Terms of Reference

Chirundu
Joint Cross Border Water Supply and Sanitation Project (Zambia/Zimbabwe)

Consultancy Services to carry out

Socio-economic baseline assessment studies

May 2018

List of Contents

Abbreviations

CRIDF	Climate Resilience Infrastructure Development Facility
CLB	Chirundu Local Board (Zimbabwe)
CTC	Chirundu Town Council (Zambia)
Eng.	Engineer
GIZ	German Development Cooperation
ICPs	International Cooperating Partners
IWRM	Integrated Water Resources Management
KAPB	knowledge, attitudes, behaviour and practices
LWSC	Lusaka Water and Sewerage Company
MWDSEP	Ministry of Water Development, Sanitation and Environmental Protection
MLGPW & NH	Ministry of Local Government, Public Works and National Housing (Zim)
MoU	Memorandum of Understanding
NRW	non-revenue water
NWASCO	National Water Supply and Sanitation Council (Zambia)
O&M	Operation and maintenance
OSBP	One Stop Border Post
PCP	Public Consultation Process
PR	poverty reduction
RI	regional integration
RIDMP	Regional Infrastructure Development Master Plan
RSAP	Regional Strategic Action Plan
SADC	Southern African Development Community
TWMP	Transboundary Water Management Project
VIPs	Ventilated pit latrines
WASH	Water, Sanitation & Hygiene.
WSPs	waste stabilisation ponds
WTPs	Water treatment plants
ZIMRA	Zimbabwe Revenue Authority
ZINWA	Zimbabwe National Water Authority
ZRA	Zambia Revenue Authority

1 Introduction

The GIZ Transboundary Water Management (TWM) project supports the implementation of SADC's fourth Regional Strategic Action Plan for Water (2016-2020) with co-financing from the United Kingdom's Department for International Development (DFID). Within its Output A focus is given to the mobilization of financial resources for cross-border water infrastructure development. The aim is to capacitate SADC Member States (MS) in project preparation and accessing finance for water infrastructure. The project supports MS to prepare pre-feasibility and feasibility studies of bankable infrastructure projects for subsequent submission to a financing institution for implementation. The GIZ TWM maintains close cooperation with the SADC Water Division and the KfW funded Water and the Regional Fund for Water Infrastructure and Basic Sanitation hosted by the Development Bank of Southern Africa.

The SADC Secretariat is implementing the Regional Infrastructure Development Master Plan (RIDMP) whose aims are guided by the Regional Indicative Strategic Development Plan (RISDP), which in particular is pursuing the goals of regional integration (RI) and poverty reduction (PR). In the Water Sector the SADC Secretariat's implementation of the infrastructure programme under the RISDP and the RIDMP is directed through the fourth Regional Strategic Action Plan (RSAP IV), which also responds to the dictates of the SADC Protocol on Shared Watercourses.

To this end, SADC Secretariat with the support of GIZ TWM is implementing transboundary water infrastructure projects to improve cross-border water supply and sanitation in the border towns at some selected border towns/crossings. This is in pursuit of the goals of RI and PR through water infrastructure, using the cross-border water supply and management philosophy as a vehicle of transboundary cooperation.

Two projects are already under implementation between Mozambique and Swaziland in the Lomahasha/Namaacha border towns and on the Tunduma and Nakonde border towns between Tanzania and Zambia. SADC is looking for more projects that can be implemented using the same model, but which have a strong link to the SADC transport corridor initiative and the recently launched Regional Industrialisation Strategy and Action Plan.

In line with this agenda the governments of Zambia and Zimbabwe have agreed to conduct a pre-feasibility/feasibility study and environmental impact assessment for the Chirundu cross border project with technical backstopping support from SADC and GIZ. The study shall provide further basic information, and shall specify the scope and design of the project as well as develop the terms of reference for the detailed engineering design of the project.

2 Project area

2.1 About Chirundu

Chirundu is a settlement on the Zambezi River between Zambia and Zimbabwe. The settlement is an important international border for the North-South Corridor linking eastern and southern Africa. The transport corridor is the busiest regional transit transport link in eastern and southern Africa, carrying 5.8 million tons of cross-border traffic extending over three regional and economic groups, COMESA, SADC and SACU. The Beira-Lobito Corridor also

passes through Chirundu making the settlement a trade route node and convergence of all corridors in the sub-region including the Kalahari.

The Chirundu border crossing is the site of two of the five major road and rail bridges across the Zambezi River. It is the only place on the Zambezi where two bridges cross the river. The Chirundu settlement consists of two towns, a larger part in Zambia and a smaller one in Zimbabwe. In Zambia the town has a population of approximately 15,000 whilst in Zimbabwe the resident population is estimated at just below 4,000 people giving a combined urban population of just under 20 000. Chirundu Zambia serves also as the capital for Chirundu district and is growing at a fast pace. It is estimated that the actual population including informal settlements and immediate surroundings stands at 62,000 with 4.5 % annual growth rate which is the highest in the country. Chirundu is the busiest port of entry in Zambia. Both settlements have a predominantly young and growing population, which is under-served in terms of basic services. About 25% of the population live in informal settlements.

