

THE UNITED REPUBLIC OF TANZANIA



MINISTRY OF WATER AND IRRIGATION

TERMS OF REFERENCE

FOR

**CONSULTANCY SERVICES FOR PREPARATION OF FEASIBILITY STUDY,
DETAILED DESIGN AND ENVIRONMENTAL AND SOCIAL ASSESSMENT FOR
KIDUNDA DAM**

NOVEMBER, 2008

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ACRONYMS

AfDB	African Development Bank
B/C	Cost Benefits Analysis
DAWASA	Dar es Salaam Water and Sewerage Authority
DAWASCO	Dar es salaam Water and Sewerage Corporation
DOE	Division of Environment
DWSSP	Dar es salaam Water Supply and Sewerage Authority
EIB	European Investment Bank
ESMPs	Environmental and Social Management Plans
EA	Environmental Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
FWSMP	Future Water Source Master Plan
GON	Government of Norway
GoT	Government of Tanzania
GPS	Global Positioning System
GTZ	Gesellschaft for Technische Zusammenarbeit
HVA	Height –Volume-Area
ICOLD	International Commission of Large Dams
IDA	International Development Agency
I I F	International Independent Facilitator
IPDP	Indigenous Peoples Development Plan
IRR	Internal Rate of Return
JICA	Japanese International Cooperation Agency
LRP	Livelihoods Restoration Plan
MOWI	Ministry of Water and Irrigation
MCM	Million Cubic Meters
NAPA	National Adaptation Plan of Action
NORAD	Norwegian Development Agency
NEMC	National Environmental Management Council

NPV	Net Present Value
OM	Operation and Maintenance
PMF	Probable Maximum Flood
PoE	Panel of Experts
QCBS	Quality Cost Based Selection
RAP	Resettlement Action Plan
SA	Social Assessment
SCP	Selous Conservation Program
TANAPA	Tanzania National Parks Authority
ToR	Terms of Reference
UTM	Universal Transverse Mercator
WRBWO	Wami Ruvu Basin Water Office
WB	World Bank

1 PROJECT BACKGROUND

Introduction

The Kidunda Dam on Ruvu River is proposed to regulate flow and improve reliability of the main water supply source of Dar es Salaam, the commercial city of Tanzania with a population of over 4 million people. The unregulated Ruvu River contributes over 90% of the city's total supply. According to the pre-feasibility level study of Kidunda dam by JICA (1994)¹, Norconsult (2007)² and (2008)³, the height of the dam is estimated at around 25 m and the total reservoir capacity is around 150 million m³. The preliminary EIA report was submitted in March 2008, and disclosed internally after stakeholders consultation workshop held in Morogoro on September 2007.

The Ministry of Water and Irrigation (MoWI) through DAWASA conducted a Future water sources Master Plan study under the Dar es salaam Water Supply and Sewerage Project (DWSSP), which included analysis of 26 options of surface and groundwater development to supply the future water needs for the city. This study integrated technical, economic, environmental and social criteria upfront in the analysis to identify and evaluate the most promising water source options. The two most promising and complementary options prioritized are: (a) the proposed Kidunda Dam for regulating the flow of Ruvu River and improving the reliability of the city's main water supply source located north of the city and (b) the phased exploitation (along with assessment and monitoring) of the newly found Kimbiji aquifer located south of the city to meet most of the city's future water supply needs.

The Government strategy is to optimize the use of both its surface and groundwater systems and minimize the risks. On the groundwater side, the DWSSP has funded test drilling of 3 deep boreholes in the Kimbiji aquifer with promising results, and follow up work to be supported with a grant from the Government of Norway (GON) is going to be used to further assess, initiate pilot development and monitor the Kimbiji aquifer response to better understand the new aquifer system.

On the Ruvu River, as a preliminary mitigation measure for the proposed dam, the Government through a multi-sector stakeholder oversight committee, has recommended a smaller dam with the primary objective of drinking water supply to the city instead of the originally planned larger multipurpose dam (under the 1994¹ JICA supported reconnaissance study) and has also moved the proposed dam site 12 km downstream to reduce the potential inundated area and to minimize upstream environmental and social impacts.

This project is at pre-feasibility stage and needs to be upgraded into feasibility study stage. The Feasibility study will address various technical investigations including topographic surveys and mapping, geotechnical investigations, hydrological and yield analysis, dam design etc. The final dam site and dimensions will be determined based on the study results including proper topographical survey, geotechnical investigations, hydrological analysis and

other tasks, including an updated environmental and social assessment. It should also continue and enhance its efforts for organizing stakeholder consultation meetings to collect inputs and present the results of the Draft and Draft final EA, SA and ESMP's.

In particular, the EA, SA and ESMPs will look into the two potential risks:

- (i) Inundation of small part of the Selous Game reserve by the reservoir, of which the new mapping and selection of dam axis will take into consideration and also the JUKUMU wildlife management area and Mkulazi Forest Reserve and
- (ii) Resettlement of JUKUMU wildlife management village communities upstream of the dam as well as other impacts, including a review of the downstream environmental flow requirement estimated.

Although the inundated area of Selous Game reserve is estimated at around 4-5 km² out of the total area of around 55,000 km² according to the current survey, it should be noted that this is a designated UNESCO World Heritage Site with high biodiversity.

In order to implement the project the preliminary study reports need to be expanded and updated to full EA, SA and ESMPs based on the final topography, design parameters as well as the updated environmental and social assessment to meet all requirements of the Bank safeguard policies and Government of Tanzania's requirements.

1.2 CURRENT INITIATIVES

1.2.1 Comprehensive Assessment of Kimbiji aquifer.

The Royal Norwegian Government through NORAD will fund further assessment of this aquifer to assist in future planning and monitoring. Project document and draft of ToRs for consultancy services have been submitted to the Royal Norwegian Embassy for grant agreement. This study will be implemented under the Water Sector Development Program arrangement.

1.2.2 The Kidunda Dam Project.

The current dam site is proposed to be located 12 km downstream of the Ruvu River from the original multipurpose dam site in order to reduce the potential environmental impacts on the upstream area. The proposed live storage volume of 140 million m³ has been significantly reduced to around 7% of the average annual runoff volume of the Ruvu River.

The dam is proposed to augment low flows in the river system during critical periods, to allow uninterrupted supply to the two water treatment works supplying the city. This dam will store water up to 90 m elevation above sea level, with inundation estimated to be around 27 to 60 km². The actual dimensions will be determined by this study, after proper maps have been developed. This modification has been introduced through the preparation process of the aforementioned Dar es Salaam Water Source Master Plan (FWSMP)

Project Area

The proposed Kidunda Dam will be located at Kidunda village approximately E37413500 and N9196000 downstream of Mgeta and Ruvu rivers confluence in Morogoro South province. The reservoir is expected to partially affect the Selous Game Reserve Area and various communities. The dam reservoir area is provisionally estimated between 27 to 60 square kilometers.

