



ENVIRONMENTAL AND MANAGEMENT PLAN (ESMP) FOR

GROUNDWATER DEVELOPMENT AND MANAGEMENT FOR NZUGUNI AQUIFER

PROPONENT: WAMI/RUVU BASIN WATER BOARD

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1.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Environmental and Social Management Plan (ESMP) sets the “environmental and social conditions” that will be abided by client in the course of implementing the project. It aims at ensuring effective implementation of the proposed mitigation measures. The objective of the ESMP is to set out clearly the key components of environmental and socio-economic management for the project and thereby ensure that the basic concepts are realized throughout the construction and installation, operation and closure (if any) phases of the Project. The basic concepts for consideration are:

- i. Negative impacts on physical, biological and socio-economic setting are mitigated;
- ii. Benefits that will arise from the development of the Project are enhanced;
- iii. Compliance with Tanzanian legislation and consistency with international guidelines and best practice is achieved;
- iv. Development programs are identified and implemented with the active involvement of the community and sustainable outcomes are achieved; and
- v. Good will and good relations with communities, civil society and governments at local and national levels are maintained.
- vi. The Project will endeavor to ensure that resources are available to implement the ESMP throughout all phases of project development and closure.

1.1 IMPLEMENTING AND REPORTING PROCEDURE

The overall implementation of the mitigation measures is the primary responsibility of the client/developer. Client/developer is responsible for making sure that the aspects of the ESMP that are to be implemented during operations are adhered and also need to ensure that the mitigation measures are implemented.

Other institutions involved in the implementation of the ESMP include developer, Contractor and communities at large with responsibilities as follows:

The developer and contractor are responsible for executing the mitigation measures during mobilization, construction, operations and the day-to-day monitoring that these measures are being implemented according to the approved ESMP.

1.2 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Monitoring is a long-term process, which helps to ensure that the proposed mitigation measures are effective in managing the impacts that have been identified. Its purpose is to establish benchmarks so that the nature and magnitude of anticipated environmental and social impacts can be continually assessed. Monitoring involves the continuous or periodic review of construction and maintenance activities to determine the effectiveness of recommended mitigation measures. Consequently, trends in environmental degradation or improvement can be established, and previously unforeseen impacts can be identified or pre-empted and averted.



Environmental and Social Management Plan (ESMP)				
Tanzania Base Grant Project				
Item	Mitigation, Management and Enhancement Measures	Means of Verification	Responsibility	Monitoring Procedure
A. General Requirements for ESHS Management				
<u>Responsibilities and Liabilities</u>	Ensure that all workers, suppliers and possible subcontractors are familiar and comply with the ESHS requirements and specifications of this ESMP.	Induction training performed and recorded. Contracts with subcontractors and suppliers	Hired contractor will implement the mitigations and Wami Ruvu Basin Water Board and Ministry of Water will monitor and verify compliances	Review of training records Review of Contracts to ensure that Project requirements are included
	Prepare Environmental and Social Monitoring Plan	Final Project-specific ESMP Baseline Indicators developed according to items to be monitored	Wami Ruvu Basin Water Board Water Board and Ministry of Water	Will be determined according to monitored parameters

	To develop environment, social and Health and Safety Plan	Monitoring reports	Ruvu Basin Water Board and Ministry of Water	Inspection and Measurement of parameters
<u>Resources allocated to ESHS Management</u>	Assign ESHS responsible expert from Wami Ruvu Basin Board/ Ministry of water who will be reporting the implementation of ES throughout the project implementation	Final Project-specific ESMP Inform the relevant authorities about the ESHS responsible.	Wami Ruvu Basin Water Board/Ministry of Water	Periodic ES implementation Reports
	Include ESHS management in the Bidding document for Contactor to include it in their budget	Contact management document	Wamiruvu Basin Water Board	Project implementation Reports
	Contractor to include ESHS experts	Contract management document	Contractor	ESHs implementation report
<u>Reporting</u>	Reporting of progress and incidents, accidents, observations, near misses.	Final Project-specific ESMP Reporting protocol for ESHS incidents	Wami Ruvu Basin Water Board	Review once prior to finalization of Project-specific ESMP