Formal employment is mainly in public institutions operating at the Border Complexes of either country, notably revenue authority, Department of Immigration, the police, health and defence. Private sector employers include clearing agents, transporters and those operating beer-halls, restaurants, butcheries and grocery shops. A greater percentage of the population in Chirundu engages in informal trading (e.g., vending and other such activities).

Chirundu is surrounded by wildlife/safari areas in both countries, and it is also a popular destination for fishing with a high potential for tourism related developments. The settlements have a high potential for tourism, agriculture and trading. To date a new and modern shopping centre is already under construction in Chirundu Zambia.

2.2 Development challenges and socio-economic characteristics

Like most urban settlements in the developing world, Chirundu faces the challenge of a rapidly increasing population that, coupled with poor physical planning, which puts a severe strain on existing public health services and other amenities. The high volume of traffic through the border has brought commercial opportunities to Chirundu, but has also placed the existing services under further pressure. The pressure on services has in turn increased the risk of waterborne diseases in each town as well as cross border infection. The situation is exacerbated by the high HIV infection rate that is experienced in Chirundu, partially due to the high transient cross border population that spends time in Chirundu while completing the cross border formalities. Child pregnancies are also reported to be high. Chirundu is also fast becoming a commercial hub for the nearby rural areas in both countries.

Town planning is poor for both towns in Chirundu. As the populations increase and more people settle in the towns, the towns will run out of economic servitudes for service supply lines. It is therefore necessary that the water supply and sanitation system is adequately planned before the settlement densities reach a critical level beyond which creating servitudes will be impossible without property demolitions.

Lastly, despite the existence of a physical barrier in the form of the Zambezi River, the border remains highly porous and the movement of resident and surrounding populations is not restricted by national boundaries. For example, ordinary shoppers have been observed to visit Chirundu-Zambia from as far as Makuti, Karoi, Kariba and rural Hurungwe in Zimbabwe. In the past the situation was the reverse. Furthermore, Chirundu Zimbabwe is isolated from

other urban centres in Zimbabwe with the nearest urban centre, Karoi, being 150 km away. The town is therefore highly dependent on services from across the border. Thus, developments in the two towns cannot be decoupled as disease outbreaks in one town will inevitably affect the other and the surrounding areas in both countries as well as the transit populations.

2.3 Water supply and sanitation system

WASH services in the two towns are under the control of national institutions and are operated separately from each other. In Chirundu Zambia water supply is the responsibility of the Lusaka Water and Sewerage Company (LWSC), a commercial utility headquartered in Lusaka. In Chirundu Zimbabwe water supply is the responsibility of the Zimbabwe National Water Authority (ZINWA) Manyame Catchment Council headquartered in Harare. In both towns sanitation services fall under the local political administrative authorities, i.e., Chirundu Town Council (CTC) in Zambia and the Chirundu Local Board (CLB) in Zimbabwe. All the institutions responsible for services have capacity limitations and are not able to cope effectively with the challenges posed by the demands for service provision in a fast growing settlement.

Water for both domestic and commercial purposes is drawn from the Zambezi River for both towns. The flows on the Zambezi River downstream of the Kariba Dam are mainly outflows from the dam and are therefore regulated and the water quality is generally good. Due to generally the hydro-geological condition of the area, the groundwater potential around Chirundu is rated moderate to low, between 1-2 l/s. The existence of alluvial aquifers along the main river with occasionally high yields, above 40l/s, has not resulted in the development of groundwater sources for public water supply. Consequently, there are no known boreholes and deep wells in Chirundu.

Institutions and formal settlements have individual service connections but the informal settlements rely on communal taps. Water service delivery is generally poor in Chirundu partly because of water pipe bursts often caused by elephants which deliberately damage water pipes to access drinking water. Intermittent water cuts resulting from power outages are also experienced.

Household and institutional/commercial premises are either connected to a septic tank or a reticulated sewage disposal system whilst most public places such as bus termini and market places have Blair Toilets. Residents from informal settlements use basic individual pit latrines and public toilets while a sizeable number resort to open defecation.

Sewage treatment is by waste stabilisation ponds but in both towns the design capacity for the original treatment facilities has long been exceeded leaving partially treated sewage flowing into the Zambezi River. Recent initiatives such as the new sewage ponds in Chirundu-Zimbabwe commissioned in 2013 with support from Welthungerhilfe (better known as German Agro Action, which is a German NGO) have been limited to critical areas, in this case the new immigration facilities. Also the total installed wastewater treatment capacity is underutilised due to the missing link between the old wastewater network and the recently constructed stabilisation ponds. Consequently areas of the town have largely remained unserved because of funding limitations. Furthermore, in the case of Chirundu-Zimbabwe the old sewer ponds discharge just upstream of the raw water abstraction points for both towns posing a pollution risk in case of washout by river tides.

