
Vulnerable groups and social inclusion	National policy supports gender equality and social protection, but project documents identify risks of exclusion affecting women, IDPs, returnees, minority clans, poor households, pastoralists, and tail-end users.	OS7 and OS10 require differentiated measures and meaningful access to project benefits and decision-making.	Apply targeted consultation, non-discrimination in WUA rules, inclusive governance, female CLO support, and monitoring of access and representation.
Cultural heritage	No modern federal antiquities statute providing a complete project chance-find system is identified.	OS8 requires identification and protection of cultural heritage and procedures for unexpected finds.	Apply the project Chance Finds Procedure to all ground-disturbing works and obtain competent clearance before resuming affected activities.
SEA/SH prevention and response	Sexual violence is addressed in national criminal law, but the project documents do not identify a comprehensive project-level national SEA/SH prevention and survivor-referral framework.	OS4, OS7 and OS10 require prevention, safe reporting, confidentiality, survivor-centred response, and non-retaliation.	Worker Codes of Conduct, training, confidential project channel, female CLO access, and mapped survivor-centred referral pathways; SEA/SH cases are not mediated through customary forums.
Stakeholder engagement and grievance redress	The project documents do not identify a national requirement equivalent to a continuous project-level SEP and multi-channel GRM with defined accessibility and escalation arrangements.	OS10 requires meaningful engagement, information disclosure, accessible grievance redress, and differentiated participation.	Implement the South West State SEP and multi-channel GRM in all three districts, with conflict-sensitive outreach and specific routes for water-allocation and SEA/SH matters.
Institutional capacity and multi-district coordination	Implementation spans three districts, four intervention types, and a security-sensitive environment, while routine institutional capacity is not quantified.	OS1 requires sufficient organizational capacity and competence to implement E&S commitments.	Dedicated SWS E&S Officer; district/CLO support; contractor ESHS staffing; Supervision Consultant; WUA capacity building; safeguards training and project-level reporting systems.

2.10.1 Governing Compliance Principle

For the South West State component, compliance is therefore based on the combined application of the Federal Republic of Somalia's legal and policy framework, the relevant South West State and district administrative arrangements, applicable international obligations, and the AfDB ISS 2023. Where a national requirement is absent, not operational, or less specific than the AfDB safeguard requirement, the Project applies the ISS and the associated project procedure as the minimum implementation standard. This principle is carried into procurement, contractor obligations, pre-mobilization approvals, monitoring, grievance management, and the ESMP.

CHAPTER 3: ANALYSIS OF ALTERNATIVES

3.1 Purpose and Approach

This chapter records the alternatives considered for the South West State component and explains the basis for the preferred approach. It does not repeat the project rationale, environmental and social baseline, or detailed mitigation measures presented elsewhere in the ESIA. The analysis is limited to alternatives that are supported by the project documents, engineering packages, screening records and water-infrastructure assessment matrix.

The alternatives analysis distinguishes between: (i) whether the proposed water-infrastructure intervention should proceed; (ii) where works should occur, particularly for new groundwater infrastructure; (iii) the design and technology choices available for catchments, canals and groundwater systems; and (iv) how works should be sequenced and implemented. The assessment applies technical feasibility, expected water and agricultural benefit, environmental and social risk, implementation practicality, cost, climate resilience and long-term operability as decision considerations.

3.2 Decision Criteria and Evidence Base

The BBS water-infrastructure assessment matrix provides a quantified prioritisation tool for assessed infrastructure. The matrix records location, infrastructure type, target dimensions or length, target command area, targeted beneficiary households, assessment-team cost, design cost estimate and four weighted benefit/readiness criteria. The matrix is an input to project selection; it is not treated in this ESIA as a substitute for environmental and social screening, hydrogeological confirmation, land-access verification or final engineering design.

Table 3-1: Water Infrastructure Prioritization Criteria

CRITERION	WEIGHT	HOW REPRESENTED IN ASSESSMENT MATRIX
Command area	40%	Relative target command area compared with the highest command area in the matrix.
Farmers' / beneficiary use	40%	Relative targeted beneficiary households compared with the highest beneficiary number in the matrix.
Community readiness	10%	Readiness score recorded in the assessment matrix.
Site accessibility	10%	Accessibility score recorded in the assessment matrix.
Total score	100%	Matrix classification: 70-100% High; 40-69% Medium; 16-39% Borderline; 0-15% Not viable.

3.3 No-Project Alternative

Under the no-project alternative, the selected existing water catchments, canals and the rehabilitated borehole would remain in their present condition, while the proposed new groundwater works would not be developed. The development benefits sought through improved water access, restored irrigation conveyance

and more reliable productive water infrastructure would therefore not be realised at the selected South West State sites.

The no-project alternative would avoid construction-phase disturbance and the risks associated with drilling, excavation, canal works and temporary access. It would, however, leave the identified water-infrastructure constraints unresolved. On the evidence used for project preparation, this alternative is not preferred because it does not meet the project objective of improving productive water access and climate resilience in the target areas.

3.4 Location and Siting Alternatives

3.4.1 Rehabilitation Works

For rehabilitation works, the principal location decision has already been constrained by the existence of the asset. The catchments and irrigation canals are existing infrastructure, and the rehabilitation alternative is therefore to work within or immediately around the existing footprint rather than create a new water-infrastructure corridor. The environmental and social advantage of this approach is that it limits new land disturbance and makes use of established water-use locations and management arrangements.

3.4.2 New Groundwater Works

The five new boreholes and the new dug well require a different siting approach because the final construction point must be technically viable and socially acceptable. The project documents require new groundwater locations to be confirmed through hydrogeological investigation and land-access screening before works. Micro-siting is therefore the relevant location alternative: candidate points are compared on groundwater potential, access, land availability, security and avoidance of sensitive receptors or displacement. A location that does not satisfy these conditions is not carried forward merely because it appears in an earlier assessment record.

3.4.3 Site-Selection and Naming Records

The supporting documents demonstrate that site selection evolved during preparation. In Marka-Janale, the benefit-ranking matrix links the final ESIA site labels to engineering asset names: Sar Adde to Arfeyle 1 and Arfeyle 2; Kaaytoy to Agraariyo and Agrikolo; Doobis to Saddexda Qumbe and Shanley; and Kamirow to Wasiirka. The screening package also contains additional candidate or earlier-name records.

3.5 Design and Technology Alternatives

The design alternatives retained in the existing South West State ESIA and supported by the engineering packages are summarised below. They are presented as project-level choices; final site-specific dimensions and equipment schedules remain subject to the approved engineering drawings and pre-works investigations.

Table 3-2: Design and Technology Alternatives - South West State

DESIGN ISSUE	ALTERNATIVE A	ALTERNATIVE B	PREFERRED APPROACH / BASIS
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DESIGN ISSUE	ALTERNATIVE A	ALTERNATIVE B	PREFERRED APPROACH / BASIS
Borehole / groundwater pumping	Diesel pumping	Solar-powered pumping	Solar pumping is identified as the preferred project approach because it reduces routine fuel dependence and operating emissions. The supplemental borehole package also contains generator-room drawings for some sites; final power configuration must therefore be confirmed in the approved site-specific design rather than inferred from generic drawings.
Catchment lining	Compacted-soil / unlined basin	Geomembrane lining where infiltration losses justify it	Use lining selectively where required by site conditions; the available Hudur catchment drawings include lined water-pan details.
Canal rehabilitation	Full concrete lining	Selective lining combined with desilting, bank repair and control-structure works	Selective treatment is preferred in the current project documents, targeting deterioration and conveyance constraints without converting the full canal length to concrete.
Groundwater abstraction	Uncontrolled pumping	Abstraction limited by sustainable-yield determination and monitoring	Yield-limited abstraction is the preferred approach; sustainable yield is established before operation of groundwater infrastructure.
Lower Shabelle work access and scheduling	Fixed implementation schedule regardless of access conditions	Security-led flexible scheduling	Flexible sequencing is preferred where access and security conditions require it.

3.6 Construction and Implementation Alternatives

The project documents favour a combined implementation approach rather than a single construction method across all typologies. Mechanised methods are appropriate for drilling and bulk earthworks, while labour-based methods can be used for suitable finishing, desilting, minor earthworks and reinstatement. The final method for each activity is defined in the contractor's approved method statement and must remain consistent with the engineering design and E&S requirements.

A fully simultaneous mobilization across all 22 sites is not preferred. The project documentation instead supports district- and typology-based work packaging and phased mobilization. This allows design confirmation, hydrogeological investigation, land-access confirmation and site readiness to be completed before the relevant works begin, while also allowing implementation in Lower Shabelle to respond to access and security conditions.

3.7 Environmental and Social Implications of the Alternatives

The principal environmental and social advantage of the preferred alternative is that rehabilitation remains focused on existing infrastructure while new works are subject to site confirmation before construction. Selective rather than blanket canal lining reduces unnecessary disturbance; hydrogeologically controlled groundwater abstraction avoids treating pump capacity as the determinant of allowable withdrawal; and flexible implementation avoids forcing works to proceed when site readiness or access conditions are unsuitable.

The alternatives rejected or not preferred would transfer risk rather than remove it. Uncontrolled groundwater abstraction would increase the risk of unsustainable drawdown; fixed scheduling in a security-sensitive setting would reduce the ability to respond to changing access conditions; full canal lining would extend the construction footprint and material demand beyond the selective rehabilitation approach; and siting a new groundwater point before confirming hydrogeological and land conditions would create avoidable technical and social risk.

3.8 Feasibility of Managing Impacts Under the Preferred Alternative

The preferred alternative was retained because its material environmental and social risks can be linked to identifiable design, pre-construction and operational controls. The necessary controls include site confirmation for new works, engineering condition assessment for rehabilitation works, sustainable-yield determination for groundwater infrastructure, defined canal profiles and structures, and phased implementation.

3.9 Cost and Economic Considerations

Cost was included in the project assessment process through both assessment-team cost estimates and design cost estimates recorded in the water-infrastructure matrix. The same matrix evaluates benefit-related criteria through command area and targeted beneficiary households. These data provide a comparative infrastructure-selection input; this ESIA does not reproduce or re-perform the project's separate economic and financial analysis.

A separate BBS feasibility-study cost-benefit analysis evaluates crop and value-chain performance and explicitly avoids generating quantitative economic indicators where the minimum data are absent. Consistent with that approach, this ESIA does not assign economic values or selection scores to South West sites for which the available evidence does not provide them.

3.10 Stakeholder Input into Alternatives

Stakeholder consultation records identify matters that directly affect alternatives: the location of new water points, groundwater sustainability, irrigation continuity and head-to-tail access, local employment, women's participation, inclusion of displaced and minority households, security, and maintenance sustainability. These concerns support the preferred approach of confirmed siting for new works, controlled groundwater abstraction, phased canal rehabilitation, inclusive water-management arrangements and designs that can be operated and maintained locally. Detailed consultation findings and ongoing engagement requirements are maintained through the Stakeholder Engagement Plan, consultation records and Chapter 9 ESMP provisions.

3.11 Preferred Alternative and Conditions

The preferred alternative is the final South West State project scope as defined by the BBS Master List: rehabilitation of selected catchments and irrigation canals and one existing borehole, together with the new

groundwater works, implemented through site-specific design confirmation, selective rehabilitation, sustainable-yield controls and phased implementation. This preference is conditional on resolving the site-specific design and site-record requirements identified in the supporting documentation before mobilisation.

Where final hydrogeological, land-access, security or engineering verification demonstrates that a proposed location or design is not viable, the project must return to the alternatives process for that site rather than assume that the current point or design remains acceptable.

CHAPTER 4: DESIGN MEASURES

4.1 Purpose and Design Basis

This chapter identifies environmental and social considerations that are incorporated into the proposed engineering design itself. It is intentionally limited to design-stage measures and does not duplicate construction-phase mitigation, monitoring procedures or institutional responsibilities presented later in the ESIA.

Design information is available at different levels of detail across the 22 sites. Detailed Hudur catchment, borehole and water-point drawings and Janaale canal profiles provide typology-specific design evidence, while final site-specific parameters for other sites shall be confirmed through the approved engineering design and pre-construction process.

4.2 Design Principles Applied Across Infrastructure Types

The project design approach is based on four principles supported by the preparation documents: use existing infrastructure footprints where rehabilitation is proposed; confirm the location and sustainable yield of new groundwater works before construction; apply selective rehabilitation rather than unnecessary full reconstruction; and provide infrastructure that can be operated through community water-management arrangements after handover. Climate resilience and user safety are incorporated through the relevant site design rather than treated only as operational controls.

4.3 Water Catchment Design Measures

The Hudur engineering drawings for Warjanaay, Wardhato and Salah Abib show water-pan rehabilitation/enhancement as a system rather than only excavation of the basin. The drawings include basin sections, inlet arrangements, silt control, outlet/overflow arrangements, fencing, livestock watering facilities and elevated storage details. The Warjanaay drawing specifically shows a 1.5 mm HDPE liner within the water-pan section and pipe connections to associated water-use structures. These details support the project approach of addressing storage, sediment control, controlled access and water distribution together.

For the Marka and Qansax Dhere catchments, final site-specific dimensions and rehabilitation details shall be confirmed through the approved engineering design before mobilisation and incorporated into the C-ESMP.

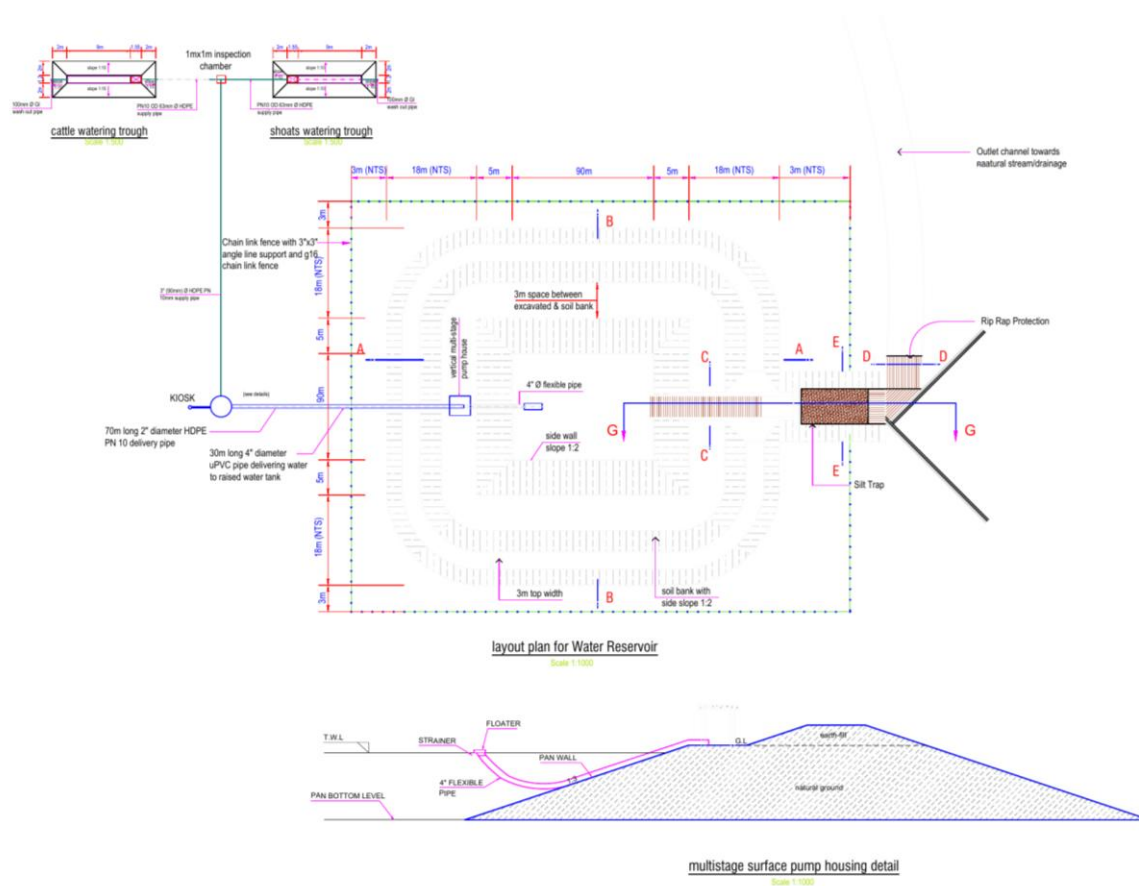


Figure 4-1: Typical Hudur Water Catchment Plan and Associated Structures

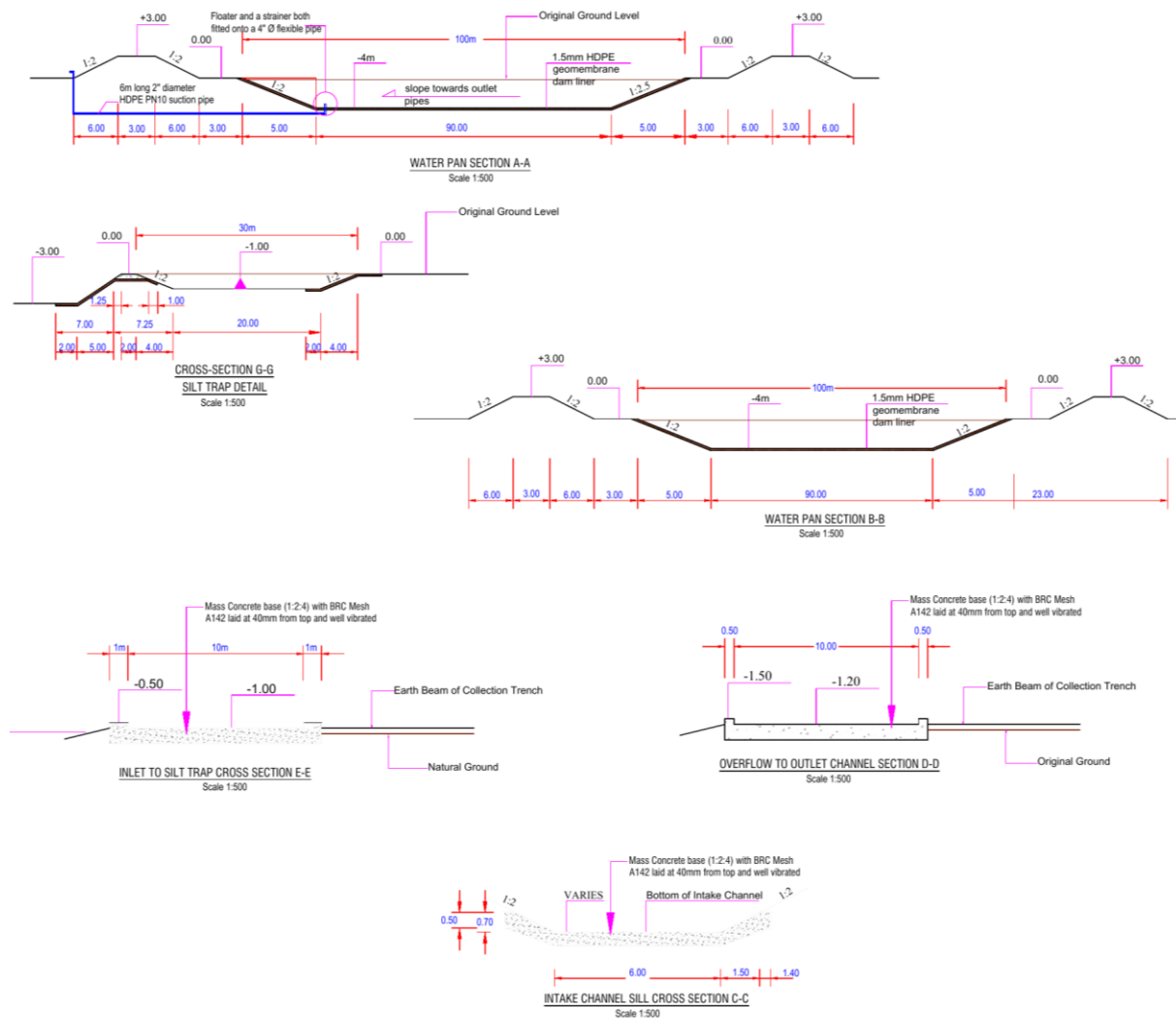


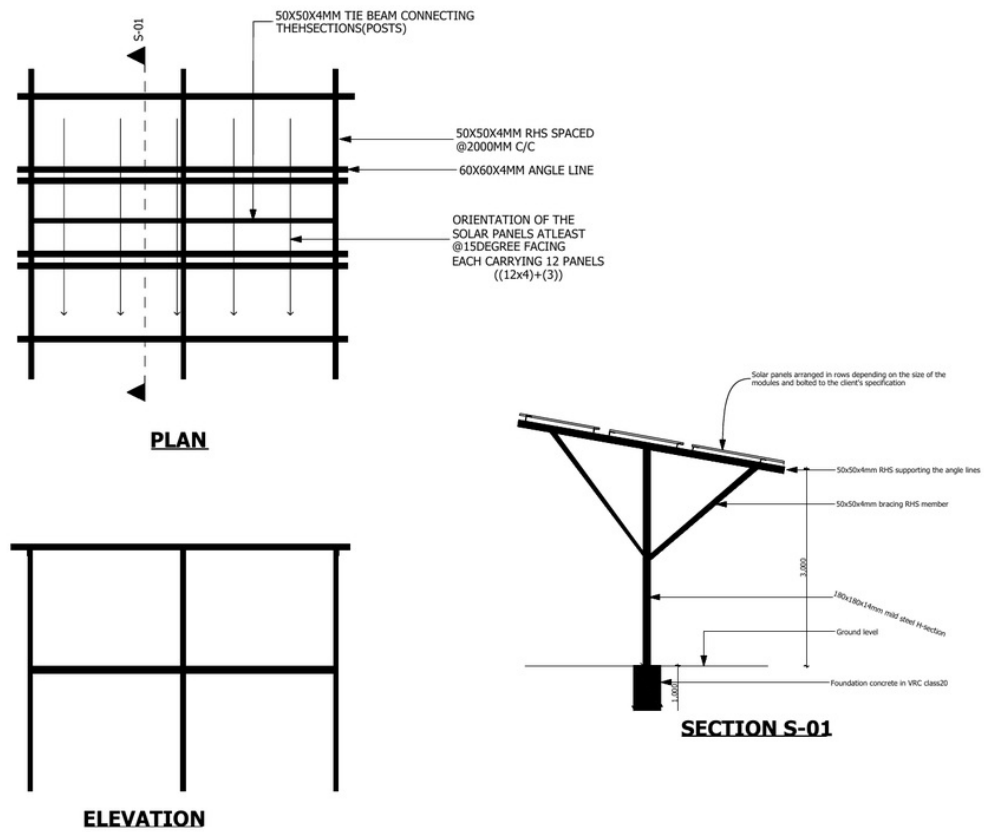
Figure 4-2: Typical Water Catchment Sections, Inlet/Silt Control and Overflow Arrangement

4.4 Borehole Design Measures

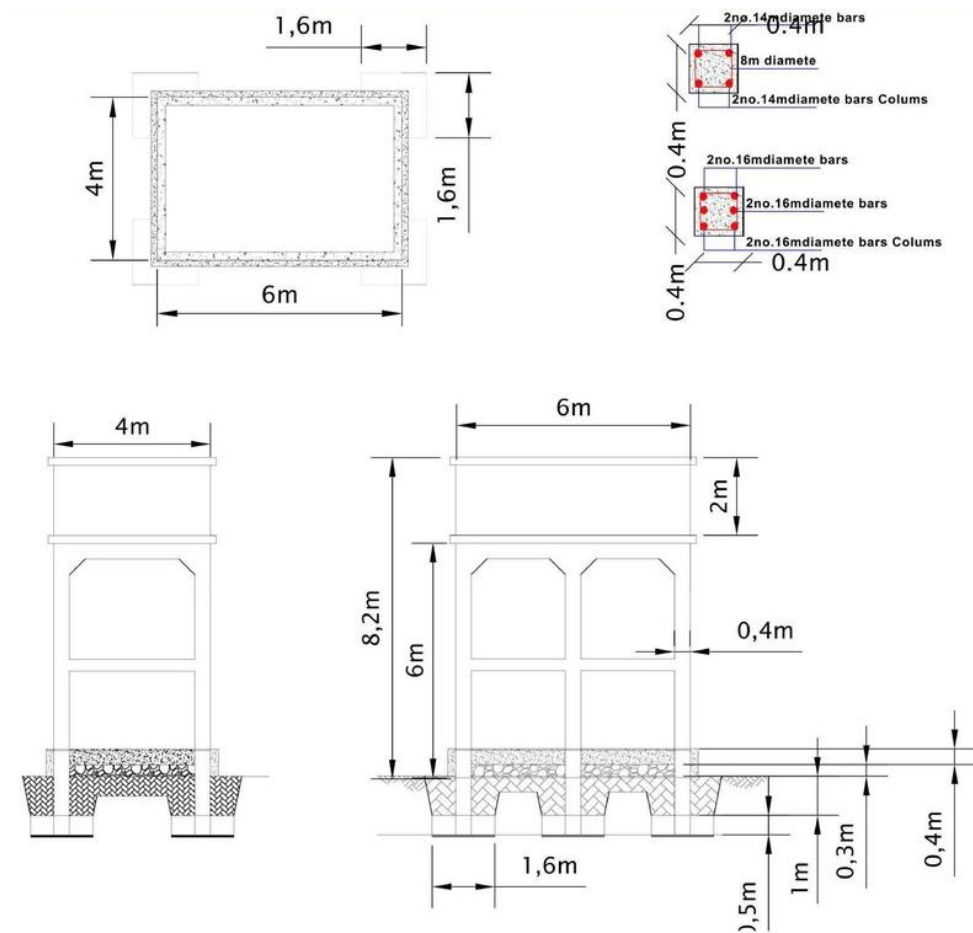
The Hudur borehole engineering drawings include drawings for solar-panel and fencing arrangements, elevated water storage, livestock troughs and latrine facilities. This indicates that the borehole intervention is designed as a managed water point with abstraction, storage, distribution, livestock access and sanitation components rather than as a stand-alone drilled hole.

Solar-powered pumping is the preferred project approach where confirmed by the approved site-specific engineering design. Because some engineering records also include generator-room details, the final mechanical/electrical configuration for each groundwater site shall be confirmed before procurement and incorporated into the C-ESMP.

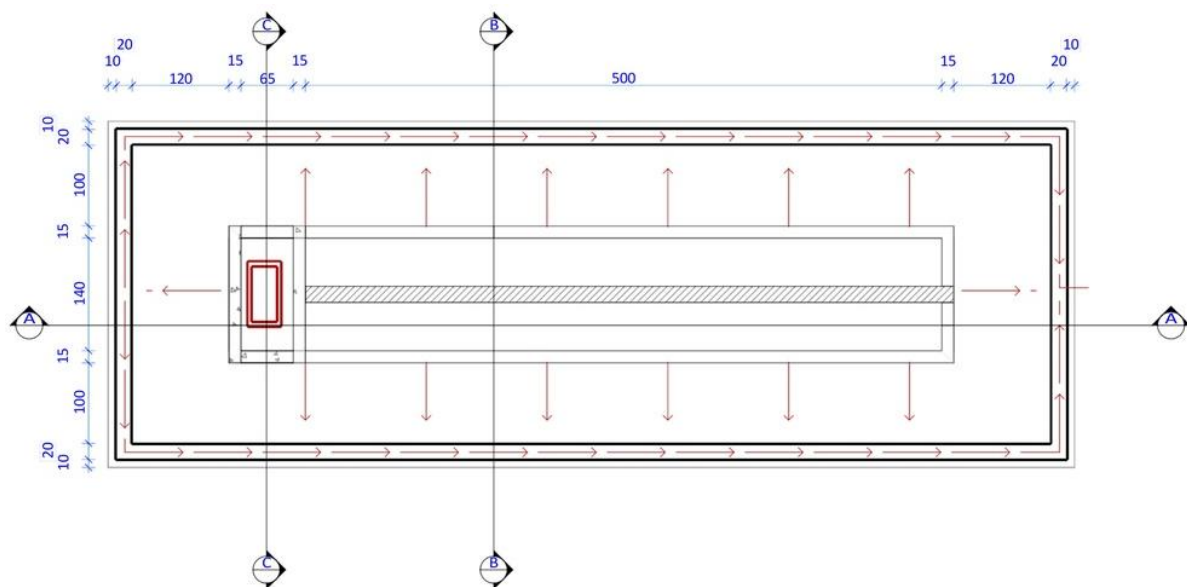
Groundwater design capacity is constrained by hydrogeological sustainable yield rather than by pump or storage capacity alone. Borehole depth, casing, screen interval, development method, pump duty and abstraction regime should therefore be finalised only after the pre-works hydrogeological investigation required by the project. No unverified depth or yield is assigned in this ESIA to a new borehole.