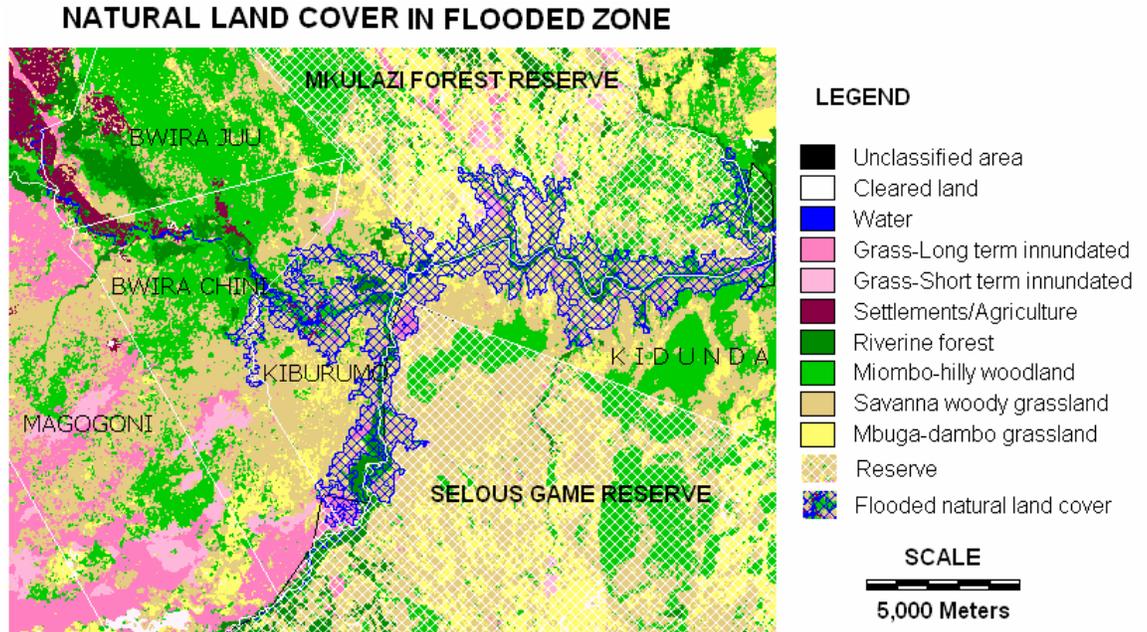
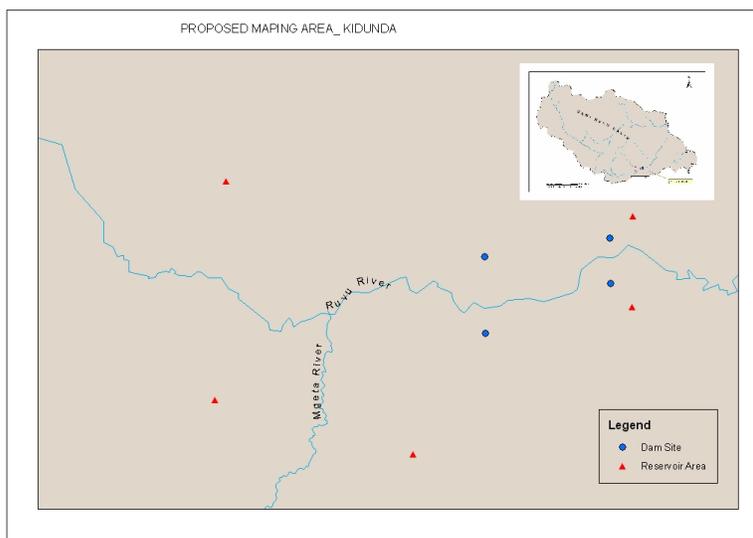


Figure. 1 Location map of natural land cover

Figure2: Proposed Mapping Area



Footnote:

The Blue points indicate the proposed Dam area which is within the reservoir area and its coordinates are indicated in section 3.1.3.

The Red points indicate the proposed Reservoir area inclusive a 500m buffer zone and its coordinates are indicated in section 3.1.2

2 OBJECTIVES OF THE ASSIGNMENT

Overall Objective

The overall objective of the consultancy is to upgrade the existing pre-feasibility study of the Kidunda Dam to a feasibility level, prepare detailed design and tender documents, upgrade and finalize the EA, SA, ESMPs and construction plans to meet GoT and World Bank requirements for a category A projects through QCBS procurement procedures.

The consultancy will also upgrade and finalize the Environmental Assessment, Social Assessment, and ESMP reports based on the supplementary baseline survey.

The assignment is expected to be implemented in 3 Phases with the following sequence;

- **Phase 1:** Review of reports and recommend water demand based on Integrated Water Resources Management and hydrological analysis. Conduct Aerial and Topographic Mapping for the Project Area including reservoir site, dam sections and associated works (camping site, access road, borrow sites, communication and community resettlement locations). Recommend the dam axis based on topographic and aerial surveys. Conduct geological and geotechnical investigations for the dam site, dam sections and associated works, borrow sites/quarries or other required survey and assessments. Present the results to MoWI with attention to (POE) for recommendation and decision. The consultancy will also be required to prepare ToRs for Social and Environmental Impact survey indicators. These should consider but not limited to the following;
 - Dam's social, economic and environmental impacts
 - Social economic survey baseline data showing indicators
 - Livelihood/income restoration
- **Phase 2:** Based on results in Phase1 the consultant will conduct feasibility study considering the issues raised by the environmental and social analysis of alternatives, as part of the selection of the final dam design. The consultant will also complete the SA and undertake substantial consultations with relevant stakeholders. The consultant will also prepare Financial and Economic Analysis Report.
- **Phase 3:** Once the client makes a final decision on the optimal dam design, the consultant will:-
 - i) Prepare the final detailed design, construction drawings and tender documents including engineering cost estimates of all contract packages including dam, and associated works.
 - ii) Finalize the EA based on this final choice of dam design and prepare the corresponding ESMPs which are, the Environment Management Plans, Resettlement Action Plans (RAPs), Livelihood Restoration Plan (LRP),

and Indigenous Peoples Development Plan (IPDP) and complete the consultations and disclosure process. The consultant shall also prepare monitoring and evaluation plan.

- iii) The consultant will also prepare the Dam Safety Plans/Report. The requirements and contents of the plans are described in subsequent sections of these ToRs.
- iv) Prepare Project Implementation Plan (PIP): The consultant shall prepare project implementation plan, risks and mitigation measures
- v) Prepare ToRs for the works supervision for the various works packages.

The consultant will carry out the consultancy under the GoT and Financiers. The GoT will appoint the International and Local Panel of Experts (POE) and recruit an International Independent Facilitator (IIF) to provide quality control. The POE and IIF will report to the GoT.

2.2 Specific objectives

The consultancy will have the following specific objectives

- To review various reports including but not limited to Future Water Sources, preliminary EIA, design and tender document and JICA studies on hydrology, water demands, environmental flow, social and economic, Selous Game Reserve and aquatic system of the Ruvu River
- To prepare Aerial and Topographic Maps for the Kidunda Dam site and overall project area,
- To conduct geological and geotechnical studies
- To conduct EA and SA survey/ assessments
- To finalize feasibility study
- To upgrade and finalize the Environmental Assessment, Social Assessment, Resettlement Action Plan and ESMPs, Livelihood Restoration Plan and Indigenous People Restoration Plan
- Valuation Report of Project Affected Persons/institutions (PAP)
- To prepare Dam Safety Plans/Report
- To prepare Detailed Design, Construction Plan and Tender Documents
- To prepare ToRs for construction supervision.