Access to reliable and safe water supply and sanitation facilities at the two towns in Chirundu is thus a challenge that requires action to both prevent and control the proliferation of disease.

2.4 Current initiatives

Out of its commitment to transboundary water management in Southern Africa, DFID funds the Climate Resilience Infrastructure Development Facility (CRIDF). In 2016 CRIDF carried out a feasibility study for a water supply and sanitation project in Chirundu-Zambia. The project proposes to upgrade the treatment plant, pumping system, pumps and pumping mains, bulk main pipelines, introduce bulk meter, increase water storage as well as construct new and refurbish existing ablution facilities. While the CRIDF FS gave options for immediate to long term the Zambian stakeholders felt the described scope of work is limited and the stated funding need is low (USD9 million.). They think the study focussed on the urban area only but should have considered the surrounding areas especially in defining the future scenarios. They also believe the institutional capacity and arrangement were not adequately considered.

In Chirundu-Zimbabwe, national government agencies, ZINWA and ZIMRA have embarked on WSS infrastructure projects to augment water supply and improve wastewater treatment through construction of a new water-works complete with a water storage tank and new waste stabilisation ponds. The developments remain largely uncompleted and/or unconnected to the larger settlement.

The two projects on either side of the Zambezi River are not integrated and the benefits of economies of scale, value for money and cost-effectiveness to be gained through a joint scheme remain unexplored and may actually be missed.

Meanwhile, the one stop border post (OSBP) at Chirundu has been completed and has been judged by key stakeholders to have greatly improved movement across the border. Considering this, free movement will only result on a strain on the planned WASH facilities on Chirundu-Zambia if no corresponding measures are implemented on the Zimbabwe side. Thus, SADC considers it imperative that a feasibility study be undertaken for a joint project for the entire Chirundu settlement.

Despite the national efforts sector development in general, and services in the border towns in particular, have been constrained by inadequate funding.

2.5 Town specific issues

Available documentation shows that the two towns have embarked on separate initiatives pertaining to the delivery of water supply, sanitation and health services. They also have divergent outlooks about their developmental trajectories as these are mostly shaped by national political imperatives and policy frameworks. Yet in these differences there are opportunities for synergies, which if exploited, may result in a win-win for both towns. Currently though, there is no formal cross border collaboration between the two towns. However, personal relations among key stakeholders from either side of the river are reported to be cordial and the stakeholders feel more formal collaboration will be beneficial to either party in the long run. They also seem to acknowledge that national policies currently limit the scope for effective collaboration even where such would make both economic development and service delivery sense.

2.5.1 Chirundu Zambia

As stated above, CRIDF carried out a feasibility study for a water supply and sanitation project in Chirundu-Zambia focussing on the installation of new infrastructure. Thus, for Chirundu Zambia the focus in WSS development is to augment and modernise services to meet both growing demand and previously unserved populations. The district administration also has plans to expand the urban boundaries, which would result in an increased service area.

Physical planning: The town size is currently stated as 600 hectares from just 94 ha before it was declared the district capital. However, traditional chiefs control the land and there are encroachments from the rural area. As such there is need to incorporate current residents in the new urban boundaries. Jurisdiction over land is also an issue. So far it has been reported that two chiefs, Chipopo and Chifembe, are clashing over land rights. This makes it difficult for the urban local authority to decide who to negotiate with regarding land for urban expansion.

Water resources: Chirundu Zambia has historically depended on the Zambezi River for its source of water supply from two abstraction points which are located upstream (southeast of the town) and downstream (northeast of the town). Each of these intake points pumps water to separate water treatment plants. About 2,000 m^3 of water is supplied from the two water treatment plants to the town.

Water Supply: The Lusaka Water and Sewerage Company (LWSC) supplies reticulated water to the Chirundu border area and the entire urban area through two main water supply systems, namely (1) piped house and yard connections and (2) communal water points. However, some institutions and individual households have developed their own private water systems. Communal water points are in the form of water kiosks managed by water licensed water vendors. A total of 928 house and 60 commercial connections are reported. Willingness to pay for services was reported to be high even though services were often erratic.

LWSC indicates that they are currently supplying approximately 2,000 m³/d to Chirundu consumers (1,400 m³/d from Chirundu Main Plant ï although only half of this volume is treated and 600 m³/d from the ex-ZRA system, therefore total treated volume of water that can be supplied to Chirundu is estimated as 1,300 m³/d). The water losses in the system are estimated at 50%. The LWSC is not able to meet the current water supply demand due to inadequate water production capacity. It is reported that facilities for water abstraction, treatment, transmission and storage all have inadequate capacity and the distribution network is not servicing the full customer base. Latest service figures suggest that LWSC produces 3,800m^3/day against a demand of 10,400m^3/d. Hours of supply is 21 to connected consumers only.