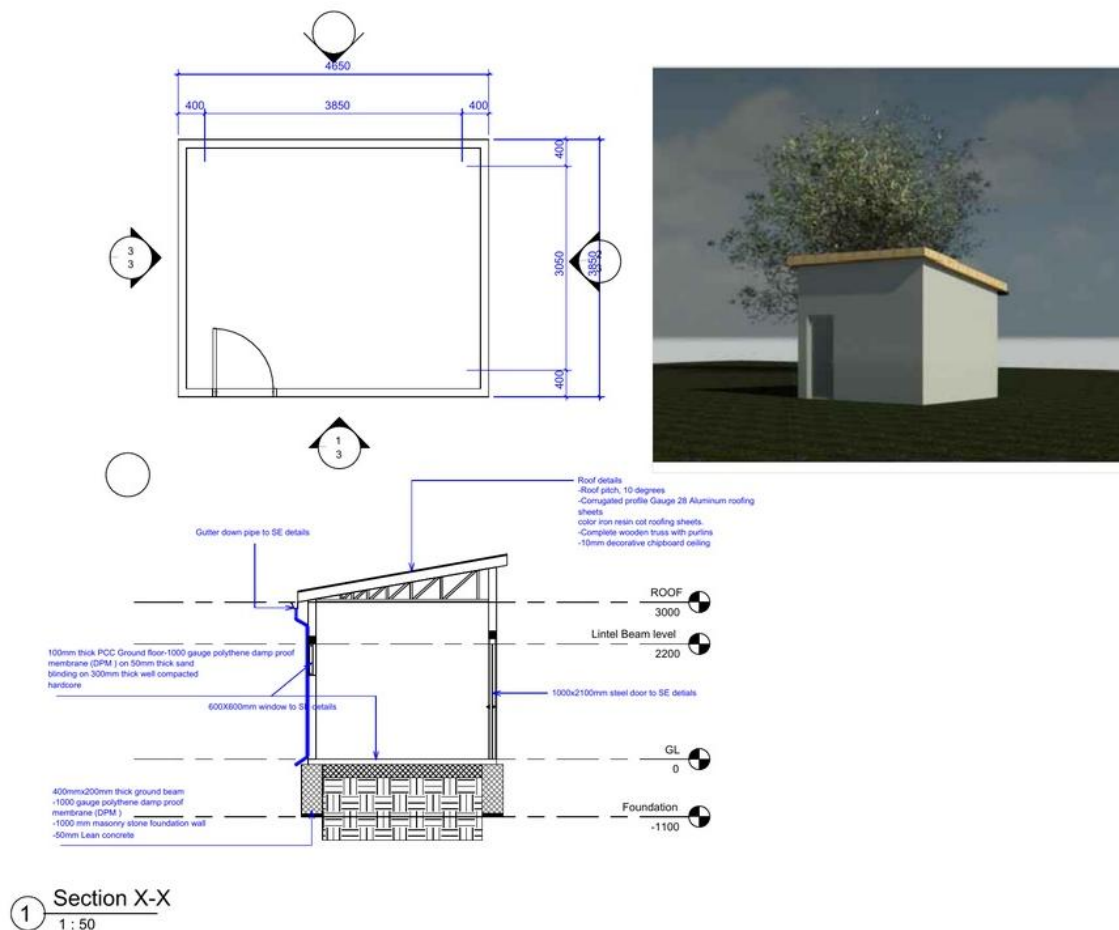
(a) Solar array references



(b) Elevated-tank reference



(c) Livestock-trough reference



(d) Sanitation reference

Figure 4-3: Typical BBS Borehole Site Layout - Solar Array, Fencing, Elevated Tank and Water-Use Facilities

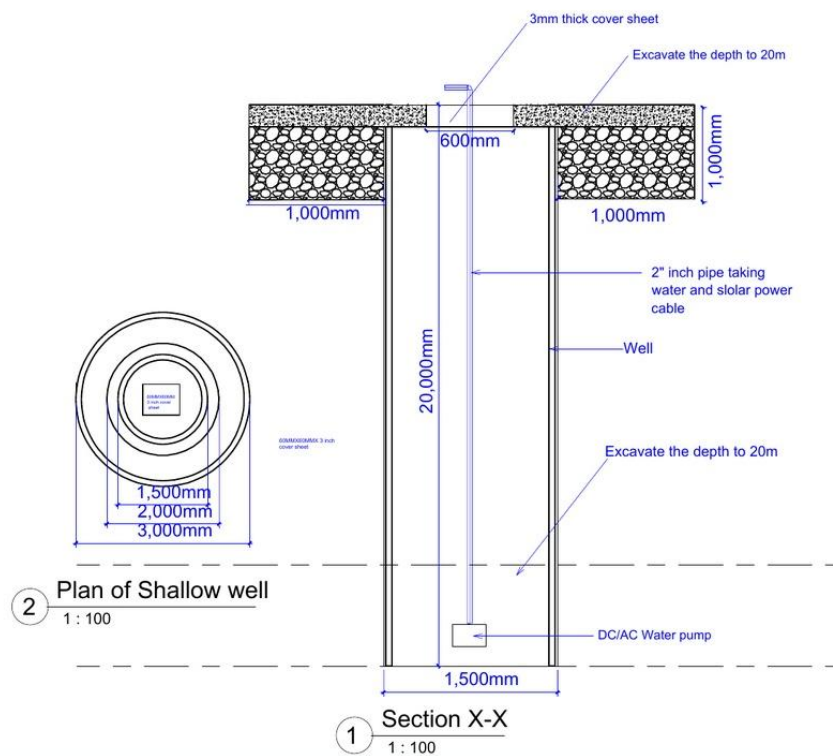
4.5 Dug-Well / Shallow-Well Design Measures

Gomoro is classified in the final South West State site register as a new dug well. The engineering records include project-standard shallow-well details; the approved site-specific design shall govern the final construction method and dimensions.

The shallow-well section shown in Figure 4-4 is retained only as a project-standard reference detail. It is not a final Gomoro construction drawing. The approved site-specific design shall establish excavation depth, lining/ring details, access and fall-protection measures, pump arrangement, water storage and distribution configuration before mobilisation.



(a) Gomoro proposed dug-well site – field verification photographs



(b) Project standard shallow-well detailed reference only

Figure 4-4: Gomoro Proposed Dug-Well Site and Project-Standard Shallow-Well Reference Detail

4.6 Irrigation Canal Design Measures

The Janaale engineering package contains longitudinal profiles and structure drawings for named canals including Saddexda Qumbe, Shanley and Wasirka. The benefit-ranking matrix provides the cross-reference between these engineering names and the final ESIA site labels. The engineering profiles distinguish primary and secondary canal dimensions and show proposed canal bed and bank elevations against existing profiles. Separate drawings are provided for intake and canal-crossing structures.

Table 4-1: Example Canal Dimensions Shown in Janaale Engineering Profiles

ENGINEERING PROFILE	BASE WIDTH (M)	FLOW DEPTH (M)	SIDE SLOPE	TOTAL DEPTH (M)	TOP WIDTH (M)
Saddexda Qumbe - secondary profile	0.30	0.45	1.25	0.75	1.43
Shanley - secondary profile	0.30	0.45	1.25	0.75	1.43
Wasiirka - primary profile	0.40	0.50	1.25	0.80	1.65

The profiles above demonstrate that canal geometry is being defined from survey and hydraulic design rather than by adopting a single cross-section for all sites. This ESIA therefore does not extrapolate these dimensions to Arfeyle 1/2, Agraariyo or Agrikolo where the specific profile is not reproduced in this chapter. The final works package should use the approved canal-by-canal profiles, cross-sections and structure drawings.

4.7 Climate-Resilience Measures Incorporated in Design

Climate resilience is incorporated differently by infrastructure type. Catchment design must preserve storage and safe overflow under variable rainfall; groundwater systems must be sized to sustainable yield and operated within the available resource; and canal rehabilitation must restore conveyance and structures while remaining compatible with Lower Shabelle flood conditions. The detailed climate-risk assessment and hazard ratings are addressed in the baseline and impact chapters and are not repeated here.

The design-stage requirement is that the final drawings demonstrate how the relevant climate hazard has been considered. Where a generic drawing does not contain a South West site-specific hydrological or hydrogeological basis, that information must be provided by the supporting technical assessment before the drawing is accepted for construction.

4.8 User Access, Safety and Functional Separation

The technical packages show the inclusion of fencing, water-storage structures, livestock troughs and sanitation facilities at relevant water points. These elements provide a design basis for controlling access around wells and equipment, separating livestock watering from the abstraction point, and managing water after it is pumped or harvested. For canal works, intake and crossing structures form part of the engineering package and should be coordinated with established community access routes.

4.9 Design Response to Stakeholder Considerations

The design choices are consistent with stakeholder issues documented during preparation: reliability of water supply, equitable irrigation access, safe and convenient water use, groundwater sustainability, siting of new works, and maintenance after handover. The engineering response is therefore to use controlled distribution and storage, retain site-specific groundwater confirmation, rehabilitate canal controls and conveyance, and provide associated water-use structures. Detailed stakeholder commitments are presented in the stakeholder-engagement and ESMP chapters.

4.10 Design Information to be Confirmed Before Construction

Table 4-2: Design Confirmation Requirements Before Mobilisation

SITE / TYPOLOGY	REQUIRED DESIGN CONFIRMATION
All 22 sites	Field-verified coordinates and signed site register consistent with the final Master List.
New boreholes and dug well	Hydrogeological siting, sustainable yield, final depth/lining/casing, pump duty, storage and power configuration.
Hudur catchments	Approved site-specific basin, embankment, liner (where applicable), inlet/silt-control, overflow and water-use structure drawings.
Marka canals	Approved canal-by-canal longitudinal profile, cross-section, intake/control structures, crossings and any selective lining limits.
Marka and Qansax Dhere catchments	Approved site-specific drawings; these were not identified in the engineering records reviewed for this chapter.
Document nomenclature	Reconciliation of Master List names with screening-form and engineering-drawing names; no construction drawing to be issued against an ambiguous site identity.

CHAPTER 5: PROJECT DESCRIPTION

5.1 Purpose and Scope of this Chapter

This chapter describes the physical South West State project that is assessed in the remainder of the ESIA. It provides the site register, infrastructure typologies, principal works, implementation approach, temporary support requirements and operation concept.

5.2 South West State Component within the BBS Project

The South West State works form part of BBS Component 1 - Irrigation Infrastructure Development. The project Concept Note identifies Component 1 as the water-infrastructure component, covering rehabilitation of irrigation and flood-protection infrastructure, dryland water management and irrigation expansion, and infrastructure planning, design and maintenance systems. For this state-level ESIA, the assessed physical scope is limited to the 22 South West State sites in the final project list.

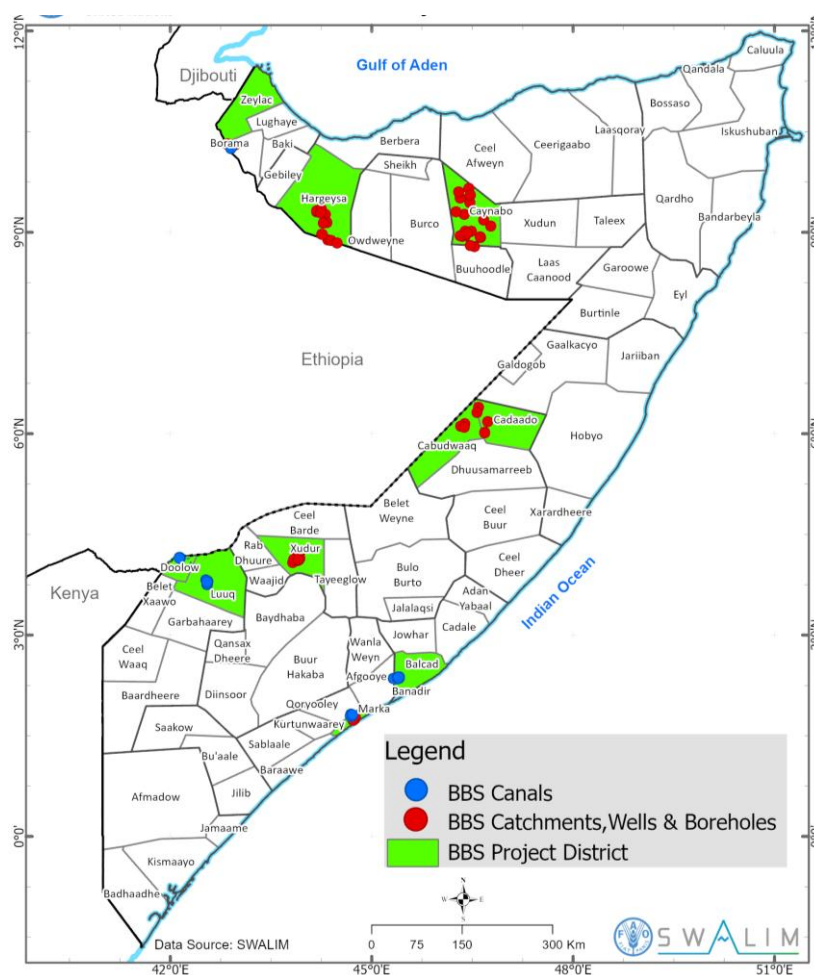


Figure 5-1: BBS Project Locations in Somalia, Showing the South West State Project Area

5.3 Project Locations and Site Register

The final South West State ESIA site register comprises sites in Hudur District (Bakool Region), Marka District (Lower Shabelle Region) and Qansax Dhere District (Bay Region). The table below reproduces

the final site identifiers, coordinates, infrastructure type and works status used as the controlling scope for this ESIA.

Table 5-1: South West State BBS Project Site Register (22 Sites)

No	Site / Village	District	Region	Infrastructure	Latitude	Longitude	Status
1	Warjanaay	Hudur	Bakool	Water Catchment	4.122610	43.898034	Rehabilitation
2	Salah-bib	Hudur	Bakool	Water Catchment	4.123564	43.836346	Rehabilitation
3	Wardhoto	Hudur	Bakool	Water Catchment	4.126045	43.907416	Rehabilitation
4	Waneey	Hudur	Bakool	Borehole	4.078592	43.823619	New
5	Sheikh Aways	Hudur	Bakool	Borehole	4.112841	43.896615	New
6	Godow	Hudur	Bakool	Borehole	4.138145	43.928804	New
7	Gomoro	Hudur	Bakool	Dug Well	4.217378	43.901627	New
8	Banjanay	Hudur	Bakool	Borehole	4.226804	43.931759	New
9	Laame Looshe	Hudur	Bakool	Borehole	4.121369	43.915683	Rehabilitation
10	Sar Adde Canal (19)	Marka	Lower Shabelle	Irrigation Canal	1.819092	44.691425	Rehabilitation
11	Sar Adde Canal (20)	Marka	Lower Shabelle	Irrigation Canal	1.818475	44.691117	Rehabilitation
12	Kaaytoy Canal (21)	Marka	Lower Shabelle	Irrigation Canal	1.799322	44.682215	Rehabilitation
13	Kaaytoy Canal (22)	Marka	Lower Shabelle	Irrigation Canal	1.795372	44.679400	Rehabilitation
14	Doobis Canal (23)	Marka	Lower Shabelle	Irrigation Canal	1.802184	44.704162	Rehabilitation
15	Doobis Canal (24)	Marka	Lower Shabelle	Irrigation Canal	1.804074	44.706787	Rehabilitation
16	Kamirow Canal	Marka	Lower Shabelle	Irrigation Canal	1.789789	44.686325	Rehabilitation
17	Bufow Ba'ad Catchment (26)	Marka	Lower Shabelle	Water Catchment	1.746756	44.742091	Rehabilitation
18	Bufow Ba'ad Catchment (27)	Marka	Lower Shabelle	Water Catchment	1.768511	44.760703	Rehabilitation
19	Bufow Ba'ad Catchment (28)	Marka	Lower Shabelle	Water Catchment	1.731089	44.717756	Rehabilitation
20	Raydable	Qansax Dhere	Bay	Water Catchment	2.844125	43.004575	Rehabilitation
21	Aydura	Qansax Dhere	Bay	Water Catchment	2.873569	43.026894	Rehabilitation
22	Ceel Hindi	Qansax Dhere	Bay	Borehole	2.896706	43.008564	New

5.3.1 Coordinate and Site-Identity Status

The site table above is used as the ESIA reference register. The supplemental assessment files contain several inconsistencies in spelling, coordinates and infrastructure terminology. Examples include Hudur catchment coordinates that do not consistently align between screening forms and the final list, a different coordinate for Sheikh Aways in one screening form, and differing 'borehole', 'dug well' and 'shallow well' terminology in some Hudur records. The project screening records also does not contain forms for the three Qansax Dhere sites.

These inconsistencies are not resolved by assumption in this ESIA. Before mobilisation, all 22 locations must be field-verified and reconciled into a signed site register linking the final site name, GPS position, infrastructure type, screening record, design drawing and works package. Any material change to location or infrastructure type requires environmental and social re-screening before works.

5.3.2 Marka Canal Nomenclature Cross-Reference

The water-infrastructure assessment matrix uses engineering asset names for the seven Marka-Janale canals. The cross-reference below is retained so that the ESIA site register can be matched to the technical profiles, BoQs and screening records without changing the final project nomenclature.

Table 5-2: Cross-Reference of Marka Canal Site Labels and Engineering Names

FINAL ESIA / MASTER LIST LABEL	ENGINEERING NAME IN ASSESSMENT MATRIX
Sar Adde Canal (19)	Arfeyle 1
Sar Adde Canal (20)	Arfeyle 2
Kaaytoy Canal (21)	Agraariyo
Kaaytoy Canal (22)	Agrikolo
Doobis Canal (23)	Saddexda Qumbe
Doobis Canal (24)	Shanley
Kamirow Canal	Wasiirka

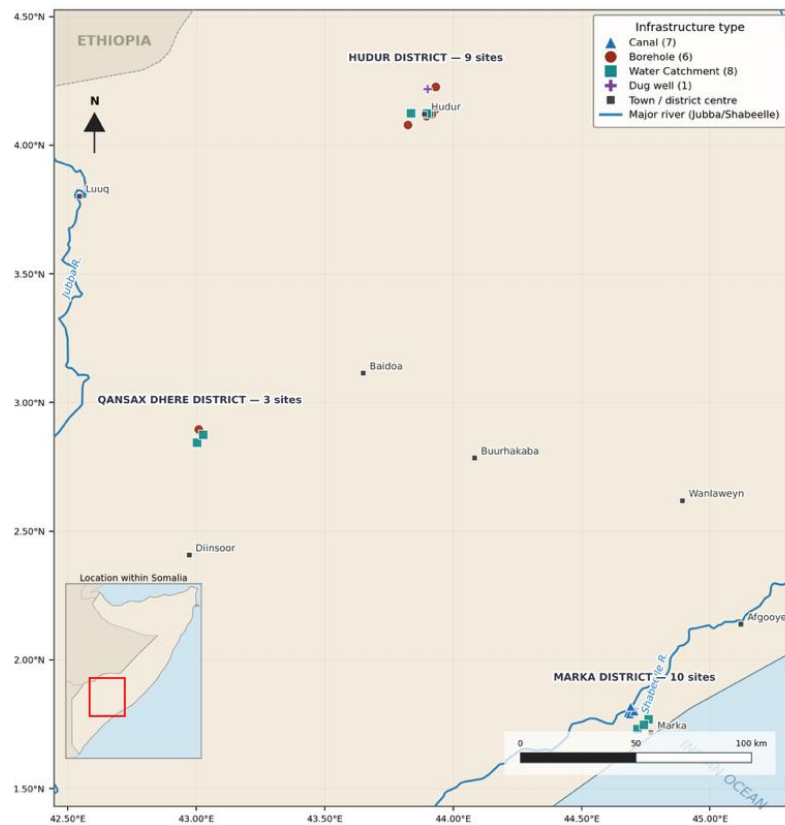


Figure 5-2: South West State BBS Project Site Locations - Hudur, Marka and Qansax Dhere

5.4 Infrastructure Typologies and Principal Works

5.4.1 Water Catchments

The state component includes eight water-catchment rehabilitation sites. The works described in the project documents include desilting and reshaping of the storage basin, repair of embankments or bunds, improvement of inlet/outlet and silt-control arrangements, selective use of geomembrane lining where required by site conditions, rehabilitation or construction of livestock watering facilities, and reinstatement/revegetation of disturbed surfaces. Final quantities and dimensions are governed by the approved site-specific BoQ and drawings.



Figure 5-3: Representative Pre-Works Water Catchment Conditions in South West State

5.4.2 Irrigation Canals

The seven canal sites are rehabilitation works in the Marka-Janale area of Lower Shabelle. The works package includes desilting and reshaping of canal sections, bank repair and stabilisation, rehabilitation or replacement of offtakes, gates and control structures, canal crossings where included in the design, and restoration of conveyance capacity. The engineering package includes longitudinal profiles and structure drawings for several named canals; site-specific profiles and structure schedules govern the actual works at each canal.



Figure 5-4: Representative Marka-Janale Canal Conditions Before Rehabilitation

5.4.3 Boreholes

The final site list contains six borehole interventions: five new boreholes and rehabilitation of the existing Laame Looshe borehole. For new boreholes, the project documents provide for hydrogeological siting followed by drilling, casing and development, installation of the pumping/power system and associated storage/distribution infrastructure. For the rehabilitation site, the works are confined to the existing borehole and its pump and appurtenances as confirmed by the technical assessment. Site-specific depth, yield, pump duty and equipment configuration are not stated in this chapter unless supported by the approved design.



Figure 5-5: Representative Hudur Borehole Site / Existing Water-Point Condition

5.4.4 Dug Well

Gomoro is identified in the final site list as one new dug well. The available engineering package is labelled as a shallow-well package and contains a general layout and well-section details. The final construction method, depth, lining arrangement, pumping/drawing arrangement and associated water-use structures must therefore follow the reconciled site-specific design rather than the generic drawing title.



Figure 5-6: Gomoro Proposed Dug-Well Site - Field Verification Photograph

5.5 Project Life-Cycle Activities and Implementation Approach

5.5.1 Pre-Construction Confirmation

Before physical works, each works package shall be converted into a construction-ready site package comprising verified coordinates and access, the applicable condition/hydrogeological assessment, approved engineering design and BoQ, and the approved C-ESMP and task-specific method statements.

5.5.2 Construction Methods

Construction methods vary by typology. Catchment works are predominantly earthworks and structure rehabilitation; canal works combine desilting, excavation/reshaping and hydraulic structure works; boreholes require drilling and borehole development together with installation of water-storage and

distribution infrastructure; and the dug well requires controlled excavation and lining according to the final design. The project documents support a combination of mechanised and labour-based methods depending on the task.

5.5.3 Work Packaging and Sequencing

The Project Implementation Plan covers 2026-2029 and includes early technical assessment, site prioritisation, detailed engineering design and BoQs before civil-works implementation. For South West State, the dispersed geography and different infrastructure types support district- and typology-based work packages rather than treating all 22 sites as a single work front. Exact contract packaging and site start dates are not stated in the available South West design records and are therefore not invented in this ESIA.

5.6 Temporary Construction Support and Associated Sites

Civil works will require temporary support areas such as access routes, lay-down/storage areas, locations for spoil or excavated material, construction-water points, fuel or equipment servicing areas where applicable, and worker welfare facilities. The available documents do not identify a final South West State register of borrow areas, spoil-disposal sites, camps or lay-down areas. Such locations are therefore not mapped or described as confirmed project sites in this chapter.

Any temporary or associated site selected during implementation must be linked to the relevant works package and subjected to the project's screening, land-access and reinstatement requirements before use. This prevents an unassessed support site from becoming part of the project by default.

5.7 Materials, Equipment and Resource Requirements

The technical packages identify the main classes of construction inputs: earthworks materials; concrete and reinforcement for water-control, storage and access structures; HDPE/GI pipework in relevant water-point designs; geomembrane where specified for catchments; borehole casing and pumping equipment; solar-system components where selected; fencing; tanks; troughs; and general mechanical fittings. Actual quantities are contained in the site-specific BoQs and are not reproduced in this ESIA chapter.

5.8 Workforce and Contractor Organisation

The available South West engineering and Master List documentation does not define a reliable workforce number for each work package. Workforce size and composition will depend on the contractor, infrastructure type, sequencing and final BoQ. The contractor is therefore required to provide the labour profile, staffing structure and work-front organisation in the mobilisation documentation. Labour standards and occupational health and safety requirements are addressed in the impact and ESMP chapters rather than duplicated here.

5.9 Operation and Maintenance Concept

The BBS project documents provide for strengthened Water User Associations and community water-management structures to support operation and maintenance of the infrastructure after handover. The operational tasks vary by asset: canal and catchment systems require inspection, sediment management and structure maintenance, while groundwater facilities require management of pumping, storage, distribution and equipment maintenance. The project also provides for O&M frameworks and training of local operators and technicians.

This chapter describes the intended operating concept only. Governance requirements, inclusion, monitoring, maintenance triggers and institutional responsibilities are specified in the ESMP and associated management instruments.

CHAPTER 6: PROJECT BASELINE

6.1 Purpose and Baseline Approach

This chapter establishes the pre-project environmental and social conditions against which the South West State component is assessed. It does not repeat the project description, alternatives analysis, legal framework or design measures already presented in Chapters 1-5. The baseline is organised around the environmental and social receptors that are relevant to the three project districts and to the four infrastructure typologies: dryland catchments, groundwater points, a dug well and riverine irrigation canals.

The evidence base is uneven across the project area. Hudur and the Lower Shabelle project corridor are supported by field screening records and qualitative production, market, gender and youth assessments. The South West State climate assessment provides regional information for Bay, Bakool and Lower Shabelle. By contrast, the available socioeconomic assessment and the South West State screening package do not provide equivalent site-level evidence for Qansax Dhere. This chapter therefore presents Qansax Dhere only to the level supported by the available project documents and identifies the remaining baseline information as a pre-construction verification need rather than filling the gap by assumption.

6.2 Baseline Evidence, Scale and Data Confidence

Chapter 1 records the general ESIA methodology and limitations. For interpretation of the baseline, the key issue is the scale and reliability of each source. Qualitative findings are used as qualitative evidence only and are not converted into statistical population or household estimates.

Table 6-1: Baseline Evidence and Data-Confidence Framework

EVIDENCE SOURCE	BASELINE USE	CONFIDENCE	IMPORTANT LIMITATION
June 2026 BBS Master List / final South West State site register	Project-site identification, district, infrastructure type and status	High for defining the current ESIA scope	Some earlier screening and engineering records use different names or coordinates; Chapter 5 records the reconciliation requirement.
South West State E&S screening forms (December 2025)	Site observations, existing land/water setting, vulnerable groups, preliminary sensitivities	Moderate to high for the specific screened location	The available project records covers Hudur and Janaale/Marka records but does not provide comparable Qansax Dhere screening forms.
FGD and KII synthesis (January 2026)	Livelihood, market, gender and youth conditions	Moderate; qualitative and consensus-based	Coverage includes Hudur and Janaale but not Qansax Dhere.
Crop Value Chain and Gender Analysis (January 2026)	Agro-ecology, production systems, priority crops, market orientation, input access and inclusion	Moderate; comparative qualitative evidence	Uses Janaale as the Lower Shabelle production reference and Hudur as the Bakool reference; it does not provide a Qansax Dhere district profile.

EVIDENCE SOURCE	BASELINE USE	CONFIDENCE	IMPORTANT LIMITATION
South West State Climate Risk Assessment	Regional drought, heat, rainfall, groundwater-stress and Lower Shabelle flood context	Moderate at regional scale	Not a substitute for site-level hydrology, hydrogeology or geotechnical investigation.
Project Fragility/Resilience Assessment Note and Gender Empowerment/GSI material	Contextual fragility, gender exclusion, vulnerability and institutional conditions	Moderate at programme/state scale	Not designed as a site-level household survey.
Engineering drawings and site photographs	Physical condition and design context where the site identity can be matched	High for clearly matched assets; otherwise limited	Generic or legacy-location drawings are not treated as baseline evidence for a different site.

6.3 Regional Environmental Setting

The South West State project area spans two distinct agro-ecological settings. Hudur in Bakool and Qansax Dhere in Bay fall within the semi-arid dryland interior, where livelihoods depend on rainfall, water catchments and groundwater sources. The Marka project area in Lower Shabelle lies within the Shabelle riverine floodplain, where irrigated agriculture depends on canals connected to the river system. This distinction is fundamental to the baseline: water scarcity and groundwater reliability dominate the dryland setting, while river flow, flood exposure, canal condition and irrigation access dominate the Lower Shabelle setting.

The South West State climate assessment identifies Bay and Bakool as recurrent drought- and food-security-stress areas and Lower Shabelle as exposed to seasonal flooding as well as prolonged insecurity. These regional conditions are used to frame, but not replace, site-specific observations.

6.4 Hudur District (Bakool) Baseline

6.4.1 Physical and Water-Resource Setting

Hudur is a dryland agro-pastoral and predominantly rain-fed production environment. Project infrastructure in the district relies on water catchments and groundwater rather than river-fed irrigation. The South West State climate assessment places Hudur within the semi-arid Bay-Bakool setting, where recurrent drought, high temperatures, evaporation and reduced groundwater recharge are material baseline constraints.

The project screening records for the Hudur catchment sites repeatedly identify seasonal runoff areas and erodible soils at the screened locations. These forms do not identify a nearby protected area or critical habitat concern at the screened catchment footprints. They are screening observations rather than a detailed soil or geomorphological survey; no site-specific soil profile, infiltration test, sediment-yield study or geotechnical dataset is available for the assessed catchment sites.

Groundwater is an important baseline resource because the Hudur scope includes groundwater infrastructure. However, the available records do not establish aquifer geometry, static and dynamic water levels, recharge rates, borehole test yields or a defensible sustainable abstraction rate for the project groundwater points. The climate assessment identifies groundwater stress as a regional concern in Bay and Bakool. The absence of site-specific hydrogeological data is therefore treated as a substantive baseline gap to be closed before groundwater works are commissioned.



Figure 6-2: Representative Hudur Dryland / Groundwater Site Baseline - Waneey

6.4.2 Livelihoods, Production and Markets

The qualitative crop value-chain assessment classifies Hudur as an agro-pastoral, rain-fed district in which crop and livestock livelihoods coexist. The priority crops recorded in that assessment are sorghum, maize and cowpea, with production described as predominantly subsistence-oriented. Market connectivity is rated very low in the comparative assessment. The rain-fed yields are below normal, with rainfall variability, pests and poor seed quality identified as principal structural constraints.

The assessment also characterizes Hudur's bargaining power and market participation as weak relative to the irrigated districts. These findings are qualitative and were prepared to support project design and prioritisation; they should not be interpreted as measured farm-level yields, crop areas, household incomes or market shares.

6.4.3 Social Conditions and Vulnerability

Hudur screening records identify vulnerable or marginalised groups at several screened locations, including internally displaced people and women-headed households. The wider South West State GSI assessment similarly identifies high displacement in Bay and Bakool and barriers to access for women, IDPs and minority-clan households. The available evidence does not provide a verified site-by-site count of these groups, so vulnerability is treated as a characteristic requiring differentiated engagement rather than quantified in this chapter.

Screening forms also note that informal labour arrangements are common. This provides relevant baseline context for later labour-management requirements, but no district-level employment-rate, wage or child-labour prevalence dataset is available for the project communities.

6.5 Marka / Lower Shabelle Baseline

6.5.1 Riverine and Irrigation Setting

The Marka project area lies within the Lower Shabelle riverine floodplain. The final ESIA scope includes irrigation-canal rehabilitation and catchment works in this corridor. The South West State climate assessment identifies Shabelle river flooding as a distinct Lower Shabelle hazard, with canal and floodplain infrastructure exposed to inundation, sedimentation and damage during high-flow events.

The Janaale/Marka screening records describe the canals as existing, altered and long-established infrastructure footprints. Several forms record that communities already coexist with and use the canal system. This is an important baseline distinction from a greenfield irrigation project: the assessment concerns rehabilitation of an established water-distribution system and its existing users rather than the introduction of a new riverine corridor.