The EA and ESMPs must comply with the GoT's environmental and social requirements (EMA 2004) and the World Banks safeguard/policies stated below.

Triggered World Bank Safeguards Policies

➤ *Environmental Assessment – OP4.01*

EA classification is “A” as impacts are widespread, intensive, long term with potentially irreversible in some cases. Actions required for compliance with this policy are to be addressed in the EA and Environmental Management Plans

➤ *Natural Habitats – OP4.04*

Large project such as this one has major impacts on natural habitats, such as conservation/protected areas, national zoological parks and potentially impact mangroves and other estuarine ecosystems with potential loss of ecological functions. This policy prohibits impacts that cause significant conversion or degradation of critical natural habitats. Actions required for compliance with this policy are to be addressed in the EA and Environmental Management Plans.

➤ *Forests OP4.36*

The reservoir area will impact the health and quality of some forest areas. Actions required for compliance with this policy are to be addressed in the EA and Environmental Management Plans otherwise actions can be addressed in stand-alone Forest Management Plans, however, EA must still identify and analyze this impact

➤ *Physical Cultural Resources – OP4.11*

This project will involve the significant excavation, movement of earth and flooding, therefore, very likely that features and/or landscape subject to this policy will be affected. Actions required for compliance with this policy are to be addressed in the EA and Environmental Management Plans.

With regards Social Safeguards;

• *Involuntary Resettlement – OP4.12*

Loss of land and access to land will result from land acquisition and land use needs of the project, resulting in physical displacement. Similarly, loss of income and livelihoods will result too. This policy covers the required actions to be addressed in the Resettlement Action Plans (RAPs) and Livelihood Restoration Plan (LRP).

• *Indigenous Peoples – OP4.10.*

Ancestral burial grounds and sites have been identified and noted by the client. The Social Assessment is expected to reveal if there exist any indigenous people within the project area and if this policy is triggered. If present, then the required actions are to be addressed in the IPDP framework.

The World Banks other safeguards Policies listed below are not triggered;

- Pest Management OP4.09
- Projects on International waterways OP7.50
- Projects in Disputed Areas OP7.60

Safety of Dams OP4.37 is triggered and is discussed in 3.6 below.

3 DETAILED SCOPE OF WORKS

3.1 REVIEW THE REPORTS

Review relevant reports regarding future water demands for Dar es Salaam, existing water rights, Selous conservation program especially animal distribution, migratory routes and access roads, environmental flows estimation, social impacts and community in the projects etc.

3.2 WATER DEMAND ASSESSMENT

The consultant shall review water demands for Dar es Salaam based on the existing reports, assess other water demands including irrigation water, environmental flow, and other uses for the downstream of the dam through rapid assessments.

3.3 MAPPING OF THE PROJECT AREA

The consultant shall conduct topographic and aerial mapping of the project area with suitable scales as indicated below. The main tasks shall include but not limited to the following;

3.3.1 Establishment of control points

The consultant shall review the previous reports and liaise with relevant Authorities to locate National grid points or secondary permanent and reliable established points to act as a start point. Using GPS and photo control points the consultant shall use triangulation method to establish permanent control network within the project area for further referencing of future surveys. The WGS-84 coordinates must be transformed to the national grid system and control points map produced at 1:1000 scales. At least three permanent control points must be referenced to Mean Sea Level.

3.3.2 Topographic Mapping of Upstream Area (Reservoir Area)

This area includes; A Reservoir area of provisional capacity of not less than 150 MCM storage volume, expected sediments delta and a 500 m buffer zone. This area provisionally lies between these points by UTM system:

Reservoir – Points

X	Y
395433.16	9190220.74
395961.43	9201004.45
405113.83	9187624.38
416012.93	9199293.3
415989.96	9194791.47

The topographical control points will be 500 m intervals and should be visible from adjacent points. Grid system of 100 m intervals will be used depending on the terrain. Map scale of 1:10000 and contour interval of 2 meters.

3.3.3 Topographic Dam Site Mapping

The consultant shall survey and prepare a Dam site map with a grid system of 50 metres interval at scale of 1:1000 and contour interval of 0.5 metres. The proposed area lies between these points:

DAM-POINTS	
X	Y
408754.88	9193493.75
408720.43	9197272.07
414898.96	9198190.81
414944.89	9195939.9

3.3.4 Topographic Mapping of the Potential Construction Areas

Topographical Maps shall be prepared of potential access roads, site camp, and permanent housing area and construction facilities with a scale of 1:2000 contour interval of 1 meter. The proposed camp site is around the following point

X	Y
416012.93	9199293.3

3.3.5 Topographical Mapping of Downstream Area

This is a river corridor immediately downstream of the dam axis, covering at least 3 km. The Consultant shall survey and prepare downstream map with a grid of 100 metres intervals at 1: 10000 scale and contour intervals of 2 meter plus river cross sections at these points:

X	Y
414170.95	9197254.17
415290.64	9197277.25
415683.11	9197842.87
416029.41	9197796.70

3.3.6 Digital Aerial Photography

The consultant shall map the entire Project Area including upstream and downstream, potential communities, infrastructures and land use to be impacted by the project. The proposed area is estimated to cover 80 square kilometers.

The aerial digital photography in full color of the project area will be used to produce geo referenced orthophoto mosaics maps of 1:5000 scales. The aerial photograph will have to cover the area enclosed in the following coordinates shown below.

X	Y
395000	9190000
395000	9205000
420000	9205000
420000	9190000

The following specifications are expected in this kind of activity

- Ground resolution: Pixel size (0.15-2m)
- Digital terrain model with a 15 cm pixel with 15 cm spot height.
- Spectral resolution: Visible channels red, green, or blue
- For accurate determination of dwellings, affected properties /infrastructure from a resolution of 2 meters is preferred.
- Geometrical accuracy: 2-5 m with control points.
- Coordinate system: UTM (WGS 84)
- Format: Geo coded TIFF

Using mapping results, the consultant shall determine suitable dam site at a suitable scale to determine dam body volume, H-V-A curve, define relationship between reservoir volume and inundation area along with reservoir depth (water elevation).

- Determine location of associated infrastructures including spillway, access road, telecommunication, electricity and borrow pits location for dam construction materials,
- Determine communities' settlement areas
- Prepare a draft feasibility report

3.4 Feasibility Study:

Based on the results of the items 3.3.1 to 3.3.6 above and after consultation with POE and a decision reached by MoWI the consultant shall carry out the following:-

3.4.1 Geological, Geotechnical and seismological Investigation

The consultant shall conduct geological/geotechnical investigation. This could be sub-contracted to a specialized firm(s) under the consultant's supervision. This will cover the following items but not limited to:-

- Assessment of the geological condition of the dam foundation, abutment, the proposed reservoir area and dam axis.
- Conduct a series of geological investigations/tests, such as seismic refractions, bore-holing/logging, trial pits, in-situ and laboratory tests for measuring

soil/rock type classification, shear stress, permeability, grouting procedures, etc.

