

THE WORLD BANK

UTTARAKHAND EFFICIENT WATER SUPPLY PROGRAM

(P514519)

ENVIRONMENTAL AND SOCIAL SYSTEMS ASSESSMENT

Program-for-Results Financing

Draft for Appraisal

25 August 2026

Document Control

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Operation	Uttarakhand Efficient Water Supply Program
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Important limitation This report is designed as a complete appraisal-stage ESSA. The consultation record and participant annex cannot be finalized from the supplied evidence. The relevant sections therefore specify the minimum information to be inserted from verified consultation minutes and attendance sheets before disclosure. This avoids converting unverified statements into findings.

Acronyms and Abbreviations

Acronym	Meaning
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
CHS	Community Health and Safety
DDWS	Department of Drinking Water and Sanitation
DBO	Design-Build-Operate
DLI/DLR	Disbursement-Linked Indicator / Disbursement-Linked Result
E&S	Environmental and Social
ESCO/RESCO	Energy Service Company / Renewable Energy Service Company
ESSA	Environmental and Social Systems Assessment
FHTC	Functional Household Tap Connection
GoUK	Government of Uttarakhand
GP	Gram Panchayat
GRM	Grievance Redress Mechanism
IBRD	International Bank for Reconstruction and Development
MPA	Multiphase Programmatic Approach
NRW	Non-Revenue Water
O&M	Operation and Maintenance
OHS	Occupational Health and Safety

Acronym	Meaning
PAP	Program Action Plan
PDO	Program Development Objective
PforR	Program-for-Results
POM	Program Operations Manual
SEA/SH	Sexual Exploitation and Abuse / Sexual Harassment
SPSU	State Program Support Unit
ULB	Urban Local Body
UJN	Uttarakhand Peyjal Nigam
UJS	Uttarakhand Jal Sansthan
UKeWSP / UeWSP	Uttarakhand Efficient Water Supply Program
WSS	Water Supply and Sanitation

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Executive Summary

Program overview

The Uttarakhand Efficient Water Supply Program is a six-year PforR operation supporting the initial phase of the Government of Uttarakhand's long-term water supply and sanitation transformation. Its development objective is to improve the reliability and efficiency of water supply services and the financial sustainability of service providers. The Program combines statewide institutional, digital, operational and financial reforms with investments and service improvements in selected urban, peri-urban and rural areas.

The Program is organized around three mutually reinforcing Results Areas: (i) strengthening institutions and professionalizing service delivery; (ii) improving water supply service delivery, operational efficiency and resilience; and (iii) strengthening financial sustainability. The PAD identifies direct service benefits for approximately 1.8 million people, including additional beneficiaries from new and improved schemes and existing beneficiaries in 22 peri-urban schemes whose performance will continue to be monitored.

Purpose and method

This ESSA assesses whether the applicable environmental and social management systems, as they are designed and implemented, are capable of managing the effects of the PforR Program in a manner consistent with the Bank's six PforR environmental and social core principles. The assessment combines: review of the Program boundary and expenditure framework; identification of likely environmental and social effects; review of relevant legal, regulatory, institutional and operational systems; analysis of experience under the earlier Uttarakhand peri-urban PforR; and comparison with the structure and analytical depth of the Metro Dhaka ESSA.

Assessment standard The ESSA concerns the adequacy and performance of systems, not only the existence of laws or safeguard documents. It therefore distinguishes between system design, institutional capacity, implementation practice, monitoring evidence and residual risk.

Overall E&S effects

The Program is expected to generate substantial positive effects through more reliable water services, improved water quality management, reduced energy intensity and NRW, climate- and source-risk-informed planning, stronger customer accountability, and more sustainable sector financing. The principal adverse effects are expected to be site-specific, predictable and manageable through strengthened screening, design, contracting, supervision and operational controls. The overall E&S risk is assessed as Moderate, consistent with the PAD, subject to application of the exclusion list and timely implementation of the system-strengthening actions in this ESSA.

Risk/impact area	Key issue	System response required
Source sustainability and climate/disaster risk	Source decline, seasonal drying, landslides, flash floods, erosion, asset disruption and cumulative abstraction risk.	Scheme-level source sustainability and hazard screening; climate-informed alternatives analysis; resilience measures; monitoring of yield and quality.
Construction pollution and slope stability	Spoil, debris, erosion, dust, noise, traffic, trench safety, hazardous materials and work in hilly terrain.	Proportionate ESMPs; site-specific slope, drainage, spoil and traffic plans; contract conditions; supervision and incident reporting.
OHS and community safety	Excavation, work at height, confined spaces, electrical and chlorination risks, road safety and public access to work sites.	Contractor OHS plans; competent supervision; emergency arrangements; barricading; worker training; near-miss and fatality protocols.
Land and livelihoods	Small land requirements, access restrictions, informal users and risks from reliance on voluntary or administrative land transfer.	Early land screening; documented ownership and encumbrance checks; avoidance; compensation and assistance before impacts; no forced eviction.
Inclusion and affordability	Remote communities, women, low-income households, Scheduled Castes/Tribes, persons with disabilities and tariff-related affordability concerns.	Inclusive consultation; affordability analysis; transparent service standards; accessible customer and grievance channels; disaggregated monitoring.
Labor and SEA/SH	Contract labor conditions, migrant labor, worker accommodation, child/forced labor and SEA/SH.	Labor clauses; codes of conduct; worker GRM; age verification; SEA/SH referral protocol; monitoring of contractors and operators.

Risk/impact area	Key issue	System response required
Institutional capacity	Uneven E&S staffing, fragmented responsibilities and risk of weak integration into performance-based contracts and digital systems.	Defined accountability; qualified staff; E&S procedures in POM; dedicated budgets; training; third-party audits; management review.

Core-principle conclusion

Core Principle	Applicability	ESSA conclusion
1. General principle of environmental and social management	Applicable	The legal framework and previous PforR systems provide a foundation, but the Program needs a consolidated E&S management procedure, systematic screening, proportional instruments, contract integration, monitoring and disclosure.
2. Natural habitats and physical cultural resources	Applicable	Potential impacts are manageable if sensitive locations are screened early, alternatives are assessed, works avoid critical habitats and cultural heritage, and chance-find procedures are mandatory.
3. Public and worker safety	Applicable	This is a central risk area. Contractor/operator OHS, community safety, emergency preparedness, water quality, chemical safety and incident reporting require explicit and auditable controls.
4. Land acquisition and loss of access	Applicable	Large-scale resettlement is excluded. Minor land and livelihood impacts require consistent due diligence, avoidance, documented voluntary arrangements where genuinely voluntary, and compensation/assistance before impact.
5. Indigenous Peoples and vulnerable groups	Applicable	The system must identify Scheduled Tribe and other vulnerable groups in Program areas, ensure culturally appropriate and accessible engagement, track distributional outcomes and address affordability and accessibility barriers.
6. Social conflict	Contextually relevant	The Program is not designed for conflict-affected settings, but localized disputes over sources, land, tariffs, service standards and contractor behavior require transparent consultation, grievance handling and conflict-sensitive implementation.

Priority recommendations

- Adopt and operationalize a Program E&S Management Procedure as part of the POM, covering screening, exclusion, risk classification, instruments, clearances, land due diligence, labor and OHS, stakeholder engagement, GRM, monitoring, incident response and recordkeeping.
- Maintain qualified environmental and social specialists at the SPSU and implementing-agency levels, supported by field capacity, dedicated budgets and measurable responsibilities.
- Integrate E&S requirements into feasibility studies, DPRs, bidding documents, DBO and performance-based O&M contracts, ESCO/RESCO arrangements, service agreements and verification protocols.
- Establish a digital E&S management information module linked to Program monitoring, with scheme-level records and disaggregated indicators.
- Apply the exclusion list before procurement or commitment of Program funds and maintain an auditable screening register.
- Undertake independent annual E&S performance audits and disclose executive summaries and corrective-action status.