A complete reconciled pre-project hydraulic dataset is not available for all seven final ESIA canal sites. In particular, the available evidence does not provide a reconciled set of design flows, measured conveyance efficiency, head-to-tail delivery data, sediment volumes, canal water-quality results or flood-stage relationships for every final canal label. These parameters should therefore be treated as pre-works technical baseline requirements rather than assumed values.



Figure 6-3: Representative Marka / Lower Shabelle Canal and Riverine Baseline Photographs

6.5.2 Agricultural Production and Market Context

The qualitative value-chain assessment classifies Janaale as a riverine, irrigated and commercially oriented production area. Priority crops recorded are maize, sesame, vegetables and banana. Market connectivity is rated high relative to the dryland districts. Production is nevertheless described as variable and below potential, with water governance, input costs and pests identified as principal constraints. Trader dominance is identified as the main market constraint.

These findings support the baseline conclusion that the Lower Shabelle project corridor is not simply water-dependent but also market-linked.

6.5.3 Social, Access and Security Context

The South West State GSI and stakeholder material identifies IDPs, returnees, women-headed households and minority-clan households as groups requiring attention in and around Marka and Hudur. Screening records for several Janaale/Marka sites specifically identify IDPs and women-headed households as vulnerable groups. The same material identifies equitable irrigation access and head-to-tail distribution as existing community concerns.

Lower Shabelle is also described throughout the project preparation material as security-sensitive. The climate assessment treats insecurity as a risk multiplier because it can constrain routine maintenance, monitoring and emergency response. The project fragility assessment likewise identifies insecurity as a factor that disrupts agricultural production, restricts mobility and raises implementation costs. This contextual condition is part of the baseline and is separate from security risks generated by the project itself.

6.6 Qansax Dhere District (Bay) Baseline

The final South West State project scope places the Qansax Dhere sites in Bay Region and includes dryland water infrastructure. The South West State climate assessment groups Qansax Dhere with Hudur in the semi-arid Bay-Bakool dryland setting, where rain-fed agriculture, catchments and groundwater are exposed to drought, extreme heat, high evaporation and groundwater-stress conditions. The same assessment gives a regional baseline rainfall range of approximately 300-500 mm per year for Bay and Bakool, while noting substantial inter-annual variability.

The supporting socioeconomic evidence is materially weaker for Qansax Dhere than for Hudur and the Lower Shabelle corridor. The available FGD/KII synthesis and crop value-chain analysis do not contain a Qansax Dhere district profile, and the available South West State screening package does not include comparable Qansax Dhere site forms. For that reason, this ESIA does not assign Qansax Dhere site-specific crops, market orientation, household characteristics, land-tenure patterns, groundwater levels, biodiversity conditions or vulnerability counts that are not supported by the available records.

Before physical works at the Qansax Dhere sites, the PIU and contractor shall establish the site baseline required for implementation: confirmed coordinates and footprint, current land and water use, nearby receptors and access routes, water-source condition, groundwater information for the borehole site, vulnerable-user groups, community water-governance arrangements and site photographs. The verified information shall be incorporated into the C-ESMP before mobilisation.

6.7 Biological Environment and Ecosystem Services

The project screening records reviewed for Hudur and the Janaale/Marka corridor do not identify critical natural habitat, protected areas or Key Biodiversity Areas at the screened project footprints. The Hudur catchments are described as dryland sites with seasonal runoff and erodible soils, while the Lower

Shabelle canal sites are characterised as existing altered infrastructure within a long-established agricultural landscape.

The baseline biodiversity conclusion is therefore limited: no critical-habitat concern is identified in the available screening evidence, but vegetation clearance limits, riparian protection at canal works and site verification remain necessary because the absence of an identified feature in screening is not equivalent to a full ecological survey.

The most directly relevant ecosystem and natural-resource services in the project area are water-related: rainfall/runoff storage and livestock/domestic water access in the dryland areas, and irrigation-water conveyance and agricultural production in Lower Shabelle. These functions are already embedded in local livelihood systems and are addressed in the impact assessment as receptors rather than restated as project benefits here.

6.8 Social and Socioeconomic Baseline

6.8.1 Livelihood Dependence and Food-Security Sensitivity

Agriculture and livestock are central to livelihoods in the project preparation evidence. The qualitative assessment distinguishes a subsistence-oriented rain-fed agro-pastoral system in Hudur from a more commercial irrigated system in the Lower Shabelle corridor. The project fragility assessment places these livelihood systems within a wider context of recurrent climate shocks, infrastructure deficits, food insecurity and low household resilience.

Bay and Bakool are identified in the South West climate assessment as recurrent famine-risk areas, while the project fragility assessment identifies climate shocks as a primary driver of livelihood fragility and displacement. The baseline implication is high sensitivity to interruptions in water availability and to climate shocks, not a quantified estimate of current food-insecurity prevalence at each site.

6.8.2 Land, Water Governance and Access

The South West State GSI material describes local governance as a combination of formal institutions and customary clan governance (xeer), with clan identity influencing access to land and water. Project consultations and screening records also show that water access and siting decisions are socially significant. No parcel-level cadastral or tenure survey is available for all project sites, and this chapter therefore does not assign ownership or tenure status beyond the documented project records.

For the Lower Shabelle canals, the qualitative production assessment identifies water governance as a factor limiting performance, while stakeholder material records concern over head-to-tail equity. These are baseline governance conditions that shape the sensitivity of irrigated users to rehabilitation and future water-allocation arrangements.

6.8.3 Markets, Inputs and Financial Access

Across the qualitative production assessment, formal agricultural credit is reported as absent and producers rely on savings, informal loans, remittances and traders. Women and youth face greater constraints in input access, finance and market participation than adult men. The assessment also identifies weak or inactive cooperatives and weak extension or input-quality systems as cross-cutting service-delivery constraints.

These findings provide a programme-level socioeconomic context. They are not used to infer household debt, income, expenditure or poverty rates at the individual South West State sites because such data were not supplied.

6.8.4 Gender and Youth

The project gender material identifies women as major participants in subsistence agriculture while facing structural barriers to land ownership, formal credit, technical training, leadership and market access. Women and girls also carry the primary burden of water collection, and the South West GSI assessment notes that collection distances can become substantial during dry periods. Female literacy is described as low in the state-level GSI assessment.

The qualitative value-chain assessment finds gender and youth exclusion to be systemic, with female youth the most excluded group across land, input access, skills, markets and decision-making. Youth unemployment is also identified in the South West GSI material as a potential source of social tension.

6.8.5 Internally Displaced People, Minority Clans and Other Vulnerable Groups

The South West GSI assessment identifies IDPs, returnees and minority clans as groups that can face insecure tenure, discrimination in access to community resources and under-representation in local decision-making, with particular concern around Marka and Hudur. Screening records at several Hudur and Janaale/Marka locations similarly identify IDPs and women-headed households as vulnerable groups.

The project fragility assessment also recognises women, youth, minority clans and persons with disabilities as groups that can be disproportionately affected by Somalia's interacting climate, socioeconomic and security stresses. The ESIA does not present unsupported counts of these groups at the 22 sites; their presence and access conditions require confirmation through site-level engagement and monitoring.

6.9 Community Health, Safety and Security Baseline

The ESIA study does not provide a complete district-level public-health profile, disease-incidence dataset or verified inventory of health facilities for all three project districts. Accordingly, this ESIA does not assign malaria, diarrhoeal disease, nutrition or other health incidence rates to the project communities without supporting data. Water quality at the final project supply points is likewise not established by a complete baseline laboratory dataset in the available records.

What is supported is the contextual exposure profile. Dryland communities depend on catchments and groundwater during periods of water stress; Lower Shabelle communities live and farm around established canals; and project preparation material recognises water-related vector, sanitation and water-quality considerations. These conditions make water safety and quality important receptors for the later impact assessment, while the actual commissioning standards and monitoring requirements are addressed in Chapter 9.

Security is a material baseline condition, particularly in Lower Shabelle. The project fragility assessment identifies persistent insecurity as disrupting agricultural production and mobility, while South West project documents describe conflict-sensitive access constraints and security coordination needs. Security conditions are dynamic and cannot be represented by a static site rating in this chapter; site-specific assessments immediately before mobilisation are therefore required.

6.10 Cultural Heritage Baseline

The available Hudur and Janaale/Marka screening records do not identify known tangible cultural-heritage features at the screened project footprints. No comprehensive archaeological survey or cultural-landscape inventory for all 22 sites was supplied, and the Qansax Dhere evidence is particularly limited. The baseline position is therefore that no known heritage receptor has been identified in the available screening records, while previously unknown subsurface material remains possible wherever excavation or drilling occurs. The management response is addressed through the Chance Finds Procedure and is not repeated here.

6.11 Climate Baseline and Projected Change

The South West State climate assessment characterises the overall climate risk to the component as Very High, driven principally by recurrent drought and extreme heat across the dryland and riverine districts, groundwater stress in Bay and Bakool, and Shabelle river flooding in Lower Shabelle.

Table 6-2: South West State Climate Baseline and Projected Change

PARAMETER	PROJECT CLIMATE-ASSESSMENT VALUE	INTERPRETATION / SCOPE
Mean annual rainfall - Bay and Bakool	Approximately 300-500 mm/year	Regional baseline in the South West climate assessment; rainfall is higher along the Lower Shabelle floodplain.
Mean temperature change, 2021-2040	+0.9°C to +1.2°C above 1991-2020 baseline	RCP8.5 precautionary scenario used by the project climate assessment.
Very hot days >40°C by 2040	+12 to +25 days/year	Regional projection.
Crop-water demand / open-water evaporation	+8% to +12%	Projected change cited in the climate assessment.
Gu rainfall variability	±15-25%	Risk of consecutive failed Gu seasons.
Deyr rainfall	+5-10%	Slight increase with higher-intensity events and greater flood risk.

PARAMETER	PROJECT CLIMATE-ASSESSMENT VALUE	INTERPRETATION / SCOPE
Consecutive dry days in drought years	+8 to +18 days	Regional projection.
Heavy-rainfall intensity / Shabelle flows	+10-20%	Higher Deyr peak flows and riverine flood risk in Lower Shabelle.

The same climate assessment rates agricultural drought and extreme heat/evaporation as Very High risks, groundwater stress as Very High overall risk, and Shabelle riverine flooding as High overall risk. These ratings are carried forward to Chapter 7 for assessment of how climate conditions interact with the proposed works; adaptation measures are addressed in the design and mitigation chapters rather than repeated here.

6.12 Contextual Fragility and Resilience Conditions

The project Fragility/Resilience Assessment Note describes Somalia's fragility as multidimensional and mutually reinforcing, with climate shocks, infrastructure deficits, governance and institutional weakness, socioeconomic vulnerability, insecurity and regional pressures affecting rural livelihoods. Pastoral, agro-pastoral and riverine households are identified as particularly exposed, while women, youth, minority clans and persons with disabilities face heightened vulnerability.

For the South West State component, the relevant baseline manifestation of these conditions is the combination of drought and food-security sensitivity in the dryland districts, flood and security exposure in Lower Shabelle, limited infrastructure and services, and reliance on local and customary institutions for water and resource governance. These contextual conditions influence receptor sensitivity and implementation feasibility and are carried into the impact assessment without being treated as impacts caused by the project.

6.13 Existing and Planned Developments / Cumulative Context

The ESIA study does not provide a verified inventory of all existing or reasonably foreseeable water, irrigation, road, settlement or agricultural developments within the area of influence of the 22 South West State sites. Some Janaale/Marka screening forms note that previous FAO water-development assessments have been undertaken in the same catchment. That statement is retained as evidence of prior sector activity, but the ESIA does not infer the location, scale or cumulative effect of projects for which supporting information was not supplied.

Cumulative effects are therefore assessed in Chapter 7 only where an interaction can be supported by the available project and baseline evidence. Any material new development identified before or during implementation should be added to the project cumulative-impact register and considered in updated site assessment.

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

The baseline is sufficient to distinguish the principal environmental and social settings and receptors relevant to the South West State component. Site-specific information that depends on final siting, design or contractor mobilisation shall be confirmed through the pre-construction process and incorporated into the C-ESMP before the affected works proceed.

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

INFORMATION TO BE CONFIRMED	CURRENT ASSESSMENT BASIS	C-ESMP / PRE-CONSTRUCTION REQUIREMENT
Qansax Dhere site baseline	No comparable site screening or district-specific FGD/KII/value-chain profile was found in the available South West State records.	Before mobilisation, complete site screening, land/water-use and receptor verification, community consultation, vulnerable-user identification and a GPS/photographic record. Incorporate findings into the C-ESMP.
Groundwater conditions - Hudur and Qansax Dhere	No reconciled static/dynamic levels, test yields, recharge assessment or sustainable-yield determination for final groundwater sites.	Before mobilisation, complete site screening, land/water-use and receptor verification, community consultation, vulnerable-user identification and a GPS/photographic record. Incorporate findings into the C-ESMP.
Marka canal hydraulics	No complete reconciled dataset of flow, conveyance, sediment load and head-to-tail delivery for all final canal labels.	Complete a canal condition/hydraulic survey and continuity/head-to-tail plan using the final site nomenclature and incorporate the results into the C-ESMP and method statement.
Water quality	No complete baseline laboratory dataset for all final water-supply points and canals.	The commissioning plan shall define approved water-quality acceptance criteria, sampling locations, accredited laboratory method and response to non-compliance.
Land and access	No parcel-level tenure/cadastral dataset for all footprints and temporary access routes.	Document site-specific land/access arrangements, actual users and any temporary-use requirements before works. Incorporate commitments and reinstatement requirements into the C-ESMP.
Biodiversity	No full ecological inventory for all 22 sites; Qansax Dhere evidence particularly limited.	Verify the final footprint and sensitive vegetation/habitat conditions before ground disturbance and incorporate any additional avoidance controls into the C-ESMP.
Socioeconomic baseline	No statistically representative household survey covering all project communities.	Establish site-level beneficiary, vulnerability and access baseline through mobilisation-stage registration and consultation; use these records for inclusion and benefit monitoring.
Security	Security conditions are dynamic and cannot be fixed by the ESIA field-date baseline.	Update the site-specific security assessment immediately before mobilisation and incorporate the approved security controls into the C-ESMP/SMP.

6.15 Baseline Summary for Impact Assessment

The baseline establishes three distinct sensitivity profiles for Chapter 7. Hudur is a drought- and groundwater-sensitive agro-pastoral setting with rain-fed production, limited market connectivity and identified vulnerable households. Marka/Lower Shabelle is an established irrigated and market-linked riverine setting where existing canal users are exposed to flood, water-governance and security constraints. Qansax Dhere is a dryland Bay setting exposed to the same regional drought, heat and groundwater stresses as Hudur, but with materially less site-specific baseline evidence in the available project information.

Across the component, the social baseline is characterized by dependence on water and agriculture, unequal access to land, finance and decision-making for women and youth, displacement and minority-clan exclusion risks, and the influence of customary governance on resource access. The climate baseline is one of high variability and increasing stress. These conditions define receptor sensitivity; the significance of project-related changes to those receptors is evaluated in Chapter 7.

CHAPTER 7: ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

7.1 Impact-Assessment Scope and Approach

This chapter evaluates the environmental and social risks and impacts of the South West State component of the BBS Project. It applies the assessment method already established in Chapter 1 to the project activities described in Chapter 5 and the receptors and sensitivities established in Chapter 6. It does not repeat the baseline description or the detailed mitigation measures set out in Chapter 8.

The assessment covers the 22 sites in Hudur, Marka and Qansax Dhere and distinguishes the four intervention typologies: water-catchment rehabilitation, irrigation-canal rehabilitation, borehole construction/rehabilitation and the new dug well. Impacts are considered for pre-construction and mobilisation, construction, commissioning and demobilisation of temporary works, and operation and maintenance.

7.1.1 Impact Identification

Impact pathways were identified by linking each project activity to the environmental or social receptor that could change as a result. The screening package consistently identifies contractor labour responsibilities, child-labour risk, OHS requirements, construction pollution, traffic/road-safety needs, SEA/SH controls, vulnerable groups, stakeholder engagement and security-management requirements across the screened South West State sites. The project ESMP further identifies aquifer depletion, land-access disputes, confined-space and drilling injury, bank/trench collapse, heat illness, erosion and spoil, domestic and irrigation-water disruption, community safety, exclusion and head-to-tail inequity, water contamination, sedimentation and infrastructure-safety risks.

7.1.2 Significance Determination

Consistent with the methodology adopted for this ESIA, significance is determined from the nature and magnitude of the change, duration, geographic extent, receptor sensitivity, reversibility and likelihood. The four significance classes are Negligible, Minor, Moderate and Major. No numerical scoring system is introduced because the available data do not support a consistent quantitative score for all 22 sites.

Table 7-1: Impact Significance Descriptors

RATING	MEANING IN THIS ESIA	MANAGEMENT IMPLICATION
Negligible	No material change to a receptor, or an effect too small or unlikely to alter environmental or social function.	Normally acceptable with routine good practice.
Minor	Localised, short-term and readily reversible effect on a receptor of low to moderate sensitivity.	Manageable through standard controls and supervision.
Moderate	Material effect of limited to medium extent/duration, or an effect on a sensitive receptor that requires specific management and monitoring.	Requires defined mitigation, responsibility and verification.

RATING	MEANING IN THIS ESIA	MANAGEMENT IMPLICATION
Major	Severe consequence, potentially fatal or livelihood-significant effect, significant effect on a highly sensitive receptor, or a risk whose consequence remains serious even if likelihood is uncertain.	Requires avoidance or strong controls; may be unacceptable if effective mitigation cannot be demonstrated.

Pre-mitigation significance describes the credible impact before the measures in Chapter 8 are applied. Expected residual significance assumes full and effective implementation of those measures and the ESMP in Chapter 9. For data-dependent risks, the residual rating remains conditional on the required pre-works study confirming that the design assumption is valid.

7.1.3 Treatment of Uncertainty

Three uncertainties materially affect impact confidence. First, sustainable yield and baseline groundwater levels are not established for the final groundwater sites. Second, final siting and land-access status for the six new works require confirmation. Third, the available South West State screening and socioeconomic evidence does not provide equivalent site-level coverage for Qansax Dhere. The assessment therefore uses typology- and regional-level evidence for Qansax Dhere and does not attribute unsupported village-level characteristics. A change in site, footprint, water source, land requirement or sensitive receptor requires reassessment before works.

7.2 Impact Receptors and Valued Environmental and Social Components

The impact assessment uses the receptors already established in Chapter 6. The principal receptor groups are summarized below to show why apparently similar project activities can have different significance in the three district contexts.

Table 7-2: Principal Impact Receptors and Sensitivity

RECEPTOR / VEC	PROJECT-AREA EXPRESSION	SENSITIVITY FOR IMPACT ASSESSMENT
Water resources	Groundwater at Hudur and Qansax Dhere; catchment storage and runoff; Shabelle-connected canal water in Marka	High where water availability is already climate-stressed or supports essential domestic, livestock or irrigation use.
Soils, drainage and land	Catchment embankments, canal banks, excavation areas, farmland, access corridors and pastoral routes	Moderate to High where erosion, bank failure or temporary access disruption affects productive land or movement.
Communities and water users	Domestic water users, pastoral/agro-pastoral households, canal users including head- and tail-end farmers	High because water reliability is directly linked to livelihoods, food security and daily household needs.
Workers	Local and non-local workers involved in excavation, drilling, confined-space, canal and transport activities	High for potentially fatal hazards including confined space, drilling, collapse, heat and security exposure.
Vulnerable groups	Women and female-headed households, IDPs/returnees, minority-clan households, poor households and youth	High where exclusion, access restrictions, SEA/SH or employment practices can create disproportionate effects.

RECEPTOR / VEC	PROJECT-AREA EXPRESSION	SENSITIVITY FOR IMPACT ASSESSMENT
Community health and safety	Children, pedestrians, nearby residents and users of canals, catchments, wells and roads	Moderate to High because open works, vehicles and water infrastructure create physical hazards.
Modified habitats / vegetation	Existing canal margins, catchment surroundings and other modified dryland/agricultural vegetation within footprints	Generally Low to Moderate; no critical habitat is identified in the available screening, subject to site verification.
Cultural heritage	Known and previously unknown archaeological, burial, religious or cultural material	Low based on available screening for known features, but potentially sensitive if a chance find occurs.

7.3 Direct Impact Pathways by Project Phase

7.3.1 Pre-Construction and Mobilisation

Before physical works begin, the principal risk pathway is not earthworks but incorrect or incomplete project readiness. Mobilisation before confirmation of security, land access, hydrogeology, final coordinates, canal/catchment condition, community notification or contractor ESHS plans can convert an otherwise manageable rehabilitation activity into a land dispute, unsafe worksite, unsustainable groundwater abstraction or work at the wrong location. Because these are preventable precursor risks, they are treated as hold-point issues in Chapters 8 and 9 rather than as unavoidable project impacts.

7.3.2 Construction and Rehabilitation

Construction pathways differ by typology. Catchment rehabilitation primarily disturbs soil, embankments, drainage and spoil. Boreholes introduce drilling, groundwater-development and equipment hazards. The dug well adds confined-space and excavation risk. Canal rehabilitation interacts directly with existing irrigation supply, canal banks, flowing or seasonally active water, agricultural access and head-to-tail users. Across all typologies, common pathways include dust, noise, waste, traffic, worker safety, community safety, employment practices, SEA/SH and security exposure.

7.3.3 Commissioning, Operation and Maintenance

Operation shifts the risk profile away from temporary construction disturbance to resource sustainability, water quality, allocation, maintenance, user safety and governance. Groundwater abstraction can exceed sustainable yield; canals and catchments can re-silt or lose effective capacity; unsafe or contaminated water can expose users; rehabilitated assets can create drowning or fall hazards; and improved water availability can become inequitable if WUA rules exclude tail-end users, women, IDPs or minority groups.

7.3.4 Demobilization of Temporary Works

Temporary lay-down areas, access corridors, borrow/spoil areas, fuel-storage points and welfare facilities can leave residual disturbance if they are not reinstated. The credible pathways are abandoned waste or spoil, contaminated soil, erosion, unfilled depressions, damaged access routes and continued land-use

restriction. These are construction close-out effects rather than a separate decommissioning phase for the permanent water assets.

7.4 Pre-Construction and Mobilization Risks

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

RISK PATHWAY	POTENTIAL CONSEQUENCE	APPLICABILITY	PRE-MITIGATION SIGNIFICANCE	ASSESSMENT BASIS
Security clearance and access	Worker/community exposure; mobilisation into an unsafe or conflict-sensitive location	All sites; priority in Lower Shabelle	Major	Security context is dynamic and Lower Shabelle insecurity is identified as a risk multiplier. No work may proceed without current assessment.
Hydrogeological confirmation	Unsustainable abstraction, dry well or inappropriate pump sizing	6 boreholes + dug well	Major (provisional)	Groundwater stress is rated Very High in the project climate assessment; sustainable-yield data for final sites are incomplete.
New-work siting and land access	Land dispute, access restriction, economic/physical displacement	5 new boreholes + 1 dug well	Moderate (provisional)	Physical displacement is not anticipated, but final siting/land access is not fully confirmed. Any displacement changes the OS5 determination.
Coordinate and asset reconciliation	Construction at wrong or mismatched asset / footprint	Marka canal/catchment records and any unresolved site label	Moderate	Source records use different names/coordinates in some cases; Chapter 5 requires reconciliation.
Contractor ESHS readiness	High-risk work starts without task-specific controls	All sites	Major	Confined-space, drilling, excavation, heat, community-safety, SEA/SH and security controls are prerequisites, not post-start corrective actions.

7.5 Construction-Phase Environmental Risks and Impacts

7.5.1 Catchment Earthworks: Erosion, Sediment and Spoil

Desilting, reshaping and embankment repair disturb exposed soils and accumulated sediment. In Hudur and Qansax Dhere, rainfall is highly variable and intense events can rapidly mobilise loose material; the climate assessment also identifies flash flooding and erosion as material hazards to catchment infrastructure. Uncontrolled spoil can obstruct runoff, damage productive land or create depressions that retain water. The effect is local and reversible when works are well managed, but material because it acts directly on the function of the rehabilitated catchment. Pre-mitigation significance: Moderate. Expected residual significance: Minor.

7.5.2 Canal Earthworks: Bank Instability, Sediment and Water Quality

Canal desilting and bank reshaping can destabilise banks, mobilise sediment and temporarily increase turbidity. Bank or trench collapse also creates a direct worker and community safety pathway. The Lower Shabelle works occur in an established irrigated setting where canal water and canal access have livelihood importance. A collapse causing injury has severe consequence even where occurrence is preventable. Pre-mitigation significance is Major for bank/trench collapse and Moderate for sediment/turbidity. Expected residual significance is Minor-Moderate for collapse and Minor for sediment/turbidity, assuming the controls in Chapter 8 are applied.

7.5.3 Drilling, Excavation and Temporary Pollution

Borehole drilling, concrete works, equipment operation, fuel handling, packaging and general site activities generate temporary dust, noise, drilling residues, used oils, solid waste and spill risk. The South West screening forms consistently flag construction pollution as requiring management. The impacts are generally local and temporary but can become material at water points or near occupied communities if spills, drilling fluids or waste enter water or soil. Pre-mitigation significance: Moderate. Expected residual significance: Minor.

7.5.4 Biodiversity and Vegetation Disturbance

The available screening records do not identify critical habitat or protected areas at the screened South West State sites, and rehabilitation is largely within existing water-infrastructure footprints. Vegetation clearing and soil disturbance can nevertheless affect modified dryland, agricultural or canal-margin vegetation, particularly at temporary access, borrow or spoil locations. Pre-mitigation significance: Minor to Moderate. Expected residual significance: Minor, subject to the pre-works footprint verification required where screening coverage is incomplete, especially in Qansax Dhere.

7.6 Construction-Phase Labour, Occupational Health and Safety Risks

7.6.1 Confined-Space and Dug-Well Works

The new dug well creates a confined-space pathway involving restricted entry/exit, possible atmospheric hazard, collapse and difficult rescue. The ESMP specifically requires a confined-space permit, atmospheric testing, ventilation and rescue provision. Because failure can result in fatality, pre-mitigation significance is Major. Expected residual significance is Minor-Moderate only if competent supervision and rescue capability are in place before entry.

7.6.2 Borehole Drilling and Plant Safety

Drilling introduces rotating equipment, suspended loads, pressurised systems, unstable ground, moving plant and site-exclusion requirements. The screening requires OHS controls across all screened sites and the ESMP identifies drilling injury as a specific impact. Pre-mitigation significance: Major. Expected residual significance: Minor-Moderate.

7.6.3 Excavation, Canal-Bank and Trench Collapse

Excavated faces and canal banks can collapse onto workers or community members, particularly where soil is wet, unsupported or loaded near the edge. The ESMP explicitly requires shoring for excavations/banks greater than 1.5 m, competent supervision and spoil setback. Because the credible consequence includes serious injury or fatality, pre-mitigation significance is Major. Expected residual significance: Minor-Moderate.

7.6.4 Heat Stress and Remoteness from Medical Care

The climate assessment rates extreme heat and evaporation as Very High, with additional very hot days projected by 2040. Manual earthworks, drilling and canal works can therefore expose workers to dehydration and heat illness, while remoteness can delay treatment. Pre-mitigation significance: Major. Expected residual significance: Minor-Moderate, conditional on work-rest controls, drinking water, first response and documented evacuation routes.

7.6.5 Labour Conditions and Child Labour

South West State screening records identify labour-management responsibilities and child-labour risk, with informal labour arrangements noted in Hudur screening. The project can create positive local employment, but poor recruitment, age verification, contracts, pay or grievance access could transfer project benefits into labour-rights impacts. Pre-mitigation significance: Moderate. Expected residual significance: Minor if the project-wide LMP is applied to contractors, subcontractors and labour at support sites.

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

7.7.1 Community Safety and Traffic

Open excavations, canal cuts, drilling rigs, construction vehicles and material transport can expose children, pedestrians, livestock and nearby residents. Screening across the South West sites identifies traffic/road-safety assessment as required, while the ESMP requires barriers, signage, overnight protection and settlement speed controls. Pre-mitigation significance: Moderate. Expected residual significance: Minor.

7.7.2 Temporary Water-Supply and Irrigation Disruption

Taking an existing source, catchment component or canal reach temporarily out of service can reduce domestic, livestock or irrigation water availability. In the dryland districts the consequence is amplified during Jilaal and Hagaa water stress; in Marka the consequence can include crop and livelihood effects and unequal distribution between head- and tail-end users. Pre-mitigation significance: Moderate-Major. Expected residual significance: Minor-Moderate, dependent on documented continuity arrangements and sequencing.

7.7.3 Security and Conflict Sensitivity

Security is a contextual condition that can cause direct harm to workers and communities and can also weaken safeguards implementation by interrupting supervision, monitoring and engagement. Lower Shabelle is the priority security-sensitive area within the South West State component, and insecurity can constrain maintenance and emergency response. Project activity may also create tension if local hiring, site access or water allocation is perceived as favouring particular groups. Pre-mitigation significance: Major in security-sensitive locations and Moderate elsewhere. Expected residual significance: Moderate because the underlying contextual hazard cannot be eliminated by the project.

7.7.4 SEA/SH and Worker-Community Interaction

The screening records require specific prevention and response measures for SEA/SH at all screened South West sites. Women and girls already face barriers to participation and access to services, while displacement and insecurity can increase vulnerability. Worker presence, unequal access to jobs or project resources, and reliance on male-dominated local structures can increase exposure or suppress reporting. Pre-mitigation significance: Moderate. Expected residual significance: Minor-Moderate, recognising that risk reduction depends on worker conduct, confidential reporting and functioning referral pathways rather than engineering controls.

7.7.5 Land Access, Temporary Disturbance and Displacement Risk

Rehabilitation generally uses existing communal, community-managed or irrigation-scheme land, while six new works require confirmed siting. Temporary working areas, access corridors, spoil placement and construction support sites can affect land use, crops or movement even without permanent acquisition. The current material does not support a finding of large-scale displacement. Pre-mitigation significance is Moderate on a precautionary basis for the six new works and Minor-Moderate for temporary access at rehabilitation sites. Expected residual significance is Minor where access is voluntary/documented and losses are compensated. If physical displacement or material economic displacement is identified, this rating no longer applies and a separate OS5 determination is required.