- Locate borrow pit and quarry areas and investigate the suitability and volume of dam construction materials (aggregates for concrete mixes, embankment /filter/fill materials, etc.)
- Conduct seismology assessment of the dam site and surrounding areas for determining seismic loads for dam design
- Drill at least 100m deep bore holes with 200 m spacing downstream of the proposed dam axis to identify if there are any liquefiable materials, conduct borehole logging and prepare lithological profile.

All geological and geotechnical tests should be in compliance with FIDIC and ICOLD

3.4.2 Supplemental Hydrological Assessment

The consultant will carry out supplemental hydrological assessment in the following areas:

- Assess historical records of rainfall and runoff flow regime of the Wami/Ruvu River including records of the newly installed gauging and weather stations to check the present and future water availability and prepare a rainfall-runoff model.
- Propose and conduct supplementary hydrological monitoring (rainfall, flow volume, sediment loads, etc.)
- Conduct flood analysis including frequency analysis and calculation of PMF (Probable Maximum Flood) to determine the dam design flood and spillway capacity.
- Review sediment load, determine dead storage volume and propose scour and flushing arrangements if required.
- Assess possible impacts of climate change on the hydrological characteristics using some scenarios (without climate change, low climate change and high climate change) drawing from existing literature and a critical review of the key NAPA recommendations related to 10% reduction in the annual Ruvu River Flows.
- Determine the required reservoir capacity and rule curve corresponding to the required safety level against drought based on known climate variability and emerging concerns over long term Climatic Change.

As stated in Section 2.1 above, a detailed and comprehensive Social Assessment of the entire project area is to be completed during the feasibility study and design and to undertake substantial consultations with the relevant stakeholders.

A socio-economic and livelihood/income baseline survey will be carried out to determine the number of people affected, their socio-economic condition (household

incomes and assets including community facilities) impacted. This will result in the production of a final Social Assessment Report, which will include RAP, LRP, and Stakeholder Consultation and Communications Action Plan.

The environmental and social planning process will be fully integrated into the technical feasibility study options by;

- (i) Identifying and analyzing the potential environmental and social impacts (direct, indirect, induced and cumulative) of the considered options using an Integrated Water Resources Management approach,
- (ii) Identifying and quantifying the costs of the corresponding mitigation measures necessary to avoid, reverse or otherwise acceptably manage these impacts and
- (iii) Incorporating these costs into the economic and financial analysis so as to inform the decision making process to agree on a final dam design option. This section would constitute the Analysis of Alternatives portion of the environmental assessment process, but is to be fully described and included in the feasibility study report. This section would then be summarized in the final EA report, as the final EA report would focus on the selected dam design.

3.4.3 Economic and financial analysis

The consultant shall conduct the economic and financial analysis covering the following aspects:

- Conduct cost benefit analysis of the final scheme in the economic and financial terms. Presented indicators will include NPV (Net Present Value), B/C (benefit cost analysis), and economic/financial IRR (Internal Rate of Return).
- While cost estimates are tabulated with unit costs and estimated quantities for project components as well as physical and financial contingencies, benefits should cover direct ones from drinking water and other water supply. Non quantifiable benefits are explained separately.
- Prepare project cost budget tables on an annual basis using Costab software covering local and foreign components. The duration of the analysis should cover the construction phase and operational phase.
- The costs of the environmental management/mitigation measures and resettlement costs should be included as a cost to the project. The cost of additional adaptation measures to Climate Change (altered dam design and operations and other measures) should be defined. The cost of the construction management shall also be included in the estimate as separate items. Appropriate contingencies will be applied to take account of factors which can not be adequately defined at the feasibility phase.

3.5

COMPARE AND SELECT OF DAM SITES AND TYPE

The consultant will compare at least three options and recommend the best one based on the above studies for detailed design and cost. The option will be prepared considering suitable dam type, site, size and other conditions. The consultant will prepare a table comparing the options in terms of dimensional parameters (dam height, reservoir area and volume), preliminary cost estimates (investment and operation), and the environmental and social impacts (resettlement area and number of population to be relocated).

The consultant shall brief the results of conducted studies/investigations/tests as well the selected dam site, size and type with the client and Panel of Experts to seek their guidance and endorsement.

3.6

UNDERTAKE DETAILED QUALITATIVE AND QUANTITATIVE ENVIRONMENTAL AND, SOCIAL ASSESSMENT AND UPDATE CURRENT EA REPORT, FINALIZE SA REPORT AND PREPARE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPS) TOGETHER WITH AN INDICATIVE BUDGET

The consultant shall undertake detailed qualitative and quantitative update of and finalization of the Environmental Assessment, and Social Assessment as follows:

3.6.1 The Environmental Assessment

After completion of the analysis of alternatives and on selection of the final dam design, the consultant shall complete and finalize EA based on the final choice of dam design.

- i) Fully describe and illustrate using schematic engineering layouts the entire project design on relevant and well referenced maps ensuring all dam structures are clearly illustrated in their correct location, including identified areas for temporary construction sites/use, access roads and power lines. Then present a corresponding description of all the parts of the project infrastructure making references to the maps, include the relevant features and parameters of the various components of the dam infrastructure such as the reservoir, the dam, the spillway, outlet for riparian release, the outlet structure, and all other components of the project.
- ii) Show the entire project area and project impacted areas, including the reservoir inundated area, is expected to be significantly large and spread over a vast area. Ensure full capture of the environmental issues, with the entire project area divided into project impact zones. The project area is expected to be divided into the following zones, but the consultant is free to use their own discretion;
 - o Upper Upstream Area – Catchment Areas
 - o Lower Upstream Area – i.e. Reservoir Area

- Dam Site
- Upper Downstream Area – (i.e. the river corridor immediately downstream of the dam)
- Lower Downstream Area – (the estuary/mangroves swamps area, impacts on the structures downstream)

iii) Update and complete Flora and Fauna surveys and all other relevant data and present the entire biophysical data using detailed and clearly referenced maps with acceptable scales and charts and tables as appropriate

iv) Describe and present the applicability of relevant national, regional and international policy (including World Bank safeguard policies), Legal and Administrative Framework governing the Water and Environment Sector in Tanzania.

v) Discuss and present a detailed summary of Analysis of Alternatives section already fully presented in the preliminary study report including the rationale for arriving at the selected dam design.

3.6.2 The Social Assessment

The consultant shall identify and evaluate social and economic impacts resulting from project implementation including but not limited to the types of social impacts, the extent and severity of these impacts (Constructions areas; quarry areas, spoil disposal areas, construction camps, communities resettlement areas, access roads, power transmission and distribution line/corridors). This can be obtained and expanded from the Preliminary EIA. The indicative budget for implementing ESMPs and RAP and other plans should also be evaluated.

3.6.3 Management/Mitigation of Impacts:

The consultant shall undertake a detailed qualitative and quantitative analysis of the anticipated changes to the baselines to determine the direct, indirect, induced and cumulative impacts of the project, in each key phase of project execution such as construction, and operation stages, in each of the agreed project impact zones identified and referenced above.

These impacts may include but not limited to; loss of habitat and ecosystems, hydrological changes, loss of fauna and flora, impacts on wildlife food supply (Gonabis) and migration patterns, water quality, emission of greenhouse gases, erosion and sedimentation, loss of physical cultural resources, impacts associated with construction, etc. Discuss and present the analysis and the results aided by well referenced and detailed maps and charts to readable scales as well integrate safeguard compliance monitoring program.