Proposed Program Action Plan

Action	Responsibility	Timing	Completion measurement
1. Approve the Program E&S Management Procedure and integrate it into the POM, standard bidding documents, contracts and verification protocols.	DDWS/SPSU with UJN and UJS	Before award of the first Program civil-works or performance-based contract; maintain thereafter.	Approved procedure; standard clauses and templates issued; sample contracts demonstrate incorporation; screening register operational.
2. Establish and maintain the Program E&S institutional architecture, including designated qualified specialists (at HQ and field division level), field support, annual work plan and dedicated budget.	DDWS/SPSU, UJN, UJS	Within three months of effectiveness and throughout implementation.	Positions filled; terms of reference and reporting lines approved; budget and

Action	Responsibility	Timing	Completion measurement
			annual work plan available; quarterly reports submitted.
3. Operationalize an integrated, accessible Program GRM and stakeholder engagement system, including worker GRM and confidential SEA/SH pathways.	DDWS/SPSU, UJN, UJS and service providers	Within six months of effectiveness; functioning before field works.	Multiple intake channels; service standards; escalation and referral protocols; sex- and vulnerability-disaggregated reporting; closure and satisfaction tracked.
4. Implement annual independent E&S audits, including verification of exclusion screening, land due diligence, OHS, contract compliance, inclusion and corrective actions.	DDWS/SPSU	First audit within 12 months of effectiveness; annually thereafter.	Audit reports and time-bound corrective-action plans approved; summary disclosed; closure status reported to Program steering arrangements.

1. Program Description

1.1 Introduction and sector context

Uttarakhand's mountainous terrain is ecologically fragile, seismically active and is biodiversity rich. Its topographical challenges, dispersed settlements and extensive pumping requirements create high costs and operational demands for water service delivery. The PAD describes a sector that has expanded infrastructure coverage but continues to face intermittent supply, high water losses, weak operating cost recovery, rising energy costs and vulnerability of springs due to degraded catchments and groundwater sources. Institutional responsibilities have historically separated planning and construction from O&M, limiting lifecycle accountability and operational input into design.

The Program builds on the earlier World Bank-financed Water Supply Program for Peri-Urban Areas in Uttarakhand (P158146). That operation established performance-linked service delivery, digital monitoring, lifecycle responsibilities and structured E&S procedures. The present Program scales the service-delivery approach and adds statewide institutional, digital and financial reforms, new and improved schemes, performance-based O&M, and energy-efficiency and renewable-energy arrangements.

1.2 Development objective, duration and boundary

Dimension	Government program	Bank-supported PforR boundary
Duration	2027-2047	2027-2032
Geographic scope	Statewide	Statewide institutional and sector reforms; service improvements and investments in selected urban, peri-urban and rural areas.
Sector/investment	Water supply and sanitation investments across the state	Primarily water-supply investments in selected areas, with sanitation strategy and preparatory activities.
Focus	Long-term transformation across operational efficiency, financial efficiency, institutional excellence and resilience	Initial phase establishing institutional, operational, financial and resilience foundations.
Financing	About US\$2 billion over 20 years	Program expenditure of INR 1,600 crore, with IBRD financing stated in the PAD as US\$152.38 million; separate financing arrangements include private capital and grant preparation support.

The PAD contains financing presentations at both operation and PforR-program levels. This ESSA uses the PforR boundary and expenditure framework for risk assessment and does not treat financing outside that boundary as Program expenditure.

1.3 Results Areas and activities

Results Area	Main supported changes	Principal E&S interface
RA1: Strengthening institutions and professionalizing service delivery	Institutional diagnostics and redesign; lifecycle accountability; sector oversight; service agreements; digital roadmap and systems; capacity to manage performance-based contracts.	Embedding E&S accountability in organizational roles, digital systems, contracts, service standards, disclosure and citizen engagement.
RA2: Improving service delivery, efficiency and resilience	New infrastructure through performance-based DBO contracts; performance-based O&M for underperforming schemes; monitoring of earlier peri-urban schemes; NRW and energy efficiency; ESCO/RESCO; source sustainability and climate resilience; sanitation strategy and studies.	Most direct civil-works, land, OHS, community safety, source, biodiversity, pollution, labor and climate risks.
RA3: Strengthening financial sustainability	Service-area and scheme-level accounting; metering, billing and collection; tariffs; cost recovery; financial assessment and transaction preparation.	Affordability, distributional impacts, transparency, consultation, protection of vulnerable users, labor implications of organizational reforms and data privacy considerations.

1.4 Program beneficiaries

The PAD identifies approximately 1.8 million direct service beneficiaries. This comprises approximately 1.16 million additional beneficiaries from new and improved schemes and 627,300 existing beneficiaries in 22 peri-urban schemes whose performance will continue to be monitored. Statewide institutional and digital reforms are expected to strengthen systems beyond the immediately supported schemes. Benefit estimates should be updated through the Results Framework and applied consistently across Program documents.

1.5 Institutional and implementation arrangements

Entity	Program role	Required E&S accountability
DDWS	Nodal department providing policy direction, strategic oversight and monitoring.	Approve Program E&S system; ensure resources; review performance; coordinate cross-departmental issues; report material incidents and compliance.
SPSU	Program coordination, DLI reporting and fiduciary and E&S oversight.	Maintain specialists, screening register and MIS; quality-assure instruments; consolidate monitoring; manage audits, training, disclosure and Bank reporting.
UJN and UJS	Principal implementing agencies through existing institutional structures.	Apply screening and land due diligence; prepare/approve proportionate instruments; integrate requirements into contracts; supervise works and operations; manage grievances and corrective actions.
ULBs and GPs	Counterpart institutions for service agreements and local accountability.	Support land and stakeholder due diligence, disclosure, community interface, grievance intake and service-performance monitoring.
Contractors, DBO/O&M operators, ESCO/RESCO partners	Design, construction, operation, maintenance and performance delivery under contracts.	Implement contractual E&S plans and codes; provide competent staff; report incidents and performance; maintain worker GRM; comply with legal permits and Program procedures.
Independent verification/auditors	Verification of results and/or performance.	Include specifically defined E&S criteria where relevant; independently verify system operation, not merely document presence.

1.6 Past experience and lessons

- The earlier peri-urban PforR demonstrates that E&S requirements can be embedded in designs, bidding documents and supervision protocols, supported by dedicated specialists and periodic audits.
- The earlier operation used environmental and social assessments, site-specific management plans, screening and monitoring mechanisms for construction and O&M.
- The draft UKeWSP ESSA records that early land-related delays occurred for some sites, underlining the need for readiness screening and resolution of land prerequisites before procurement and works.
- The draft also identifies the absence of explicit E&S provisions in Bills of Materials/DPRs as a practical constraint. The new Program should therefore cost E&S measures and treat them as measurable contractual obligations.
- Digital grievance channels should complement, not replace, local and accessible non-digital channels for remote and vulnerable users.

1.7 ESSA methodology and evidence limitations

The assessment applied five steps: (i) define the Program boundary and activities; (ii) identify environmental and social benefits, risks and impacts; (iii) review system design against the six core principles; (iv) assess institutional performance and implementation experience; and (v) develop prioritized actions proportionate to residual risk.

Verification gaps The supplied materials do not provide verified dates, locations, minutes or participant lists for stakeholder consultations supporting this version. They also do not provide a finalized list of selected schemes. Accordingly, the ESSA evaluates the Program at system level and requires scheme-level screening. Consultation findings must be updated only from verified records before public disclosure.

2. Environmental and Social Effects of the Program

2.1 Approach to risk assessment

Risk significance was considered in relation to scale, location, sensitivity, reversibility, probability, institutional capacity and the effectiveness of available controls. The analysis covers the full results chain, including policy and institutional reforms, planning and design, procurement, construction, operation, maintenance and decommissioning or replacement of equipment. The exclusion list removes activities with high or significant adverse impacts that are not suitable for PforR support.

2.2 Expected environmental and social benefits

Benefit pathway	Expected benefit	Condition for realization
Reliable and safer water services	Reduced dependence on unsafe or inconvenient sources and improved continuity and quality of supply.	Water quality assurance from source to consumer, equitable connections and service standards, operational capacity and affordability.
Operational efficiency	Reduced NRW, optimized energy use and better asset management.	Credible baselines, metering, leakage management, preventive maintenance and transparent performance verification.
Climate and source resilience	Risk-informed planning, source assessment, improved catchment area or spring shed management to feed into rich resilience standards and better design and decision support.	Source sustainability assessment, screening of degraded catchments and their management, catchment-level coordination, hazard-informed siting/design and monitoring of source yield and quality.
Institutional accountability	Clearer lifecycle responsibilities, service agreements, oversight and public reporting.	Explicit E&S mandates, reliable data, disclosure and consequences for non-performance.
Inclusion and citizen engagement	Stronger customer interface, grievance handling and participation, including opportunities for women's groups.	Accessible channels, representation of vulnerable groups, disaggregated data, feedback loops and fair remuneration/conditions for community-facing roles.
Financial sustainability	Improved information on costs and revenues and stronger O&M financing.	Transparent and consultative tariff reforms, affordability measures and protection from exclusion due to inability to pay.