7.7.6 Cultural Heritage and Chance Finds

No known tangible cultural-heritage feature is identified in the available Hudur and Janaale/Marka screening records. Drilling and excavation can nevertheless encounter previously unknown material. The likelihood is uncertain and the consequence depends on the find. Pre-mitigation significance: Minor, with potentially higher site-specific consequence if a significant find occurs. Expected residual significance: Negligible-Minor when the stop-work and notification procedure is followed.

7.8 Summary of Construction-Phase Significance

Table 7-4: Construction-Phase Impact Significance Summary

IMPACT / RISK	APPLICABILITY	PRE-MITIGATION	EXPECTED RESIDUAL	KEY QUALIFICATION
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IMPACT / RISK	APPLICABILITY	PRE-MITIGATION	EXPECTED RESIDUAL	KEY QUALIFICATION
Security / conflict-sensitive implementation	All; priority Lower Shabelle	Major	Moderate	Residual depends on current security assessment and ability to maintain supervision.
Confined-space dug-well works	Gomoro / final dug-well site	Major	Minor-Moderate	Potentially fatal; residual conditional on permit, testing and rescue capability.
Borehole drilling and plant	Hudur + Ceel Hindi / final borehole sites	Major	Minor-Moderate	Potential serious injury; site exclusion and competent operation required.
Canal bank / excavation collapse	Marka canals and other excavations	Major	Minor-Moderate	Potential serious injury/fatality.
Heat stress / remote emergency response	All active works	Major	Minor-Moderate	Extreme heat is a Very High climate hazard.
Water / irrigation disruption	Existing sources and Marka canals	Moderate-Major	Minor-Moderate	High receptor sensitivity during dry periods and cropping cycles.
Erosion, sediment and spoil	Catchments + canals	Moderate	Minor	Local and reversible with disciplined earthworks management.
Dust, noise, waste, spills	All works	Moderate	Minor	Construction pollution flagged across screening forms.
Community safety / traffic	All works	Moderate	Minor	Children, pedestrians, livestock and existing users exposed.
SEA/SH	All districts	Moderate	Minor-Moderate	Behaviour- and reporting-dependent residual risk.
Labour conditions / child labour	All contractors/support sites	Moderate	Minor	Requires LMP, age verification and worker GRM.
Land access / new-work siting	6 new works; temporary access all sites	Moderate (provisional)	Minor*	*Only where OS5 screening confirms no displacement requiring a separate instrument.
Biodiversity / vegetation disturbance	All footprints; site verification required	Minor-Moderate	Minor	No critical habitat identified in project screening.
Chance finds	Ground-disturbing works	Minor	Negligible-Minor	Low known baseline sensitivity; procedure required if encountered.

7.9 Operation and Maintenance Risks and Impacts

7.9.1 Groundwater Abstraction and Aquifer Sustainability

Groundwater stress is rated Very High in the South West State climate assessment because prolonged drought, higher evaporation and reduced recharge can combine with abstraction to lower water tables. The sustainable yield of each final groundwater site shall be established through the approved hydrogeological assessment before drilling, rehabilitation or commissioning. Uncontrolled or over-sized

pumping could deplete the resource, reduce source reliability or affect nearby users. Pre-mitigation significance: Major (provisional). Expected residual significance: Moderate, conditional on hydrogeological confirmation, yield-limited pumping and groundwater-level monitoring. If the hydrogeological assessment shows that sustainable yield cannot meet the proposed demand, the design shall be reduced, relocated or otherwise revised before operation.

7.9.2 Sedimentation, Storage and Conveyance Loss

Catchments and canals will continue to receive sediment after rehabilitation. Without maintenance, storage or conveyance performance will decline, potentially recreating the baseline service problem and increasing erosion or local flood exposure. The ESMP sets a >15% storage/conveyance-loss maintenance trigger. Pre-mitigation significance: Moderate. Expected residual significance: Minor-Moderate because effectiveness depends on sustained WUA maintenance and institutional support.

7.9.3 Water Quality and Public Health

Contamination can arise from poor wellhead protection, animal access, sediment, damaged infrastructure, flood contamination or unsafe storage/handling. Water quality is a direct community-health receptor, and the project monitoring plan requires pre-commissioning and semi-annual testing of relevant parameters. Pre-mitigation significance: Moderate-Major because unsafe drinking water can cause illness. Expected residual significance: Minor-Moderate, conditional on water-quality certification, sanitary protection and response to failed results.

7.9.4 Community Safety at Operational Infrastructure

Open or poorly protected wells, catchments and canals can create fall, drowning or access hazards, especially for children and livestock. Rehabilitation can increase water permanence or depth and thereby increase exposure even where the infrastructure function improves. Pre-mitigation significance: Moderate. Expected residual significance: Minor with maintained fencing/signage and routine inspection.

7.9.5 Pest and Vector Risks

Standing water at troughs, catchments, canals, irrigation fields or poorly drained works can create mosquito-breeding habitat, while livestock concentration at water points can contribute to animal-health exposure. The project P/VMP identifies malaria/vector source reduction, Rift Valley Fever awareness and pesticide/IPM controls as relevant to South West State. Pre-mitigation significance: Moderate. Expected residual significance: Minor-Moderate, with seasonal variation and higher sensitivity after flood events.

7.9.6 Water Allocation, Access and Social Conflict

Improved infrastructure changes access to a scarce and valuable resource. In Marka, restored conveyance can alter head-to-tail distribution; at groundwater and catchment sites, access rules can favour established users or dominant groups if governance is not inclusive. Consultation records specifically raise head-to-tail equity, IDP/minority inclusion, women's participation and site-selection concerns. Pre-mitigation

significance: Moderate-Major. Expected residual significance: Moderate because fairness depends on WUA rules, representation, transparent allocation and grievance resolution over the life of the asset.

7.9.7 Exclusion of Women, IDPs, Minority Groups and Youth

The baseline identifies structural gender and youth exclusion and heightened vulnerability of IDPs and minority-clan households. Project benefits may therefore be captured by better-connected users unless access, membership and employment processes deliberately include these groups. This is primarily a distributional impact rather than a physical impact. Pre-mitigation significance: Moderate. Expected residual significance: Minor-Moderate where differentiated inclusion measures are implemented and monitored.

7.10 Summary of Operation and Maintenance Significance

Table 7-5: Operation and Maintenance Impact Significance Summary

IMPACT / RISK	APPLICABILITY	PRE-MITIGATION	EXPECTED RESIDUAL	KEY QUALIFICATION
Aquifer depletion / declining source reliability	Groundwater sites	Major (provisional)	Moderate	Final rating depends on sustainable-yield determination and observed drawdown.
Sedimentation / loss of storage or conveyance	Catchments and canals	Moderate	Minor-Moderate	Maintenance-dependent.
Water-quality contamination	Water-supply points; canals where used by people/livestock	Moderate-Major	Minor-Moderate	Commissioning blocked where required water-quality criteria are not met.
Operational infrastructure safety	Wells, catchments, canals	Moderate	Minor	Requires continued fencing/signage and inspection.
Pest/vector amplification	Standing-water environments	Moderate	Minor-Moderate	Seasonal and flood-sensitive.
Water-allocation/access conflict	All community-managed water assets; especially Marka canals	Moderate-Major	Moderate	Governance-dependent residual effect.
Exclusion / elite capture	All WUAs and benefit-allocation arrangements	Moderate	Minor-Moderate	Requires verified representation and non-discriminatory access.
Climate damage to infrastructure / service reliability	All sites; drought/heat all districts, flood Lower Shabelle	Major climate exposure	Moderate	Project climate assessment explicitly assesses residual climate risk as Moderate after adaptation.

7.11 Indirect and Induced Impacts

The most plausible indirect effect is increased productive use of water as reliability improves. In the Lower Shabelle irrigated setting, improved conveyance can support greater or more reliable cultivation; in dryland areas, improved water reliability can influence livestock concentration, household water-use patterns and local economic activity. These are intended development effects but can also increase

pressure on water allocation, groundwater abstraction, local land values, input use and governance systems.

The project documents do not provide a quantified induced-development model for each South West site. The ESIA therefore does not assign unsupported changes in cultivated area, population or agrochemical use. It identifies the pathway qualitatively and relies on operation-phase water, WUA, pest/vector and grievance monitoring to determine whether material induced effects emerge. Overall indirect/induced adverse significance is assessed as Moderate before management and Minor-Moderate residual; positive livelihood effects are considered separately in Section 7.14.

7.12 Cumulative Impacts

Cumulative impact assessment is constrained by the absence of a verified inventory of all existing and planned water and irrigation developments around the 22 sites. The screening forms record prior water-development assessment in parts of the same catchment, but do not provide enough information to quantify combined abstractions or combined sediment/flood effects. The analysis is therefore limited to interactions that are supported by the available evidence.

- Groundwater: multiple existing and future users drawing from the same stressed aquifer could combine with drought and reduced recharge. Until aquifer-specific user/abstraction information is available, cumulative groundwater risk remains a material uncertainty and is treated conservatively through sustainable-yield determination and drawdown monitoring.
- Lower Shabelle irrigation: rehabilitation of multiple canal reaches within the same irrigation system can have combined effects on flow distribution, head-to-tail equity, sediment management and cropping intensity. Coordination across water-user groups is therefore necessary even where each individual work package is localised.
- Construction: simultaneous work fronts can cumulatively increase traffic, demand for local labour, security exposure and supervision burden across a district. District- and typology-based sequencing reduces this interaction.
- Climate: drought, heat and flooding are not project-caused but compound project effects and can simultaneously affect multiple assets, users and response systems.

On the evidence available, cumulative adverse impacts are assessed as Moderate and manageable, but this conclusion is conditional on the pre-works hydrogeological and hydraulic information and on updating the cumulative-impact register if new developments are identified.

7.13 Associated Facilities, Support Sites and Supply-Chain Risks

Borrow areas, spoil-disposal locations, construction-water abstraction points, temporary access routes, camps, lay-down areas and fuel/storage points may be required but are not all fixed in the current design. Their impacts can include vegetation and soil disturbance, erosion, traffic, dust, noise, water competition, spills, waste, land-use conflict, child-labour/labour-standard gaps and SEA/SH exposure where

workforce controls do not extend beyond the main worksite. Pre-mitigation significance is Moderate. Expected residual significance is Minor where each support site is screened, permitted, documented and reinstated under the Associated Facilities and Support-Sites Register.

Construction materials are expected to be obtained from commercial suppliers and screened local borrow sources. Primary suppliers shall be screened for child labour, forced labour and serious safety issues where required by the project LMP and procurement controls. Supply-chain risks are therefore managed through procurement and contractor due diligence rather than as a separate large-scale impact pathway.

7.14 Climate Change Risks and Interaction with Project Impacts

Climate change is treated as a risk multiplier rather than a separate project-generated impact. The South West climate assessment rates agricultural drought and extreme heat/evaporation as Very High, groundwater stress as Very High, Shabelle riverine flooding as High and rainfall variability as Very High. These hazards interact directly with project risks: drought increases water-demand and groundwater-depletion risk; extreme heat increases worker OHS exposure and evaporation losses; intense rainfall increases erosion, sedimentation and catchment/canal damage; and Shabelle flooding can damage canal infrastructure and contaminate water.

The project climate assessment states that residual climate risk is Moderate after adaptation, contingent on sustained WUA capacity, functioning monitoring and adequate contingency financing. This Moderate residual climate rating is retained here. It is not a guarantee that extreme events will remain within design conditions; rather, it expresses the expected remaining risk after the climate-resilience measures described in Chapters 4, 8 and 9 are implemented.

7.15 Positive Impacts and Development Opportunities

The project is intended to generate positive impacts by restoring or expanding access to functional water and irrigation infrastructure. The project concept and South West consultations support the following benefit pathways; the ESIA records them as expected opportunities rather than guaranteed outcomes because their magnitude will depend on final design, implementation quality, climate conditions and inclusive operation.

Table 7-6: Positive Impacts and Development Opportunities

POSITIVE IMPACT PATHWAY	EXPECTED EFFECT	ASSESSMENT
Improved water reliability	Rehabilitated catchments, new/rehabilitated boreholes and the dug well can improve reliability of domestic/livestock/production water where current infrastructure is degraded or insufficient.	Major positive where the source remains sustainable and access is equitable.
Improved irrigation performance	Canal rehabilitation in Marka can restore conveyance and reduce physical constraints on irrigated production.	Major positive for users served, conditional on head-to-tail equity and maintenance.

POSITIVE IMPACT PATHWAY	EXPECTED EFFECT	ASSESSMENT
Climate resilience	More reliable water infrastructure, climate-resilient design and monitoring can reduce vulnerability to drought, heat and flood-related service interruption.	Moderate-Major positive; cannot eliminate regional climate hazard.
Local employment and skills	Construction and O&M create opportunities for local labour and practical skills development.	Moderate positive; distribution depends on transparent recruitment and labour standards.
Women and vulnerable-group participation	Inclusive WUA structures, female participation and non-discriminatory access can strengthen representation in water governance.	Moderate positive if targets translate into effective participation rather than nominal membership.
Reduced conflict from clearer rules	Documented access and allocation rules plus grievance channels can provide a structured route to resolve water and site-related disputes.	Moderate positive, but governance support must continue after handover.

7.16 Residual Impact Profile

Residual significance assumes full implementation of Chapter 8 and the ESMP in Chapter 9. The assessment shows that most construction impacts can be reduced to Minor or Minor-Moderate because they are localised, temporary and controllable. The effects that remain Moderate are those dominated by external conditions, resource sustainability or governance rather than a one-time engineering control.

Table 7-7: Residual Impacts Requiring Particular Management Attention

RESIDUAL ISSUE	EXPECTED RESIDUAL SIGNIFICANCE	WHY MANAGEMENT ATTENTION REMAINS NECESSARY
Security and supervision continuity	Moderate	Underlying insecurity cannot be eliminated by the project; access and supervision can still be interrupted.
Groundwater sustainability	Moderate (conditional)	Depends on site-specific sustainable yield and long-term drawdown; rating must be revisited if hydrogeology is unfavourable.
Water allocation and access governance	Moderate	Equity depends on WUA behaviour, representation, transparent rules and grievance resolution over time.
Climate-related service reliability	Moderate	Retained directly from the project Climate Risk Assessment after adaptation.
Temporary water/irrigation disruption	Minor-Moderate	Can be reduced substantially but remains sensitive to seasonal timing and continuity arrangements.
SEA/SH	Minor-Moderate	Residual risk is behaviour- and reporting-dependent and cannot be reduced to zero through physical design.
OHS high-risk tasks	Minor-Moderate	Potential consequence remains severe, but likelihood is expected to be strongly reduced by task controls and supervision.
Most erosion, pollution, traffic, waste, biodiversity and reinstatement effects	Minor	Localised and reversible where standard controls and close-out verification are implemented.

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

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

IMPACT TOPIC	REQUIRED CONFIRMATION	C-ESMP / DECISION REQUIREMENT
Groundwater abstraction	Hydrogeological survey, baseline static/dynamic levels, test yield and sustainable yield for each final groundwater point.	Confirm sustainable yield and monitoring threshold before groundwater works. Resize, relocate or revise the design where the approved demand cannot be sustained.
New-work land impact	Final footprint, users, tenure/access agreement, crops/assets and any restrictions on common access.	Confirm the OS5 pathway before mobilisation. Any physical displacement or material economic displacement requires the appropriate additional assessment/instrument before the affected work proceeds.
Qansax Dhere site-specific impacts	Site screening, receptor verification, land/water use, photos/GPS and community consultation.	Confirm that typology-level ratings remain valid and incorporate any additional site-specific controls into the C-ESMP.
Marka canal hydraulic effects	Final canal identity/alignment, condition, flow/conveyance, connected users and construction continuity plan.	Confirm water-disruption, head-to-tail, sediment and flood pathways for each canal work package and incorporate controls into the C-ESMP.
Biodiversity / heritage	Footprint walkover where screening is incomplete and confirmation of sensitive vegetation/features.	Escalate OS6/OS8 assessment where final footprint verification identifies a sensitive receptor.
Security	Updated site-specific security assessment immediately before mobilisation.	Confirm whether mobilisation can proceed and incorporate the approved security controls into the C-ESMP/SMP.

7.18 Overall Impact Assessment Conclusion

The South West State component combines moderate-scale rehabilitation and new water infrastructure in environmentally and socially sensitive operating conditions rather than large-scale greenfield development. The principal adverse risks are concentrated in security-sensitive implementation, potentially fatal OHS tasks, groundwater sustainability, temporary interruption of essential water/irrigation services, water-allocation governance, SEA/SH, land access for new works and climate-related stress on infrastructure and users.

On the evidence currently available, these risks are capable of being reduced to an acceptable residual profile for a Category 2 operation, provided the design assumptions are verified before mobilization and the mitigation and ESMP requirements are implemented in practice. Most residual construction effects are expected to be Minor or Minor-Moderate. Groundwater sustainability, security, water-allocation governance and residual climate risk remain Moderate and require continued monitoring and

management. This conclusion is conditional: if pre-works studies identify physical displacement, unsustainable groundwater yield, a sensitive habitat/cultural receptor, a materially different project footprint, or security conditions that prevent effective supervision, the relevant impact assessment and safeguards requirements must be re-evaluated before works proceed.

CHAPTER 8: MITIGATION MEASURES

8.1 Purpose and Approach

This chapter sets out the environmental and social measures to be applied to the South West State component of the BBS Project after consideration of the project design measures in Chapter 4 and the risks and impacts assessed in Chapter 7. It does not repeat the impact assessment. Its purpose is to define the control measures that are carried forward into the Environmental and Social Management Plan (ESMP) in Chapter 9, where responsibilities, monitoring, schedules and costs are assigned.

The measures are based on the South West State ESIA material, the project screening and design documentation, the BBS project-level safeguard instruments, and the pre-construction requirements already identified for the 22 sites. Where site-specific information remains incomplete, the measure is framed as a pre-mobilization verification or hold point rather than as an assumed site condition.

8.2 Application of the Mitigation Hierarchy

The mitigation hierarchy is applied in the following order: avoid adverse effects where practicable; minimise or reduce effects that cannot be avoided; restore or reinstate disturbed areas and functions; and compensate for verified losses where avoidance and restoration are insufficient. Positive outcomes are strengthened through inclusive governance, operation and maintenance capacity, and equitable access arrangements.

For this project, a significant part of risk management occurs before physical works begin. The key avoidance decisions are therefore embedded in siting confirmation, security clearance, hydrogeological verification, land-access screening, works sequencing, and confirmation of water-supply continuity. Construction-phase controls are then applied to the residual risks that remain.

8.3 Avoidance Measures

- No physical works will commence at a site before the required site-specific security assessment and clearance have been completed; a Security Management Plan will be prepared where required.
- No borehole or dug-well works will proceed before hydrogeological assessment and determination of a sustainable yield for the relevant groundwater source.
- The six new works will undergo siting and land-access screening before mobilization. Micro-siting will be used to avoid physical displacement and avoidable impacts on existing land uses and access routes.
- All site coordinates and the identity of the works to be implemented will be field-verified before mobilization, with particular attention to the Marka canal and Bufow Ba'ad catchment records where project records use different naming and coordinate conventions.
- Catchment and canal rehabilitation will be preceded by condition assessment so that the final works respond to the actual state of the asset rather than an assumed condition.

- Canal works in Marka will not begin until water-continuity and head-to-tail allocation arrangements have been agreed with the relevant water users.
- Working areas, temporary access routes, irrigation command areas and pastoral routes will be documented before works so that construction phasing can avoid unnecessary interruption of movement and water access.
- Catchment and canal earthworks will be scheduled outside peak rainfall and flood periods where practicable, consistent with the implementation sequencing adopted for the project.

8.4 Minimization and Reduction Measures

Where an impact cannot be avoided, the following measures reduce the duration, extent or intensity of exposure:

- Phased construction and advance notification will be used where existing water or irrigation supply may be temporarily interrupted; alternative supply arrangements will be provided where required by the approved site plan.
- Canal and excavation works shall use competent supervision, barriers, dewatering where required, and safe battering/shoring based on ground conditions, excavation geometry and the approved C-ESMP excavation method statement; spoil shall be set back from excavation edges.
- Catchment and canal earthworks will use silt-control measures, controlled spoil placement, prompt compaction and revegetation of disturbed surfaces, and post-rain inspection.
- Construction areas accessible to communities will be physically controlled using barriers and Somali-language warning signs, with no unguarded excavations or open canal cuts left overnight.
- Vehicle movement through settlements shall be managed through the Community Health and Safety / Traffic Management controls, including a maximum 30 km/h settlement speed unless a lower site-specific limit is required.
- Water abstraction during construction and operation will remain within the sustainable-yield limits established for the relevant source, and pumping arrangements will be sized accordingly.
- Water quality will be confirmed before commissioning and monitored during operation, with supply withheld from commissioning where the required test does not pass.

8.5 Mitigation Measures by Intervention Type

8.5.1 Water Catchment Rehabilitation

- Complete a pre-works condition assessment of the basin, embankment, inlet/outlet, silt-control features and associated access areas.
- Use erosion and sediment controls during earthworks, including silt-control measures and controlled spoil placement away from watercourses and cultivated fields.
- Compact and seed disturbed cut surfaces within five days as specified in the existing South West ESMP, and inspect works after rainfall events.

- Maintain functioning silt traps and drainage so that storage capacity is not progressively lost to sedimentation.
- Protect domestic-use points from livestock access where the approved design provides separate access or trough arrangements.
- Inspect embankments, liners, spillways and silt traps during operation and undertake desilting when monitoring confirms the project threshold for storage loss has been reached.

8.5.2 Boreholes and Dug-Well Works

- Complete hydrogeological investigation and establish the sustainable yield before drilling, rehabilitation or commissioning.
- For new works, complete land-access and siting screening before construction and document the agreed site and access arrangements.
- Apply drilling-site exclusion zones and safe work controls; apply a confined-space permit system, atmospheric testing, ventilation and rescue provision wherever confined-space entry is required for the dug-well works.
- Protect the wellhead and water point from contamination and complete commissioning water-quality testing before the facility is opened for use.
- Limit abstraction to the established sustainable yield and monitor groundwater levels and abstraction during operation; reduce abstraction and investigate where drawdown exceeds the site-specific threshold.
- Maintain fencing, signage and associated safety features at high-risk points, and inspect them routinely during operation.

8.5.3 Irrigation Canal Rehabilitation - Marka

- Agree a canal-specific water-continuity and head-to-tail equity plan with affected water users before works begin.
- Phase works to maintain irrigation continuity to the extent practicable and provide advance notification of planned interruptions.
- Use excavation and bank-stability controls, including shoring where required, competent supervision, barriers, dewatering and appropriate spoil setbacks.
- Keep excavated material out of active watercourses, fields and community access routes unless its reuse has been specifically agreed and found suitable.
- Confirm water quality before resumed use where works may have affected the quality of conveyed water.
- Maintain documented head-to-tail allocation rules during operation and use the GRM allocation track where water-distribution disputes arise.

- Inspect conveyance performance, bank condition and sedimentation after works and periodically during operation; undertake corrective maintenance where the monitoring threshold is reached.

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

8.6.1 Security and Conflict Sensitivity

Security-led implementation is a controlling measure across the South West State component and is particularly important in Lower Shabelle. Works will follow site-specific clearance, conflict-sensitive engagement, flexible scheduling, incident reporting, and coordination with the relevant South West State and district authorities and community leadership. Works will be suspended when the approved security arrangements require suspension.

8.6.2 Labour and Occupational Health and Safety

Contractors will implement the project Labour Management Procedures and approved OHS arrangements, including worker registration and age verification, written contracts, worker grievance arrangements, task-specific method statements, PPE, first-response capacity, toolbox talks, emergency routes, heat-stress controls, and the specific confined-space, drilling, excavation and canal-bank controls applicable to the work package.

8.6.3 Community Health and Safety

Community protection measures include advance notification, barriers, exclusion zones, Somali-language signage, safe control of open excavations and canal cuts, traffic controls, protection of water quality, and communication of any temporary changes to water or irrigation access. Commissioning will not proceed until required water-quality confirmation has been obtained.

8.6.4 SEA/SH Prevention and Response

All workers, including subcontractors, drivers and security personnel, will sign the project Code of Conduct before starting work. The project will maintain a confidential SEA/SH reporting pathway managed through the PIU social/GBV function, with a female Community Liaison Officer accessible in each district and survivor-centred referral arrangements confirmed before mobilization. SEA/SH complaints will not be mediated through community or customary structures.

8.6.5 Waste, Pollution and Resource Management

Waste and pollution measures will be implemented through the approved Contractor ESMP and Waste Management Plan. They include controlled spoil placement, management of drilling fluids, fuel and general waste, protection of watercourses and water points, prevention and response to spills, and reinstatement of temporary support areas. Any associated borrow, spoil or temporary-use site will be subject to the project screening and approval process before use.

8.6.6 Pest and Vector Management

The project-wide Pest and Vector Management Plan applies to the South West State sites. Source reduction, drainage of standing water, management of trough and canal drainage, coordination on Rift Valley Fever and Desert Locust early warning, and safe pesticide practice where applicable will be implemented through the WUA and PIU arrangements described in Chapter 9 and the standalone P/VMP.

8.7 Land Access, Livelihood Restoration and Compensation

A Land Access Protocol applies to the South West State component. Working areas and access corridors will be agreed and documented with the relevant landholders, community representatives, water-user groups and WUAs before works. Irrigation command areas and pastoral routes will be documented and the works phased to maintain access and supply as far as practicable.

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

8.8 Differentiated Measures for Vulnerable Individuals and Groups

- Water-user governance arrangements will be inclusive and non-discriminatory, with representation of women, IDPs/returnees and minority-clan households addressed during WUA formation and oversight.
- The ESMP sets a minimum 30% target for women in WUA membership and leadership; this target will be verified at formation and during oversight.
- Female CLO coverage will be maintained to support women's participation, access to information and confidential grievance uptake.
- Engagement methods will include targeted outreach where general community meetings are unlikely to reach displaced, mobile, minority or female-headed households.
- Local recruitment will be transparent and conflict-sensitive. The project LMP targets referenced in the South West ESIA will be incorporated into contractor recruitment plans and verified through workforce reporting.
- Water-access and irrigation-allocation decisions will be monitored for exclusion or systematic head-to-tail inequity, with corrective action and GRM access where exclusion is identified.

8.9 Enhancement Measures

Positive project outcomes will be strengthened through WUA formation and training, operation and maintenance support, local employment and skills transfer, participation of women in water governance and maintenance training, and integration of water-management capacity with the project's wider climate-

resilience and agricultural-support activities. These enhancement measures are implemented through the project implementation arrangements and Gender Action Plan and do not replace the mitigation requirements above.

8.10 Measures Requiring Continued Management Attention

The following measures depend on sustained institutional or behavioural performance and therefore remain management priorities beyond the construction period: security-led implementation in conflict-sensitive locations; groundwater abstraction control against sustainable-yield findings; equitable head-to-tail canal allocation; maintenance of the confidential SEA/SH pathway; functioning and inclusive WUAs; routine catchment and canal maintenance; accessible grievance resolution; and continued monitoring of water quality and infrastructure safety.

8.11 Technical and Financial Feasibility

The mitigation measures are integrated into the project implementation arrangements through three principal funding and delivery routes: contractor obligations priced through the works contracts; PIU-managed safeguards and monitoring activities; and operation-and-maintenance responsibilities assigned to WUAs with PIU and district support. The detailed cost allocation is presented in Chapter 9. No new cost values are introduced in this chapter.

8.12 Pre-Mobilisation Verification and Adaptive Management

Where site-specific parameters depend on final design, siting, hydrogeology, security or contractor method, they shall be confirmed before the affected works are authorised and incorporated into the approved C-ESMP and controlled site register.

CHAPTER 9: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

9.1. ESMP objectives and scope

This ESMP translates the environmental and social commitments of the South West State ESIA into operational requirements for the Project Implementation Unit (PIU), contractors, the Supervision Consultant, South West State and district counterparts, Community Liaison Officers (CLOs), Water User Associations (WUAs) and water-user groups. It applies to all 22 sites in Hudur, Marka and Qansax Dhere and to the associated temporary support sites used for construction. It covers pre-construction and mobilization, construction, commissioning, operation and maintenance, and demobilization and reinstatement of temporary works.

Site-specific values that depend on final engineering, hydrogeology, land access, site verification or activity-specific OHS assessment shall be established through the pre-construction process and incorporated into the approved C-ESMP before mobilisation.

9.2. Summary of environmental and social risks and impacts

Risks arising from project activities. The principal construction risks are security and conflict exposure, particularly in Lower Shabelle; unsafe drilling and confined-space work; excavation and canal-bank collapse; heat stress and delayed emergency response; erosion, sediment and spoil generation; contamination from fuels, drilling fluids and construction waste; disruption of community water supply and irrigation; community exposure to excavations, machinery and traffic; worker-community interaction and SEA/SH risk; temporary land access and asset disturbance; and chance finds during ground-disturbing works. During operation, the principal risks are groundwater over-abstraction, deterioration in water quality, renewed sedimentation and loss of catchment or canal capacity, unsafe access to water infrastructure, inequitable head-to-tail water distribution, exclusion of vulnerable users, and weak operation and maintenance.

Risks arising from associated facilities and support sites. Borrow areas, spoil-disposal areas, temporary access routes, lay-down areas, fuel-storage points, construction-water abstraction points and any worker accommodation can generate additional land, erosion, pollution, community-safety, labour and SEA/SH risks if they fall outside the main site controls. These locations are therefore subject to screening, documented access, security clearance where relevant, management requirements and reinstatement before close-out.

Contextual and cumulative risks. The South West component combines recurrent drought and groundwater stress in Bay and Bakool with riverine flooding and security constraints in Lower Shabelle. Project benefits can also alter demand for water and irrigation, intensify cultivation and increase pressure on local water-governance arrangements. The ESMP therefore relies on sustainable-yield controls, water-

continuity and head-to-tail allocation arrangements, inclusive WUA governance, conflict-sensitive engagement and adaptive monitoring rather than on engineering controls alone.