Code of Conduct	Establish a Code of Conduct taking into consideration legislation, safety rules, substance abuse, environmental sensitivity, communicable diseases, gender issues (sexual harassment), respect for local beliefs and customs, community interactions etc.	Code of Conduct in place and rules shared with personnel	Wami Ruvu Basin Water Board	Review of Code of Conduct induction records Review of reported punishable or misconduct behaviour Review of grievance records
<u>ESHS Training</u>	Provide H&S induction and training and awareness to the workforce regarding H&S risks and mitigation measures (including indirect workers) tailored to Project scope.	Training performed and recorded	Wami Ruvu Basin Water Board	Review of training records

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B. Protection of the Environment				
Protection of adjacent areas Selection of borrow areas, backfill material	Ensure that means of protection are in place to avoid or minimise adverse effects on vegetation, soils, groundwater and surface water, biodiversity, natural drainage and the water quality in areas within the works area. Drilling methods to minimize impacts to the extent possible.	No of impacts identified in the adjacent environment	Wami Ruvu Basin Water Board	Regular monitoring of adjacent natural resources.

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B. Protection of the Environment				
stockpile sites and access road	Ensure that work site boundaries and limits are in accordance with plans agreed upon in advance. All drilling activities should be carried out within boundaries.	Marking the borders of works site boundaries and usage of warning signs	Contractor/ Wami Ruvu Basin Water Board	Site inspection prior to commencement of activities.
	Ensure to stay out of surrounding wetland areas.	Pre-drilling survey to make sure that site is not in wetland areas	Contactora	During site selection
	Ensure to keep the following distances from permanent water course and outside of floodable areas; sensitive urban services and buildings (health centre, school,);	Marking the borders of works site boundaries in line with given limits and usage of warning signs	Contactora	Site inspection prior to commencement of activities.
	Minimize visual impacts	Visual inspection and comparison with adjacent undisturbed areas.	Contractor Wami Ruvu Basin Water Board	Review of grievance records

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B. Protection of the Environment				
	Ensure all works carried out minimise pollution risk (e.g. liquid effluents, air emissions, noise and vibration management, vehicle and equipment maintenance and selection, fuel, oil and chemical storage and handling) including the whole duration of the Project.	Ensure that potential pollutants are not stored and handled within 50m of sensitive receptors (particularly watercourses). Ensure that potential pollutants are safely stored i.e. stored above catch pan.	Contractor Wami Ruvu Basin Water Board	Regular site inspection Review of grievance records
	Ensure appropriate containment and storage of drilling wastewater, including sanitary water. No untreated effluent is discharged.	No untreated wastewater discharge	Contacto Wami Ruvu Basin Water Board	Regular site inspection Review of grievance records
	Use to the extent possible, vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters).	Technical Specification Sheet	Contacto Wami Ruvu Basin Water Board	Prior to commencement of works and each time new equipment/vehicle is used at the site. Review of grievance records Visual inspection on regular basis
Selection of borrow areas, backfill material stockpile	Use low Sulphur content fuels, in line with legal provisions in force as well as local availability.	Technical Specification Sheet	Contacto	Regular documentation inspection
	Ensure vehicles are switched off when not in use. Sensitize drivers.	Engines switched off when not in use	Contacto	Site inspection

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B. Protection of the Environment				
sites and access road Pollution prevention	Best practice to ensure minimisation of dust emissions (e.g. proper stockpiling, watering etc.) during dry and windy conditions and transportation.	Watering conducted, no of dust emissions observed, no of workers' grievances	Contractor	Regular site inspection Review of grievance records
Effluents	Ensure speed limits on site. Sensitize drivers.	Speed signs installed Training performed and recorded Accident/incident reports	Contractor	Random site inspection Review of accident/incident records Review of training records
Emissions and dust	Avoid operations and vehicle movements at night.	No of grievances received	Contractor	Random site inspection Review of accident/incident records Review of training records
Noise and Vibration	Locate stationary equipment (such as power generators) as far as possible from nearby receptors (e.g. worker resting areas, populated areas and environmentally sensitive areas). Make sure that noise levels don't exceed 120db in case of equipment or vehicle use.	Effective distances between equipment and receptors are kept Use of sound detector to ensure that noise level is kept below recommended level	Contractor	Once prior to commencement of works Review of grievance records