Prescribe and present detailed tangible, practical relevant management /mitigation measures appropriate for the location bearing in mind capacity restraints for those who have to

implement and monitor their implementation, also bearing in mind the need to first avoid these impacts altogether, or to reverse them and then when these are not possible to manage them in an sustainable way.

The presentation and discussion of these measures is to correspond to the relevant impacts determined in 3.6 above and to include discussions on details for implementation of these measures. All these measures must be compliant with the requirements of the relevant GOT laws and triggered World Bank Safeguards Policies.

3.7 INSTITUTIONAL FRAMEWORK FOR IMPLEMENTATION AND CAPACITY ASSESSMENTS

The consultant shall propose and present a workable institutional arrangement to provide suitable oversight for implementation and monitoring the management measures proposed during the construction and operations & maintenance stages. The proposal must allow for Adaptive Management approaches in the institutional framework. Undertake detailed and thorough capacity constraints of each institution proposed and assigned responsibility; and propose corresponding detailed capacity building measures. As part of the capacity building measures, if training is required, identify the relevant positions that should benefit from this training, develop detailed training plans for each area/position requiring training, and when and where training will be provided and who would provide training, and develop detailed cost budgets to implement this training plan.

The consultant should recommend clearly the implementation responsibilities, including:

- a). Overseeing dam, planning, design and operation,
- b). Implementing the ESMPs,
- c). Mitigating upstream and downstream risks/threats to the dam noted above.
- d) The costs associated with these and the work plan also must be defined

3.8 Consultations and the Participatory Process.

This project has been assigned an EA category A, in compliance with World Bank OP 4.01 on Environmental Assessment, thereby requiring that the GOT/DAWASA consults project affected groups (to be identified in the SA), local NGOs, and other stakeholders about the project's environmental aspects and takes their views into account in preparing the project.

The projects overall Consultative Strategy and process will be led by an International Independent Facilitator who will be appointed by the client.. The consultant will work closely with this IIF and will lead and undertake under the guidance of the IIF,

comprehensive, meaningful and participatory consultations with all relevant stakeholders using appropriate methods.

Details of the EA and the ESMPs will be presented, at various stages such as at data collection and when advanced drafts of the report are completed. This document is to be fully documented as an annex to the EA report focusing on summarizing the discussions, categorizing the views expressed and how these decisions were taken into account in the finalization of the reports.

3.9 PREPARE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

All Environment and social management plans will include summary details in an itemized manner corresponding to detailed description of the proposed mitigation measures, when and how they are to be implemented and monitored, with measurable outcome and output monitoring indicators as appropriate, details of institutional responsibility for their implementation and monitoring, and with full details of corresponding budget. In most cases presentation of these plans may suffice in matrix form with certain items cross referenced to descriptive sections.

3.9.1 Environmental and Social Management Plans (ESMPs)

The ESMPs is the term/acronym used collectively referring to the group of Environmental and Social management plans, which consists of the following documents:

- Environmental Management Plan (EMP),(Part 1 and Part 2)
- Resettlement Action Plan (RAP)
- Livelihood Restoration Plan (LRP)
- Indigenous Peoples Development Plan (IPDP)
- Safeguards Compliance Monitoring

3.9.2 Preparation of the EMP shall be divided into two main parts as follows;

- Part One would relate entirely to the construction stage

Covering the following; erosion and sedimentation control, spoil disposal and management, quarry management, water quality, reservoir clearance, chemical and used oils and lubricant waste management, hazardous materials, emission and dust control, noise control, physical cultural resources, vegetation clearing, landscaping and re-vegetation, solid waste management, use of explosive materials, and any other relevant construction related issue.

The potential Social impacts are related but not limited to the following to be covered in the social reports (RAP/LRP/IPDP) shall include; change in land use patterns, employments, compensation, water quality, seasonal flooding, soil degradation, and bank soil stability/erosion and land use changes, fire hazards, river transportation, inundated forests, impediments to movements of animals, cattle, people, and disruption of communication between communities, loss of land, land disputes, increased flooding, water borne diseases, loss of social fabrics, negative impacts on fishing activities, inability to afford new technologies and impact on ritual sites.

3.9.3 Part Two would deal with management of the operation related impacts which will include Reservoir Inundation, Water Quality, Riparian Release and other identified impacts relevant to the operations and maintenance stages.

- In addition to the ESMP, depending on the scale and intensity of the impacts identified, other specific and special environment plans maybe required, for e.g., Reservoir Clearing before inundation, Fauna rescue or maintenance or re-routing of migration and/or construction of special travel corridors to ensure sustainability of habitats, mangrove protection to prevent excessive salinization of inland estuarine ecosystems, etc., as relevant.

The exact number and type of special environmental management plans would be decided upon following the consultant's presentation of the impacts to the client. (for simplicity it is suggested to have one joint management plan with different components and institutional arrangements, etc.

It is however important to note that the full range of issues are addressed under both areas – environmental and social – and that the management of these two distinct sets of impacts - environmental and social impacts – remain distinct under one plan.

3.9.4 Preparation of the Resettlement Action Plan (RAP) as per WB-OP.4.12

This shall cover in detail the following but not limited to

- Valuation Report of Project Affected People (PAP) including all persons and institutions to be compensated (This must be fully authorized/sanctioned by the relevant Authorities according to laws of the land)
- Measures to minimize land acquisition and losses
- Resettlement policies and entitlements,
- Compensation for and removal and replacement of burial and spiritual/traditional sites
- Cost of relocating the existing/ building of new public infrastructures including roads, religious buildings, hospitals, schools, market and administrative/ law enforcement, water and sanitation, electricity and telecommunication

- Cost of managing wildlife/ environmental interventions resulting from impacts of the project
- Action plan managing complaints/grievances
- Land use planning

3.9.5 Preparation of Livelihood Restoration Plan (LRP)

This shall cover in detail the following tasks but not limited to issues related to loss of livelihoods,

- Social-economic base line survey report
- Socio-economic characterization
- Socio-economic impacts and
- Socio-economic monitoring and mitigation measures

3.9.6 Preparation of IPDP

This shall cover in detail the following tasks as defined by the Bank Policy OP4.10 but not limited to

- identification and evaluation of impacts on Indigenous People's if their presence will be confirmed by the SA,
- Indigenous People livelihood restoration monitoring and mitigation measures

3.10 Dam Safety Plans

The consultant shall prepare a Dam Safety Plans covering all aspects in the dam safety safeguard policy according to World Bank (OP/BP4.37).