9.3. Mitigation, compensation and enhancement measures

9.3.1. Pre-construction and mobilization phase

Table 9-1: AFDB OPERATIONAL SAFEGUARDS APPLICABILITY AND ESMP CROSS-REFERENCE

AFDB OPERATIONAL SAFEGUARD	APPLICABILITY	MAIN ISSUES ADDRESSED IN THE ESMP
OS1 - Assessment and Management of E&S Risks and Impacts	Applicable	Overall assessment, site readiness, design confirmation, climate and security integration, associated-facility screening, monitoring, reporting and corrective action.
OS2 - Labour and Working Conditions	Applicable	Worker terms, age verification, workers' GRM, drilling and confined-space safety, excavation safety, heat stress, welfare, first aid and emergency response.
OS3 - Resource Efficiency and Pollution Prevention and Management	Applicable	Groundwater sustainability, water quality, water use, sediment/spoil, drilling fluids, waste, fuels and hazardous materials, vector and pesticide controls.
OS4 - Community Health, Safety and Security	Applicable	Security, community exposure to works, traffic, open excavations, water-supply disruption, water safety, emergency preparedness, SEA/SH prevention and vector risks.
OS5 - Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement	Precautionary / site-specific	Siting and land access for five new boreholes and one new dug well, temporary access and support sites, crop or asset damage, and reassessment if displacement occurs.
OS6 - Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources	Precautionary / verification	Footprint verification, riparian protection at canal sites, vegetation clearance control, erosion prevention and reassessment if screening assumptions change.
OS7 - Vulnerable Groups	Applicable	Women and female-headed households, IDPs and returnees, minority clans, poor households, pastoralists, youth and tail-end irrigation users; differentiated access and governance measures.
OS8 - Cultural Heritage	Precautionary / verification	Chance-find procedure for drilling, excavation, canal and catchment earthworks, with stop-work and notification requirements.
OS9 - Financial Intermediaries	Not applicable	The South West State component is not a financial intermediary operation.
OS10 - Stakeholder Engagement and Information Disclosure	Applicable	SEP implementation, disclosure, conflict-sensitive consultation, GRM, water-allocation grievance track, vulnerable-group outreach and commitment tracking.

9.3.2. Construction phase

Table 9-2: Comprehensive ESMP Implementation Matrix - South West State (All 22 Sites)

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
OS1 - Assessment and Management of Environmental and Social Risks and Impacts					

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
Pre-construction	Mobilization before environmental, social, land, security and technical readiness has been confirmed.	Apply a PIU site-readiness checklist at every site. Confirm verified coordinates, access arrangements, community notification, security clearance, required hydrogeological or condition assessment, and approved C-ESMP before issuing mobilization authorization.	PIU / SWS E&S Officer	100% of sites mobilized only after signed readiness checklist; verified during PIU audit before mobilization.	Included in PIU safeguards oversight budget.
Pre-construction	Design or works proceeding from inconsistent site names, coordinates, typologies or drawing references.	Reconcile the June 2026 Master List, screening records, site coordinates and engineering drawings before mobilization. Maintain a signed site register linking the final ESIA name to any engineering legacy name used in drawings or BoQs.	PIU / Technical Consultant	Signed reconciled site register for all 22 sites before works; zero works at an unverified location.	Included in technical preparation / supervision.
Pre-construction / design	Catchment or canal design does not reflect actual pre-works condition.	Complete and document condition assessment of each catchment and canal; incorporate findings into final design, quantities, method statements and BoQs before works.	PIU / Technical Consultant	Condition assessment completed for each applicable site; Supervision verifies incorporation into design and method statement.	Catchment-condition budget line: USD 9,500 total; canal design checks within technical works preparation.
Construction	Earthworks during unsuitable rainfall or flood conditions increase erosion, sedimentation and works damage.	Sequence catchment and canal earthworks outside peak Gu and Deyr rainfall / flood windows where practicable; inspect after significant rainfall; suspend activities where conditions are unsafe or erosion controls are ineffective.	Contractor; Supervision Consultant	Daily / post-rain inspection during earthworks; work suspension recorded where required; erosion outside approved footprint corrected promptly.	Contractor BoQ / C-ESMP; PIU monitoring within safeguards budget.
Operation and maintenance	Failure to maintain catchments and canals leads to sedimentation, reduced storage/conveyance and infrastructure deterioration.	WUAs conduct post-rainfall and seasonal inspection, silt-trap / canal clearance and maintenance. Trigger corrective maintenance when storage or conveyance loss exceeds the adopted threshold.	WUA / PIU	Bi-annual condition inspection and after major storms/floods; maintenance log reviewed during PIU oversight visits.	WUA O&M resources; PIU oversight.
OS2 - Labour and Working Conditions					
Pre-construction	Workers engaged without documented terms, age verification, welfare arrangements or a workers' grievance channel.	Apply the project-wide LMP: worker register, age verification, written employment terms, non-discrimination, workers' GRM, welfare provisions and induction before work. Flow requirements to subcontractors.	Contractor; PIU / Supervision verify	100% worker register and induction before deployment; zero workers under 18 on construction sites; monthly payroll / record spot checks.	Contractor BoQ / C-ESMP.
Construction - dug well	Confined-space entry may expose workers to asphyxiation, collapse and delayed rescue.	Use a confined-space permit system, atmospheric testing, ventilation, competent supervision, safe access/egress, standby person and rescue provision before entry.	Contractor; Supervision verifies	Permit and atmospheric-test record for each entry; rescue arrangement present; zero unauthorized entry.	Contractor BoQ / OHS Plan.

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
Construction - boreholes	Drilling operations expose workers and communities to rotating equipment, dropped objects, high-pressure lines and uncontrolled access.	Establish drilling exclusion zone; competent operator; equipment inspection; guarded moving parts; safe pipe handling; PPE; controlled lifting; first aid and emergency arrangements.	Contractor; Supervision verifies	Daily drilling safety checklist; equipment inspection records; zero public access to exclusion zone.	Contractor BoQ / OHS Plan.
Construction - canals / excavations	Canal-bank or trench collapse and falls into excavations can cause serious injury or fatality.	Provide competent excavation supervision, safe battering or shoring as required, dewatering where needed, spoil setback, barriers and safe access. Do not leave dangerous excavations unguarded overnight.	Contractor; Supervision	Daily excavation inspection; corrective action before entry; community barriers in place at all open works.	Contractor BoQ / OHS and Community H&S Plans.
Construction	Extreme heat and remoteness increase dehydration, heat illness and delayed medical response.	Implement a competent Heat Stress Management Plan within the C-ESMP, including potable water, shade, acclimatisation, workload-based work/rest arrangements, heat-trigger criteria, toolbox talks, trained first response and documented medical evacuation.	Contractor; Supervision verifies	Daily toolbox and welfare checks; heat-illness register; heat controls and evacuation arrangements verified at active work fronts.	Contractor BoQ / OHS Plan.
OS3 - Resource Efficiency and Pollution Prevention and Management					
Pre-construction - groundwater	New or rehabilitated groundwater infrastructure may be developed without evidence of sustainable yield.	Complete a hydrogeological survey and sustainable-yield determination for every borehole and the dug-well site before drilling, rehabilitation or commissioning. Size pumping equipment to the approved yield.	PIU / Technical Consultant	Hydrogeological report and approved sustainable-yield value for each groundwater site before works/commissioning.	Hydrogeological survey line: USD 20,000 total.
Operation - groundwater	Abstraction above recharge / safe yield may lower water tables and reduce source reliability.	Meter or record abstraction and monitor groundwater levels against the site-specific sustainable-yield threshold. Reduce abstraction and investigate if the action threshold is exceeded.	WUA / PIU technical oversight	Baseline pre-works; monthly O&M level and abstraction records; corrective action where threshold exceeded.	WUA O&M; PIU monitoring.
Construction / commissioning	Construction, drilling or poor source protection can contaminate water intended for community use.	Protect wellheads and catchment inlets, control drilling fluids and fuels, separate livestock/domestic access where designed, and test water before commissioning. Do not commission a supply point that fails applicable quality criteria.	Contractor; PIU / accredited laboratory	Pre-commissioning test for all supply points; semi-annual O&M testing; additional testing after contamination/flood events.	Water-quality monitoring line: USD 18,100 total.
Construction	Canal and catchment spoil, drilling fluids, oils, packaging and general waste can contaminate land and water.	Segregate wastes; manage spoil at approved locations; contain drilling fluids; store oils/fuels in controlled areas; remove wastes to approved disposal arrangements; reinstate temporary disposal and support sites.	Contractor; Supervision	Weekly waste / spoil inspection; disposal records; zero uncontrolled discharge or dumping.	Contractor BoQ / Waste Management Plan.
Construction	Fuel and hazardous-material spills may contaminate soil or water.	Use bunded storage, drip trays and spill kits; trained handling; immediate containment and reporting of spills; prohibit refuelling where release could enter water.	Contractor; Supervision	Weekly storage inspection; spill log; zero untreated spills.	Contractor BoQ / Spill Prevention Plan.

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
Operation	Standing water at troughs, catchments, canals or drainage depressions can increase vector risk; irrigation intensification may increase pesticide use.	Apply project-wide P/VMP source-reduction, drainage, hygiene and IPM requirements; coordinate seasonal RVF/locust early warning and safe pesticide practice where relevant.	WUA focal person / SWS E&S Officer	Monthly vector-management checks; seasonal surveillance; pesticide incidents recorded and investigated.	P/VMP budget line: USD 8,200 total.
OS4 - Community Health, Safety and Security					
Pre-construction / all phases	Security deterioration or conflict dynamics may expose workers and communities and interrupt supervision, especially in Lower Shabelle.	No mobilisation without site-specific security assessment and clearance. Apply conflict-sensitive engagement, flexible scheduling and a Security Management Plan where required; coordinate with appropriate authorities and community leaders.	PIU / Contractor / District Administration	Security clearance per site before mobilisation; continuous incident and access monitoring; serious incident triggers halt and review.	Security assessment / conflict-sensitive engagement line: USD 28,000 total; contractor security costs additional.
Construction	Open excavations, drilling plant, canal cuts and materials movement may injure community members, especially children.	Install barriers and Somali-language warning signs before works; maintain exclusion zones and safe crossings; inspect daily; prohibit dangerous unguarded excavations overnight.	Contractor; Supervision	100% active hazardous areas barricaded / signed; daily inspection; community-safety incidents tracked.	Contractor BoQ / Community H&S Plan.
Construction	Project traffic can increase collision and pedestrian risk in settlements.	Use agreed routes, competent drivers, community notification and a maximum 30 km/h speed in settlements unless a lower site-specific limit is required; manage reversing and loading areas.	Contractor	Driver induction and incident log; speed compliance spot checks.	Contractor BoQ / Traffic Management measures.
Construction	Taking a water source or canal out of service may interrupt domestic or irrigation supply and affect livelihoods.	Provide advance notification, phased works and documented continuity arrangements. For Marka canals, agree head-to-tail continuity and allocation arrangements with water-user groups before works and confirm water quality before resumed use.	Contractor / PIU / water-user groups	No unplanned disruption beyond agreed arrangements; canal continuity / equity plan approved before works; complaints tracked.	Canal continuity and equity facilitation line: USD 14,500 total.
All phases	Weak emergency preparedness can amplify consequences of serious injury, flood, security or contamination events.	Maintain site emergency response arrangements, first aid, communication, medical referral and evacuation route appropriate to the district and work activity.	Contractor / PIU	Emergency contacts and route verified before mobilisation; drills / briefings documented; incident response reviewed.	Contractor BoQ / OHS Plan; PIU oversight.
OS5 - Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement					

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
Pre-construction - six new works	New boreholes or the dug well may be sited on land with unresolved rights or may cause displacement or access disputes.	Apply site-specific OS5 siting and land-access screening; document voluntary / agreed access; avoid displacement through micro-siting. Suspend affected works and undertake the required OS5 determination if displacement or material economic loss is identified.	PIU / District Administration	OS5 screening and documented access for all six new works before mobilisation; zero works on unresolved land.	PIU safeguards budget; compensation if required must be separately confirmed and funded before impact.
Construction / support sites	Temporary access, lay-down, spoil or borrow areas may damage crops or assets or restrict use.	Document temporary access and reinstatement arrangements before use; record affected users; compensate verified project-caused crop or asset losses at full replacement cost in accordance with the Land Access Protocol.	PIU / Contractor / District Administration	100% temporary land uses documented; damage claims recorded and resolved; reinstatement verified at close-out.	Project/contract compensation and reinstatement provisions, as applicable. Any verified loss shall be funded before closure of the affected case.
OS6 - Habitat and Biodiversity Conservation and Sustainable Management of Living Natural Resources					
Pre-construction / construction	Works may clear vegetation or disturb riparian areas beyond the approved footprint; screening assumptions may change after final micro-siting.	Verify footprint and sensitive receptors before works; minimise clearing; protect riparian vegetation where relevant; reinstate disturbed vegetation; reassess if a protected or critical-habitat feature is identified.	Contractor / PIU / Supervision	Zero clearance beyond approved footprint; site screening updated if conditions differ from assumptions.	Contractor BoQ; PIU monitoring.
OS7 - Vulnerable Groups					
Pre-construction / O&M	Women, IDPs, returnees, minority clans, poor households, pastoralists and tail-end users may be excluded from consultation, WUAs or project benefits.	Use targeted outreach, non-discrimination in WUA eligibility, conflict-sensitive balanced representation and monitoring of access and grievance trends. Verify inclusion before handover.	PIU / SWS E&S Officer / CLOs / WUAs	Representation and participation records; zero substantiated exclusion incidents; WUA governance reviewed at formation and during O&M.	Community engagement / outreach line: USD 21,500 total; WUA training line: USD 27,000 total.
Construction / O&M	Women may face unsafe access, increased SEA/SH exposure or exclusion from water-governance decisions.	Provide female CLO access, women-only engagement where appropriate, safe water-point access and at least 30% female WUA membership and leadership.	PIU / CLOs / WUAs	≥30% women in WUA membership and leadership; women's participation tracked; female-friendly grievance access maintained.	SWS E&S / CLO support line: USD 65,000 total; WUA training line as above.
OS8 - Cultural Heritage					

PROJECT PHASE	E&S RISKS AND IMPACTS	MITIGATION / MANAGEMENT MEASURES	IMPLEMENTATION RESPONSIBILITY	MONITORING RESPONSIBILITY / INDICATORS / FREQUENCY	INDICATIVE COST (USD) / FUNDING SOURCE
Construction	Excavation, drilling, canal and catchment earthworks may encounter previously unknown cultural heritage or human remains.	Apply the Chance Finds Procedure: immediate stop-work, secure area, record and notify PIU and relevant authority; do not resume affected works until authorised.	Contractor / PIU	100% workers inducted; all chance finds recorded and cleared before work resumes.	Contractor BoQ / induction; PIU oversight.
OS10 - Stakeholder Engagement and Information Disclosure					
Pre-construction / construction	Inadequate disclosure or engagement may create misunderstanding, conflict or exclusion, particularly where physical access is security-constrained.	Implement the South West State SEP using district/site meetings, targeted groups, Somali-language information and conflict-sensitive / remotely supported engagement where needed. Provide advance notice of works.	PIU / CLOs / District Administration / Contractor	Engagement calendar implemented; attendance sex-disaggregated; advance notice documented; commitments tracked.	Community engagement line: USD 21,500 total.
All phases	Communities or workers may lack accessible routes to raise grievances or sensitive complaints.	Operate the multi-channel project GRM and workers' GRM; maintain anonymous channels; resolve routine complaints within the adopted timelines; do not mediate SEA/SH through community or xeer structures.	PIU / SWS E&S Officer / CLOs / Contractor / WUAs	GRM log reviewed monthly; ≥80% resolved within 30 days; canal allocation cases within 14 days; SEA/SH cases referred through confidential pathway.	GRM line: USD 15,500 total.
Operation - Marka canals	Restored canal capacity may benefit head-end users disproportionately or generate allocation disputes.	Use documented head-to-tail allocation rules, WUA oversight and the fast-track water-allocation grievance route. Review allocation when monitoring or grievances indicate systematic tail-end deprivation.	WUAs / PIU	Seasonal head-to-tail delivery checks; allocation complaints tracked and reviewed; no systemic tail-end deprivation.	Canal facilitation / WUA capacity lines; O&M resources.

9.3.3. Operation and maintenance phase

The operation and maintenance measures in Table 9-2 apply from commissioning and handover. WUAs and water-user groups are responsible for routine operation, access and allocation rules, inspection, desilting and minor maintenance within their mandate, supported by the PIU and district/state counterparts. Groundwater abstraction, water quality, catchment and canal condition, safety features, inclusion and grievance trends must remain under monitoring after construction. Handover is conditional on water-quality clearance where relevant, completion of required training, functioning governance arrangements and closure of construction-related non-compliances.

9.3.4. Land Access Protocol

A Land Access Protocol applies to all South West State sites, with particular attention to the five new boreholes, the new dug well and temporary construction-support areas. Before works or temporary occupation, the PIU must confirm the site or corridor, identify the person or group using the land, document the agreed access arrangement, record any crops or assets that may be affected and confirm the reinstatement requirement. Eligibility for compensation is based on verified project-caused loss rather than title alone. Any unexpected physical displacement or material economic displacement requires suspension of the affected activity and an OS5 determination before works continue.

9.3.5. SEA/SH prevention and response

- All workers, including drivers, security personnel and subcontractors, sign an enforceable Code of Conduct before commencing work and receive SEA/SH induction and refresher training.
- A separate confidential SEA/SH reporting pathway is established before mobilisation and managed through the project's designated social/GBV function; SEA/SH complaints are not handled through ordinary community mediation or xeer forums.
- At least one female CLO is available in each district as a safe contact point for women and girls and for confidential referral.
- Survivor-centred referral pathways to available medical, psychosocial and protection services are mapped and confirmed before mobilisation, with particular attention to displaced populations and locations where services are limited.
- Worker accommodation, if required, is sited and managed to reduce community exposure and includes appropriate gender-separated welfare arrangements.
- SEA/SH allegations are recorded only in confidential systems; project reporting uses non-identifying aggregate information.

9.4. Environmental and social clauses for procurement and contracts

The environmental and social obligations in this ESMP must be given contractual force through bidding documents, works contracts and supervision terms of reference. The following requirements apply to each works contract or lot:

- Contractor ESMP (C-ESMP) requirement, including site- and activity-specific annexes and method statements for high-risk tasks.
- Required supporting plans covering OHS, community health and safety, waste and spill prevention, labour management, SEA/SH, security where applicable, traffic and emergency response.
- Mobilisation conditions linked to the PIU site-readiness checklist and the ESHS hold points in Section 9.5.
- Worker-protection clauses requiring age verification, written employment terms, non-discrimination, welfare provisions, workers' GRM and Code of Conduct.
- Performance, corrective-action and suspension clauses allowing unsafe or non-compliant activities to be stopped until corrective measures are verified.
- Incident-reporting obligations consistent with Section 9.9.1 and any more stringent AfDB or Financing Agreement requirements.
- Flow-down of E&S obligations to subcontractors, temporary labour and support-site activities.
- Reinstatement and handover obligations, including closure of temporary access routes and support sites and correction of outstanding E&S non-compliances.

9.5. Environmental, Occupational Health and Safety requirements (ESHS hold points)

No physical works may begin at a South West State site until the applicable requirements below have been submitted, verified and approved by the PIU in writing:

- Site-specific security assessment and clearance; Security Management Plan where indicated by the assessment.
- Field-verified coordinates and reconciled site register linking the final ESIA nomenclature to the engineering drawings and BoQs.
- Hydrogeological survey and sustainable-yield determination for every borehole and the dug-well site.
- OS5 siting and land-access screening for the five new boreholes and one new dug well; documented access for temporary support areas.
- Pre-works condition assessment for each catchment and canal.
- Approved C-ESMP and activity-specific method statements.
- OHS Plan covering drilling, confined space, excavation/canal-bank safety, heat stress, emergency response and medical evacuation.
- Waste Management and Spill Prevention Plan, Community Health and Safety Plan, and traffic controls.
- Labour Management Procedures in operation: worker register, age verification, written terms and Workers' GRM.
- SEA/SH Code of Conduct, training plan and confirmed referral pathway; female CLO contacts publicised.
- Canal water-continuity and head-to-tail equity plan for Marka canal works.
- GRM operational in the relevant district before mobilisation.

9.6. Stakeholder-engagement measures

Stakeholder engagement is implemented through the South West State SEP. The approach combines district and site-level meetings, farmer and water-user engagement in Lower Shabelle, pastoral and agro-pastoral outreach, women-only sessions, engagement with IDPs, returnees and minority clans, and coordination with traditional/religious leaders and district authorities. Where insecurity limits physical access, conflict-sensitive remote or intermediary-supported engagement may be used provided that records, feedback and commitments are captured. Project information is disclosed in accessible Somali-language formats through district offices, community and WUA structures, notice boards, radio and other locally appropriate channels.

9.7. Project-level grievance redress mechanism

A multi-channel GRM applies to all South West State project sites. Uptake channels include CLOs, WUAs, district focal points, suggestion boxes, phone/SMS, written and anonymous submissions, and referral through community leaders where appropriate. Routine grievances should be resolved at the lowest competent level and escalated where resolution is not achieved or the complainant is dissatisfied. Canal water-allocation complaints use the dedicated fast-track route. SEA/SH allegations use the separate confidential survivor-centred pathway and are never mediated through ordinary community or customary forums. Access to AfDB's Independent Recourse Mechanism and judicial remedies remains available and must not be obstructed.

9.8. Monitoring and reporting plan

Table 9-3: Monitoring Plan - South West State (22 sites, construction and O&M phases)

PARAMETER	INDICATOR / METHOD	FREQUENCY	RESPONSIBLE	THRESHOLD / ACTION
Security status	Security clearance per site; incident and access log; work suspensions	Before mobilization; continuous	PIU / Contractor	No works without clearance; serious incident triggers halt and review.
Construction ESHS compliance	ESMP checklist; corrective actions; contractor plans; incident log	Weekly Supervision; monthly PIU audit	Supervision / SWS E&S Officer	Material non-compliance corrected within agreed timeframe; unsafe work stopped.
Groundwater levels and abstraction	Static/dynamic water level and abstraction record	Baseline pre-works; monthly O&M	PIU / WUA	Drawdown beyond site-specific sustainable-yield threshold triggers abstraction reduction and investigation.
Water quality - supply points	Turbidity, pH, E. coli / coliforms, nitrates, EC as applicable	Before commissioning; semi-annually O&M; after contamination/flood event	PIU / accredited laboratory	WHO guideline values / project-approved standards; commissioning blocked until acceptable.
Canal performance and equity	Conveyance / flow; head-to-tail delivery; siltation; allocation complaints	Post-works; bi-annually; after major floods	WUA / PIU / Supervision	Head-to-tail inequity or >15% conveyance loss triggers corrective maintenance / allocation review.
Catchment condition	Storage depth; embankment/liner/spillway condition; silt trap	Bi-annually; after major storms	WUA / CLO; PIU oversight	>15% storage loss triggers desilting; structural defect requires prompt action.
Soil erosion and spoil	Visual erosion; spoil location; vegetation recovery; reinstatement	Monthly construction; quarterly O&M	Contractor E&S / SWS E&S Officer	No significant erosion beyond footprint; spoil/support sites reinstated.
WUA governance and inclusion	Female membership/leadership; IDP/minority representation; allocation dispute log	At formation; 3/6/12 months; annually	PIU / SWS E&S Officer	≥30% female membership and leadership; no substantiated exclusion incident.
GRM performance	Cases received/resolved/pending; resolution time; water-allocation cases; sensitive referrals	Monthly	SWS E&S Officer	≥80% resolved within 30 days; allocation cases within 14 days; sensitive cases referred through confidential pathway.
Labour and OHS	Worker register; age verification; injuries; near misses; heat illness; high-risk work permits	Continuous; monthly summary	Contractor; Supervision	Zero fatalities; zero child labour; LTIFR and other OHS indicators monitored against the approved project OHS KPI framework.
SEA/SH prevention	Code of Conduct coverage; training; referral pathway status; confidential cases	Monthly confidential review; quarterly training check	PIU social/GBV function / CLOs	100% workers sign CoC and receive induction; 100% allegations referred through confidential pathway.

PARAMETER	INDICATOR / METHOD	FREQUENCY	RESPONSIBLE	THRESHOLD / ACTION
Pest and vector management	Standing water; drainage; larvicide records where used; livestock disease / RVF / locust warning; pesticide incidents	Monthly; seasonal as applicable	WUA focal person / SWS E&S Officer	No persistent avoidable standing water; project-wide P/VMP triggers applied.
Community safety / traffic	Barriers, signs, safe access, speed controls, community incidents	Daily construction; monthly summary	Contractor / Supervision	Hazardous work areas protected; maximum 30 km/h in settlements unless a lower site-specific limit applies.
Reporting and assurance	Weekly inspections, monthly PIU reviews, quarterly reports, annual review	As scheduled	Supervision / PIU	Reports submitted against approved calendar; overdue corrective actions escalated.

The monitoring plan is consolidated in the project Environmental and Social Monitoring Plan. Monitoring results are used to confirm compliance, identify corrective actions, test whether operational assumptions remain valid, and update the ESMP where the risk context changes.

Table 9-4: Numeric Performance Standards and Thresholds - South West State

PARAMETER	NUMERIC THRESHOLD / STANDARD	IMPLEMENTATION BASIS
Security clearance	No mobilization without current site-specific clearance	ESMP / site-specific security assessment
Groundwater abstraction	Not to exceed the site-specific sustainable yield established by the pre-works hydrogeological assessment	Hydrogeological survey / OS3
Groundwater drawdown	The action threshold shall be established for each groundwater site by the approved hydrogeological assessment and sustainable-yield monitoring plan before commissioning.	Hydrogeological assessment / C-ESMP monitoring plan
Water quality	Water intended for community use shall meet the approved project and applicable drinking-water standard; commissioning is blocked until compliant results are confirmed.	C-ESMP commissioning and water-quality protocol
Canal conveyance	>15% conveyance loss triggers corrective maintenance / allocation review	South West monitoring plan
Catchment storage	>15% storage loss triggers desilting	South West monitoring plan
Settlement traffic speed	Maximum 30 km/h in settlements unless a lower site-specific limit is required by the Traffic Management Plan.	ESMP / Traffic Management Plan
Heat-stress work window	The C-ESMP Heat Stress Management Plan shall define potable-water provision, acclimatisation, workload-based work/rest arrangements, shade, heat-trigger criteria, first aid and emergency response consistent with GIIP.	C-ESMP Heat Stress Management Plan
WUA female representation	≥30% female membership and ≥30% female leadership	ESMP / Gender and Social Inclusion measures
GRM resolution	≥80% of grievances resolved within 30 days; canal allocation cases within 14 days	ESMP / GRM

PARAMETER	NUMERIC THRESHOLD / STANDARD	IMPLEMENTATION BASIS
Fatalities	Zero	C-ESMP OHS Plan
LTIFR	Zero fatalities; LTIFR and related OHS indicators shall be monitored against the approved project OHS KPI framework.	C-ESMP OHS Plan / approved project OHS KPI framework

9.9. Institutional arrangements

Table 9-5: Roles and Responsibilities - South West State ESMP

ACTOR	KEY RESPONSIBILITIES	REPORTING / INTERFACE
PIU (MoAI)	Overall ESMP ownership; approve C-ESMPs; verify pre-works studies and hold points; manage serious incidents and corrective actions; quarterly AfDB reporting; coordinate federal and SWS counterparts; ensure budget availability.	Reports to MoAI and AfDB.
South West State E&S Officer	Day-to-day safeguards oversight across the 22 sites; inspections; GRM coordination; monitoring consolidation; WUA follow-up; monthly reporting to PIU.	Reports to PIU environmental/social function.
District Administrations - Hudur, Marka, Qansax Dhere	Site access and community liaison; local coordination; conflict-sensitive support; land and grievance mediation within mandate.	Coordinate with PIU, SWS E&S Officer and CLOs.
Community Liaison Officers	Community information, grievance intake, vulnerable-group outreach, women's engagement and reporting; at least one female CLO per district as stated in project instruments.	Monthly logs to SWS E&S Officer / PIU.
Contractors / subcontractors	Implement C-ESMP and all construction-phase measures; maintain ESHS staff and records; worker management; high-risk work controls; incident reporting; reinstatement.	Report to Supervision Consultant and PIU.
Supervision Consultant	Weekly compliance inspections; verify method statements, hold points, corrective actions, monitoring results and commissioning readiness.	Reports to PIU.
WUAs / water-user groups	O&M, access/allocation rules, catchment/canal inspection and clearance, groundwater and water-use records where applicable, GRM support and community accountability.	Supported and overseen by PIU/SWS counterparts.
AfDB	Safeguards oversight; review periodic reports; supervision; corrective-action requirements; recourse mechanism access.	External oversight.

9.9.1. Incident management and reporting

Serious incidents shall be reported immediately to the PIU and notified to AfDB within the applicable Bank/Financing Agreement timeframe. The approved C-ESMP incident procedure shall use the controlling project reporting protocol consistently.

All incidents are recorded in the South West State incident register, investigated to establish root causes and corrective actions, and tracked to closure. Security incidents are additionally coordinated with the competent South West State and district security structures. Sensitive SEA/SH records are kept confidential and are not entered into ordinary site grievance logs.

9.10. Institutional capacity assessment

The ESIA establishes a multi-tier implementation arrangement but does not assume that every implementing institution has all specialist capacity in-house.

The ESMP addresses this through a dedicated South West State E&S Officer, district/CLO support, contractor ESHS staffing, independent supervision, specialist technical inputs for hydrogeology and design verification, and structured WUA capacity building before handover. Where the PIU lacks specialist competence for a specific risk - for example hydrogeological yield determination, laboratory water-quality testing or specialized GBV referral mapping - the relevant qualified technical support must be procured rather than assumed to be available internally.