To address the water supply challenges, the recently concluded technical assessment proposes to develop a ring main network, comprising a ring main allowing for improved coverage of supply to the town. Water kiosks would be constructed to cover all the residential areas, although the number and location would be determined and finalised after consultation with stakeholders at the detailed design stage.

Sanitation: The council owns and manages public ablution blocks with a water borne sewer system at the main bus station and main local market. Ventilated pit latrines (VIPs) are mainly utilised by institutions and a few households whilst ordinary unlined pit latrines are preva-

lent both in commercial and residential areas. Because of the terrain and poor soil conditions in the town a sizeable number of pit latrines are reported to collapse during the rainy season posing a health threat to both residents and travellers.

The technical assessment proposes the construction of public ablution facilities for use by travellers crossing the border and at high foot traffic areas like the local market. The ablution block would consist of toilets, shower and laundry facilities, which will be separate for males and females. Sewage treatment would be by means of a septic tank, designed to be emptied every 3 years. The sludge would be discharged into sewage ponds located at the nearest town with sewage treatment facilities. In future, these facilities could be connected to the existing sewer network system, which would need to be refurbished to possibly include a faecal sludge handling facility.

The low to medium income residents would be encouraged to use on-site treatment solutions, while construction of VIP latrines for the low income communities would be considered on condition of affordability.

The existing non-functional sewerage treatment plant would in future be redeveloped to full operation to receive and treat wastewater from the operations of a conventional sewerage system conveying sewerage from the border post and surrounding commercial area. A small bore sewerage system from other high volume water consumers (lodges, hotels, businesses, homeowners) can be incorporated into the existing system. All the wastewater would then be conveyed to the refurbished oxidation ponds.

Solid waste management: The mandate of waste collection and disposal lies with the local authority within their planning jurisdiction. In this light Chirundu council is expected to establish a sustainable solid waste management system. It is envisaged that the current waste disposal practice of using pits and burning will be banned as it is environmentally unfriendly and undesirable for an area that is frequented by tourists and other travellers.

System augmentation plans: The current feasibility study plans to expand and improve the WSS system as follows:

- Rehabilitate raw water pipeline from abstraction pontoon to a capacity of 936 m^3/hr
- Upgrade the treatment capacity (to 6 ML/day)
- Increase storage capacity to 2 ML which guarantee at least 12-hour storage
- Increase booster pump capacity (pumps and pipes)
- Upgrade bulk pipeline capacity to 630 m^3/hr peak hour flow
- Introduce bulk metering
- Increase distribution network
- Refurbish the sewer system and connect high consumption water users

2.5.2 Chirundu Zimbabwe

There is currently little formal documentation on the status of WSS in Chirundu Zimbabwe. However, a reconnaissance visit to the town provided preliminary insights into the WSS situation in Chirundu Zimbabwe as of May 2017. From the field observations and discussions with the Local Board it appears the WSS challenge for the town is two-fold (1) how to connect the entire town to existing infrastructure which infrastructure seems to have excess ca-

pacity in relation to current demands, and (2) how to complete and operationalise installed infrastructure which has not yet been commissioned.

It should also be noted that several players are involved in the delivery of services. This situation arose from the difficult economic environment prevailing in the country in the past two decades during which a ñfirefightingò approach was adopted regarding service delivery. Some players like the Zimbabwe Revenue Authority (ZIMRA), by virtue of them having funds, ended up playing a significant role in WASH service infrastructure development to save the situation, even though they do not have such a mandate.

Water supply: There is an old and a new WTPs. The old plant is in good working order but has one raw water pump. The old water treatment plant has a capacity of 70m^3/h on average producing 1,100m^3/day against a peak demand of 1,375m^3/day. There is storage of 2,000m^3 Water loses in the system are around 33%. The capacity of the new treatment plant is 180m^3/h delivering 2880m^3/day. Storage is in the form of a 2000m^3 ground reservoir. The new plant is ñstate of the artò but is yet to be completed and commissioned due to contractual issues. A new storage reservoir has been completed but only serves the border complex as it is not connected to the town reticulation.

Wastewater: There are new and old waste stabilisation ponds. The Old WSPs discharge into Zambezi River and have been decommissioned but still receive sewage from some parts of the town. The ponds need minor rehabilitation works if they are to continue in use. The Ministry of Local Government, Public Works and National Housing (MLGPW-NH) wishes them decommissioned but the Local Board believes they still can be used to serve areas that cannot drain by gravity to the new WSPs. The new ponds are well designed and are reported to have sufficient capacity to serve the entire settlement but currently only serve the border complex and may not command the whole town without some pumping of sewage. The design capacity of the two works is also not documented.