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B. Protection of the Environment				
Waste Management	Identify waste management facilities and waste management contractors. Ensure disposal through waste contractors licensed for treatment/removal/recycling of each of the waste types.	Waste management through licensed contractors, if feasible	Contractor	Inspect waste management facilities Review of waste transfer records
	Ensure that all wastes produced are properly collected, segregated, stored, transported and treated Comply with national regulations and good industrial international practices in waste management	Waste collection inventories Waste transfer notes	Contractor	Random site inspection Review of waste inventories Review of waste transfer records
	Minimize the waste production to the extent possible.	Records of waste production are kept Waste Management Plan Training performed and recorded	Contractor	Monitor (e.g. monthly) the amount of waste produced Review of training records
	Document all waste related operations (type of wastes, quantities produced etc.).	Storage, transport and treatment of waste is documented Waste transfer notes Waste inventories	Contractor	Review of waste transfer records Review of waste inventories

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B. Protection of the Environment				
	Appropriate and safe storage of fuels, drilling materials, wastes and any materials that can cause spills (e.g. batteries from energy generators).	Safe storage of materials Spill response procedure Spill response and remediation equipment in place.	Contractor	Random site inspection
Vegetation Clearing	Limit vegetation clearing to areas within the site boundary where it is strictly necessary.	Vegetation clearing minimal Marking the borders of works site boundaries	Contractor	Site inspection prior to commencement of activities.
	Describe the methods of vegetation clearance. Ensure that no chemicals/pesticides are used, burning of vegetation is restricted etc. Do not clear vegetation more than two months in advance of operations	No use of fires or chemicals on site Marking the borders of works site boundaries Usage of warning signs	Contractor	Site inspection prior to commencement of activities. Site inspection during site clearance

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B. Protection of the Environment				
	<p>Avoid clearing mature trees and endangered species.</p> <p>In areas where endangered species are known to exist, carry out adequate evaluation to ensure that no adverse impact to endangered species will be caused by the works. Plan adequate mitigation measures to ensure that the works will not negatively affect the endangered species.</p> <p>If endangered species are found unexpectedly during works, halt all works and provide ad-hoc assessment of the areas for endangered species and establish adequate mitigation measures.</p>	No of mature trees cleared	Contractor	Site inspection prior to commencement of activities.
Vegetation Clearing	Avoid to the extent possible areas of ecological value.	Areas of ecological value avoided	Contractor	Site assessment prior to site selection. Ecological value assessment if needed.
	Avoid natural habitats disturbance.	No of habitats disturbed	Contractor	Inspection of drilling practices.
	Ensure that rehabilitated areas don't pose health and safety risks (such as holes, ponds).	Reinstatement completed	Contractor	Inspection after drilling Inspection after heavy rainfalls and snow

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C. Health and Safety				
<u>Health and Safety Plan</u>	Develop a Health and Safety Procedures	H&S procedures	Contractor	Review of H&S Procedure
<u>Accident reporting</u>	Ensure all H&S related incidents (e.g. observations, accidents) on site are recorded and followed up properly.	Incident recording process in place	Contractor	Check incident/accident records
<u>Personal protective equipment</u>	Ensure the provision of Personal Protective Equipment (PPE) for workers (hardhats, masks, safety glasses, safety boots etc. depending on project type).	PPE used by everyone on-site Training performed and recorded	Contractor	Random site inspection Review training records
<u>Emergency scenarios prevention</u>	Ensure immediate cleaning of any spills and remediation of contaminated areas after drilling	Workers trained.	Contractor	Review of training records
	Provide necessary prevention equipment and teams on site in line with applicable regulations to respond to emergency scenarios e.g. fire, explosion, natural hazards etc.	Prevention equipment and team is in place Training performed and recorded	Contractor	Regular site inspection Review of training records
	Maintain high standard in housekeeping on site. Drilling materials and light equipment should be stored properly.	Visual verification of good housekeeping on-site	Contractor	Random site inspection