9.11. Capacity development and training

Table 9-6: Capacity Building and Training Plan - South West State

TRAINING TOPIC	TARGET PARTICIPANTS	KEY CONTENT	FREQUENCY / TIMING	RESPONSIBLE	DOCUMENTATION
Worker E&S induction	All workers and subcontractors	Project rules; prohibited behaviours; GRM; Code of Conduct; environmental controls	Before work; for every new worker	Contractor E&S Officer	Signed induction record
Occupational health and safety	Workers and supervisors	Drilling, confined space, excavation/canal-bank safety, heat stress, PPE, emergency response, first aid	Monthly toolbox; periodic refresher	Contractor OHS / E&S Officer	Toolbox and refresher records
SEA/SH prevention - workers	Workers, supervisors, drivers, security staff	Definitions, prohibitions, CoC, confidential reporting, consequences, community conduct	Before mobilisation; refresher	PIU social/GBV function / Contractor	Signed CoC; attendance
Security and conflict sensitivity	Workers, site managers, CLOs as relevant	Security clearance, conflict-sensitive conduct, do-no-harm, community engagement	Before mobilisation; as context changes	PIU / security focal point	Briefing record
Waste and pollution control	Site supervisors, storekeepers, plant operators	Spill response, fuel storage, waste segregation, drilling fluids, spoil management	Before works; refresher	Contractor E&S Officer	Inspection / training record
Chance Finds Procedure	Workers and supervisors	Recognition, stop-work, securing, notification, handling of human remains	At induction; refresher after any find	Contractor / PIU	Induction sign-off
WUA governance and water management	WUAs / water-user groups	Roles, access rules, head-to-tail equity, record keeping, conflict resolution, O&M	Before handover; annual refresher	PIU / Supervision / extension support	WUA records and attendance
Infrastructure O&M	WUA technical committees / district officers	Catchment, canal, borehole and dug-well maintenance; defect identification and escalation	Before handover; first-season mentoring	Supervision / Contractor / district officers	O&M manual and logs
Groundwater monitoring	WUAs / district water officers	Water-level reading, abstraction records, sustainable-yield limits, early warning	At handover; refresher	PIU / Technical Consultant	Monitoring records
GRM implementation	CLOs, district focal points, WUA GRM contacts	Logging, acknowledgement, escalation, confidentiality, sensitive complaints	Before mobilisation; six-monthly refresher	PIU safeguards function	GRM register review
Gender and social inclusion	CLOs, PIU, district focal points, WUAs	Inclusive facilitation; women, IDP/minority and pastoral inclusion; representation tracking	Before mobilisation / WUA formation; coaching	PIU / gender/social specialist	Participation and governance records
Climate-smart water management	WUAs and relevant district officers	Seasonal forecasts, drought/flood contingency, adaptive allocation and maintenance timing	During O&M capacity building; annual refresher	PIU / Supervision	Training and O&M records

TRAINING TOPIC	TARGET PARTICIPANTS	KEY CONTENT	FREQUENCY / TIMING	RESPONSIBLE	DOCUMENTATION
AfDB safeguards awareness	PIU, SWS and district counterparts	ISS obligations, monitoring, incident escalation, reporting and recourse	Before commencement; annual refresher	PIU / AfDB project team as applicable	Workshop record

9.12. Implementation schedule

Table 9-7: Implementation Schedule and Reporting Calendar - South West State

ACTIVITY	TIMING / TRIGGER	RESPONSIBLE	OUTPUT
Security assessment / clearance	Before mobilisation at each site	PIU / Contractor	Current site clearance; SMP where required
Hydrogeological surveys	Before works / commissioning at each groundwater site	PIU / Technical Consultant	Survey report and sustainable-yield determination
OS5 siting / land-access screening	Before mobilisation at each new work	PIU / District Administration	Screening and documented access
Coordinate / site-register reconciliation	Before mobilisation	PIU / Technical Consultant	Signed reconciled site register
Catchment / canal condition assessments	Before works	PIU / Technical Consultant	Condition report incorporated into design
C-ESMP and supporting plans approval	Before on-site mobilisation	PIU	Written approval
Canal continuity / head-to-tail plan - Marka	Before canal works	PIU / water-user groups	Agreed continuity and allocation plan
GRM and SEA/SH pathway operational	Before mobilisation in each district	PIU / SWS E&S Officer / CLOs	Publicised channels and referral pathway
Worker induction	Before each worker starts	Contractor	Signed record
Supervision inspections	Weekly during active works	Supervision Consultant	Weekly ESHS report
PIU safeguards review	Monthly during construction	PIU / SWS E&S Officer	Monthly review / corrective action log
Water-quality clearance	Before commissioning and per O&M schedule	PIU / accredited lab	Test certificate / action record
WUA formation / training	Before handover	PIU / SWS E&S Officer	Governance and training records
Quarterly safeguards reporting	Quarterly throughout implementation	PIU	Periodic E&S report to AfDB
O&M oversight visits	3, 6 and 12 months post-handover; annually thereafter where project arrangements continue	PIU / SWS E&S Officer	Oversight report

9.13. Cost estimates and sources of financing

The ESMP provides the indicative safeguards budget below for PIU-managed safeguards, monitoring, engagement and capacity-building activities.

Table 9-8: Indicative ESMP Budget - South West State (USD)

COST ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL	FUNDING SOURCE
SWS E&S Officer + district CLO support (3 districts)	20,000	17,000	15,000	13,000	65,000	Project safeguards budget
Security assessment & conflict-sensitive engagement (Lower Shabelle priority)	11,000	7,000	5,500	4,500	28,000	Project safeguards budget
Community engagement - three districts + IDP/returnee outreach	8,000	5,500	4,500	3,500	21,500	Project safeguards budget
GRM operation - three districts	5,500	3,800	3,200	3,000	15,500	Project safeguards budget
Hydrogeological surveys & sustainable-yield tests - 6 sites	13,000	3,000	2,000	2,000	20,000	Project safeguards budget
Water-quality monitoring - groundwater + catchment points	5,500	4,200	4,200	4,200	18,100	Project safeguards budget
Canal water-continuity & head-to-tail equity facilitation - Marka	6,500	3,500	2,500	2,000	14,500	Project safeguards budget
Catchment condition assessments & erosion controls	4,500	2,000	1,500	1,500	9,500	Project safeguards budget
WUA capacity building & training - 22 sites / 3 districts	11,000	7,000	5,000	4,000	27,000	Project safeguards budget
SEA/SH prevention & GBV referral mapping	4,500	2,800	2,200	2,200	11,700	Project safeguards budget
Pest and vector management (P/VMP)	2,800	1,800	1,800	1,800	8,200	Project safeguards budget
SUBTOTAL	92,300	57,600	47,400	41,700	239,000	
Contingency (10%)	9,230	5,760	4,740	4,170	23,900	
TOTAL (indicative)	101,530	63,360	52,140	45,870	262,900	

All amounts are indicative and shall be incorporated into annual work planning and reconciled with the Financing Agreement, procurement plan and works-contract BoQs. Costs shown in Table 9-2 are cross-references to these consolidated lines or to contractor obligations and shall not be added again.

9.14. ESMP implementation matrix

The implementation matrix below consolidates the principal readiness, mitigation, monitoring, institutional and budget commitments into a tracking tool. It should be maintained by the South West State E&S Officer, reviewed during monthly PIU safeguards reviews and reflected in quarterly reporting to AfDB. The detailed measure set remains the comprehensive matrix at Section 9.3.2 and the monitoring plan at Section 9.8.

Table 9-9: ESMP Implementation Matrix - South West State

CODE	IMPACT / RISK	MEASURE	DEADLINE	COST / SOURCE	KPI	IMPLEMENTATION	MONITORING
SWS-01	Site mobilization without readiness	Signed PIU site-readiness checklist for every site	Before mobilization	PIU safeguards oversight	100% sites with signed checklist	PIU / SWS E&S Officer	Supervision / AfDB oversight
SWS-02	Inconsistent site records / wrong location	Reconciled Master List, coordinates, screening and drawings	Before mobilization	Technical preparation	Signed site register for 22 sites	PIU / Technical Consultant	SWS E&S Officer
SWS-03	Security exposure	Current security clearance and SMP where required	Before mobilization; continuous	USD 28,000 line + contractor costs	No works without clearance	PIU / Contractor	District / Supervision
SWS-04	Groundwater over-abstraction	Hydrogeological survey and sustainable-yield limits	Before groundwater works	USD 20,000 line	Approved yield per groundwater site	PIU / Technical Consultant	SWS E&S Officer
SWS-05	Land/access dispute at new works	OS5 siting and documented land access	Before mobilization at six new works	Safeguards budget; compensation if triggered	100% new works screened	PIU / District Administration	SWS E&S Officer
SWS-06	Unsafe high-risk work	Approved OHS plan and method statements	Before activity	Contractor BoQ	Permit / checklist coverage; zero fatality target	Contractor	Supervision / PIU
SWS-07	Water / irrigation disruption	Continuity and head-to-tail plan for Marka canals; alternative supply where required	Before affected works	USD 14,500 line + contractor costs	No unplanned disruption; allocation complaints tracked	PIU / Contractor / WUAs	SWS E&S Officer
SWS-08	Water contamination	Pre-commissioning and O&M water-quality testing	Before commissioning; semi-annual O&M	USD 18,100 line	All commissioned sources meet approved criteria	PIU / Lab / WUA	SWS E&S Officer
SWS-09	Community exclusion	Targeted engagement and inclusive WUA governance	Before handover and throughout O&M	USD 21,500 + USD 27,000 lines	≥30% female WUA membership / leadership; inclusion tracked	PIU / CLOs / WUAs	SWS E&S Officer
SWS-10	SEA/SH risk	CoC, training, confidential channel and referral pathway	Before mobilization; throughout works	USD 11,700 line + contractor training	100% workers sign CoC; confidential referral pathway functional	PIU / Contractor	PIU social/GBV function

CODE	IMPACT / RISK	MEASURE	DEADLINE	COST / SOURCE	KPI	IMPLEMENTATION	MONITORING
SWS-11	Weak grievance response	Multi-channel GRM operational in 3 districts	Before mobilization; all phases	USD 15,500 line	≥80% grievances resolved within 30 days	SWS E&S Officer / CLOs	PIU
SWS-12	Sedimentation / loss of capacity	Condition monitoring and corrective desilting	Bi-annual O&M / after events	WUA O&M + USD 9,500 catchment line	>15% loss triggers corrective action	WUA / PIU	SWS E&S Officer
SWS-13	Vector / pest risk	P/VMP implementation and seasonal coordination	Construction / O&M	USD 8,200 line	No persistent avoidable standing water; incidents tracked	WUA focal / PIU	SWS E&S Officer
SWS-14	Reporting failure	Weekly supervision, monthly PIU review, quarterly AfDB report	Throughout implementation	Safeguards budget	Reports submitted against calendar	Supervision / PIU	AfDB
SWS-15	Weak O&M capacity	WUA formation, governance and technical training before handover	Before commissioning	USD 27,000 line	100% sites handed over to trained management structure	PIU / WUA	SWS E&S Officer

9.15. Environmental monitoring matrix

The environmental monitoring matrix for the South West State component is the monitoring plan at Section 9.8. It specifies the indicator or method, frequency, responsible party and action threshold for each parameter and is supported by the Environmental and Social Monitoring Plan in the annexes. The core environmental parameters are security status where it affects safe implementation; groundwater level and abstraction at groundwater sites; water quality at community supply points; canal performance and head-to-tail delivery; catchment storage and structural condition; erosion, spoil and reinstatement; waste and hazardous-material controls; community safety; and vector and pest-management indicators. Monitoring is intensified after major storms, floods, contamination events, security incidents or other conditions that may invalidate the routine monitoring frequency.

9.16. Risk-management matrix

The matrix below records implementation risks that could prevent the ESMP from being delivered as designed. These are implementation risks, not a re-rating of the environmental and social impacts assessed in Chapter 7.

Table 9-10: ESMP Implementation Risk-Management Matrix - South West State

IMPLEMENTATION RISK	EVIDENCE / TRIGGER	RISK TREATMENT	OWNER
Security deterioration restricts access or supervision	Lower Shabelle security context and project access constraints	Suspend / resequence works; update security assessment; use conflict-sensitive remote support where appropriate; do not proceed without clearance	PIU / Contractor
Hydrogeological information is delayed or inadequate	Groundwater yield data are a documented pre-works gap	No drilling / commissioning until qualified hydrogeological assessment establishes sustainable yield	PIU / Technical Consultant
Site names, coordinates or drawings remain inconsistent	Project records contains legacy names / coordinate inconsistencies	Use signed reconciled site register as a hard hold point before works	PIU / Technical Consultant
Programme pressure bypasses ESHS hold points	Multi-site / multi-typology programme and seasonal windows	Hold points incorporated in mobilisation authorisation and supervision checklists; non-compliance triggers stop-work	PIU / Supervision
WUA governance does not achieve required inclusion	Women, IDPs, minority clans and tail-end users face documented barriers	Verify representation before handover; repeat mobilisation / training; use GRM and PIU oversight	PIU / SWS E&S Officer
Budget or contractor pricing omits ESHS requirements	Contractor ESHS costs are additional to PIU safeguards budget	Price ESHS requirements in BoQs; reconcile annual work plan and procurement plan with ESMP budget	PIU / Procurement / Engineer
Conflicting thresholds or reporting requirements remain in project instruments	Current South West documents contain different LTIFR and some incident-reporting thresholds	Reconcile against approved Monitoring Plan, Financing Agreement and AfDB protocol before the affected activity proceeds; more stringent formally approved requirement prevails	PIU / AfDB project team

9.17. Key ESMP implementation indicators

- Readiness and compliance: 100% of sites mobilized only after the applicable PIU readiness checklist and hold points are closed; 100% of new works complete OS5 siting and access screening; 100% of groundwater sites have an approved sustainable-yield determination before commissioning.
- Worker health and safety: 100% worker induction and age verification; zero fatalities; high-risk work permits / checklists completed; heat-stress and emergency arrangements verified at active sites.
- Water and infrastructure performance: all commissioned community supply points pass the approved water-quality criteria; groundwater levels and abstraction monitored against sustainable yield; canal/catchment maintenance triggered at the adopted >15% loss thresholds.
- Community safety and continuity: no unplanned water-supply or irrigation disruption beyond agreed arrangements; active hazardous areas barricaded and signed; community and traffic incidents tracked and investigated.
- Stakeholder engagement and grievance: engagement events implemented against the SEP; ≥80% of grievances resolved within 30 days; canal allocation cases resolved within 14 days; SEA/SH cases handled only through the confidential pathway.
- Inclusion and governance: ≥30% women in WUA membership and leadership; IDP/minority and other vulnerable-group representation tracked; no substantiated exclusion incidents left without corrective action.
- Environmental performance: erosion and spoil non-compliances corrected; no uncontrolled waste or hazardous-material discharge; P/VMP monitoring active at applicable sites.
- Reporting and assurance: weekly Supervision inspections, monthly PIU safeguards reviews and quarterly reports completed against the approved calendar; annual ESMP / monitoring review completed.

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

- Design. Pre-works condition assessments, hydrogeological results, site verification and climate / safety requirements must be incorporated into the final engineering design, quantities and method statements before mobilisation.
- Planning. The ESMP determines readiness and sequencing: no site enters the works programme until the applicable hold points are closed, and catchment/canal earthworks are scheduled with reference to rainfall, flood, water-supply and security constraints.
- Procurement. C-ESMP requirements, labour and Code of Conduct clauses, high-risk work plans, incident reporting, corrective-action and suspension rights, reinstatement obligations and flow-down to subcontractors are included in bidding documents and contracts.

- Budget. PIU-delivered safeguards measures are funded through the indicative USD 262,900 ESMP budget subject to project approval and annual planning; contractor ESHS costs are priced in works contracts and are additional.
- Implementation and supervision. Contractor obligations are verified by the Supervision Consultant and PIU through inspections, hold-point approval, monitoring, corrective actions and incident management. Site-specific values are transcribed into C-ESMPs and method statements rather than remaining generic ESIA commitments.
- Operation and handover. Handover is conditional on completion of required water-quality testing, WUA / management arrangements, O&M training, closure of construction-related E&S non-compliances, and transfer of monitoring and maintenance responsibilities.
- The ESMP should be reviewed whenever there is a significant change in scope, site condition, design, security context or regulatory requirement. The change-management process must identify whether additional assessment, consultation, disclosure or AfDB review is required before the change is implemented.

9.19. Associated management plans

- Stakeholder Engagement Plan (SEP) - project instrument under OS10 covering stakeholder identification, engagement methods, disclosure, differentiated outreach and engagement scheduling in South West State.
- Grievance Redress Mechanism procedures - project instrument under OS10/OS4 covering uptake channels, acknowledgement, resolution and escalation, canal-allocation grievances and the separate SEA/SH pathway.
- Gender and Social Inclusion assessment / measures - supporting instrument for women, IDPs, returnees, minority clans, youth and other vulnerable groups, including WUA representation targets.
- Chance Finds Procedure - applies to all ground-disturbing works under OS8.
- Environmental and Social Monitoring Plan - consolidates monitoring indicators, methods, frequencies, responsibilities and action thresholds.
- Environmental, Social and Capacity Building Training Plan - provides the detailed training programme supporting Section 9.11.
- Climate Risk Assessment - documents drought, heat, groundwater stress, riverine flood and other climate hazards and adaptation requirements.
- Labour Management Procedures (LMP) - project-wide / contractor instrument under OS2 covering workforce management, age verification, written terms, welfare, non-discrimination and workers' GRM.
- Contractor Environmental and Social Management Plan (C-ESMP) - required for each works contract or lot, with site-specific annexes and method statements.

- Occupational Health and Safety Plan - contractor instrument covering drilling, confined space, excavation/canal-bank work, heat stress, emergency response and medical evacuation.
- Waste Management and Spill Prevention Plan and Community Health and Safety Plan - contractor instruments under OS3 and OS4.
- Security Management Plan (SMP) - required where the site-specific security assessment indicates the need, particularly in the Lower Shabelle context.
- Integrated Pest and Vector Management Plan (P/VMP) - project-wide instrument under OS3/OS4.
- Land Access Protocol - Section 9.3.4, applied as a precautionary OS5 measure. No Resettlement Action Plan is currently identified in the South West project records; if site-specific OS5 screening identifies displacement or a resettlement instrument requirement, that instrument must be prepared, disclosed and approved before the affected works proceed.

CHAPTER 10: CONCLUSION AND RECOMMENDATIONS

10.1 Overall Conclusion

The ESIA concludes that the proposed water-infrastructure interventions can be implemented in an environmentally and socially acceptable manner provided the mitigation, management, monitoring and pre-works controls defined in this ESIA are applied. The conclusion is conditional: it depends on confirmation of outstanding site-specific information, effective contractor management, functioning safeguards oversight, and continued operation and maintenance arrangements after handover.

The South West State component covers a diverse set of existing and new water infrastructure across Hudur, Marka and Qansax Dhere. The ESIA identifies security and conflict sensitivity, groundwater sustainability, construction and confined-space safety, irrigation continuity and head-to-tail water allocation, land access for new works, water quality, SEA/SH, inclusion of vulnerable groups, and long-term maintenance as the principal matters requiring control. These matters are addressed through the mitigation measures in Chapter 8 and the ESMP in Chapter 9 rather than through reliance on general good practice alone.

10.2 Basis for Environmental and Social Acceptability

The basis for accepting the project is that the proposed works are accompanied by enforceable measures at the points where risk is created: site and design verification before mobilisation; security clearance before access to conflict-sensitive locations; hydrogeological confirmation before groundwater development; OS5 screening and documented access for new works; water-continuity and allocation planning before canal rehabilitation; task-specific OHS controls during construction; water-quality confirmation before commissioning; and defined monitoring and WUA responsibilities during operation.

The project also provides mechanisms to address implementation uncertainty. Where monitoring shows unsustainable groundwater drawdown, inequitable canal distribution, water-quality failure, infrastructure deterioration, exclusion, grievance escalation or security deterioration, the ESMP requires corrective action, restriction or suspension of the affected activity, or further assessment before implementation continues.

10.3 Conditions to be Satisfied Before Mobilisation

- Confirm the final approved project site register, site names, coordinates and applicable design package for each works contract.
- Complete and clear the site-specific security assessment for every working and access area and prepare a Security Management Plan where required.
- Complete hydrogeological assessment and sustainable-yield determination for every groundwater work.

- Complete siting and land-access screening for the six new works and document voluntary access arrangements.
- Complete catchment and canal condition assessments required to finalise the rehabilitation scope.
- Approve the Contractor ESMP and relevant task-specific method statements and supporting ESHS plans.
- Establish the project GRM in the relevant district, including the confidential SEA/SH pathway and female CLO access.
- For Marka canal works, agree the water-continuity and head-to-tail equity arrangements with water users before mobilisation.
- Confirm applicable emergency-response and referral arrangements, including medical and GBV referral pathways.
- Reconcile site/design information requiring pre-construction confirmation that could affect the identity, siting, design or safeguards requirements of the relevant work package.

10.4 Conditions During Construction

- Implement the approved C-ESMP, OHS plan, waste controls, community health and safety measures and security arrangements throughout the works.
- Maintain supervision, weekly inspection and corrective-action tracking, with works suspended where a hard hold point or safety/security condition is breached.
- Maintain water and irrigation continuity arrangements and provide the required advance notification of temporary interruptions.
- Implement the project Labour Management Procedures, worker Code of Conduct, grievance channels and SEA/SH prevention requirements.
- Control erosion, sediment, spoil, drilling waste, fuels and other construction wastes in accordance with approved site plans.
- Maintain accessible community engagement and grievance uptake across all active work fronts, including targeted outreach to vulnerable groups.
- Report and investigate incidents according to the timeframes and escalation requirements in the ESMP.

10.5 Conditions for Commissioning and Operation

- Commission water-supply facilities only after required water-quality testing has passed.
- Form or strengthen the responsible WUA/water-user management structure and complete required operation and maintenance training before handover.
- Confirm the operating abstraction limit for groundwater systems and establish groundwater-level and abstraction monitoring.

- Confirm and post access and head-to-tail allocation rules for irrigation infrastructure where applicable.
- Put in place routine inspection, silt clearance, desilting, structural maintenance and safety-signage responsibilities.
- Maintain the GRM, inclusion monitoring and PIU oversight during the post-commissioning period.
- Apply the project Pest and Vector Management Plan during operation, including source reduction and drainage measures around catchments, canals and water points.

10.6 Recommendations

- Approve implementation only subject to the ESHS hold points and pre-mobilization confirmations defined in Chapter 9.
- Retain a dedicated safeguards function with sufficient capacity to oversee the geographically dispersed and multi-typology South West State works.
- Require site-specific C-ESMPs and task-specific method statements rather than relying solely on the state-level ESMP.
- Treat security clearance, hydrogeological confirmation, land-access screening, canal water-continuity planning and GRM readiness as mandatory conditions precedent to relevant works.
- Use monitoring results and grievances as management information and revise work methods, abstraction, allocation, maintenance or supervision where the ESMP action thresholds are reached.
- Maintain WUA capacity building and post-commissioning oversight so that infrastructure sustainability and equitable access are not treated as construction-only issues.

10.7 Final Statement

The ESIA, ESMP, approved C-ESMPs and associated safeguards instruments together constitute the environmental and social requirements for implementation, with the formally approved more protective requirement prevailing where instruments differ.

APPENDICES VOLUME

SOUTH WEST STATE

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	Hudur District (Bakool), Marka District (Lower Shabelle), and Qansax Dhere District (Bay)
Project Scope	22 sites: 8 water catchments, 7 irrigation canals, 6 boreholes and 1 dug well
Appendix Compilation	August 2026

DOCUMENT-CONTROL NOTE

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

Annex 1: E&S Screening Forms (South West State)

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
Warjanaay	Water catchment rehabilitation	AfDB E&S Screening form - Xudur - Warjanaay.docx	Water Catchment 4.126045, 43.907416 Cat. 2	Reconciliation required	Form name is Warjanaay but GPS corresponds to final Wardhoto coordinate.
Salah-bib	Water catchment rehabilitation	AfDB E&S Screening form - Xudur - Warta Saalaxbiib.docx	Water catchment 4.123564, 43.836346 Cat. 2	Matched	
Wardhoto	Water catchment rehabilitation	AfDB E&S Screening form - Xudur - Wardhoto.docx	Water Catchment 4.123564, 43.836346 Cat. 2	Reconciliation required	Form name is Wardhoto but GPS corresponds to final Salah-bib coordinate.
Waneey	New borehole	AfDB E&S Screening form - Xudur - Waneey.docx	Borehole 4.078681, 43.823802 Cat. 3	Matched	
Sheikh Aways	New borehole	AfDB E&S Screening form - Xudur - Sh. Aways.docx	Borehole 4.121343, 43.915742 Cat. 3	Reconciliation required	Form GPS is near Laame Looshe; verify controlled site identity.
Godow	New borehole	AfDB E&S Screening form - Xudur - Godow.docx	Borehole 4.138145, 43.928804 Cat. 3	Matched	
Gomoro	New dug well	AfDB E&S Screening form - Xudur - Gomiro.docx	Dug well 4.217304, 43.901677 Cat. 3	Matched	
Banjanay	New borehole	AfDB E&S Screening form - Xudur - Banajanaay.docx	Dug Well 4.226804, 43.931759 Cat. 3	Type mismatch	Form records Dug Well; final site register classifies Banjanay as Borehole.
Laame Looshe	Borehole rehabilitation	AfDB E&S Screening form - Xudur - Laamiloosh.docx	Borehole Rehabilitation 4.121369, 43.915683 Cat. 3	Matched	
Sar Adde Canal (19) / Arfeyle 1	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Arfaale1 Primary.docx	Canal 1.818670, 44.691499 Cat. 2	Matched	

Final Site / Asset	Final Typology	Original Screening Form	Original Activity / GPS / Cat.	Status	Control Note
Sar Adde Canal (20) / Arfeyle 2	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Arfaale2 Secondary.docx	Canal 1.815560, 44.691042 Cat. 2	Matched	
Kaaytoy Canal (21) / Agraariyo	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Agraariyo.docx	Canal 1.797961, 44.689786 Cat. 2	Matched	
Kaaytoy Canal (22) / Agrikolo	Irrigation canal rehabilitation	No separate screening form located	— — Cat. —	Missing	No Agrikolo screening form located.
Doobis Canal (23) / Saddexda Qumbe	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Saddexda Qumbe.docx	Canal 1.802056, 44.704351 Cat. 2	Matched	
Doobis Canal (24) / Shanley	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Shanley Canal.docx	Canal 1.792238, 44.683325 Cat. 2	Matched	
Kamirow Canal / Wasirka	Irrigation canal rehabilitation	AfDB E&S Screening form - Jannale - Wasirka.docx	Canal 1.789789, 44.686325 Cat. 2	Matched	
Bufow Ba'ad Catchment (26)	Water catchment rehabilitation	No separate screening form located	— — Cat. —	Missing	No distinct form located.
Bufow Ba'ad Catchment (27)	Water catchment rehabilitation	AfDB E&S Screening form - Jannale - Bufow.docx	Canal 1.768400, 44.760700 Cat. 2	Type mismatch	GPS corresponds closely to final Catchment 27 but form activity is Canal.
Bufow Ba'ad Catchment (28)	Water catchment rehabilitation	No separate screening form located	— — Cat. —	Missing	No distinct form located.
Raydable	Water catchment rehabilitation	No separate screening form located	— — Cat. —	Missing	No Qansax Dhere screening form located.
Aydura	Water catchment rehabilitation	No separate screening form located	— — Cat. —	Missing	No Qansax Dhere screening form located.
Ceel Hindi	New borehole	No separate screening form located	— — Cat. —	Missing	No Qansax Dhere screening form located.

Screening coverage summary: 22 controlled final sites are listed. Separate screening forms were not located for 6 final sites in the reviewed pooled screening archive. Original forms are supplied in the accompanying sorted screening folder.

Annex 2: Stakeholder Engagement Plan (SEP) - South West State

This Stakeholder Engagement Plan (SEP) is customised for the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere (Bay) districts under the BBS Project, and is aligned with the AfDB Integrated Safeguards System (ISS 2023), Operational Safeguard 10 (Stakeholder Engagement and Information Disclosure).

PROJECT OVERVIEW (SOUTH WEST STATE COMPONENT)

The South West State component targets 22 sites involving water catchment rehabilitation, irrigation canal rehabilitation, borehole drilling and rehabilitation, and dug-well rehabilitation. Works are situated in areas of high pastoralist–farmer interaction, active riverine irrigation along the Shabelle in Lower Shabelle, and — particularly in Marka (Lower Shabelle) — a volatile security environment that requires conflict-sensitive engagement throughout.

OBJECTIVES

- Establish inclusive, transparent, and continuous two-way communication with all affected and interested parties across the three districts;
- Ensure the meaningful participation of women, youth, IDPs, minority clans, and other vulnerable groups in project decisions;
- Manage clan- and resource-based conflict risks through early, conflict-sensitive engagement, especially in Lower Shabelle;
- Disclose project information in accessible formats and languages ahead of works; and
- Feed stakeholder input into design, siting, scheduling, and grievance resolution.

STAKEHOLDER IDENTIFICATION AND ANALYSIS

The following stakeholders have been identified for the South West State component. A full stakeholder register with contacts is maintained by the PIU.

Stakeholder	Key Interests / Concerns in South West State
Farming households	Irrigation reliability and equitable water distribution along canals in Marka; protection of plots from construction disruption; local employment.
Pastoralists	Access to boreholes and catchments in Hudur and Qansax Dhere; livestock watering; seasonal migration routes near work sites.
Women and female-headed households	Safe, closer domestic water access; reduced water-collection time; representation in Water User Associations (WUAs); protection from SEA/SH during worker influx.

Stakeholder	Key Interests / Concerns in South West State
IDPs and returnees	Non-discriminatory access to water points and project benefits (high IDP presence in Marka and Hudur); inclusion in WUAs despite land-tenure insecurity.
Minority clans	Inclusion in WUAs to prevent elite capture by dominant lineages; fair access to rehabilitated infrastructure.
Traditional and religious leaders (guddi, xeer elders)	Conflict resolution over site selection and water sharing; culturally appropriate engagement and grievance mediation.
District administrations (Hudur, Marka, Qansax Dhere)	Local oversight; security coordination; facilitation of land access and community mobilisation.
South West State MoAI and line ministries	State-level oversight; alignment with South West State development priorities; safeguards compliance.
Security actors	Safe access to sites in Lower Shabelle; clearance of works areas; protection of personnel and communities.

ENGAGEMENT METHODS

- Community meetings and site-level consultations in each district, with separate women-only sessions facilitated by a female CLO;
- Focus group discussions with youth, IDPs, minority clans, and pastoralists;
- Key-informant and bilateral meetings with district authorities, WUAs, and traditional/religious leaders;
- Somali-language radio announcements, notice boards, and SMS for broad disclosure; and
- Conflict-sensitive, remotely supported engagement where physical access is constrained by insecurity in Lower Shabelle.

KEY ISSUES AND SOUTH WEST STATE-SPECIFIC RESPONSES

Sub-clan conflict over new or rehabilitated water-point locations

Response: Site selection is verified through joint sessions with district authorities and traditional (xeer) elders in Hudur, Marka, and Qansax Dhere, with agreements documented before works commence.