Solid waste management: The Local Board currently uses an unprotected and undersigned old quarry site as a dumpsite. Currently, wildlife access to the dumpsite is unrestricted. The Local Board has plans to construct a sanitary landfill and has identified a possible site close to the river downstream of the town area.

Institutional issues: Several players are involved in WSS service delivery for the town. Water is the responsibility of ZINWA. The Local Board manages wastewater and solid waste. ZIMRA has funded all developments serving the border complex with the of local government ministry supervising all works. The Local Board want water to be moved from ZINWA but acknowledges that they have no capacity yet to run the full WSS services. The Local Board is run by 4 commissioners appointed by the local government minister. The Local Board Secretariat has 6 permanent staff including an engineering intern. Monthly revenue ranges between USD18,000 and USD20,000 with USD10,000 covering staff costs. Meanwhile the water revenue for ZINWA is estimated at an average of USD13,000 per month.

Town planning: The town has set aside close to 100 ha of land along the highway for the purposes of developing a new central business district. However, the town is planned from the provincial headquarters in Chinhoyi about 240km away. The Local Board feels such planning does not address the real challenges in the town and often creates problems, e.g., locating houses in flood plains. There is no physical planning master plan to guide the location of new developments. Lateral expansion of the town is also restricted by the Zambezi River and national parks areas, making proper planning critical.

Town Board priorities: The order of priorities for the Town Board is stated as: (1) Town Master Plan (2) Sewage conveyance (3) Water distribution and (4) Health facilities. The Town Board welcomes the SADC initiative and believes it dovetails with their priorities.

3 Objectives and working concept of these consultancy services

3.1 Purpose and outcomes of the assignment

The purpose of this assignment is to assess the current socio-economic conditions at Chirundu that will impact on the general viability of a joint cross-border water and sanitation project proposed at Chirundu. The assignment results will contribute to the development of pre-feasibility and feasibility study reports and all supporting documents which will assist in mobilising funding for implementation of the proposed joint cross border water supply and sanitation project at Chirundu.

The assignment shall have the following outcomes:

(1) An understanding of the prevailing social and economic conditions on either side of the Zambezi River (border) as they relate to the development of a joint cross border project at Chirundu.

(2) An understanding of the water supply and sanitation services in the two border towns of Chirundu Zambia and Chirundu Zimbabwe.

(3) Key stakeholders in WSS from either side of the border fully involved and have ownership over the formulation of ideas and options for a joint cross-border water supply and sanitation project for Chirundu taking into consideration the different social groups in the two towns.

3.2 Assignment objectives

The objectives of these consultancy services are to:

(i) Generate and present sufficient information to enable a decision to be made on the funding of the project. The information should subscribe to criteria that has been used by SADC in similar projects (such as the criteria used by the SADC Regional Fund for Water Infrastructure and Basic Sanitation and indicators) but remain sufficiently broad enough to attract other potential funders to the project.

The Consultant is expected to familiarise themselves with, and demonstrate knowledge of, project preparation criteria in WASH or any other criteria as presented to them by a potential funder of the project.

(ii) Generate and present sufficient information that allows a formal financing agreement to be reached between a potential funder and the project partners in Zambia and Zimbabwe.

That is, the information base must be sufficient in order to prove the feasibility and sustainability of the project and to make a formal financing agreement between the funder and the project partners in Zambia and Zimbabwe possible.

(iii) Generate and present sufficient information for the preparation of terms of references for a detailed design study.

That is, the information base must be sufficient in order to decide on preferable technical and institutional options for the project and to prepare terms of references for a detailed design study.

The Consultant shall provide all services necessary for the achievement of the objectives of the requested study. Taking account of the present level of information, the consultancy services will comprise:

- Preparatory works and information collation (Phase 1: Inception phase)
- Socio-economic assessment for conceptual project planning (Phase 2: Pre-feasibility)

At all the stages of the assignment the consultant is expected to keep constant consultation with the project stakeholders and to have regular formal meetings with the project steering committee constituted for the purposes of this assignment. The consultant shall prepare and distribute minutes of all such meetings.

4 Scope of work

4.1 Objective of the project

The main objective of the project is to improve the living conditions in Chirundu towns through making available adequate water supply and access to improved sanitation for the populations, particularly the poor and currently unserved, in a technically sound, economically feasible, institutionally workable and environmentally sustainable way.

The project is expected to improve joint planning and development of WSS services as well as boost cross border cooperation in integrated water resources management (IWRM).

4.2 Tasks

4.2.1 Preparatory works (Phase 1: Inception phase)

The purpose of this project phase is to familiarise the consultant with the prevailing situation and baseline in the project area. Key focus areas are:

- Identify the critical success factors for a joint water and sanitation project,
- Review and agree on criteria for selection and assessment of project activities,
- Collect all available and existing information on the towns as it relates to WSS service provision,
- Compile and process additional, required basic information, in order to specify the detailed methodology and working programme for the study.