2.3 Environmental risks and impacts

2.3.1 Source sustainability and cumulative water availability

Uttarakhand's water supply systems depend disproportionately on springs (naulas, dharas, baolis), glacial-fed streams, and forested catchment aquifers. New or expanded schemes abstracting from these sources risk compounding existing stress, particularly where design yields are based on post-monsoon measurements rather than verified lean-season discharges spanning a minimum two-year record. At program scale, individual scheme viability assessments conducted in isolation will not capture cumulative abstraction stress across shared sub-basins. Source assessments must therefore establish a catchment-level water balance accounting for competing uses, glacial retreat trajectories, and the ongoing shift from snow-dominated to rainfall-dominated recharge, with a defined minimum environmental flow embedded in intake design for all surface water sources and discharge-based monitoring triggers specified at the design stage. Where catchment augmentation measures are proposed afforestation, spring shed restoration, or check dams land use tenure (van panchayat, reserved forest, or revenue land), ecological function, and the dependence of Scheduled Tribe and Van Gujjar communities on those landscapes must be assessed, with community-managed van panchayats formally recognized as long-term source stewards within the scheme's institutional design. Scheme viability can be undermined if design yield is based on limited seasonal data or if competing uses and cumulative withdrawals are not considered. Source assessments should address seasonal yield, water balance, competing users, climate sensitivity, minimum service requirements and monitoring triggers. Where source augmentation or catchment measures are proposed, land use, ecological function and community dependence must be considered.

2.3.2 Climate, natural hazards and slope stability

Landslides, flash floods, extreme rainfall, erosion and slope instability can damage intakes, pipelines, pumping stations, treatment facilities and access roads, while repair works may create secondary impacts. Hazard screening should inform alternatives, siting, engineering design, emergency access, redundancy and O&M. Spoil placement and drainage are particularly important in hill environments.

2.3.3 Water quality and public health

At the source end, the state's dependence on springs, glacial meltwater, and unregulated mountain streams exposes supply systems to contamination pathways that are highly variable and often invisible until a public health event occurs. Risks arise from source contamination, treatment failure, inadequate chlorination, cross-connections, low-pressure intrusion, unsafe chemical handling and weak monitoring. The Program should establish source-to-tap water safety controls, defined test parameters/frequencies, laboratory quality assurance, incident response, public notification and corrective measures.

2.3.4 Construction pollution, waste and resource use

Excavation, trenching, demolition and rehabilitation can generate spoil, debris, dust, noise, wastewater, oils, chemical containers, packaging and electronic waste. Poor spoil disposal can block drainage, destabilize slopes or affect water bodies. DPRs and contracts must identify disposal routes/sites, reuse opportunities, pollution-prevention measures and authorization responsibilities.

2.3.5 Biodiversity, forests and cultural heritage

Works may be located near forests, watercourses, springs, habitats or culturally significant sites. Approximately 45% of the state is classified as forest land, of which a significant proportion falls under Reserved Forest or Protected Forest categories under the Indian Forest Act, 1927. The cumulative effect of dozens of such schemes across the program, if not proactively mapped and managed, can fragment habitat, disrupt wildlife movement, and alter the hydrology of ecologically functional springs and wetlands in ways that no single-scheme environmental review would capture. Only by front-loading this multi-layer ecological and cultural screening into the DPR stage, rather than treating it as a permitting formality, can the program avoid the combination of construction delays, reputational risk, and irreversible ecological harm that has affected comparable infrastructure programs in the Himalayan reg. Early screening should avoid critical natural habitat and significant cultural heritage, identify permit requirements and sensitive seasons, and include chance-find procedures. Any tree cutting or forest-land interface must be addressed through applicable authorization and design alternatives.

2.3.6 Energy-efficiency and renewable-energy investments

ESCO/RESCO activities can reduce emissions and costs but may create construction, electrical, battery, panel, waste and worker-safety risks. Transaction documents must define lifecycle management, electrical safety, emergency response, take-back/recycling and end-of-life responsibilities.

2.3.7 Operational risks

O&M entails confined-space entry, chlorine and chemical handling, electrical systems, work at height, pressure systems, excavation for repairs and traffic exposure. Performance contracts should not create incentives to compromise safety or environmental compliance. E&S indicators and stop-work authority are required.

2.4 Social risks and impacts

2.4.1 Land acquisition, land use and access restriction

Although large-scale displacement is not expected and is excluded, small land parcels or rights of way may be needed for intakes, reservoirs, pumping stations, treatment units, pipelines and access. Risks include unclear title, encumbrances, informal occupation, common-property use, crop/tree loss and temporary access disruption. Every scheme requires documented land due diligence before procurement and possession.

2.4.2 Equity, inclusion and affordability

Remote hill settlements, low-income households, women-headed households, Scheduled Castes and Scheduled Tribes, persons with disabilities, tenants and informal users may face barriers to participation, connections, billing,

digital access or grievance systems. Tariff and metering reforms can create affordability concerns if designed without distributional analysis and consultation.

2.4.3 Labor and working conditions

Program contracts may involve direct, contracted and migrant workers. Risks include unsafe work, delayed wages, weak accommodation, discrimination, child or forced labor, unregistered subcontracting and inadequate worker grievance channels. Labor obligations must apply through the contracting chain.

2.4.4 SEA/SH and gender risks

Labor influx, customer-facing functions and hierarchical workplace settings can create SEA/SH or harassment risks. The Program requires codes of conduct, awareness, confidential survivor-centered referral pathways and sanctions, without forcing survivors to use ordinary grievance channels.

2.4.5 Community health, safety and access

Open trenches, traffic diversions, movement of machinery, blasting where legally permitted, unsafe storage, noise and interruptions can affect residents, schools, health facilities, businesses and religious sites. Works should maintain safe access, communicate shutdowns and use site-specific traffic and community safety plans.

2.4.6 Institutional reform and private participation

Organizational redesign and private operator participation may affect work roles, accountability and public perceptions. Transparent workforce planning, consultation and adherence to applicable service conditions are needed. E&S responsibilities cannot be outsourced without government oversight.

2.4.7 Data, digitalization and exclusion

Digital customer, asset and grievance systems can improve accountability but may exclude users with limited connectivity or literacy and may hold personal data. Non-digital alternatives, accessibility, defined user permissions and proportionate data governance should be embedded in system design.

2.4.8 Social conflict and trust

Disputes may arise over source sharing, service boundaries, land, road restoration, tariffs, connection priority or contractor conduct. Transparent criteria, early engagement, local mediation and timely GRM resolution are necessary to prevent escalation.

2.5 Risk by activity and mitigation

Program activity	Potential E&S effect	Required management measure	Core Principles
Institutional restructuring and service agreements	Unclear E&S accountability; workforce concerns; exclusion from decision-making.	Define E&S roles and escalation; consult affected staff and service users; include performance and disclosure obligations.	1, 5, 6
Digital systems and monitoring	Digital exclusion, privacy risks, unreliable or non-disaggregated data.	Accessible alternatives; E and S screening, water quality, data governance; audit trails; vulnerability- and sex-disaggregation; grievance safeguards.	1, 5
New DBO water schemes	Land, source, biodiversity, construction, Occupational/ Community Health and Safety (OHS/CHS), labor and climate risks.	Alternatives analysis; screening; land due diligence; proportionate ESMP; permits; contract clauses; supervision and emergency plans. Digital pathways for environmental and social screening while conceptualization, inclusion in DPR and monitoring.	1-6
Performance-based O&M	Safety shortcuts, chemical risks, maintenance waste and weak customer response.	E&S key performance requirements; safety non-negotiables; operator plans; incident reporting; independent checks.	1, 3, 5, 6
NRW and metering	Excavation/access impacts; billing disputes; affordability concerns.	Traffic/access plans; reinstatement; communication; transparent metering and billing; affordability measures.	1, 3, 5, 6
ESCO/RESCO	Occupational health and safety, Electrical and construction safety, e-waste and end-of-life liabilities.	Lifecycle clauses; competent electrical safety; take-back/recycling; emergency response.	1, 3
Source resilience measures	Land-use restrictions, competing users, habitat or catchment impacts, effect on forest and biodiversity.	Participatory source assessment; avoid adverse restriction; ecological screening; benefit-sharing and monitoring. Early screening to avoid critical natural habitat and significant cultural heritage. ecological and cultural screening into the DPR stage,	1, 2, 4, 5, 6

Program activity	Potential E&S effect	Required management measure	Core Principles
		rather than treating it as a permitting formality, to avoid the combination of construction delays, reputational risk, and irreversible ecological harm	
Sanitation strategy and studies	Downstream risks if studies lead to unsuitable technology or disposal pathways.	Strategic E&S analysis; treatment and disposal alternatives; occupational/public health and land considerations.	1, 2, 3, 4, 5

2.6 Overall risk characterization

The Program's adverse effects are expected to be moderate if high-risk activities are excluded and if the recommended system measures are implemented before contracting and field works. Risks are not uniformly low: individual schemes in hazard-prone or environmentally sensitive locations, schemes with unresolved land, or contracts lacking effective OHS oversight could present substantial implementation risk and should not proceed until risks are reduced to an acceptable level or removed from the Program boundary.