High presence of IDPs in Marka and Hudur

Response: Targeted consultations in and around IDP settlements ensure non-discriminatory access to water points and inclusion in WUA membership.

Security, access, and UXO risks (priority in Lower Shabelle)

Response: Coordination with security actors and, where relevant, demining actors before mobilisation; conflict-sensitive scheduling; and contingency engagement arrangements where access is constrained.

Equitable water distribution along canals

Response: WUA rules embed head-to-tail equity along irrigation canals in Marka, with a fast-track grievance route for water-allocation disputes.

DISCLOSURE AND ENGAGEMENT SCHEDULE

Phase	Key Engagement Activity	Timing	Primary Audience
ESIA preparation	Scoping and community consultations; women's and vulnerable-group sessions; disclosure of draft findings	During ESIA (completed)	All stakeholder groups
Pre-construction	Disclosure of final ESIA/ESMP; site-specific agreements; WUA formation/strengthening; GRM roll-out	Before contractor mobilisation	Communities, WUAs, district authorities
Construction	Advance notice of works (min. 2 weeks); ongoing community meetings; grievance handling; women's sessions	Monthly / as needed during works	Affected households, workers, leaders
Operation & maintenance	WUA governance and O&M engagement; water-allocation review; annual feedback	From handover, then annually	WUAs, farming and pastoral communities

GRIEVANCE REDRESS MECHANISM (GRM)

Grievances in South West State are managed through a four-tier system (detailed procedures are set out in Annex 3):

- Level 1 (Site): WUA chairperson and Contractor liaison — resolution within 7 days;
- Level 2 (District): District administration and traditional (xeer) elders — resolution within 14 days;
- Level 3 (State): PIU South West State E&S Officer (MoAI); and
- Level 4 (Federal / External): National PIU and the AfDB Independent Recourse Mechanism.

INFORMATION DISCLOSURE

Non-technical summaries of the South West State ESIA will be disclosed at:

- Hudur District Headquarters (Bakool);
- Marka District Headquarters (Lower Shabelle);
- Qansax Dhere District Headquarters (Bay);
- MoAI South West State office;
- WUA meeting points and project site notice boards; and
- Public radio announcements in the Somali language.

RESOURCES AND RESPONSIBILITIES

The PIU Safeguards/E&S Officer for South West State holds overall responsibility for SEP implementation, supported by district-based Community Liaison Officers (including a dedicated female CLO), WUAs, and the Contractor's community-facing staff. Adequate budget for consultations, disclosure materials, radio airtime, and female-CLO deployment is provided within the ESMP budget.

Annex 3: Grievance Redress Mechanism (GRM) Procedures — South West State

This Grievance Redress Mechanism (GRM) has been prepared for the South West State component of the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka

(Lower Shabelle), and Qansax Dhere (Bay) districts. It has been developed in accordance with the AfDB ISS 2023 (OS10) and is designed to be conflict-sensitive, given the elevated security and clan dynamics in Lower Shabelle.

OBJECTIVES

The objectives of the GRM are to:

- Provide a transparent, accessible, and fair process for receiving, recording, and resolving complaints from project-affected persons across the three districts;
- Ensure grievances are resolved promptly, at the lowest possible level, and in a culturally appropriate manner (including through xeer);
- Prevent and manage conflicts arising from project activities, particularly water-allocation and site-selection disputes;
- Protect the rights of complainants, including vulnerable groups, against retaliation; and
- Generate feedback that improves project implementation and safeguards performance.

SCOPE

This GRM applies to all complaints arising from BBS Project activities in South West State, including the construction, rehabilitation, and operation of catchments, irrigation canals, boreholes, and the dug well in Hudur, Marka, and Qansax Dhere. It covers grievances from communities, workers (through the workers' grievance mechanism in the Labour Management Procedures), and other stakeholders, and includes a separate confidential pathway for SEA/SH allegations.

UPTAKE CHANNELS

Multiple uptake channels are available to ensure accessibility for all community members, including those with low literacy, mobility constraints, or restricted movement due to insecurity:

Channel	Description
In-person	Community Liaison Officers (CLOs, including a dedicated female CLO), Water User Associations (WUAs), district focal points, and the PIU.
Suggestion boxes	Sealed boxes at project work sites, WUA meeting points, and district offices in Hudur, Marka, and Qansax Dhere. Opened and logged weekly.
Phone / SMS hotline	Dedicated project hotline [number to be confirmed before works commence]. Operational during business hours; SMS accepted 24/7. Publicised on notice boards, radio, and at community meetings.
Traditional and religious leaders	Complaints may be lodged through xeer elders and guddi, who relay them to CLOs or the district focal point — an important channel where movement is restricted.
Written submissions	Letters or forms submitted to PIU or district offices. Illiterate complainants may ask a CLO to transcribe their complaint.
Anonymous channels	Suggestion boxes and SMS accepted without identification. Anonymous complaints are

Channel	Description
	investigated to the extent possible.

GRIEVANCE RESOLUTION PROCESS

The GRM operates through a tiered process. Grievances should be resolved at the lowest possible level; escalation occurs only where resolution is not achieved within the specified timeframe or where the complainant is not satisfied. Water-allocation disputes along canals (head-to-tail equity) follow a fast-track route at Levels 1–2.

Level	Description	Responsible	Timeframe
1. Receipt	All grievances are logged within 48 hours of receipt: date, complainant details (or anonymous), nature of grievance, and preferred contact method. Acknowledgement is provided orally or in writing.	CLO / WUA / District Focal Point	Within 48 hours
2. Site-Level Resolution	The Contractor and CLO engage the complainant directly to resolve the issue through dialogue. Most construction-related grievances (noise, dust, access, damage) and canal head-to-tail water disputes are resolved here.	Contractor + CLO / WUA	Within 7 days of receipt
3. District-Level Mediation	Grievances not resolved at Level 2, or involving complex land, clan, or social issues, are referred to the district focal point and mediated with traditional (xeer) elders. A written resolution record is produced.	District Focal Point + Xeer Elders	Within 14 days of escalation
4. PIU Formal Review	Grievances unresolved at Level 3, or of high significance (SEA/SH, serious injury, major land or security disputes), are escalated to the PIU Safeguards Officer, who conducts a formal review and issues a written determination.	PIU Safeguards Officer	Within 14 days of escalation
5. External Recourse	If the complainant is not satisfied with the PIU determination, they may refer the matter to the AfDB Independent Recourse Mechanism (IRM) or the Somali judicial system. The PIU must not obstruct access to external recourse.	Complainant's choice / AfDB IRM / Courts	Per IRM or judicial procedures

CONFIDENTIALITY AND PROTECTION FROM RETALIATION

The identity of complainants will be kept confidential and disclosed to third parties only with the complainant's express consent, except where required by law or to investigate a serious allegation. Retaliation against any complainant is strictly prohibited; traditional leaders and the PIU are jointly responsible for preventing and addressing any reprisals.

SEA/SH GRIEVANCE PATHWAY

Allegations of Sexual Exploitation, Abuse, and Harassment (SEA/SH) are handled through a separate, confidential, survivor-centred pathway managed by the female CLO and the PIU GBV/SEA/SH focal point. SEA/SH allegations are not handled through the standard tiers, are never mediated through community or xeer forums, and are referred immediately to available medical, psychosocial, and protection services. Referral pathways are documented and shared before works commence.

MONITORING AND REPORTING

The PIU Safeguards Officer maintains a centralised grievance register for the South West State component. District CLOs submit monthly grievance logs to the PIU. Performance is tracked against the following indicators (target: at least 80% of grievances resolved within the specified timeframe):

Monitoring Indicator	Frequency	Responsible
Grievances received (total and by type)	Monthly	PIU
Grievances resolved within specified timeframe	Monthly	PIU
Resolution rate at Levels 1–2 (site/district)	Quarterly	PIU
Proportion of complainants satisfied with outcome	Semi-annually	PIU / CLOs
SEA/SH allegations received and referred	Monthly (confidential log)	PIU GBV focal point
GRM awareness: % of community members aware of channels	Annually	CLO survey
Women's complaints as % of total	Monthly	PIU

RESOURCES AND RESPONSIBILITIES

Entity	Responsibilities
PIU	Overall GRM management; grievance register; investigation of Level 4 grievances; reporting to AfDB; SEA/SH oversight; annual GRM review.
Community Liaison Officers (CLOs) — Hudur, Marka, Qansax Dhere (incl. female CLO)	First point of contact; logging all grievances; facilitating Level 1–2 resolution; outreach to vulnerable groups; monthly reporting to PIU.
Water User Associations (WUAs)	Receipt of community complaints; escalation to CLOs; supporting resolution of water-allocation grievances during O&M.
Contractors	Site-level grievance handling (Level 2); maintenance of site suggestion boxes; worker Code of Conduct compliance; incident reporting within 24 hours.
District Focal Points — Hudur,	Level 3 mediation; engagement with xeer elders; liaison with district

Entity	Responsibilities
Marka, Qansax Dhere	administration and security actors on sensitive issues.
Traditional and religious leaders (xeer elders, guddi)	Support mediation at Level 3; prevent retaliation; communicate the GRM to communities.

CONTACT INFORMATION

- Project Implementation Unit (PIU), Ministry of Agriculture and Irrigation, Federal Government of Somalia;
- Email: [to be confirmed] | PIU Hotline: [to be confirmed];
- South West State CLO — Hudur: [name and contact to be confirmed before mobilisation];
- South West State CLO — Marka: [name and contact to be confirmed before mobilisation];
- South West State CLO — Qansax Dhere: [name and contact to be confirmed before mobilisation];
- District Focal Points — Hudur, Marka, Qansax Dhere: [names and contacts to be confirmed].

Annex 4: Consultation Log — South West State

This annex records consultations undertaken during ESIA preparation and provides the template for ongoing logging during implementation. The summary of consultations and issues raised is presented in Chapter 9.

Table A4-1: Consultation Log Template — South West State

Date	Location / District	Participants (M/F)	Method	Key Issues Raised	Response / Follow-up
—	Hudur / Marka / Qansax Dhere	— M / — F	Meeting / FGD / KII	Security; groundwater; canal equity; access; employment	Logged; addressed via ESMP; GRM reference where applicable
—	—	— M / — F	Women-only session	Water burden; WUA participation; safety; water quality	Logged; GSI measures (Annex 6)
—	—	— M / — F	Farmer / water-user group	Head-to-tail equity; irrigation continuity; canal condition	Logged; continuity & equity plan
—	—	— M / — F	IDP / minority-clan outreach	Inclusion; equitable access; discrimination concerns	Logged; non-discrimination measures

The completed Consultation Log is maintained by the South West State E&S Officer as part of the project safeguards documentation and updated throughout implementation, with sex-disaggregated attendance and conflict-sensitive recording of security-related engagement.

Annex 5: Climate Risk Assessment — South West State

This annex presents the Climate Risk Assessment for the South West State component of the BBS Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere (Bay) districts. It has been prepared in accordance with the AfDB ISS 2023 and the national BBS ESIA climate methodology. The overall climate risk to the component is assessed as Very High, driven by recurrent drought, extreme heat, and — in Lower Shabelle — riverine flooding along the Shabelle.

SOUTH WEST STATE REGIONAL CONTEXT

The project areas span two contrasting agro-ecological settings: the semi-arid dryland plateaus of Bay and Bakool (Qansax Dhere and Hudur), which depend on rainfed agriculture, catchments, boreholes, and a dug well; and the riverine floodplain of Lower Shabelle (Marka), where irrigation canals draw on the Shabelle River. Bay and Bakool are recurrent famine-risk zones (notably during the 2011, 2017, and 2022 crises), while Lower Shabelle is exposed to both seasonal flooding and prolonged insecurity, which constrains climate-adaptive operation and emergency response.

METHODOLOGY AND DATA SOURCES

The climate hazard assessment applies the national BBS ESIA methodology, drawing on IPCC AR6 regional findings, CORDEX-Africa and CMIP6 projections (World Bank Climate Change Knowledge Portal), ICPAC seasonal and regional climate information, and food-security and drought monitoring from FSNAU and FEWS NET. Risk is characterised over the 25-year project life using the RCP8.5 (high-emissions) scenario as a precautionary basis.

CLIMATE PROJECTIONS FOR SOUTH WEST STATE (2021–2040)

Temperature Projections

Parameter	Projection (RCP8.5) — South West State
Mean temperature increase (2021–2040)	+0.9°C to +1.2°C above the 1991–2020 baseline
Mean temperature increase (2040–2060)	+1.2°C to +1.8°C above baseline
Rate of warming	+0.3°C to +0.5°C per decade
Increase in very hot days (>40°C)	+12 to +25 additional days per year by 2040
Impact on evapotranspiration (ET)	+8% to +12% increase in crop water demand and open-water evaporation
Impact on groundwater recharge	Reduced recharge in Bay and Bakool aquifers due to higher evaporation and longer dry spells

Precipitation Projections

Parameter	Projection (RCP8.5) — South West State
Mean annual rainfall — baseline	~300–500 mm/year in Bay and Bakool; higher along the Shabelle floodplain in Lower Shabelle
Mean annual rainfall change (by 2030)	±1–3% (high inter-annual uncertainty)
Gu season (April–June)	Increased variability (±15–25%); risk of consecutive failed Gu seasons
Deyr season (Oct–Dec)	Slight projected increase (+5–10%); higher-intensity events increasing flood risk

Parameter	Projection (RCP8.5) — South West State
Consecutive dry days	+8 to +18 additional dry days in drought years
Drought frequency	Moderate droughts: 1 in 4 years → 1 in 2–3 years by 2040
Shabelle River flows / extreme rainfall	+10–20% increase in heavy-rainfall intensity; higher Deyr peak flows raising riverine flood risk in Lower Shabelle

RISK RATING METHODOLOGY

Risk is rated as the product of Likelihood and Impact, consistent with the national BBS ESIA methodology:

Rating	Definition
Low (L)	Unlikely to occur during the project life (25 years); minimal impact if it does occur.
Moderate (M)	May occur 1–2 times during the project life; causes moderate disruption requiring repairs.
High (H)	Likely to occur multiple times; significant infrastructure damage or >25% yield losses.
Very High (VH)	Expected to occur frequently (every 2–5 years or more); potential for severe or catastrophic damage or crop failure.

CLIMATE HAZARD RISK MATRIX — SOUTH WEST STATE

Hazard	Likelihood	Impact	Overall Risk	Infrastructure at Risk	Implications for Agriculture and Livelihoods
Drought (agricultural)	VH	VH	VH	Catchments, boreholes, dug well, rainfed plots	Crop failure and replanting risk; Bay and Bakool are recurrent famine-risk zones; >40% yield losses projected in severe drought years.
Extreme heat and evaporation	VH	VH	VH	Open catchments, canals, solar pumps	15–25% higher evaporation from open storage; 8–12% higher irrigation demand; heat stress on sorghum, sesame, and maize.
Groundwater stress (overextraction + reduced recharge)	H	VH	VH	Boreholes, dug well, pump systems	Declining water tables in Bay and Bakool; borehole failure risk if abstraction exceeds recharge; slow

Hazard	Likelihood	Impact	Overall Risk	Infrastructure at Risk	Implications for Agriculture and Livelihoods
					aquifer recovery after multi-year drought.
Riverine flooding (Shabelle)	H	H	H	Irrigation canals, intakes, riverside plots (Marka)	Inundation of canals and floodplain farmland; sedimentation and damage to intakes; crop losses in Lower Shabelle.
Rainfall variability / consecutive failed seasons	M–H	VH	VH	All water-supply infrastructure and rainfed agriculture	Extended water stress beyond coping capacity; high displacement and livelihood-loss risk.
Flash flooding and erosion (catchments)	M–H	H	H	Catchment bunds, canal embankments, access roads	Structural damage; sedimentation of storage; erosion of agricultural plots.
Vector / disease amplification (RVF, malaria)	M–H	M–H	M–H	Standing water in canals/catchments; worker camps	Increased malaria and Rift Valley Fever risk to people and livestock; public-health and productivity burden.

KEY FINDINGS — SOUTH WEST STATE

Drought and Heat Stress

The dominant, co-occurring hazards across all three districts, both rated Very High. Bay and Bakool have experienced catastrophic multi-year droughts (2010–2011, 2016–2017, 2021–2022), with severe food insecurity and displacement.

Riverine Flooding along the Shabelle

A distinct South West State hazard concentrated in Lower Shabelle (Marka), where higher-intensity Deyr rains and elevated river flows inundate irrigation canals and floodplain farmland and damage intakes.

Groundwater Stress

Bay and Bakool's reliance on boreholes and the dug well makes them vulnerable to depletion; increased abstraction combined with reduced recharge during prolonged droughts threatens sustainable yields.

Insecurity as a Risk Multiplier

In Lower Shabelle, insecurity constrains routine maintenance, monitoring, and emergency response, amplifying the consequences of climate hazards and slowing recovery.

CLIMATE ADAPTATION MEASURES — SOUTH WEST STATE

Adaptation Measure	Description and Rationale	Phase
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Adaptation Measure	Description and Rationale	Phase
Lined and covered catchment storage	Catchment rehabilitation and storage to incorporate lining and, where feasible, covers/shading to reduce evaporation by 20–35% and increase effective storage during drought.	Design and construction
Solar boreholes with sustainable-yield controls	Solar pumps with flow meters and abstraction limited to ~70% of estimated safe yield, reviewed annually against groundwater-level monitoring, to prevent overextraction.	Design and operation
Groundwater-level monitoring network	Water-level indicators at all rehabilitated boreholes and the dug well, with annual surveys to track aquifer levels and provide early warning of depletion.	Construction and operation
Lined canals to reduce seepage	Canal lining to reduce conveyance losses by 30–40%, critical for water efficiency in a drought-prone, food-insecure context.	Construction
Flood-resilient design along the Shabelle	Raised and protected intakes, reinforced embankments, 1-in-15-year flood tolerance, and +20% spillway capacity for canal infrastructure in Lower Shabelle.	Design and construction
Drought- and heat-tolerant crop promotion	Extension support for heat- and drought-tolerant sorghum, cowpea, and sesame varieties, integrated with WUA capacity building.	O&M / extension
Sediment management and desiltation	Annual desiltation protocol for catchments and canals as part of WUA O&M responsibilities, with training and equipment provided.	O&M phase
ICPAC seasonal forecast integration	WUAs and CLOs trained to access and apply ICPAC seasonal forecasts to adjust planting calendars, water-allocation schedules, and maintenance timing.	O&M phase
Heat-stress occupational controls	Rescheduling of heavy works away from peak heat (12:00–15:00), provision of at least 3 litres of drinking water per worker per day, and shaded rest areas.	Construction and O&M
Contingency budget for climate	10% of the annual O&M budget reserved for emergency response	O&M phase

Adaptation Measure	Description and Rationale	Phase
response	(borehole repair, emergency water supply, and structural repair after flood or flash-flood events).	

Residual climate risk after adaptation is assessed as Moderate, reduced from an inherent Very High, contingent on sustained WUA capacity, functioning monitoring, and adequate contingency financing.

Annex 6: Gender and Social Inclusion — South West State

This annex provides the Gender and Social Inclusion (GSI) assessment for the South West State component of the BBS Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere (Bay) districts. It has been prepared in accordance with the AfDB ISS 2023 (OS2 and OS10) and identifies gender and inclusion risks and the measures and targets to address them.

SOUTH WEST STATE SOCIAL CONTEXT

South West State is governed through a combination of formal state institutions and customary clan governance (xeer). The social fabric is predominantly agropastoral, with clan identity central to access to land and water. Bay and Bakool are recurrent famine-affected areas with high displacement, while Lower Shabelle combines fertile riverine agriculture with prolonged insecurity. Women and girls carry the primary burden of water collection, female literacy is low, and IDPs and minority clans face heightened exclusion — particularly in and around Marka and Hudur.

KEY GENDER AND SOCIAL ISSUES IN SOUTH WEST STATE

Women's Participation and Decision-Making

Women face significant barriers to participation in public decision-making, including male-dominated, clan-based governance structures. Without deliberate measures, women risk exclusion from Water User Association (WUA) membership and leadership and from decisions on siting and water allocation.

Access to Water and Time Burden

Women and girls bear primary responsibility for water collection. During dry periods, collection distances can be substantial, reducing women's time for agricultural production, income generation, education, and rest. Closer, safer water points directly reduce this burden.

IDP and Minority Clan Inclusion

Displacement has created significant IDP and returnee populations, especially around Marka and Hudur. IDPs and minority clans often lack formal land tenure, face discrimination in accessing community resources, and are under-represented in local decision-making.

Youth Unemployment and Social Tensions

High youth unemployment, particularly among young men, is associated with conflict risk in the Somali context. Consultations highlighted strong demand for employment and skills opportunities from project works.

GBV and SEA/SH Risk

The influx of non-local workers during construction raises the risk of gender-based violence and sexual exploitation, abuse, and harassment (SEA/SH). Women's focus groups explicitly raised these concerns, alongside safety at water-collection points.

GENDER AND SOCIAL INCLUSION MEASURES — SOUTH WEST STATE

Measure	Description	Timing	Responsible
Women's WUA membership and leadership target	Minimum 30% women in WUA membership and minimum 30% in WUA leadership (chairperson, treasurer, secretary), embedded in the WUA constitution template used at all 22 sites.	WUA formation (pre-O&M)	PIU / CLOs
Reduced water-collection burden	Water points sited and designed to reduce women's average water-collection time by at least 50% by Year 2 of operation for beneficiary households.	Design and O&M	PIU / Design Team
Women-only consultation sessions	Dedicated women-only meetings and focus groups facilitated by a female CLO at key milestones (pre-construction, mid-construction, pre-handover), timed to avoid domestic-duty conflicts.	All phases	Female CLO
Female Community Liaison Officer	A dedicated female CLO appointed for South West State before mobilisation, serving as the primary contact for women's concerns, SEA/SH reporting, and GRM outreach to women.	Before mobilisation	PIU
Female employment and equal pay	Target of at least 30% female participation in project employment where feasible, with equal pay for equal work and safe, appropriate working conditions.	Construction phase	Contractor / PIU
IDP and minority-clan non-discrimination	Explicit non-discrimination criteria in WUA membership — no eligibility based on clan, land tenure, or residence duration; IDPs and minority clans explicitly targeted in mobilisation (priority in Marka and Hudur).	WUA formation	PIU / CLOs
Youth employment and skills	Minimum 20% of the unskilled construction workforce drawn from local youth (18–30); youth representation in WUA committees; skills opportunities linked to works.	Construction phase	Contractor / PIU
GBV / SEA/SH prevention (worker influx)	Enforceable Contractor and worker Codes of Conduct prohibiting SEA/SH; pre-mobilisation awareness sessions; documented referral pathways shared before works commence.	Before mobilisation	PIU / Contractor

Measure	Description	Timing	Responsible
Confidential SEA/SH reporting	Confidential, survivor-centred reporting channel managed by the female CLO, with referral to medical, psychosocial, and protection services; never mediated through community forums.	All phases	PIU / female CLO
Safe water-point design	Water points designed for safe access by women and girls: adequate visibility, community-managed access schedules, and separate domestic access where feasible.	Design phase	PIU / Design Team
Financial literacy and vulnerability screening	Financial-literacy training for women in WUAs and a vulnerability-screening tool to target livelihood support to female-headed households, IDPs, and minority-clan members.	Implementation	PIU / CLOs

MONITORING INDICATORS — GENDER AND SOCIAL INCLUSION

Indicator	Target	Frequency	Responsible
Women's WUA membership as % of total	≥30%	At WUA formation; annually	PIU / CLOs
Women in WUA leadership positions	≥30%	At WUA formation; annually	PIU / CLOs
Reduction in women's water-collection time	≥50% by Year 2 (beneficiary households)	Annually from O&M	PIU / Supervision Consultant
Women's participation in consultations	≥30% across all sessions	Per event	CLOs
Female employment in works (with equal pay)	≥30% where feasible; no pay disparity	Monthly during construction	Contractor / PIU
Youth employment (local, 18–30)	≥20% of unskilled workforce	Monthly during construction	Contractor / PIU
IDP / minority-clan representation in WUAs	Represented; track numbers	At WUA formation; annually	PIU / CLOs
SEA/SH cases received and referred	100% referral rate	Monthly (confidential)	PIU / female CLO

Annex 7: Chance Finds Procedure

This Chance Finds Procedure has been prepared for the South West State component of the Beero oo Barwaaqee Soomaaliya (BBS) Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere (Bay) districts. It has been prepared in accordance with the African Development Bank's Integrated Safeguards System (ISS 2023), OS1 (Environmental and Social Assessment), and applicable Somali cultural heritage legislation. It establishes the steps to be followed if archaeological, historical, or cultural materials are encountered during ground-disturbing works.

SCOPE AND APPLICABILITY

This procedure applies to all construction, excavation, borehole drilling, canal rehabilitation, catchment earthworks, dug-well rehabilitation, and any other ground-disturbing activities across all 22 BBS sites in South West State. A 'chance find' is any archaeological remain, historical artefact, human burial, or object of cultural, religious, or paleontological significance discovered unexpectedly during works. All Contractor and PIU personnel are bound by this procedure.

STEP-BY-STEP PROCEDURE

Step 1: Immediate Stop-Work

Any worker or supervisor who discovers a potential chance find must immediately stop all ground-disturbing works within a minimum 25-metre radius of the discovery. Machinery must be shut down. Work may only resume on written authorisation following the process below.

Step 2: Secure the Area

The area of the discovery must be cordoned off using barrier tape or other suitable means. Access must be restricted to authorised personnel only. The find must not be moved, handled, cleaned, or disturbed further pending inspection.

Step 3: Notify Site Supervisor

The worker who discovered the find must notify the Site Supervisor or Construction Manager within one hour. The Site Supervisor records the find in the site logbook: date, time, location (GPS coordinates), description, and photographs.

Step 4: Notify PIU Environmental and Social Officer

The Site Supervisor must notify the PIU Environmental and Social (E&S) Officer within four hours of discovery, providing all information documented in Step 3. The PIU E&S Officer then notifies the Supervision Consultant.

Step 5: Notify Relevant Authorities

The PIU E&S Officer notifies the relevant cultural authority within 24 hours of the discovery. In South West State this is the South West State Ministry of Education and Culture; at the federal level, the Federal Ministry responsible for antiquities and cultural heritage is informed as required.

Step 6: Expert Inspection

Competent cultural heritage authority personnel or an appointed expert must inspect the site within seven working days of notification. The PIU will facilitate access, coordinating with district authorities and security actors where required in Lower Shabelle. The expert's determination governs next steps.

Step 7: Determination and Action

Based on expert inspection, one of three outcomes will apply: (a) the find has no significant heritage value — works may resume as normal; (b) the find has significance but can be documented and preserved — documentation is completed and works resume under agreed conditions; or (c) the find is highly significant — works remain suspended and a site-specific management plan is agreed with the cultural authority, which may include preservation in situ or micro-siting of works.

Step 8: Reporting

All chance finds, regardless of significance determination, must be recorded in the project Chance Find Register and reported in the next monthly E&S progress report to the PIU. Significant finds must be reported to AfDB within seven days of discovery.

HANDLING OF HUMAN REMAINS

If human remains are encountered, works in the vicinity must stop immediately and the area must be secured with heightened respect for dignity and privacy. The remains must not be moved or photographed for public circulation. The PIU E&S Officer, district administration, and community and religious leaders (guddi and religious authorities) must be notified, and reburial or relocation, if required, must follow Islamic burial rites and local customary (xeer) practices agreed with the family and community. Where remains may be of forensic or archaeological interest, the relevant authorities are engaged before any relocation.

WORKER TRAINING

All construction workers, including sub-contractors, will receive induction training on this Chance Finds Procedure before commencing ground-disturbing works. Training covers what types of objects may constitute a chance find, the stop-work and notification obligations, the prohibition on handling or selling finds, and respectful handling of human remains. Refresher briefings are given if a chance find occurs.

PROHIBITION ON SALE AND HANDLING

Workers are strictly prohibited from retaining, handling, moving, selling, or otherwise dealing with any chance find. Violation of this prohibition may result in immediate termination of employment and referral to law enforcement.

COMPENSATION FOR STOP-WORK DELAYS

The Contractor will not be entitled to additional compensation for the first seven days of any chance find-related stop-work, as this period is considered a normal project risk. Extensions beyond seven days, if required by the cultural authority, will be addressed under the contract's delay provisions.

CHANCE FIND NOTIFICATION FORM

The following information must be recorded when a chance find is made:

- Site Name / Location:
- GPS Coordinates:
- Date of Discovery:
- Time of Discovery:
- Discovered by (Name and Role):
- Description of Find (materials, dimensions, condition, context):
- Photographs taken (Yes / No):
- Site Supervisor Notified (Time):
- PIU E&S Officer Notified (Time):
- Works Stopped (Area and Extent):
- Sketch of Discovery Location Attached (Yes / No):

Annex 8: Environmental and Social Monitoring Plan — South West State

This Environmental and Social Monitoring Plan has been prepared for the South West State component of the BBS Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere

(Bay) districts. It specifies monitoring parameters, indicators, methods, responsibilities, and action triggers, and complements the operational monitoring matrix in Chapter 10 (Table 13).