Tasks:

1. Identification and participation of stakeholders: The consultant should identify all major and minor stakeholders for the proposed joint project. Any additional project stakeholders, being those with a role in implementing the project and those affected by the project, shall be identified and agreed with the Zambian and Zimbabwean project partners. Forms and modalities for stakeholder participation and for the coordination of this study shall be agreed with the project coordinators. Multi-stakeholder workshops shall be part of the consultancy services. The consultant shall present a concept on how stakeholders shall be engaged during the assignment and the entire feasibility study.

2. Review of existing studies: Considerable work has been done to document planned or developed works that will contribute to the joint project on either side of the border. On the Zambian side documentation is more advanced whilst on the Zimbabwean side some key documentation on initiated developments is not accounted for. The consultant is required to find and review all available information and define more clearly the gaps that need to be plugged by the proposed feasibility study.

3. Physical planning considerations: The physical boundaries of the two towns are either not well specified or are earmarked for revision in the near future. The general layout has been unplanned but the approach to town planning is being revised. The project design should therefore get clarity on the future spatial layout plans in the two towns that may influence the positioning and size of WSS networks. The issue of land rights and jurisdictions need to be clearly elaborated. Special consideration for wildlife corridors and prevention of human-animal conflict needs to be explored.

4. Cross border considerations: The project should investigate fully socio-economic issues likely to affect the transfer of treated water, sewage or solid waste across the border. The investigation should cover among other issues; the human responses to physically transporting water, sewage and solid waste across the border, the likely attitudes and reactions to doing so, as well as the perceptions in the two countries.

5. Population assessment: The consultant shall determine the current population size and characteristics in the suggested supply area based on both available and derived information. The population should be gender aggregated and should cover the urban, peri-urban, informal settlements and encroaching rural areas. The population growth rate (disaggregated and averaged) for different scenarios shall be estimated in order to allow a first estimation of service (water demand, sewage and solid waste generation) in the agreed project area and possible sub areas. The demands and impacts of transit and surrounding population will also need to be assessed. The consultant is to clearly elaborate the level of confidence that can be reached with these population estimates.

6. Information on proposed developments: The consultant shall review the concepts and likely impacts for all suggested developments for the Chirundu towns including those projects by regional authorities and national governments that will have an impact on service delivery in the towns now and in the foreseeable future. Particularly, the proposed expansion plans for both towns need to be reviewed.

7. Review of social engineering approaches: By reviewing the project proposals, the collected information, visiting the project area and through his observations and professional experience, the consultant shall identify suitable social engineering methodologies for the project area and develop conceptual alternatives to improve the water supply, sanitation and hygiene situation (e.g. improvement of water use, increase efficiency of water use,

development of water saving strategies, adoption of community led total sanitation (CLTS) approaches, re-use of effluent and value addition in faecal sludge management for improved livelihoods, etc) in order to make the available amount of water and safe sanitation accessible for the highest possible number of people. Social engineering options shall be screened and rated regarding their potential social impacts as well as behaviour change implications. The consultant shall suggest and explain in his inception report, which suitable social engineering alternatives should be adopted for water demand management, hygiene promotion and behaviour change considering his professional judgement.

8. Review of hygiene practices: The consultant shall screen the current hygiene practices in the two towns and shall suggest which further investigations are required in order to control disease proliferation and to identify health improvement options. A detailed interrogation of the implications of on-site sanitation systems versus combined systems and cultural practices in relation to disease control has to be presented.

9. Solid waste management strategies: Solid waste management remains bottom of the agenda for both towns for variety of reasons including insufficient knowledge, lack of capacity and insufficient funds. The consultant shall review current solid waste practices in the two towns and suggest the further investigations and recommendations needed to modernise solid waste management for the towns. Particular attention needs to be paid to the impact of poor solid waste management on humans, livestock and wildlife in the two towns and surrounding areas.

10. Cost-benefit analysis: The consultant is expected to unpack all the potential economic and social costs and benefits of the joint project and assess how these may influence project implementation both in the construction and the operation phases of the project. The issue of displacement and relocation of households should be given special attention, especially considering the proliferation of informal and unplanned settlements in the two towns. The conflict between humans and wild life, especially the interference with wildlife corridors, also needs special attention.

11. Social impacts and poverty considerations: The socio-economic impact of the project on the communities needs to be investigated. It is important to understand if any positive or negative consequences may arise as a result of developing the project. Equally important is to assess the potential of communities to contribute to, or derive benefit from, the investment costs of the project as well as their willingness and ability to pay for services once the system is fully installed.