- Operation and Maintenance Plan including the first impoundment and dam safety inspection procedures
- Dam safety monitoring and instrumentation plan
- Emergency preparedness plan
- Construction supervision and quality control plan (including a supervisory consultancy TOR)

3.11 preparation of FINAL detailed Design, Construction Plan and Tender Documents

Based on the results of the aforementioned survey, investigation and study, the consultant shall prepare Final Detailed Design Report, Construction Plans and Tender Documents according to the international technical standards / guidelines of the International Commission of Large Dam (ICOLD) and the respective national laws/regulations/guidelines. The following issues must be addressed

3.11.1 final outline design

The Final Outline Design should include but not limited to:-

- Critical loading conditions, dam body design and safety analysis
- Excavation and treatment of foundation, abutment and reservoir rim including curtain / consolidation grouting.
- Dam type, body zoning and required materials properties along with construction techniques.
- Hydraulic/structural design, such as emergency spillway, outlet and inlet works, and if required, sediment flushing/sluicing arrangements.
- Reservoir operation plan / rule curve
- Costs estimates / Bills of Quantities (BOQs)

3.11.2 CONSTRUCTION PLAN

The Construction Plan will cover but not limited to:

- Overall construction plan and implementation schedule (preferably using MS Project)
- Construction methodologies and procedures
- Flow diversion works during construction period, such as coffer dams, diversion tunnel/canal.
- Preconstruction activities, including construction camps, access and transportation route, communication, water, electricity, etc.
- Location of borrow pit areas for construction materials;
- Operators housing office facilities, other related facilities.
- Assessment of required contractors' capacity and labor force requirements. The critical activities and the critical path of activities in the schedule shall be illustrated.

3.11.3 TENDERING DOCUMENTS

The consultant will prepare contract packages and tendering documents for all civil works, equipment and associated services according to the Bank QCBS procurement guidelines. The consultant will prepare the following documents:

- Contract packaging and Draft Procurement Plan
- Bidding documents for works and goods (including prequalification documents)
- Engineering cost estimates for the dam and associated structures including access road, power, communication, housing, offices and other facilities. These must be for the different works packages and are confidential; to be submitted separately as may be agreed with the client.

3.12 Preparation of TORs for Construction Supervision

The consultant shall prepare TORs for the different proposed construction packages.

3.13 Valuation Report for Project Affected People/institutions

The consultant shall identify and value all direct impacted households, institutions including but not limited to religious buildings, schools, dispensaries/health centers, crops, trees, land, grave yards and any other man made structures/developments.

The consultant shall take a full census, registering and documenting the status of the potentially affected population in situ. The census must be verifiable including physical marking and dated still pictures and referenced in the orthomosaic digital maps.

4 EXPECTED KEY OUTPUTS

This consultancy shall produce the following outputs:

- i) Topographical and Aerial maps of the Project area
- ii) Geotechnical investigation report.
- iii) Feasibility Study Report:
- iv) Financial and Economic Analysis Report
- v) Environmental and Social Impact Assessment Report for the Project Area (ESIA) in accordance to Tanzania regulations and World Bank safeguard policies for Category A projects.
- vi) Outline Design and Tender Documents for Design and Build of the dam and associated works including access roads) with engineering drawings..
- vii) Dam Safety Plans/Report (including O&M, safety inspection, dam safety monitoring and instrumentation plan, construction quality control plan, and emergency preparedness plan)
- viii) Environmental and Social Management Plan Reports
- ix) Construction Plan and Implementation Schedule Report
- x) TORs for Construction Supervision Services

5 IMPLEMENTATION OF THE ASSIGNMENT

5.1 ASSIGNMENT DURATION

This consultancy is estimated to be a nine (9) months full time job.

5.2 Key Staff

Experience and qualification of key team members: Staff to be engaged in this assignment shall have qualifications and / or experience as described in the following paragraphs and shown in the Information to Consultants (Data Sheet) section of the Request for Proposals. The proposed staffs need to be registered by international recognized professional bodies; however staff from the preferred firm will need to be cleared by respective professional bodies in Tanzania.

- (a) **Team Leader (Dam Specialist):** The Team Leader shall be a professional engineer with proven experience in the water resources design and planning especially in relation to dam design in developing countries. The Team Leader shall have a minimum BSc degree qualification in a relevant field as well as post graduate qualifications in Dam design. The Team Leader shall have a minimum of twenty (20) years overall experience and fifteen years (15) years relevant experience on similar dam design projects.
- (b) **Civil Engineer:** S/he shall be a professional water engineer with proven experience in water supply demand assessment and management in developing countries. The Civil Engineer shall have a minimum BSc degree qualification in a relevant field as well as post graduate qualifications in demand assessment & management. S/he shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience.
- (c) **Hydrologist:** The Hydrologist shall be a professional with proven experience in river management in developing countries. He/she shall have a minimum BSc degree qualification in a relevant field as well as post graduate qualifications in river management with a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience.

- (d) **Geologist/Geotechnical Specialist:** The Geologist shall be a professional engineer with proven experience in the planning and design of big dams geotechnical investigation works and safety analysis S/he shall have a minimum BSc degree qualification in a relevant field as well as post graduate qualifications in water dam design. Shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience.
- (e) **Economist:** The Economist shall have proven experience in the economic analysis of land use planning and project's cost benefit analysis. The Economist shall have a minimum bachelor's degree qualification in land use planning as well as relevant post graduate qualifications. The Economist shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience.
- (f) **Environmental Scientist:** The Environmental Scientist shall have proven experience in the environmental impact assessment of water resources and sanitation projects. The Environmental Scientist shall have a minimum BSc degree qualification in science or engineering as well as relevant post graduate qualifications in environmental management. The Environmental Scientist shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience on environmental assessment.
- (g) **Sociologist:** The Sociologist shall have proven experience in the social impact assessment of water resources and resettlement matters in large projects. The Sociologist shall have a minimum bachelor's degree qualification in sociology or applied anthropology as well as relevant post graduate qualifications. The Sociologist shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience on social assessment.
- (h) **Quantity Surveyor:** The Quantity Surveyor shall have proven experience in the quantifying similar large project. He/she shall have a minimum BSc degree qualification in science or engineering as well as relevant post graduate qualifications. The Quantity Surveyor shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience in similar assignments.
- (i) **Environmental Engineer:** He or she must have a proven experience in the environmental impact assessment of water resources and sanitation projects. A minimum BSc degree qualification in science or engineering as well as relevant post graduate qualifications in environmental management. Experience minimum of fifteen (15) years overall experience and seven years (7) years relevant experience on similar projects.
- (j) **Biodiversity Specialist** S/he must have a proven experience in the environmental impact assessment of water resources and sanitation projects. A minimum BSc degree qualification in science or engineering as well as relevant post graduate qualifications in environmental management. Must have a minimum of fifteen (15) years overall experience and seven years (7) years of relevant experience on environmental management.

- (k) **Land Surveyor** The Surveyor shall have proven experience in the quantifying similar large project. S/he shall have a minimum BSc degree/Advanced Diploma qualification in land surveying or engineering as well as relevant post graduate qualifications. The Surveyor shall have a minimum of fifteen (15) years overall experience and seven years (7) years relevant experience in similar assignments

Post graduate qualification shall be taken to mean education and training specific to the field of specialisation acquired after obtaining the first Bachelor degree. The term post graduate exclusively implies a masters or doctorate degree. Local experience shall be taken to mean experience on similar type of works in the Eastern Africa or Southern African Development Community (SADC) region. Relevant experience shall be taken to mean the key staff should have worked in similar large projects.

Estimated Level of Effort: An estimated level of effort required for the assignment is given in the table below.