3. Assessment of Borrower Environmental and Social Management Systems

3.1 Analytical framework

The assessment considers: (a) enabling law and policy; (b) institutional mandates and coordination; (c) procedures and operational tools; (d) staffing, budget and technical capacity; (e) implementation track record; (f) transparency, participation and grievance handling; and (g) monitoring, audit and adaptive management. A legally compliant system may still be inadequate if it lacks early screening, role clarity, resources, enforcement or evidence of implementation.

3.2 Legal and policy framework

Theme	Relevant legal/system instruments identified in the supplied draft	ESSA assessment for UKeWSP
Environmental protection and pollution control	Environment (Protection) Act, 1986 and rules; Water (Prevention and Control of Pollution) Act, 1974; Air (Prevention and Control of Pollution) Act, 1981; Noise Pollution Rules, 2000; EIA Notification, 2006.	Provides a broad pollution-control and clearance framework. Program procedures must determine applicability scheme by scheme and track consent/authorization conditions.
Waste and hazardous materials	Solid, plastic, e-waste, battery waste management rules, hazardous, plastic waste management rules and other waste-management rules as applicable.	Adequate categories of control exist, but contracts need explicit segregation, authorized handling, transport, disposal and records. The applicable version of each rule should be legally verified at implementation.
Forests, biodiversity and wildlife	Forest (Conservation) Act, 1980, 1988 amended and 2023, Forest and wildlife legislation (Wildlife (Protection) Act 1972 (2006), Biological diversity Act 2002 (2023), and applicable permission processes.	Mandates prior Central Government approval (Stage I and II) for any diversion of forest land for non-forest purposes; applicable to pipeline alignments, access tracks, intake structures passing through forest land; Compensatory Afforestation and NPV payment. Mandatory Supports avoidance and authorization, but Program screening must identify sensitive areas before designing lock-in and procurement. Establishes National Parks, Wildlife Sanctuaries, Conservation Reserves; prohibits any construction or activity in core zones. Govern access to biological resources and associated traditional knowledge; Uttarakhand Biodiversity Board regulates commercial and research access.
Land acquisition and resettlement	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013; state revenue/land procedures and negotiated or voluntary arrangements where legally permissible.	Formal acquisition has a defined framework. Gaps can arise for non-titleholders, temporary impacts, access restriction and poorly documented voluntary donation. Program procedures must close these gaps.
Labor and occupational safety	Applicable labor codes/rules and sector safety requirements; contract law and employer obligations.	Legal obligations require translation into worksite systems, competent supervision, incident reporting, worker GRM and enforcement through payments and sanctions.
Scheduled Tribes and vulnerable groups	Constitutional safeguards and applicable laws/policies for Scheduled Tribes, local governance and vulnerable persons.	The system must operationalize identification, culturally appropriate consultation, accessibility and distributional monitoring at scheme level.
Transparency and grievance redress	Right to Information framework; departmental/customer grievance systems; local-government and digital channels.	Multiple channels are an asset, but Program-wide service standards, escalation, interoperability, confidentiality and analytical reporting need consolidation.

Legal verification protocol Because laws and rules may be amended, the POM should include a controlled legal register with the official title, current amendment status, applicability trigger, responsible authority, permit/consent, renewal date and evidence location. This ESSA does not substitute for scheme-specific legal due diligence.

3.3 Institutional capacity and performance

System element	Existing strength evidenced in supplied materials	Gap / risk	Required strengthening
Prior PforR experience	Uttarakhand agencies implemented E&S screening, assessments, management plans, monitoring and independent audits under P158146.	Capacity may be project-dependent and uneven across statewide, rural, urban and private-partner arrangements.	Institutionalize permanent roles, field support, standardized tools and budgets rather than relying solely on consultants.

System element	Existing strength evidenced in supplied materials	Gap / risk	Required strengthening
Program oversight	DDWS/SPSU is assigned E&S oversight in the PAD.	Detailed authority, staffing, escalation and quality assurance arrangements need operational definition.	Approve organogram, terms of reference, delegation matrix, review thresholds and incident protocol.
Design and procurement integration	Earlier operation embedded requirements in designs and contracts.	Draft notes absence of dedicated E&S provisions in some BoQs/DPRs.	Standard costed clauses, specifications, bid evaluation requirements and payment-linked compliance.
Land readiness	Experience exists with land screening.	Past delays indicate insufficient early resolution; risks to informal users may not be consistently covered.	Land due-diligence checklist, legal verification, census where needed, compensation/assistance and readiness certificate before award.
OHS and contractor management	Supervision structures and audits were used previously.	Performance-based contracting may diffuse accountability and incentivize speed/cost over safety.	Minimum contractor/operator capacity, approved plans, leading/lagging indicators, stop-work authority and independent inspections.
GRM and citizen engagement	Digital and community-level channels and sex-disaggregated feedback were used in the earlier Program.	Fragmented channels, digital exclusion and weak feedback-to-management loops are possible.	Integrated Program GRM, local access, service standards, dashboards and management review.
Monitoring and audit	Prior independent E&S audit experience.	Document-focused reporting may not show actual outcomes or closure of findings.	Risk-based field verification, outcome indicators, geo-tagged evidence where appropriate and tracked corrective actions.

3.4 Assessment against PforR Core Principles

Core principle and objective	System strengths	Material gaps	Conclusion
Core Principle 1: General environmental and social management Promote E&S sustainability in Program design; avoid, minimize or mitigate adverse effects; support informed decision-making.	The combined national/state legal framework, prior PforR tools and PAD implementation arrangements provide a credible base. The Program itself embeds source sustainability, resilience, digital monitoring and citizen accountability.	The March draft contains incomplete and transferred text, blank PAPs and unverified consultation placeholders. The system requires a single authoritative procedure spanning all contract models and the full lifecycle.	Partially consistent. Consistency depends on adoption and implementation of the Program E&S Management Procedure, resourcing, contract integration, monitoring and audit.
Core Principle 2: Natural habitats and cultural resources Avoid significant conversion or degradation of critical habitats and protect physical cultural resources.	Environmental legislation and permission systems provide formal controls; scheme rehabilitation and use of existing assets can reduce footprint.	Selected schemes are not finalized in the supplied evidence. Risks near forests, springs, rivers, erosion-prone slopes and cultural sites cannot be assessed conclusively at this stage.	Partially consistent. Apply exclusion, geospatial/sensitivity screening, alternatives analysis, permit tracking and chance-find procedures.
Core Principle 3: Public and worker safety Protect workers and communities from construction, operation, chemicals, disasters and hazardous materials.	Previous Program experience, technical agencies and performance contracting provide a platform for safety management.	OHS performance can be inconsistent across contractors and O&M; emergency planning, incident learning and community safety need stronger standardization.	Partially consistent. Safety must be embedded in procurement, supervision, payment, performance indicators and independent audit.
Core Principle 4: Land acquisition and access Manage land acquisition and loss of access to avoid/minimize displacement and provide timely compensation and assistance.	Formal acquisition law and government land processes exist; most network works can be designed within existing rights of way.	Non-titleholder impacts, temporary impacts, common-property use and voluntary arrangements require consistent documentation and assistance.	Partially consistent. Large-scale displacement is excluded; land readiness and assistance must precede impacts.
Core Principle 5: Indigenous Peoples and vulnerable groups Give due consideration to cultural appropriateness, equitable access and the needs of vulnerable groups.	Program focus on service quality, citizen engagement and statewide digital systems can improve inclusion.	Benefits may be uneven without vulnerability mapping, affordability analysis, accessible design and disaggregated monitoring. Digital systems may exclude users.	Partially consistent. Add scheme-level social inclusion planning, culturally appropriate engagement and distributional indicators.
Core Principle 6: Social conflict Avoid exacerbating social conflict, especially in fragile or disputed contexts.	Uttarakhand has functioning administrative and local-governance systems; Program activities are service-delivery focused.	Localized disputes can arise over sources, land, tariffs, service boundaries and contractor conduct.	Generally consistent for the State context, with localized conflict

Core principle and objective	System strengths	Material gaps	Conclusion
			sensitivity, transparent criteria and responsive grievance handling required.