12. Livelihood issues: The project is also expected to address long term issues such as tourism and agricultural development in the next 30 to 50 years. The consultant is invited to assess the broader economic outlook for the towns and comprehensive livelihood opportunities for the residents associated with the proposed project as the towns develop. Pro-poor developments should clearly be highlighted.

13. Definition of short, medium and long term: Clearly define, in consultation with the stakeholders, the planning horizon and base year for the proposed project. Give the justification for the selected cut-off times. All subsequent analysis is to be based on the agreed planning horizon.

14. Wildlife and human conflict: The Chirundu towns are surrounded by safari areas and game parks. As the towns expand human settlement encroach on wildlife areas and migration corridors. The consultant should assess the existing and potential conflict between wildlife and humans and propose ways to reduce this conflict.

The consultant shall prepare an **Inception Report** informed by their review of the above mentioned issues. The Inception Report shall contain a detailed methodology for carrying out the assignment and the work plan for implementation of the following phases of the assignment. The Inception Report is to be presented to, and approved by, the project steering committee before proceeding with the subsequent phases of the assignment.

4.2.2 Socio-economic assessment for conceptual project planning (Phase2: Pre-feasibility)

The purpose of the conceptual project planning phase is to prepare a detailed baseline of the project area and make projections over the agreed planning horizon. The consultant is expected to collect and process information that is required in order to allow the project partners to achieve objectives (i) and (ii) of the study. For this, the consultant shall:

- collect more profound information in order to justify financing of the Chirundu project,
- develop a medium and long term concept for making available adequate water supply and improved sanitation infrastructure for the Chirundu towns,

15. Describe the strategic context and importance of the project including identifying socio-economic benefits and possible socio-economic disadvantages and drawbacks (e.g. loss of business opportunities for existing, private water suppliers such as water vendors and water kiosk operators).

16. Determine the current population served by the two towns clearly distinguishing between (a) the resident population and (b) the transit and/or day population living in the project area and possible sub areas.

17. For the resident population, estimate the population density in the different existing and suggested water supply areas; create baselines about the currently served population with water and sanitation in the project area.

18. Describe and analyse the water supply systems for the different areas (urban, peri-urban, rural) in the two towns paying special attention to access and level of service (type of supply system, distance to water sources, time spent on water abstraction, associated costs, etc.)

19. Estimate and justify population growth rate for different scenarios taking into consideration that the towns are an integral part of the North-South and East-West Corridor; (review of results of inception phase). Consider also the impact the existence of the One Stop Border Post (OSBP) is likely to have, especially on the transit as well as the surrounding population.

20. Investigate currently used tariff structure in both Chirundu towns and revenue collection practices employed by the responsible authorities as well as the water prices from water vendors and other non-state actors in the project area; investigate and describe suitability of existing tariff and pricing systems for project implementation.

21. Propose and evaluate water tariff options for the implementation of all suggested technical alternatives (financial sustainability of future operation). Recommend the tariff system that would best serve the needs of consumers and other beneficiaries in both towns.

22. Socio economic information is important for the technical design of the project. As women are the major stakeholders in water utilisation, the needs of women in water management shall be investigated and considered in the project design. This shall not be limited to water use, but shall also include sanitation practices. The consultant therefore has to execute a representative Socio-economic Household Survey (SHS) in the two Chirundu towns. The SHS shall cover:

    a. number of persons per household; including detailed information about gender situation, women and girls, the boy child, children, child-headed households, disabled and elder people as well as other disadvantaged population groups e.g. HIV infected or indigenous people and their situation related to the access to water and sanitation.

    b. household income level;

    c. willingness and ability to pay of the households for water and sanitation services for the identified social groups.

    d. current migration patterns of household members

    e. current type of water supply, current quantities and costs for water per household for the different settlement areas (urban, peri-urban and adjacent rural areas).

    f. current sanitation practices and sanitation situation on the plots (type of sanitation facilities, where are the toilets, distance from the street, existing bathrooms inside the houses or outside, interest of the owners/tenants in a sanitation solution)

    g. current faecal sludge management practices at the household and community level (containment, transport, treatment and disposal/re-use)

    h. current solid waste management and disposal/re-use practices particularly the use and disposal of plastic and other non-biodegradable materials including the impact on wildlife.

    i. current drainage system for spilled water (soak away, septic tank, use in garden, nothing, others)

    j. current role of women in household water management; interests and expectations of women regarding future water supply and sanitation

    k. current use of drinking water for other than human purposes, e.g. watering small gardens, livestock farming, others.

    It is suggested to document the findings of the socio-economic household survey in a special report, which shall be annexed to the pre-feasibility report.

23. Describe and assess the gender situation in the project area including detailed information about women and girls, the boy child, children, child-headed households,, disabled and elder people as well as other disadvantaged population groups paying special attention to:

    a. Their situation related to access to water and sanitation, e.g., the provision of disability and gender responsive facilities (both latrines and water points).

    b. participation in water resources management,

    c. inclusion and/or employment by water service and water utilities,

    d. participation in decision taking about water and sanitation related issues.