Table 5.1

Team Member	Source	Input (person months)
Team Leader (Dam Specialist)	Local/International	9
Civil Engineer	Local / International	4
Hydrologist	Local / International	3
Geologist	Local/International	2
Economist	Local / International	3
Biodiversity Specialist	Local/International	3
Environmental Scientist	Local / International	3
Land Surveyor	Local / International	3
Sociologist	Local / International	4
Quantity Surveyor	Local / International	2
TOTAL INPUT EFFORT		36

Duration of the assignment will be nine months

MoWI will use this estimated level of effort to compare bids. The Consultant may propose an alternative level of effort, provided that it is supported by sufficient documentation in their proposal to show that it can successfully meet the assignment objectives. The Team Leader will be full time on the assignment.

panel of experts (poe):

In compliance with Dam Safety requirement OP.4.37, client will establish a Panel of Experts comprising three experts, i.e. Dam (civil) engineer, Geotechnical specialist, and Hydrologist, separate from this consultancy, The Head of the Dam Safety unit in the Water Resources Division will also participate in the meetings..

The Panel of Experts will have the responsibility of providing oversight and guidance for this consultancy as defined in a separate TOR for Kidunda Dam Project.

The Panel of Experts will provide independent technical review and guidance for technical matters related to this assignment on behalf of the client in this assignment.

However the consultant should follow other legal requirements for the outputs to be cleared with regulatory authorities.

The GOT will also establish a national technical advisory committee to supervise the overall consultancy process and other technical and administrative matters. Members of the committee will be drawn from:

- University of Dar es Salaam Department of Water Engineering,
- TANESCO- Dam Safety Expert
- DAWASA,
- Ministry of Lands and Human Settlements
- Ardhi University Department of Lands Economics,
- National Environmental Management Council (NEMC)
- Vice Presidents Office (VPO): Environment
- Ministry of Natural Resources and Tourism
- Ministry of Regional Administration and Local Government
- Wami/Ruvu Water Basin Office
- Dam and Drilling Construction Agency
- Ministry of Agriculture, Food Security and Cooperatives
- Tanzania National Parks (TANAPA)
- GTZ
- World Wildlife Fund (WWF)
- International Independent Facilitator (IIF) on behalf of Financiers Representative of Selous Game Reserve and Selous Conservation Program

International independent facilitator (IIF)

The Independent International Facilitator (IIF) shall be an international expert in Social Development Specialization (of Social Scientist or Anthropologist) with considerable experience in medium to large scale infrastructure projects in developing economies. S/he will ensure that the consultations undertaken as part of the process for developing the environmental assessment, social assessment and the land acquisition needs and the corresponding mitigation and resettlement plans, is transparent, independent, credible and participatory.

- Will assist in decision making and improve the likelihood for broad participation, sharing of project benefits and sustainable outcomes in the development and operation of the Kidunda Dam.
- Will be responsible for both the environmental and social issues in their entirety.
- Will prepare reports that will become the basis for completing the ESIA and the design and construction plan as well as other mitigation and compensation measures required for the Dam.
- The IIF will report to the MOWI/DAWASA.

Main Tasks

- On the basis of preliminary EIA and close collaboration with MOWI, DAWASA and WRBWO, identify the full range of stakeholders for the Kidunda Dam (including SCP, UDSM-IRA, WWF, TANAPA, GTZ, JUKUMU village community representatives and relevant district political representatives, and others) identified under the Kidunda Dam TORs,
- Take the lead and work closely with the Feasibility Study consultants on the consultative process for both environmental and social issues so as to validate the process and veracity of the reports produced.
- The consultative process is expected to be an ongoing process throughout the project area during project design and preparation, and therefore the IIF is expected to develop a consultative strategy and plan to present to the MOWI/DAWASA/World Bank as part of their inception report.
- Ensure consultations are undertaken in compliance with both GOT requirements (under EMA 2004 and other Acts) and World Bank Safeguards Operational Policies.
- Participate in the consultations and lead/chair/moderate the discussions as appropriate.
- Develop appropriate participatory methodologies (i) to identify potential project affected persons and their representatives and their assets and property, and all other stakeholders and that these groups are included in the consultative process and (ii) to be used during consultations.
- Based on the concerns and views identified during the consultative process, identify and design tangible options for consideration in the project design and during implementation for addressing these concerns and views.
- Develop a conflict and grievance redress mechanism for project implementation.

- Develop a Monitoring and Evaluation mechanism/arrangements for implementation of agreements reached.
- Take the lead in preparing the overall drafts and final reports on the consultations. Outline of the structure and contents of the reports to be agreed at the inception report stage.

Present the draft final consultations report at a local workshop whose audience will be MOWI, DAWASA, NEMC, World Bank, and other decision makers so as to brief them on the findings, results and recommendations to address issues raised and how and what is can be incorporated into the project design.

Local Participation

The Consultant may associate with a local Tanzanian consulting firm and provide a reasonable proportion of local staff at senior professional levels.

Counterpart staff:

- **Reporting:** Client will appoint contact person for this assignment.
- **Training:** Client will assign qualified personnel from the major stakeholders as counterparts. This will be discussed during contract negotiation. The consultant will not be responsible for costs associated with these counter part staff. However consultant must ensure that appropriate knowledge transfer occurs between the Consultant and any counterpart staff assigned to it.

Facilities, Equipment and Data

a. Provided by the Consultant

The Consultant shall provide all necessary transport and equipment it deems necessary to undertake the assignment. The Consultant shall supply its own computing equipments.

If the Consultant deems it necessary to procure and supply specialist equipment/services under the contract the Consultant shall provide full details, specifications, and cost in its bid.

- Failure to provide sufficient information about special equipment/service may result in the equipment not being included in the bid in which case the Consultant shall bear the cost of such equipment/service.

- The Consultant shall discuss and agree with *Client*, during contract negotiations, the final list of special equipment/service to be procured and supplied.
- The Consultant shall hand over all special equipment/data procured and supplied under the contract to *Client* in good working order, on completion of the contract.

The cost for Consulting Services will be deemed to include, but not necessarily limited to, the following items:

- Remuneration for Consultant's staff and support personnel
- Office space including office equipment, photocopiers, computers and the like
- Specialist third party services such as survey, drafting / mapping, soil laboratory tests and the like
- Transportation
- Printing and binding
- Communications including phone, fax, and email
- International Airfares, visas, accommodation, and incidentals
- Insurances

b) Provided by the Client

At the commencement of the assignment Client will make available to the Consultant all data, information, and reports in their possession which are deemed necessary for the assignment. Consultant will also need to review other reports on Selous Conservation.

The following reports will be available for review,

- National Water Policy (2003)
- Tanzania Environmental Management Act (EMA; 2004)
- Future Water Sources for Dar es salaam by Norconsult (2007)
- Preliminary EIA for Kidunda (2008)
- Study on Water Resources in the Ruvu River by JICA (1994)
- Study on Rehabilitation of Water supply for Dar es salaam by JICA (1991)
- Water Supply Improvement Plan for Dar es salaam by AAW (2008)

The Consultant shall treat these documents with care and return them in good order to Client at the end of the assignment.

Client shall meet all expenses for holding Consultative workshops, Steering committee and Panel of Expert meetings and counterpart staff.