3.5 Grievance redress and stakeholder engagement

The Program should operate a unified but multi-channel GRM covering service complaints, construction impacts, land and compensation, labor grievances, contractor conduct and allegations of SEA/SH. Channels should include toll-free/telephone, web or mobile, email, written submissions and in-person access through local offices or facilitation points. Remote and digitally excluded users must not be disadvantaged.

GRM feature	Minimum requirement
Access	Free, publicized, multilingual as needed, disability-accessible and available through digital and non-digital channels.
Registration	Unique case number; date, location, category, responsible entity and complainant preference recorded; anonymous complaints accepted where feasible.
Service standards	Acknowledgment, assessment, resolution and escalation timelines defined by category and risk.
Confidentiality	Restricted handling for personal data; separate confidential pathway for SEA/SH with survivor-centered referral and no mandatory mediation.
Worker GRM	Separate mechanism for direct and contracted workers, without retaliation and without replacing statutory remedies.
Appeal and escalation	Clear escalation from contractor/operator to IA and SPSU; access to courts/statutory bodies preserved.
Analytics and disclosure	Periodic reporting on receipt, resolution, aging, recurrence, satisfaction and systemic corrective actions, disaggregated where safe.
Bank channels	Information on the World Bank's corporate grievance mechanisms should be disclosed without representing them as substitutes for Program-level resolution.

3.6 Consultation record and disclosure

Evidence-controlled drafting No verified consultation minutes or participant lists were available in the supplied package. The following is therefore a completion protocol rather than a fabricated consultation narrative.

Before disclosure, DDWS and the Bank team should insert a verified consultation table recording date, location/mode, stakeholder categories, number of participants, women's participation, vulnerable-group representation, issues raised, responses and resulting ESSA changes. Attendance sheets should be retained with appropriate privacy controls. The disclosed draft and final ESSA should be made available through accessible channels, and a non-technical summary should be used for community-facing consultations.

4. Recommendations and Program Action Plan

4.1 Summary of system findings

Finding	Significance	Response instrument
Existing experience and legal systems provide a sound foundation, but procedures are fragmented across institutions and contract models.	High	PAP 1; POM procedure; standard procurement documents.
E&S staffing and budgets need to be institutionalized for statewide implementation.	High	PAP 2; annual work plan and budget.
Land readiness and non-titleholder/temporary impacts require clearer due diligence and assistance.	High	POM; exclusion list; readiness certificate; audit.
OHS/CHS and contractor/operator performance are the most immediate implementation risks.	High	Contract requirements; supervision protocol; incident management; audit.
Source sustainability, hazard screening and climate resilience must be demonstrated scheme by scheme.	High	Technical screening and design criteria; POM; verification.
Citizen engagement and GRM assets exist but need integration, accessibility and management analytics.	Substantial	PAP 3; service agreements; digital and local channels.
Independent audits should test field performance and corrective-action closure.	Substantial	PAP 4; disclosure and management review.

4.2 System-strengthening strategy

The recommended strategy is sequenced around four control points. First, no scheme enters the Program without exclusion and readiness screening. Second, no procurement proceeds without proportionate E&S requirements, cost provisions and cleared land/source prerequisites. Third, no works or operations begin without approved contractor/operator plans, qualified personnel, permits and community communication. Fourth, no result is verified solely from expenditure or output data where E&S compliance is material; field evidence, incident records, grievance data and corrective-action closure are required.

4.3 Detailed Program Action Plan

PAP	Action and scope	Responsible entity	Timing	Verification evidence
1	Approve and implement a Program E&S Management Procedure within the POM. Digitize screening formats on E and S. E and S Management will cover exclusion and risk screening; source and climate/hazard due diligence; source catchment; biodiversity/cultural heritage; land and livelihood impacts; labor and SEA/SH; OHS/CHS; pollution and waste; stakeholder engagement; GRM; contract clauses; monitoring; incident response; and records. Standard templates will apply to DBO, O&M, ESCO/RESCO and consulting assignments.	DDWS/SPSU, UJN and UJS	Before award of first Program civil works or performance-based contract; maintain throughout.	Approved procedure and templates; legal register; screening register; sample DPRs/bids/contracts; training records; quality-review records.
2	Establish and maintain qualified E&S capacity. The SPSU will include senior environmental and social specialists with authority for quality assurance and incident escalation. UJN/UJS will designate nodal officers and field capacity proportionate to workload also at Division level. Annual work plans will include training, travel, monitoring, audits and E&S measures.	DDWS/SPSU, UJN and UJS	Within three months of Program effectiveness and throughout.	Approved staffing plan and TORs; personnel in position; annual work plan and budget; quarterly staffing and field-monitoring report.
3	Operationalize an integrated stakeholder engagement and grievance system covering Program, scheme, service-provider and worker grievances, with accessible local and digital channels, confidential SEA/SH referral, escalation, service standards and disaggregated analytics.	DDWS/SPSU, UJN, UJS, ULBs/GPs and operators	System design within six months of effectiveness; operational before field works in each scheme.	Approved protocol; functioning channels; public information; case dashboard; worker GRM; referral agreements; periodic analysis and management decisions.
4	Commission annual independent E&S performance audits. Audits will verify exclusion screening, land readiness, source/hazard due diligence, permits, contract compliance, OHS/CHS, labor, inclusion, grievances, incidents, and closure of corrective actions.	DDWS/SPSU	First audit within twelve months of effectiveness; annually thereafter.	Audit report; management-approved corrective-action plan; disclosed executive summary; evidence of closure and repeat-finding analysis.

4.4 Actions to be embedded in the POM and contracts

Control area	Mandatory POM / contract provision
Screening and exclusion	Signed screening before inclusion, procurement and disbursement; geospatial and field verification as relevant; re-screening for design changes.
Risk instruments	Proportionate scheme ESMP or codes of practice; land and livelihood plan where needed; source sustainability and climate/hazard plan; stakeholder plan.
Costing	Separate and measurable E&S line items or performance obligations; no transfer of compliance cost to workers or affected persons.
Contractor/operator capacity	Named E&S and safety personnel; competence requirements; method statements; training; subcontractor controls; monthly reporting.
OHS/CHS	Hierarchy of controls; permit-to-work for high-risk tasks; PPE; trench/confined-space/electrical/chemical safety; traffic control; emergency drills; stop-work authority.
Labor and SEA/SH	Terms and conditions; wage and age records; prohibition of forced/child labor; codes of conduct; worker GRM; confidential referral and sanctions.
Land readiness	Proof of ownership/rights; encumbrance and use checks; census where applicable; compensation/assistance completed; written site handover.
Community interface	Advance notices; access maintenance; school/health/religious-site protection; restoration standards; complaint contact displayed.
Incident management	Immediate notification of fatalities and serious incidents; root-cause analysis; corrective action; lessons shared across contracts.
Payment and sanctions	Payment linked to verified E&S obligations; corrective notices, withholding, stop-work, replacement of personnel and termination remedies.
Records and audit	Site records, permits, monitoring, grievances, worker data, incidents and corrective actions retained in the Program MIS and available for audit.

4.5 Monitoring indicators

Indicator	Frequency	Disaggregation / quality note
% of proposed schemes screened against E and S and exclusion list before procurement	Quarterly	By IA, contract type and geographic area; denominator must include all proposed schemes.
% of active schemes with current E&S instruments and permits	Quarterly	Report expired/missing approvals separately; instrument existence does not equal implementation.
% of sites with verified land readiness before handover	Quarterly	Distinguish government land, acquisition, negotiated purchase, voluntary arrangement and right of way.
Serious incidents, fatalities and lost-time injuries	Immediate and monthly	Include workers and community members; report severity and corrective-action closure, not only counts.
% of corrective actions closed by due date	Monthly/quarterly	By risk category and responsible entity; repeat findings tracked.
GRM receipt, resolution time, aging and satisfaction	Quarterly	By sex, location, vulnerability and complaint type where safe; separate confidential cases.
Water quality non-compliance and response	As per monitoring protocol	By source, treatment and consumer point; track notification and corrective action.
Households/beneficiaries meeting service standards	Semi-annual	Disaggregate by sex where meaningful, vulnerable-group and remote-area categories; verify distributional outcomes.
E&S training and competency	Semi-annual	Track role-based competence and field application, not attendance alone.
Independent audit findings	Annual	Number and severity of findings; recurrence; closure verified independently.