ENVIRONMENTAL MONITORING

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Water quality — supply points	Turbidity, pH, E. coli, coliform counts, nitrates	6-monthly during O&M; additional testing after any incident	Rehabilitated boreholes, dug well, catchments, and canal supply points across the three districts	PIU E&S Officer / contracted laboratory	WHO drinking-water guidelines; Somalia national water-quality standards
Groundwater levels	Static water level (SWL) in all boreholes and the dug well; seasonal trends	Quarterly during construction; annually during O&M	All project boreholes and the dug well	Contractor (construction); PIU (O&M)	Action threshold: SWL decline exceeding 5 m from baseline triggers reduced pumping hours, PIU notification, and review of abstraction against the hydrogeological sustainable (safe) yield; daily pumping logs maintained
Surface / river water quality (Shabelle)	Turbidity, pH, suspended solids near canal intakes	Monthly during construction near watercourses	Shabelle intakes and canals in Marka (Lower Shabelle)	Contractor E&S Officer	No construction-induced increase >10% above baseline turbidity
Soil erosion and sedimentation	Visual inspection; erosion indicators on embankments and catchment bunds	Monthly during construction; quarterly during O&M	Excavation, canal, and catchment sites	Contractor E&S Officer	No significant rill or sheet erosion on rehabilitated works
Vegetation disturbance	Area cleared beyond approved footprint; invasive-species establishment	Baseline pre-construction; monthly during construction; annually O&M	50 m buffer around all sites	Supervision Consultant	Zero clearance beyond approved footprint; no new invasive species
Dust and air quality	Visual dust assessment at site boundaries and nearest receptors; dust logs	Weekly during earthworks; after dust events	Site boundaries and settlements within 500 m	Contractor E&S Officer	No persistent visible dust beyond site boundary; complaints trigger mitigation

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Waste management	Volume and type of waste; disposal records; illegal dumping	Monthly during construction	All sites; temporary storage and disposal sites	Contractor E&S Officer	100% waste disposed at approved sites; no illegal dumping
Hazardous materials	Fuel, lubricant, and chemical storage and handling; spill incidents	Monthly audit; immediate reporting of any spill	All sites with fuel storage or chemical use	Contractor E&S Officer	Zero untreated spills; spill kit present at all fuel-storage points

SOCIAL AND LABOUR MONITORING

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
Community GRM performance	Grievances received, resolved, pending; resolution timeframe; complainant satisfaction	Monthly (log); quarterly (analysis)	GRM register; sample follow-up	PIU Safeguards Officer / CLOs	≥80% resolved within timeframe; none outstanding >60 days without written explanation
Security and conflict sensitivity	Security incidents affecting works or communities; access status; adherence to clearance protocol	Continuous; monthly summary (priority in Lower Shabelle)	Site security logs; district liaison	PIU / Contractor security focal point	No works without prior security clearance; incidents escalated immediately
Labour and employment	Workers hired; % local; % youth (18–30); % women; wages vs contract; working hours	Monthly during construction	Contractor records; PIU payroll spot checks	Supervision Consultant / PIU	Local-hire target met; ≥20% youth; ≥30% women where feasible; no wage or hour violations
Women's WUA participation	Women as % of WUA membership; women in leadership; meeting attendance	At formation; semi-annually	WUA registers; meeting minutes	CLOs / PIU	≥30% women members; ≥30% women in leadership
IDP and minority-clan inclusion	Representation in WUAs and consultations	At WUA formation; annually	WUA records; attendance lists	CLOs / PIU	At least proportionate representation; no exclusion incidents

Parameter	Indicators / Method	Frequency	Location / Source	Responsible	Trigger / Standard
SEA/SH incidents	Allegations received; referrals; outcomes (confidential tracking)	Monthly (confidential register)	Female CLO records; PIU SEA/SH focal point	PIU Director / female CLO	100% of allegations referred to support services; zero unaddressed reports
OHS incidents	Lost-time injuries (LTI), near misses, first-aid cases, fatalities; investigation completion	Monthly; immediate for LTI/fatality	Site incident register; contractor reports	Contractor E&S Officer / PIU	Zero fatalities; LTI rate target <3 per 200,000 hours; all incidents investigated
Child labour	Age verification for all workers; spot checks for workers under 18	Monthly; quarterly spot check	Contractor employment records	Supervision Consultant	Zero workers under 18 on construction sites
Equitable water access (head-to-tail)	Head-to-tail water delivery along canals; allocation disputes	Seasonally during O&M	WUA records; field checks (Marka)	PIU / WUAs	No systemic tail-end deprivation; disputes fast-tracked through the GRM
Water access — operation phase	Households with improved access; reduction in collection distance/time; satisfaction	Annually from Year 1 of O&M	Household sample survey; CLO monitoring	PIU / Supervision Consultant	Average water-collection time reduced by ≥50% for beneficiary households

REPORTING REQUIREMENTS

Monthly Reports

The Contractor E&S Officer submits a monthly E&S report to the Supervision Consultant and PIU covering environmental monitoring results, waste management, the incident log, workforce data, and GRM cases.

Quarterly E&S Reports

The PIU Safeguards Officer compiles a quarterly E&S report for AfDB, integrating monitoring data against indicators, incidents, GRM performance, workforce data, aggregated SEA/SH information, and corrective actions.

Incident Reports

Serious incidents (fatality, serious injury, significant environmental spill, SEA/SH allegation, or security incident) are reported to the PIU within 4 hours and to AfDB within 24–48 hours of occurrence, with a full investigation report within 7 days.

Annual Review

The Monitoring Plan and ESMP are reviewed annually by the PIU and updated to reflect monitoring findings, lessons learned, and any changes in project scope, in line with the operational monitoring matrix in Chapter 10 (Table 13).

Annex 9: Environmental, Social, and Capacity Building Training Plan — South West State

This Training Plan has been prepared for the South West State component of the BBS Irrigation Project, covering the 22 sites in Hudur (Bakool), Marka (Lower Shabelle), and Qansax Dhere (Bay) districts. It specifies training for project workers, community stakeholders, and institutions to ensure safeguards compliance and sustainable operation.

TRAINING OBJECTIVES

The objectives of the training programme are to:

- Ensure all construction workers understand and comply with the Labour Management Procedures, Code of Conduct, and OHS requirements;
- Prevent SEA/SH and other forms of GBV through awareness-raising and clear communication of prohibitions and consequences;
- Build the capacity of WUAs across the three districts to manage, operate, and maintain rehabilitated water infrastructure, including equitable head-to-tail water distribution;
- Ensure CLOs and district focal points can implement the GRM, conduct inclusive consultations, and monitor social inclusion; and
- Build the institutional capacity of South West State MoAI and district authorities for environmental and social safeguards oversight.

TRAINING PROGRAMME — CONSTRUCTION PHASE

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
Worker Induction — Environment and Social	All construction workers (incl. subcontractors)	Project overview; E&S standards; prohibited behaviours; GRM channels; reporting obligations	Before any ground-disturbing works; repeated for new workers	Contractor E&S Officer (PIU-facilitated)	Signed induction record per worker
Occupational Health and Safety	All workers and supervisors	Site-specific risks incl. confined-space entry (dug well), borehole drilling, canal-bank works, and heat stress; PPE; emergency procedures; incident reporting; first aid	Monthly toolbox talks; quarterly full refresher	Contractor E&S / OHS officer	Toolbox attendance records; quarterly assessment

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
SEA/SH Prevention — Workers	All workers and supervisors	Definitions of SEA/SH; Code of Conduct; reporting channels; consequences; community-relations norms	Before mobilisation; quarterly refresher	PIU Safeguards Officer / female CLO; GBV specialist where available	Signed Code of Conduct; attendance record
Security and Conflict Sensitivity	All workers and site managers (priority in Lower Shabelle)	Conflict-sensitive conduct; security protocols and clearance; community engagement; do-no-harm principles	Before mobilisation; refreshed as security context changes	PIU / Contractor security focal point	Briefing record; security protocol sign-off
Chance Finds Procedure	All workers, supervisors, site managers	What constitutes a chance find; stop-work obligation; reporting; prohibition on handling/selling; respectful handling of human remains	At induction; refresher if a find occurs	Contractor E&S / Supervision Consultant	Induction sign-off; chance-find log
Waste and Environmental Controls	Supervisors and site managers	Waste segregation; hazardous-materials storage and spill response; water-pollution prevention; erosion control	Before mobilisation; quarterly refresher	Contractor E&S / PIU E&S Officer	Waste log; inspection records
GRM Awareness — Workers	All workers and community-facing staff	GRM channels; how to raise a complaint; confidentiality; protection from retaliation; anonymous channels	At induction; on notice boards throughout construction	CLOs; Contractor E&S Officer	Awareness survey at 3 months

TRAINING PROGRAMME — COMMUNITY AND INSTITUTIONAL

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
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Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
WUA Governance and Water Management	WUA members (≥30% women)	WUA roles; equitable water allocation and head-to-tail distribution; record-keeping; conflict resolution; O&M cost recovery	Before O&M handover (2-day workshop); annual refresher	PIU / Supervision Consultant / extension officers	WUA constitutions adopted; attendance
Infrastructure O&M — Technical	WUA technical committees; district water officers	Canal maintenance (desiltation, lining repair); borehole and pump maintenance; dug-well and catchment upkeep; fault diagnosis; escalation	Before handover; annual refresher; first-season mentoring	Supervision Consultant / contractors; district water officers	O&M manual; first-season O&M log
Groundwater Sustainable-Yield and Monitoring	WUAs; district water officers	Reading water-level indicators; abstraction limits (safe yield); pumping logs; early warning of depletion	At handover; annual refresher	PIU / Supervision Consultant	Monitoring records; pumping logs reviewed
SEA/SH Prevention — Community	WUA members; leaders; CLOs; women's networks	GBV-prevention commitments; safe reporting; available support services; community monitoring of worker conduct	Before mobilisation; repeated mid-construction and O&M	Female CLO / PIU Safeguards Officer; GBV specialist	Meeting records; referral pathway distributed
Gender and Social Inclusion — CLOs and Focal Points	CLOs (Hudur, Marka, Qansax Dhere); district focal points; PIU	Gender analysis; inclusive facilitation; vulnerability identification; IDP inclusion;	Before mobilisation (workshop); quarterly coaching	PIU Safeguards Officer; gender specialist	Completion record; data-quality review

Training Topic	Target Participants	Key Content	Frequency / Timing	Responsible	Documentation
		inclusion-indicator monitoring			
GRM Implementation — CLOs and Focal Points	CLOs; district focal points; WUA GRM contacts	GRM procedures (Annex 3); logging; confidentiality; investigation; escalation; sensitive complaints (SEA/SH)	Before mobilisation (2-day workshop); 6-monthly refresher	PIU Safeguards Officer	Training record; GRM register review
Climate-Smart Water Management and ICPAC Forecasts	WUAs; district water and agriculture officers	Climate risks to infrastructure; ICPAC seasonal forecasts; climate-adaptive allocation; drought and flood contingency	During O&M capacity building; annual refresher	PIU / Supervision Consultant; ICPAC liaison	Training records; forecast use in O&M logs
AfDB Safeguards Awareness — PIU and Government	PIU staff; South West State MoAI; district administration	AfDB ISS 2023 obligations; E&S monitoring; quarterly reporting; AfDB IRM and grievance processes	Before commencement (1-day workshop); annual refresher	PIU Director / AfDB project team	Workshop record; E&S report quality review

TRAINING MONITORING AND REPORTING

The Contractor E&S Officer and PIU Safeguards Officer are jointly responsible for ensuring training is delivered as scheduled and documented in a centralised register (topics, dates, participants, and gender breakdown). Training performance is reported in quarterly E&S reports to AfDB — sessions delivered vs planned, attendance and gender breakdown, competency-assessment findings, and adjustments. The Training Plan is reviewed annually in conjunction with the ESMP.

TRAINING BUDGET ESTIMATE — SOUTH WEST STATE

Training Activity	Estimated Cost / Scope	Budget Source
Worker OHS induction and monthly toolbox talks	Workforce × project duration	Contractor cost (included in contract)

Training Activity	Estimated Cost / Scope	Budget Source
SEA/SH awareness training — workers (external specialist)	\$2,500 (pre-mobilisation)	PIU budget
WUA governance training — workshops (3 districts, ≥30% women)	$\$1,500 \times 3 = \$4,500$	PIU budget
WUA O&M technical training — hands-on (3 districts)	$\$2,000 \times 3 = \$6,000$	PIU budget / Supervision Consultant
CLO and focal-point GRM and inclusion training	\$2,500 (pre-mobilisation)	PIU budget
Community SEA/SH awareness sessions (3 districts)	\$2,250 total	PIU budget
Climate-smart water management — annual refresher	\$1,500 per year	PIU budget / O&M phase
Groundwater sustainable-yield and monitoring training	\$1,500	PIU budget
Security and conflict-sensitivity briefings	\$1,500	PIU budget
AfDB safeguards awareness — government and PIU	\$1,000	PIU budget
Contingency / ad hoc training needs	\$2,500	PIU budget

Indicative total (excluding contractor-borne worker training): approximately \$25,750 over the project life, to be confirmed in the detailed ESMP budget.

timing, field sanitation) and physical and biological controls first; chemical pesticides only as a last resort, selected from the Approved Pesticide List (project-wide P/VMP), never using WHO Class Ia, Ib, or II pesticides or those listed under the Stockholm or Rotterdam Conventions. The project does not procure or finance prohibited pesticides.

PV.4. Rift Valley Fever and Desert Locust Coordination

The project coordinates with FAO (EMPRES-i, Desert Locust Watch) and national/state veterinary and agriculture authorities on RVF and Desert Locust early warning. In flood years (elevated RVF risk), trough and catchment vector management is intensified and community and livestock-keeper awareness is raised. Desert Locust control is a government/FAO-led function; the project's role is early-warning coordination and avoidance of project-financed prohibited pesticide use.

PV.5. Safe Pesticide Management

Where any pesticide use is unavoidable in project-supported activity, storage, handling, application, and disposal follow FAO International Code of Conduct standards: secure ventilated storage away from water and dwellings; trained applicators with PPE; buffer zones around water points and canals; triple-rinsing and approved disposal of containers; and prohibition of container reuse. No pesticide application occurs near catchments, canals, boreholes, or the dug well without the buffer and protection measures.

PV.6. Roles and Monitoring

Each WUA appoints a Pest/Vector Management Focal Person, trained under Annex 9. The South West State E&S Officer oversees implementation, supported by community animal-health workers and agriculture extension where available. Monitoring indicators (trough/canal drainage, standing water, larvicide records, livestock disease, RVF/locust early warning, and pesticide incidents) are included in the monitoring plan (Table 13), with seasonal intensification for locust and flood-year RVF risk.

PV.7. Awareness and Capacity

Community awareness on vector source reduction, safe water storage, and — where relevant — IPM and safe pesticide practice is delivered through the WUAs and CLOs as part of the training programme (Annex 9). Awareness is integrated with the hygiene and water-safety messaging delivered at commissioning and handover.

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.

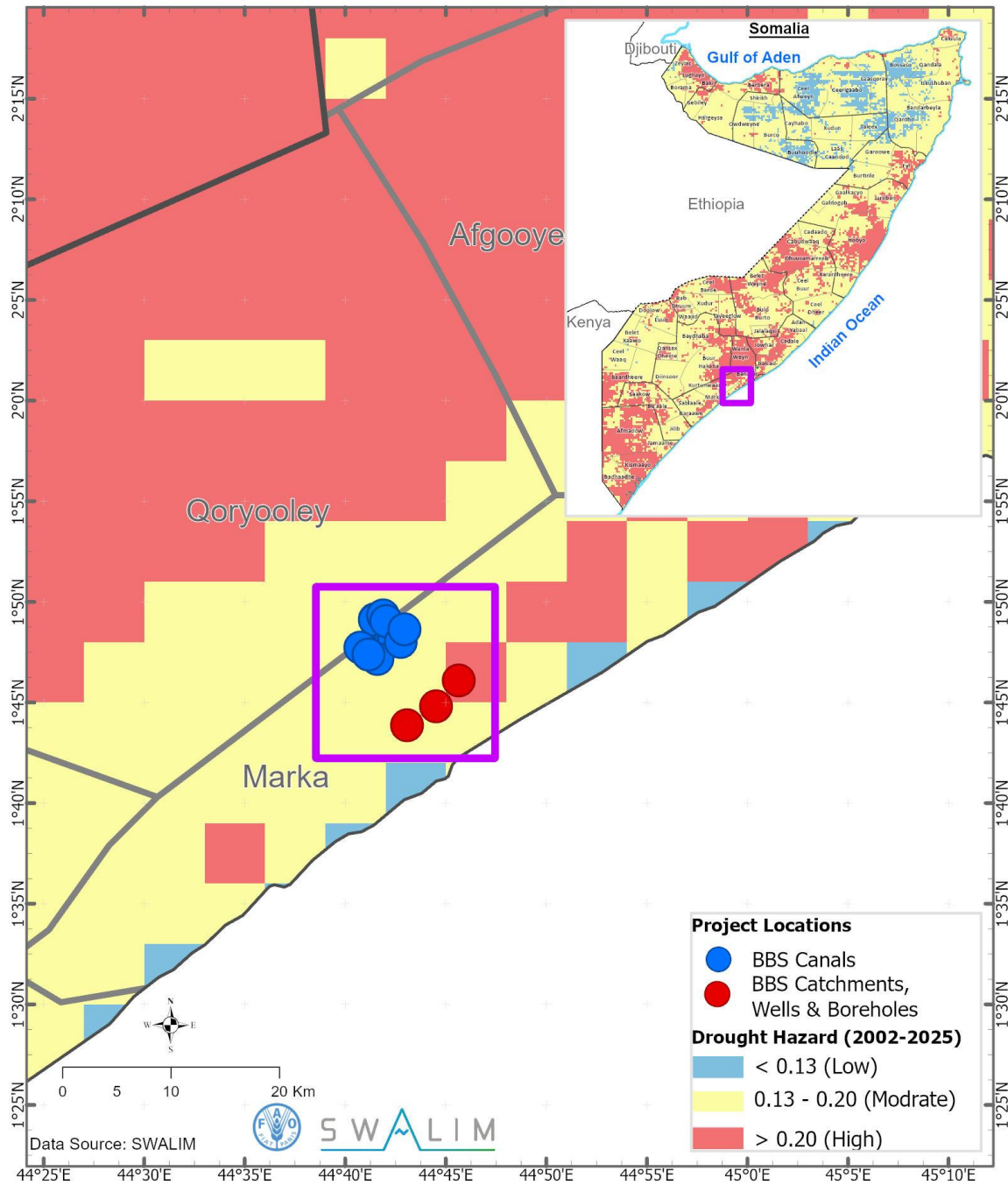
Evidence Group	Record / Folder	Relevance	Control / Use
Hudur catchment drawings/BoQs	BBS - WATER CATCHMENT / HUDUR	Warjanay, Wardhato and Salah Abiib packages.	Site-name/coordinate labels require controlled reconciliation.
Hudur borehole/dug-well packages	Boreholes and shallow wells archive	Waneey, Gomoro, Godow, Banjanay, Sheikh Aways and Laamaloosh packages.	Use only after site identity/final design confirmation.
Janaale canal engineering	Irrigation canal & Pipelines / Janaale	Arfeyle 1/2, Agriko, Saddexda Qumbe, Shanley, Wasiirka profiles/structures/BoQs.	Use final ESIA-engineering cross-reference.
Marka/Hudur mapping	Water Canals / Water Points	Marka canal and Hudur water-point maps.	Supporting mapping evidence.
South West climate maps	Project Concept Note	Xudur and Marka climate-hazard maps.	Supporting climate-risk evidence.

Selected Supporting Maps / Climate-Hazard Figures



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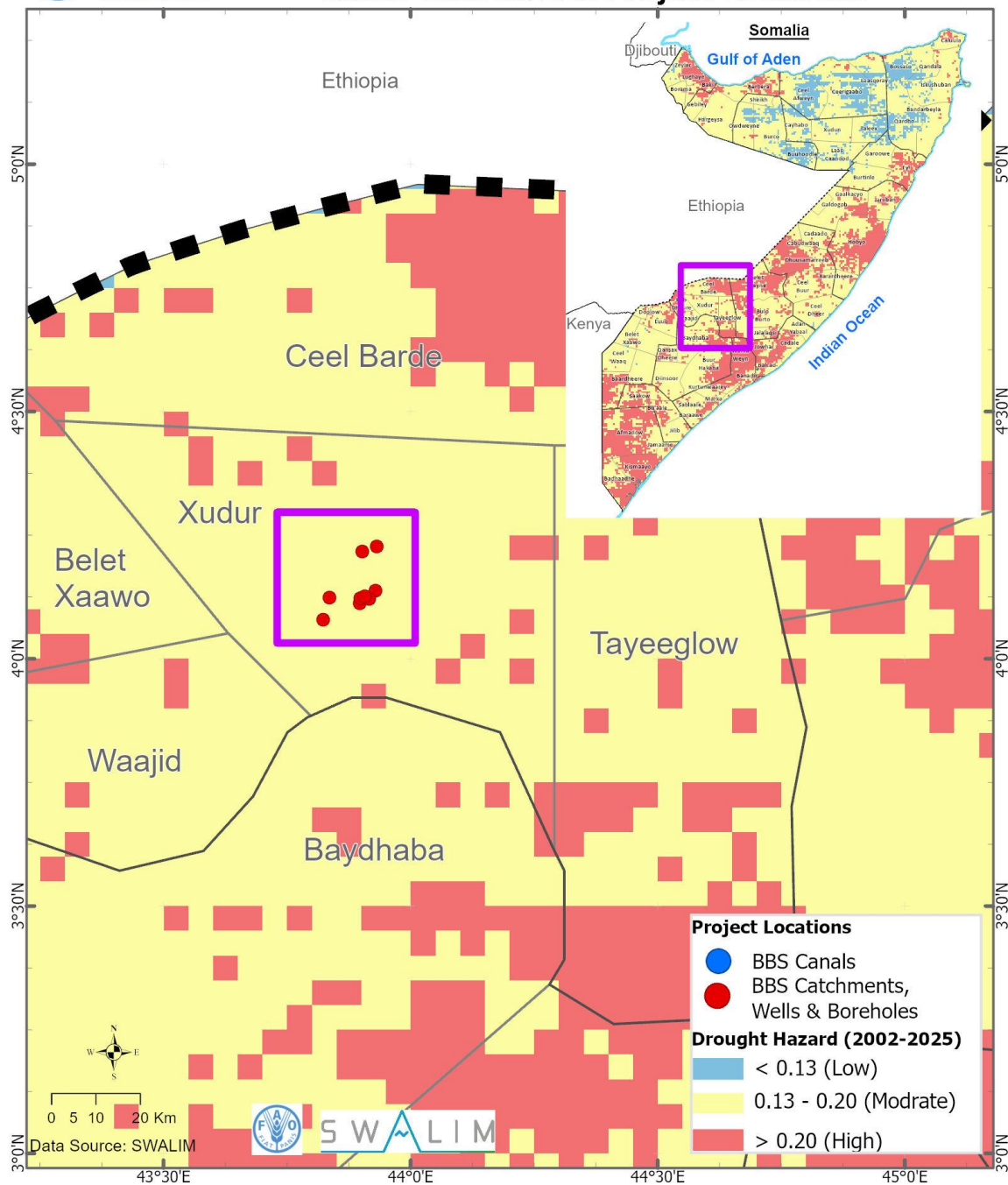
Marka District BBS Project Locations



Supporting record: Annex 1-5 Som_Marka_BBS_Project_Climate_Hazard1.jpg



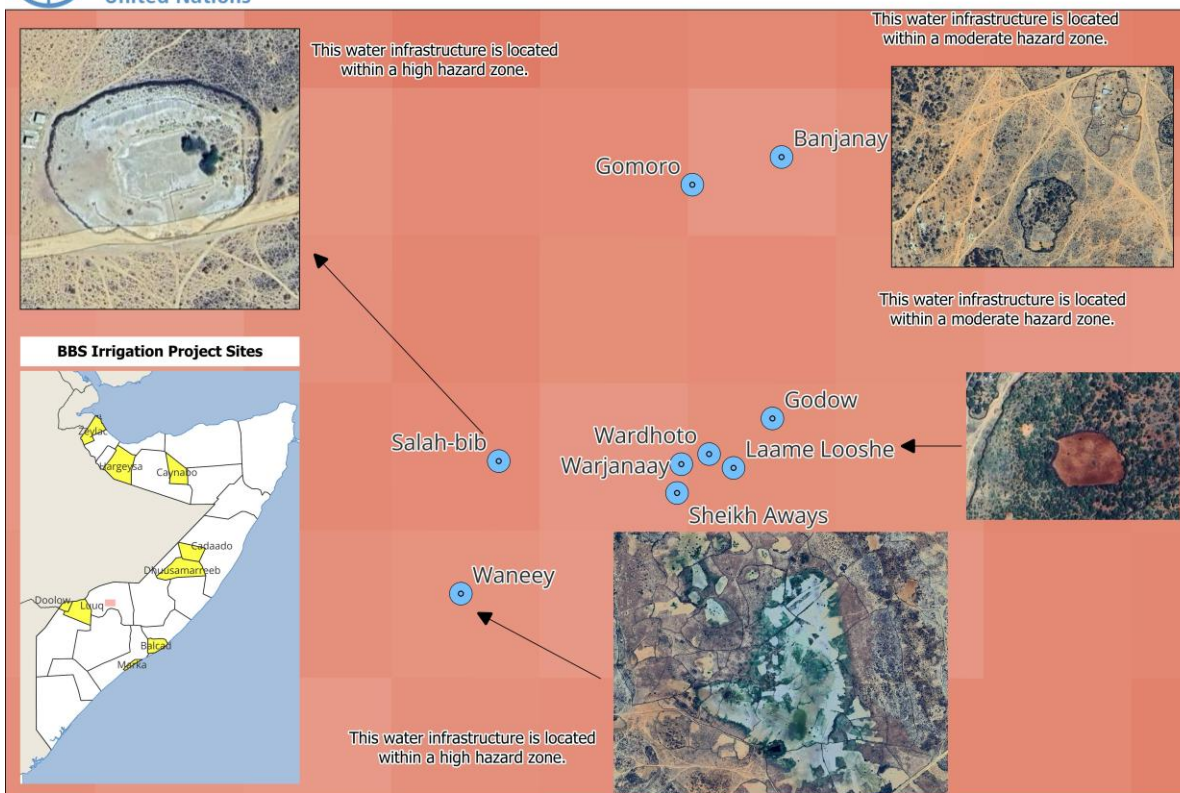
Xudur District BBS Project Locations



Supporting record: Annex 1-5 Som_Xudur_BBS_Project_Climate_Hazard.jpg



Hudur Site – Water Infrastructure Vulnerability



Legend

- BBS Target Districts
- Water infrastructure catchments
- Hudur Site
- Admins
- Districts
- Regions
- Neighbouring Countries
- Country Boundary
- Drought Hazard
- Band 1: DH (Gray)
- Low
- Moderate
- High
- Google Satellite

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

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

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

Map produced by the Somalia Water and Land Information Management Project (SWALIM). SWALIM is a multi-donor project implemented by the United Nations' Food & Agriculture Organization.

For copies of digital data please contact: swalim@fao.org.

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

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



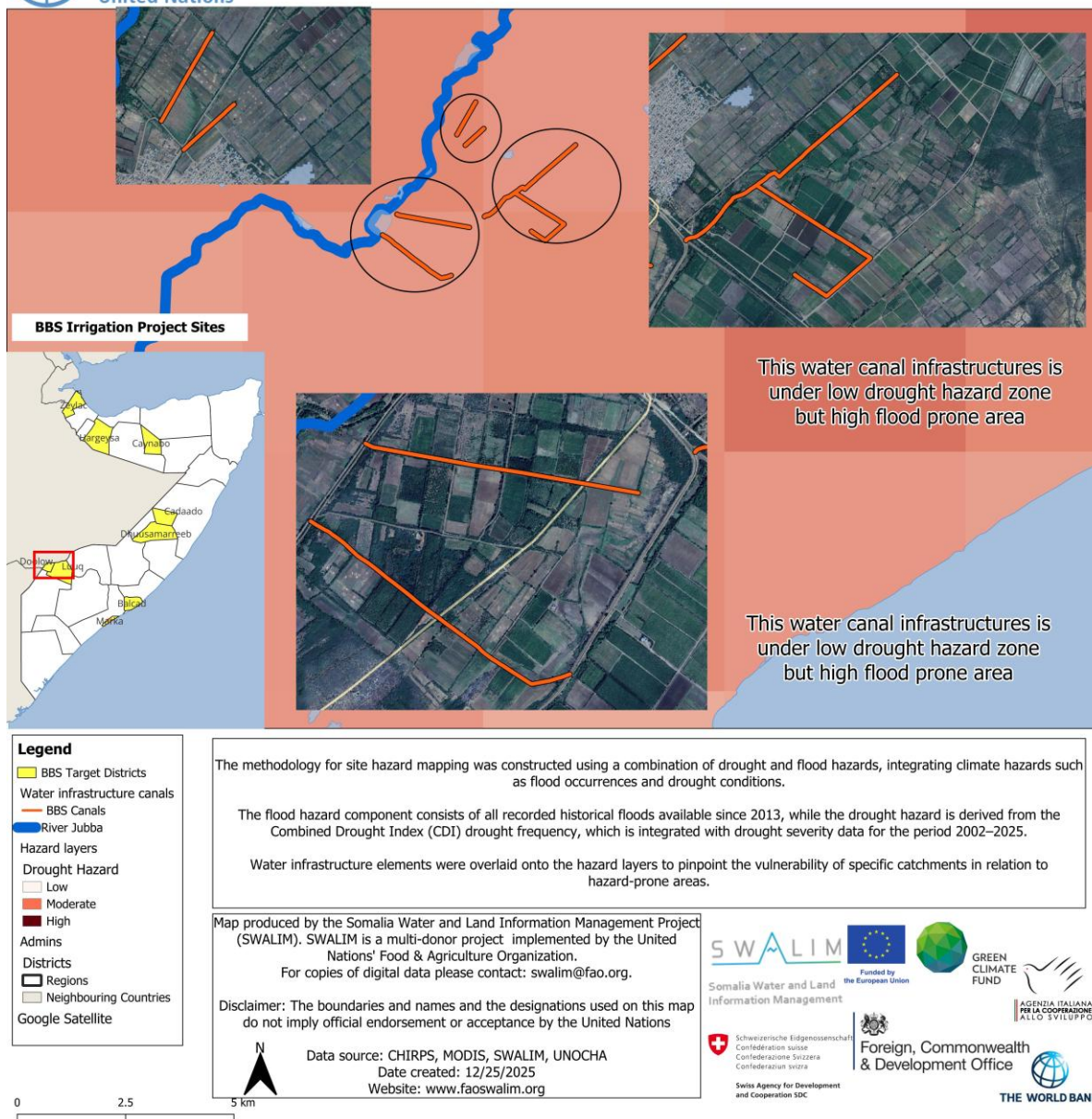
0 10 20 km



Supporting record: [hudur_2002206.jpeg](#)



Marka Site – Water Canal Infrastructure Vulnerability



Supporting record: marka_canal_2002206.jpeg

Project-Wide Supporting Studies Relevant to this ESIA

Study / Instrument	Record Location	Use in State ESIA
Project Concept Note / PCN	Project Concept Note BBS archive	Project rationale, components and implementation arrangements.
BBS Master List / Water Infrastructure Costing & Benefit Ranking	PCN annex 3-1b / assessment matrix	Controls final site selection and supports prioritisation.

Study / Instrument	Record Location	Use in State ESIA
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
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