6 REPORTING REQUIREMENTS

Reporting schedule

- (a) The Consultant shall prepare and submit the following reports to the Permanent Secretary MoWI for the attention of the Panel of Experts. The number of reports and timing shall be as follows:-

Table 6.1: Reporting Schedule

Description	No.	Target
Inception report (including methodology and work plan of the consultancy)	15	Four (4) weeks after the assignment start of the assignment
Bi monthly progress reports	15	Two (2) week after the end of every two month
Topographic Survey and Geotechnical Report	15	Three Months after start of the assignment
Proposed dam size and sites proposal	15	Three Months after start of the assignment
Financial and Economic Analysis Report (along with Feasibility Study Report)	15	Five months after start of the assignment
Feasibility Study Report including the summary of the studies, investigations and surveys as well as the site/type selection proposal.	15	Five months after start of the assignment
Detailed Geological and geotechnical Report	15	Five months after start of the assignment
Draft Environmental and Social Impact Reports	15	Five months after start of the assignment
Draft Design and Tender Documents	15	Five months after start of the assignment
Final Detailed Design & Tender Documents	15	Seven months after start of the assignment
Final RAP,EMP,LRP, EPP, IPDP and RIMP	15	Seven months after start of the assignment
TOR's for Construction Supervision	15	Eight months after start of the assignment
Final ESIA Report	15	Eight months after start of the assignment
Valuation Report PAP	15	Eight months after start of the assignment
End of assignment workshop	15	Nine months after start of the assignment

- (b) All assignment outputs, including maps and drawings, as well as the proceedings of the end of assignment workshop shall be submitted in both hard copy and digital copy. The digital copy format shall be agreed with the Panel of Experts during mobilization. The digital copy shall be submitted on suitable long term storage media such as CD or DVD and in editable version. Each

final hard copy submitted shall be accompanied with a digital copy suitably bound to the inside cover of the hard copy. Also consultant to provide one editable CD/DVD copy of each report submitted.

- (c) The Consultant shall prepare a draft of each assignment output (excluding progress reports) as well as the proceedings of the end of assignment workshop and submit these to the Panel of Experts (POE). The Panel of Experts (POE) shall meet (according to the schedule defined in its TOR) and review the draft feasibility and other technical reports and provide comments within Five (5) working days of receiving the draft report. The Consultant shall incorporate the comments where appropriate and submit the final report within two weeks of receiving the comments.

Progress Reporting

a) Inception Report

The Consultant shall prepare an inception report, which shall discuss at least the following:

- Background, objectives, and scope of the assignment
- Outline of conditions at the start of the assignment
- Constraints and issues and suggested adjustments to the scope and methodology
- Schedule of key activities
- Table of Contents and Work Program for RAPs, EMP, LRPs, EPP, ESTS and IPDP
- Table of Contents and Work Program for Dam Safety Plans

The Inception Report shall be kept as brief as possible and shall be limited to highlighting key issues and tasks and any significant proposed modifications to the original proposal.

The Consultant shall incorporate where appropriate such written comments and submit the final report to client within five (5) working days of receiving the comments.

b) Bi monthly progress reports

The Consultant shall prepare bimonthly progress reports, which shall discuss at least the following:

- Summary of the background, objectives, and scope of the assignment
- Activities undertaken during the period and progress against program
- Issues and constraints that could affect the delivery of services and outputs

- Program of work to be undertaken during the next period

The Bi-monthly Progress Reports shall be kept as brief as possible and shall be limited to highlighting progress, key issues and constraints encountered during the reporting period. The Consultant shall submit the Progress Report to client within five (5) working days of the end of the reporting period.

c) Aerial and Topographic Mapping Report and Geotechnical Survey Report: These reports must be submitted to the Client 3 months after contract signing. The report must comply with the requirements but not limited to items 3.3.1 to 3.3.6 and of this document.

d). Feasibility Study Report: This report will summarize and underline key issues but not limited to water demands, hydrology, geological/geotechnical investigation and others as indicated on item 3.4.1 to 3.5 of these ToRs. This report shall be submitted 2 months after start of the assignment. This report covers the comparison and recommendation of the dam site, type, size, etc. This report must be submitted 5 months after start of assignment. The report must be prepared incorporating findings from topographic mapping, geotechnical survey and other technical studies.

e). Economic and Financial Analysis Report: The consultant shall prepare and submit this report complying but not limited to section 3.4.3 of this terms of reference. The report must be submitted 8 months after start of assignment.

f) Draft Environmental and Social Impact Assessment report: The consultant must finalize the EA based on the selected dam. The report must meet all relevant statutory requirements as stated on EA section but not limited to items 3.6.1 to 3.8 of this document. The report must be submitted 5 months after start of the assignment.

g). Final Dam Safety Plans/ Report: Consultant shall prepare and submit Dam safety report complying but not limited to requirements stated under item 3.10 of this document. This report must be submitted 7 months after starting of the assignment

h) Final Detailed Design, Tender Documents and Construction Plans Report:

The consultant shall prepare and submit this report complying but not limited to sections 3.9.1 to 3.10 of this terms of reference. The report must be submitted seven months after start of assignment

i) Final Environmental and Social Management Plans Report:

The consultant: shall prepare and submit this report complying but not limited to section 3.11.1 to 3.11.3 of these terms of reference and meeting all ESIA certification processes. The report must be submitted 8 months after start of assignment.

j) ToRs for Construction Supervision

The consultant: shall prepare and submit ToRs for construction supervision as indicated in section 3.12 of these terms of reference. The report must be submitted 8 months after start of assignment

h) Valuation Report of Project Affected Persons/institutions (PAP)

The consultant: shall prepare and submit this report complying but not limited to section 3.13 of these terms of reference and meeting all ESIA certification processes. The report must be submitted 8 months after start of assignment

7 CONSULTATIVE MEETINGS AND WORKSHOPS

- (a) There will be three main stakeholders' Consultative Meetings/Workshops:
 - These will be organized and delivered in conjunction with the IIF.
 - All stakeholders' consultative meetings to be held in Morogoro on dates to be specified. Adequate time and preparations are recommended for meaningful participation.
 - ESIA Review Panel Meeting to be held under NEMC chairmanship on a date to be specified.
 - End of Assignment Workshop to be held on a date to be specified.
 - The client will meet all costs of hosting meetings and workshops.
- (b) The Consultant shall prepare and present at a workshop, outlining work undertaken, conclusions, and recommendations for the assignment. The workshop papers to be distributed and presented shall cover the following
- (c) Background, objectives, and scope of the assignment
 - Approach and method used to achieve the objectives of the assignment
 - Description of Environmental and Social Impact Assessment issues and possible mitigation measures.
 - Description of the recommended Resettlement Action Plans, Environmental Management Plans, Livelihood Restoration Plans.
 - Description of the social / environmental impacts; Lessons learned that should be taken into account in undertaking similar works
- (d) The Consultant shall prepare and agree a detailed outline and workshop format before conducting the workshop (This should be done in conjunction with IIF.).
 - The Consultant shall prepare and distribute workshop papers for use by the participants.
 - The Consultant shall prepare sufficient copies of the workshop papers for each attendee as well as fifteen (15) official copies.
 - Workshop materials must be in both English and Kiswahili to allow all participants understand and contribute to the project.
- (e) At the conclusion of the workshop, the Consultant shall compile and submit the proceedings of the workshop to the client.