Annex A. Program Exclusion List

Program funds shall not support an activity that meets any of the following criteria. The exclusion decision must be documented before procurement or commitment and revisited if scope or location changes.

- Activities likely to cause significant, diverse, irreversible or unprecedented adverse environmental or social impacts, or activities that would be classified as high risk and cannot be reduced to a level suitable for PforR support.
- Significant conversion or degradation of critical natural habitats, legally protected areas, or critical cultural heritage.
- Large-scale land acquisition, physical displacement or economic displacement; forced eviction; or land possession before required compensation and assistance.
- Use of land where title, encumbrance, informal occupation, common use or access issues remain unresolved.
- Activities affecting Scheduled Tribes or other vulnerable communities where culturally appropriate consultation and measures to ensure equitable benefits cannot be demonstrated.
- Dams or water-retaining structures with safety implications beyond the capacity of the Program system, and activities dependent on unsafe dams, unless assessed and managed under applicable Bank requirements.
- Water abstraction likely to cause significant depletion, ecological harm or unresolved conflict among users, or where source sustainability cannot be demonstrated.
- Works in locations with unacceptable landslide, flood, erosion or other disaster risk that cannot be reduced through feasible design and operational measures.
- Use, production, storage or disposal of banned hazardous substances, unbounded asbestos fibers, internationally banned pesticides/chemicals, or activities involving child labor or forced labor.
- Activities that would cause significant water, soil or air contamination or expose workers/communities to unacceptable health and safety risk.
- Procurement or operation that lacks required statutory permits or for which material permit conditions cannot be met.
- Any activity prohibited by applicable law or inconsistent with the legally defined Program boundary.

Annex B. Scheme E&S Screening and Readiness Checklist

Screening question	Yes/No/NA	Evidence / action required
Is the scheme/activity within the approved PforR geographic, sector and expenditure boundary?		PAD/POM reference and financing code.
Does any exclusion criterion apply?		If yes, exclude and record decision.
Are location coordinates, footprint, access and ancillary sites known?		Map and site photographs.
Are forest, protected area, habitat, river/spring, cultural heritage or eco-sensitive receptors present nearby?		Sensitivity screening and permit/avoidance action.
Is source capacity demonstrated across relevant seasons and considering competing uses and climate risk?		Source assessment and monitoring plan.
Is the site exposed to landslide, flood, erosion, seismic or other hazard?		Hazard assessment and resilience design.
Will land, right of way, access, crops, trees, structures or livelihoods be affected?		Land records, field verification, census/consultation and action plan.
Are non-titleholders, tenants, users of common land or informal activities present?		Avoidance and assistance measures; no forced eviction.
Will works create trench, traffic, confined-space, electrical, chemical or work-at-height risks?		OHS/CHS plan and competent personnel.
Are waste, spoil and disposal/reuse routes and authorized sites identified?		Waste/spoil plan and approvals.
Could vulnerable groups face exclusion, affordability or accessibility barriers?		Inclusion and stakeholder measures.
Are required consultations completed and documented?		Minutes, attendance categories, issues and design response.
Are permits/consents identified and obtained as required before the relevant activity?		Permit register.

Screening question	Yes/No/NA	Evidence / action required
Are E&S measures costed and included in procurement documents?		BoQ/performance clauses and bid requirements.
Is a scheme-level GRM contact and escalation pathway operational?		Public notice and GRM test.
Has the responsible E&S specialist issued a readiness recommendation?		Signed review and approval.

Annex C. Indicative Environmental and Social Code of Practice

C.1 Site establishment and community interface

- Confirm approved site footprint and access route against the scheme-specific Environmental Screening Record before any mobilization; deviations require E and S Specialist written approval.
- Map and physically demarcate all sensitive receptors within 100 m of the work zone — including schools, health facilities, temples, naulas, dharas, and van panchayat forest boundaries before earthworks begin; no works within the demarcated buffer without E and S Specialist sign-off.
- Erect multilingual notice boards (Hindi and local dialect where applicable) at site entry displaying contractor name, UJN/UJS E and S Specialist contact, project GRM number, and emergency response contacts for the nearest government hospital, fire station, and USDMA district office.
- Conduct a structured community pre-construction meeting at the gram panchayat level at least seven days before site mobilization; record attendance, concerns raised, and commitments made; file with the SPSU within five working days.
- Maintain safe, unobstructed pedestrian and vehicle access always, including during trench excavation across roads and paths; provide steel road plates or temporary bridging; issue advance notice of supply shutdowns not less than 48 hours before interruption, through gram panchayat notification chains and, where connectivity exists, SMS alert.
- Fence, barricade, and illuminate all open excavations, stockpiles, and equipment storage areas at dusk; use reflective markers on mountain road sections where works are adjacent to traffic.
- Establish and operate a site-level Grievance Register from Day 1 of mobilization; log, acknowledge, and resolve complaints within the timelines set in the project GRM; report unresolved complaints to the SPSU monthly.

C.2 Erosion, slope and spoil management

- Conduct a slope stability assessment for all excavations on gradients steeper than 25 degrees before earthworks begin; obtain a geotechnical clearance for sites in landslide-prone zones identified on the USDMA hazard map or the program's GIS Environmental Sensitivity Map.
- Strip and stockpile topsoil separately from subsoil in all areas where reinstatement is required; protect topsoil stockpiles with jute netting or temporary vegetative cover; prohibit use of topsoil as fill material.
- Minimize the length of open trench at any one time; in hilly terrain, limit open excavation length to 50 m per active working face unless approved otherwise; backfill and compact in layers within 48 hours of pipe laying.
- Install cross-drain diversion channels, silt traps, and check dams at spoil stockpile bases before material is deposited; inspect after every significant rainfall event (greater than 30 mm in 24 hours).
- Transport all excavated spoil only to approved designated disposal or reuse sites; maintain a spoil movement log recording volumes, vehicle registration, driver, destination, and date; prohibit dumping on slopes, in drains, nallas, water bodies, agricultural land, forest areas, or van panchayat land.
- Cover all loaded spoil and aggregate vehicles with tarpaulin before leaving the site; remove tracked soil and debris from public roads at the end of each working day; assign a dedicated road-cleaning worker for active urban sections.
- Do not divert, bund, or alter the course of any seasonal or perennial stream without prior written E and S Specialist approval and, where required, UKPCB intimation; reinstate natural stream channels to original alignment and cross-section within 72 hours of pipe crossing completion.
- During monsoon season (June 15 to September 30), implement a daily slope stability inspection by a designated competent person before works commence; suspend slope excavation immediately upon issuance of a USDMA or IMD heavy rainfall or landslide warning for the district.

C.3 Pollution prevention and waste

- Maintain all construction equipment in sound mechanical condition; conduct and record pre-start daily checks; prohibit operation of equipment with visible oil leaks, damaged exhaust systems, or malfunctioning hydraulics.
- Store all fuel, lubricants, and chemical materials — including chlorine compounds, coagulants, and solvents — in banded, covered, impermeable secondary containment areas located at least 30 m from any watercourse, spring, nala, or drainage channel; label all containers with contents, hazard classification, and emergency contact.
- Maintain a minimum of two spill kits (absorbent material, neutralizing agent, personal protective equipment, and disposal bags) at every fuel and chemical storage point; designate and train at least two workers per shift as spill-first responders; report all spills exceeding 20 litres to the E and S Specialist within one hour and to UKPCB if reaching a watercourse.
- Segregate site waste into a minimum of five streams: general municipal waste, reusable and recyclable material, construction and demolition debris, hazardous waste (including empty chemical containers, used oil, and paint), and sanitary waste; maintain labelled, covered bins for each stream at a designated waste management area.
- Dispose of all waste streams only through authorized channels; retain disposal manifests, vehicle records, and receipts for hazardous waste for the duration of the contract plus two years; submit monthly waste disposal summary to the E and S Specialist.
- Control construction dust through regular water spraying on unpaved surfaces and stockpiles, particularly during dry season works in urban areas; comply with UKPCB ambient noise standards (45 dB(A) daytime, 35 dB(A) night in residential zones); avoid operation of heavy plant, jackhammers, or blasting within 150 m of residences, schools, or health facilities between 7:00 PM and 7:00 AM.
- Prohibit open burning of any waste material on or adjacent to the site at all times; prohibit burning of cleared vegetation; arrange green waste composting or authorized disposal.
- Properly manage and dispose of WTP backwash water and sludge in accordance with UKPCB CTO conditions; do not discharge untreated backwash directly into watercourses or onto unlined ground.