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C. Health and Safety				
First-aid	Ensure minimum first aid provisions on site (suitably stocked first-aid kits; a person, respectively an adequate number of first-aid helpers and ensure that staff and workers are informed about first-aid arrangements)	Suitable first aid kits on site Ensure the presence of first aid helpers in all shifts	Contractor	Regular monitoring of first aid kits
Hygiene, accommodation and food	Report any occurrence of any communicable diseases amongst the workforce (STD, HIV/AIDS, TB, malaria and Hepatitis B and C). Sensitise workers.	Training performed and recorded	Contractor	Review of training records

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D. Labour and relations with local communities				
<u>Labour conditions</u>	Ensure minimum legal labour standards as per ESS2 regulations (child/forced labour, sexual assault, no discrimination, equal opportunities, working hours, minimum wages) are met.	Grievance Mechanism Records, Training performed and recorded	Contractor	Review of Inspection reports (also from labour authorities), Review of grievance records Review of training records

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D. Labour and relations with local communities				
	Ensure that all direct and indirect workers have access to and are aware about the Grievance Mechanism where they can raise workplace relevant complaints anonymously.	Grievance Mechanism in place and grievances recorded Training performed and recorded	Wami Ruvu Water Board and Ministry of Water	Review of grievance register Review of training records
	Ensure all workers have the same rights and are treated equally.	Non-discrimination policy in place	Contractor	Random site inspection Review of grievance register
Local recruitment	Ensure local communities are preferred for the supply of goods and services to the Project and Project personnel, where appropriate.	Local Procurement and Employment Records	Wami Ruvu Basin Water Board	Review procurement and employment rules and records Review of grievance register
<u>Community interaction</u>	Engage/ communicate/inform communities. Ensure consultations with the local authorities and communities regarding the drilling. Obtain local knowledge regarding chance finds and land acquisition matters.	Minutes of Meetings Grievance Mechanism	Wami Ruvu Basin Water Board and Ministry of Water	Review of grievance register Minutes of consultation meetings

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D. Labour and relations with local communities				
	Initiate an efficient Grievance Mechanism to allow potentially affected individuals to raise their concerns. If there will be any grievances Ministry of Water and Wami Ruvu Basin Water Board (grantee) will fast track through the GRMC	Grievance Mechanism in place, grievances recorded	Wami Ruvu Basin Water Board and Ministry of Water	Review of grievance register
	Engage with the local community and potential affected households to understand their needs and identify the risk of damage to their livelihood basis through the Project (e.g. take of pasture land, lack of access to water).	Minutes of Meetings Grievance Mechanism records	Wami Ruvu Basin Water Board and Ministry of Water	Review of grievance register and meeting minutes
Damage to people and property	Ensure all contractors implement codes of conduct concerning employment and workforce behaviour (including but not limited to safety rules, zero tolerance for substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general).	Code of Conduct Grievance Mechanism records	Wami Ruvu Basin Water Board and Ministry of Water	Worker interviews, Review of grievance log

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D. Labour and relations with local communities				
	Ensure that site areas are provided with appropriate security, fencing, signage and lighting. Use hazard notices/signs/barriers to protect children and other vulnerable people from harm and prevent access to non-workers.	H&S planning of drilling site done, items installed	Wami Ruvu Basin Water Board and Ministry of Water	Inspection prior to the activities. Random site inspection Review of grievance register
Traffic management	Ensure safe driving by Project personnel (e.g. through training/induction).	Driver Training Records as part of Induction training	Contractor	Review of training records
	Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas.	Warning signs Minutes of Meetings	Contractor	Inspection of traffic routes, Review of grievance register