C.4 Worker and community safety

- Prepare a written task-specific risk assessment and method statement for every high-risk activity before commencement; high-risk activities include open trench works deeper than 1.2 m, confined space entry (sumps, chambers, reservoirs), work at height above 2 m, use of explosives or pneumatic tools near slopes, lifting operations, and electrical isolation and re-energization.
- Implement a permit-to-work system for confined space entry, live electrical work, hot work, and slope blasting; no high-risk task to begin without a signed, time-limited permit; retain permits on file.
- Conduct a documented site safety induction for every worker before first entry; repeat induction after any serious incident or after return from absence exceeding 14 days; conduct toolbox talks for the specific activity at the start of every working day.
- Provide task-appropriate PPE to all workers at no cost: minimum requirements include safety helmet (BIS IS 2925), safety boots (IS 1989), high-visibility vest, and gloves; provide full body harness for work at height, respirator and chemical-resistant gloves for WTP chemical handling, and gas monitor for confined space entry.
- Ensure potable drinking water, shaded rest areas, and adequate gender-segregated sanitation facilities are available at all active sites; do not permit workers to consume water from construction-impacted springs or supply lines.
- Apply trench support (shoring or benching) for all excavations deeper than 1.2 m or shallower if in unstable ground; inspect trench stability at the start of each shift and after rainfall; evacuate trench immediately if cracking, seepage, or slope movement is observed.
- Apply Monsoon Season Construction Restrictions from June 15 to September 30 in seismically active zones (Zones IV and V) and all sites in areas mapped as landslide-prone by USDMA: suspend slope excavation and open-cut rock works during active rainfall; implement daily slope condition inspections; maintain emergency evacuation routes clear and accessible from all active sites.
- Establish and maintain a site first-aid post with a trained first-aider per 25 workers; record the location and contact of the nearest government hospital with emergency services in the site emergency plan; for remote mountain sites, identify the nearest helicopter-accessible landing point and maintain emergency communication equipment.
- Report all incidents (injury, near-miss, environmental incident, community complaint escalation, and security incident) to the E and S Specialist within 24 hours using the program incident report form; investigate all lost-

time injuries and near-misses within 72 hours; submit investigation report and corrective action plan to the SPSU within seven days.

- Preserve stop-work authority for any worker, foreman, or E and S Specialist who identifies an imminent safety or environmental risk; no penalty or adverse consequence to any worker exercising stop-work authority in good faith.

C.5 Labor and SEA/SH

- Maintain written employment contracts for all workers in a language they understand; retain wage payment records, attendance registers, and age verification documents for all workers for the duration of the contract plus two years.
- Prohibit employment of any person below 18 years of age in any capacity on the program; conduct age verification using government-issued identity documents before engagement; immediately report any discovery of underage labor to the SPSU and take corrective action within 24 hours.
- Prohibit all forms of forced, bonded, or trafficked labor; prohibit deduction of wages as a disciplinary measure; ensure workers are free to leave employment with reasonable notice.
- Implement and enforce a written Code of Conduct signed by all workers, supervisors, and managers before site entry; the Code must explicitly prohibit sexual exploitation, abuse, and harassment, discrimination based on gender, caste, religion, or tribal identity, unauthorized entry into community areas, and alcohol and drug use on site.
- Establish a confidential, accessible, and gender-sensitive worker-level grievance mechanism; make the GRM accessible through multiple channels (physical register, telephone hotline, and, where possible, digital reporting); protect all complainants from retaliation; post GRM information in Hindi and local dialect at worker accommodation areas and site offices.
- Provide all workers — particularly women workers and daily-wage workers — with clear, confidential information on SEA/SH reporting channels before site mobilization; designate a trained focal point for SEA/SH complaints; do not investigate SEA/SH complaints through ordinary site mediation or disciplinary channels; refer survivors to government health, legal, and psychosocial support services.
- In areas with a significant Scheduled Tribe workforce, provide culturally appropriate induction materials and ensure engagement with community elders or Van Gujjar community representatives in worker welfare planning.

C.6 Restoration and closeout

- Prepare and agree a site-specific Restoration Plan before works commence; use the Restoration Plan as the acceptance baseline for closeout.
- Reinstate all roads, footpaths, agricultural access, irrigation channels, and community drains to pre-construction condition or better within 30 days of backfilling; obtain written acceptance from the gram panchayat or affected landowners.
- Remove all temporary structures, equipment, fuel and chemical storage, waste stockpiles, and construction materials from the site within 14 days of substantial works completion; leave the site in a clean, hazard-free condition.
- Stabilize all disturbed surfaces using appropriate bioengineering measures hydro-seeding, jute matting, brush layering, or dry-stone walling as appropriate to terrain before the onset of monsoon or within 30 days of earthworks completion, whichever is earlier; use native plant species for revegetation; prohibit use of invasive exotic species.
- Replace all trees felled during construction at the compensatory ratio required under the applicable Forest Department authorization; submit photographic evidence of plantation establishment to the E and S Specialist; maintain planted trees for a minimum of one monsoon season.
- Verify that all naulas, dharas, and community water points affected by construction are restored to full functional condition and acceptable water quality before closeout; obtain community sign-off.
- Confirm all site grievances are closed or formally escalated before submitting the E&S Completion Certificate; outstanding grievances must be documented with status and responsible party in the completion certificate.
- E and S Specialist to conduct a joint final site walkthrough with the contractor, gram panchayat representative, and (where applicable) van panchayat representative before issuing the E&S Completion Verification; no final payment to be released without the signed Completion Verification.

C.7 Water Source and Spring Protection During Construction

- Identify all active springs, naulas, dharas, baolis, and seasonal water points within 200 m of the work zone before earthworks begin; record their locations, yield (estimated by measurement where practicable), and community dependence in the pre-construction environmental record.
- Establish a minimum exclusion buffer of 50 m around any active spring or community water point; no excavation, blasting, fuel storage, or waste disposal within this buffer without E and S Specialist written approval and community notification.
- Monitor spring yield and water clarity at identified springs weekly during active earthworks; if visible yield reduction, turbidity increase, or discolouration is observed, immediately suspend proximate earthworks, notify the E and S Specialist, and arrange alternative water supply for dependent communities within 24 hours.
- Prohibit the use of groundwater from springs, boreholes, or surface sources within the program influence zone for construction purposes (concrete mixing, dust suppression, equipment washing) unless formally permitted through UKPCB or State Groundwater Authority.
- Where intake structures are under construction, maintain downstream residual flow at no less than the Minimum Environmental Flow defined in the scheme DPR; designate a flow monitoring point downstream of the construction zone and record weekly observations.
- Notify downstream communities at least 48 hours before any temporary stream diversion or flow restriction required for intake or pipeline construction; restore full natural flow within the approved timeframe; do not leave temporary diversion structures in place beyond 72 hours without E and S Specialist approval.

C.8 Biodiversity, Forest and Cultural Heritage Protection

- Mark all Reserved Forest, Protected Forest, van panchayat, and Eco-Sensitive Zone boundaries on the site layout plan before mobilization; demarcate physical boundary markers in the field; no equipment or personnel to cross forest boundaries without Forest Department authorization.
- Conduct a pre-construction vegetation survey for all sites intersecting or adjacent to forest land; identify and tag trees proposed for felling; obtain authorization under the applicable Forest Department order and State Forest Department permission before any tree felling; retain and submit tree-cutting permission records to the E and S Specialist.
- Prohibit workers from hunting, trapping, collecting, or disturbing wildlife, birds, or plant species within or adjacent to the work zone; post wildlife protection notices in Hindi at site entry; report any sighting of Schedule I wildlife species to the Range Forest Officer within 24 hours.
- Prohibit lighting of campfires, collection of firewood, or felling of trees for fuel or construction material from surrounding forests; provide LPG or alternative fuel cooking for worker accommodation camps in forested areas.
- Implement a Chance Find Protocol: if any previously unidentified cultural or heritage feature — including carved stone, ancient masonry, naula, deity platform, or burial site — is encountered during excavation, immediately suspend works in the affected area, mark and protect the find, notify the E and S Specialist and the State Cultural Department or ASI within 24 hours, and await formal guidance before resuming excavation within 10 m of the find.
- Conduct pre-construction cultural walkthroughs for schemes in historically settled Kumaon and Garhwal villages involving the gram panchayat head and, where applicable, the temple trust or van panchayat committee; document findings and incorporate avoidance or protection measures into the site plan.
- Apply ecologically sensitive construction windows: avoid mechanized earthworks and blasting within 500 m of a notified National Park, Wildlife Sanctuary, or Eco-Sensitive Zone during the primary bird breeding season (March 15 to June 15); obtain Wildlife Department concurrence for any works in this period within that proximity.

C.9 Water Quality During Construction and Commissioning

- Prevent all construction-related contamination of water intended for potable supply: seal all open pipe ends at end of each working day; prohibit use of solvent cement, primer, or lubricant in excess of the amount required

for jointing; remove all construction debris, rags, and foreign material from within pipes and chambers before pressure testing.

- Conduct hydrostatic pressure testing of all new or rehabilitated pipelines in accordance with IS 2712 or applicable BIS standard before connection to the distribution network; document test results and E and S Specialist sign-off.
- Flush and disinfect all new mains, service reservoirs, and distribution pipework in accordance with the Water Quality Commissioning Protocol before any water is supplied to consumers; collect end-point bacteriological samples at a minimum frequency of one sample per 500 m of main and one sample per service reservoir; achieve zero total coliform and zero E. coli in two consecutive samples before commissioning.
- Submit bacteriological and key chemical test results from an NABL-accredited laboratory to the E and S Specialist and UJN/UJS before any scheme or section thereof is declared operational; retain records in the scheme file.
- During the commissioning period and for the first three months of operation, test residual chlorine at distribution end-points daily; maintain residual chlorine within the range specified in IS 10500:2012 (0.2–0.5 mg/L at the consumer end).
- Issue public notification to affected communities at least 48 hours before any planned supply interruption for connection, commissioning, or network testing; notify gram panchayat, aanganwadi, and school authorities; provide temporary alternative water supply arrangement if interruption exceeds 24 hours.
- Establish a Water Quality Incident Response Protocol at the scheme level: define the trigger parameters, the responsible officer for each response level, the consumer notification chain, and the conditions for supply suspension; post the protocol at the WTP control room.

C.10 Occupational Health, Chemical Safety and Emergency Preparedness at WTPs

- Maintain a current inventory of all hazardous chemicals at WTP and pump house sites; store in accordance with the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989; display MSDS sheets in Hindi at each storage point.
- Restrict access to chlorine gas cylinders and sodium hypochlorite storage to trained and authorized operators only; maintain a cylinder access log; inspect connections and valves daily before first dosing; replace cylinders only with equipment in service and using full PPE.
- Install and maintain operational chlorine gas leak detectors in all chlorinator rooms; test detectors weekly; conduct a chlorine leak emergency drill at each WTP not less than once every six months.
- Maintain an emergency eyewash station and safety shower within 10 m of all chemical dosing and storage areas; inspect and test monthly.
- Prepare and maintain a Site Emergency Response Plan for each WTP and major pump station; the plan must include emergency contacts for UKPCB, nearest government hospital, fire service, and USDMA district office; review and reissue the plan annually and after any emergency incident.
- Train all WTP operators in chlorine handling, first aid for chemical exposure, and fire extinguisher use before deployment; maintain training records; repeat training annually.
- For sites in seismic Zones IV and V, anchor chemical storage racks and cylinder restraints to fixed structures using earthquake-resistant fixings; include a post-earthquake chemical storage inspection in the emergency checklist.

Annex D. Land Due Diligence and Impact Management Protocol

- Identify all permanent and temporary land requirements during feasibility and alternatives analysis.
- Prefer designs that avoid private land, physical displacement and livelihood impacts, but do not assume government land is free of users or claims.
- Verify title, classification, encumbrances, current use, customary/common use, tenancy and informal occupation through records and field verification.
- Document consultation separately with affected people, including women and vulnerable users.
- Where voluntary land arrangements are considered, establish that refusal is possible without loss of service or retaliation, obtain informed written consent, verify absence of significant livelihood impact, and provide an accessible grievance pathway.

- Where acquisition or impacts are unavoidable, complete compensation, resettlement and livelihood assistance before possession or impact, including measures for eligible non-titleholders and temporary impacts in accordance with the Program procedure.
- Maintain a land dossier and issue a signed readiness certificate before procurement/site handover.
- Audit a sample of land cases annually, including direct consultation with affected persons and verification of payment/assistance.

Annex E. Stakeholder Engagement and Consultation Reporting Template

Field	Verified entry to be completed
Date and location/mode	
Program/scheme and purpose	
Stakeholder categories invited	
Participants by category and sex, subject to privacy safeguards	
Representation of Scheduled Tribes, Scheduled Castes, low-income households, persons with disabilities, remote settlements and other vulnerable groups	
Information disclosed in advance	
Key issues and proposals raised	
Response by DDWS/UJN/UJS	
Changes made to Program design, POM, PAP or scheme	
Unresolved issues and responsible follow-up	
Evidence retained	Minutes, attendance record, photographs where consented, materials used and disclosure link/location.

Annex F. Indicative Terms of Reference for Annual Independent E&S Audit

- Assess compliance with the PforR exclusion list, PAP, POM, legal requirements, contract provisions and approved instruments.
- Use risk-based sampling across new DBO schemes, performance-based O&M, earlier peri-urban schemes, ESCO/RESCO activities and institutional/digital reforms.
- Verify field conditions, not only documents, and consult workers, affected people, vulnerable users and local governments.
- Review land readiness, compensation/assistance, source sustainability, climate/hazard design, permits, pollution control, OHS/CHS, labor, SEA/SH systems, inclusion, stakeholder engagement, GRM, incidents and water quality.
- Grade findings by severity, identify systemic/root causes, agree time-bound corrective actions and verify closure of previous findings.
- Provide a management report and a disclosure-ready executive summary that protects personal and confidential information.

Annex G. Evidence Register and Source Traceability

Source provided	Use in this ESSA	Known limitation
UeWSP PAD 25082026.docx	Authoritative basis for Program identity, PDO, boundary, Results Areas, beneficiaries, financing/expenditure, implementation arrangements and PAD risk rating.	Draft/appraisal document may still change; this ESSA should be reconciled with the final negotiated PAD.

Source provided	Use in this ESSA	Known limitation
Uttarakhand Efficient Water Supply Program_Draft ESSA_23032026.docx	Basis for prior-system description, preliminary risk identification, legal framework, institutional gaps, proposed structure and exclusion concepts.	Contains placeholders, blank PAP table and clearly transferred Dhaka text in environmental-risk sections; those passages were not used as Uttarakhand facts.
Environmental and social systems assessment (P158146).doc	Evidence on the earlier Uttarakhand peri-urban PforR system and lessons.	Earlier Program scope and institutional arrangements are not assumed to apply unchanged to UKeWSP.
P506770_Final ESSA_Post Negotiations_07Jan2026.docx	Structural and analytical benchmark for report organization, core-principle assessment, recommendations and annexes.	Bangladesh/Dhaka-specific facts, laws, institutions and risks were not transferred to Uttarakhand.
UeWSP_ES_Risks and Recommendations_Draft_23June2026.pptx	Supplementary articulation of Uttarakhand environmental, social and institutional risk themes and recommendations.	Some slides cite underlying material not included in the supplied package; unsupported exact claims were not repeated as verified findings.

Annex H. Items Requiring Completion Before Final Disclosure

Item	Required verified input	Owner
Consultation record	Dates, locations, participant categories, issues raised, responses and changes made.	Bank E&S team / DDWS
Participant annex	Verified attendance information with appropriate privacy controls.	DDWS/SPSU
Selected scheme universe	Final list/map of proposed new and improved schemes and associated facilities.	UJN/UJS/SPSU
Legal register	Current official text/amendment status and applicability of laws/rules at implementation.	SPSU legal/E&S team
Institutional staffing	Final organogram, positions, TORs, deployment and budget.	DDWS/UJN/UJS
PAP wording	Consistency with negotiated Program documents and legal agreements.	Bank task team / DDWS
Results and monitoring	Final indicators, baselines, verification arrangements and E&S data fields.	SPSU / independent verification entity
Final consistency review	Reconcile PDO, beneficiary, financing, dates and risk ratings with final PAD and POM.	Bank task team