24. Investigate and elaborate on the HIV-AIDS situation in the border towns specifically:

    a. identify the main causes and prevalence levels among different age and social groups,

    b. identify the impacts on both the infected and the affected peoples

    c. assess issues of stigma, denial and rejection

    d. analyse current coping mechanisms, treatment approaches and social support mechanisms,

25. Carry out knowledge, attitudes, behaviour and practices (KAPB) for both towns and based on the findings, suggest possible social engineering campaign measures to improve hygiene, sanitation and water use practices in both towns.

26. Perform a comprehensive and detailed gender analysis based on the findings and conclusions from the tasks above.

27. Describe and assess the needs of animals particularly the wildlife and human conflict in the two towns paying special attention to:

    a. The seasonal and daily movement of wildlife in search of pasture, prey and water in proximity to existing and proposed human settlements,

    b. The access of both domestic and wildlife to the Zambezi River and other water points along known animal corridors.

28. Identify any socio-economic risks associated with implementation of a joint water and sanitation project and recommend possible mitigation strategies against such risks.

29. Make recommendations on feasible economic and livelihood activities (trade, agriculture, tourism, waste re-use, etc.) for consideration in the feasibility study.

The consultant shall document results and findings from the conceptual project planning phase in a Conceptual Design Report as **The Socio-Economic & Social Assessment Report**. The consultant shall bear in mind that this report shall serve as financing proposal of the Zambian and Zimbabwean project applicants vis-à-vis the potential project funder. Therefore, the Conceptual Design Report shall use findings of the socio-economic and social analyses to present a viable and innovative model for water supply and sanitation in Chirundu.

5 Organisation of the study

5.1 Working Schedule

The consultancy services outlined in Section 4 (ò Scope of Work ó) of the present ToR shall be for a working duration not exceeding 40 man-days spread over a period no longer than 3 months. The team is estimated to make up to two (2) trips to Chirundu. The deliverables shall be scheduled tentatively in accordance with the timelines stated below:

- Submission of the Inception Report latest 2 WEEKS after start of activities
- Submission of the Draft Report latest 8 WEEKS after start of activities
- Submission of the Final Study Report latest 2 WEEKS after receiving comments on the Draft Report.

5.2 Logistics

The bidder for the consultancy services is invited to give details on the envisaged logistical set-up for the execution of the services in his technical offer. The project site is the Chirundu towns on either side of the Zambia/Zimbabwe border. Office space on site will be provided by the project partners in the project area but the consultant has to organise all required logistical support including transport to and from site, as well as during fieldwork, on his own.

5.3 Organisation of workshops and meetings

The consultant is obliged to:

- prepare and organise workshops and steering committee meetings for the execution of the prefeasibility/feasibility study,
- present project progress and status at the time of meeting
- document results from those workshops and meetings,
- meet all the direct costs for such workshops and meetings,
- distribute and call for comments for the minutes of the meetings,
- keep the participants lists for the meetings.

During the workshops/steering committee meetings the consultant is expected to provide appropriate translation services (English ï Tonga) for discussions. Presentations/discussions shall be delivered in the English language. The consultant shall not cover travel and per diem costs of Zambian and Zimbabwean project partner organisations.

5.4 Contribution of partners

The Zambian and Zimbabwean partners will provide free of charge all existing information, data, reports and maps as far as available and will assist the consultant in obtaining other relevant information and materials from the competent institutions and authorities as far as possible. However, it is the duty of the consultant to check availability, quality and suitability of this information.

The information, data, reports etc. as mentioned above will be available for the consultantôs unlimited use during execution of the proposed services. All the documents used by the consultant must be returned to the project partners upon completion of the assignment. Due pro-

vision shall be made in the proposal in case he has to procure maps, aerial photographs, meteorological, hydrological and geological data, etc. necessary to carry out the services at his own cost.

In general, the Zambian and Zimbabwean partners will facilitate all staff permits, authorisations and licenses required for performance of the consultantôs services in Zambia and Zimbabwe. The Zambian and Zimbabwean project partners will assist the consultant in customs clearance of all equipment, materials and personal effects to be imported (and re-exported upon completion of his assignment) for the purpose of the execution of the assignment.

5.5 Proposed staff input

The consultant has to provide the necessary staff (administrative/technical, foreign/local personnel), which is required for the execution of his services. In order to enhance the local technical skill and experience, cooperation with local specialists is highly recommended.

It is proposed to carry out the Prefeasibility/Feasibility Study with at least the following key experts:

- *Team leader*: A s*ociologist/anthropologist* with gender and special groups experience in water supply and sanitation schemes with knowledge of cross-border and transboundary projects.
- *Economist*.
- *Environmental Health specialist.*

The TL can assume the role of either economist or environmental health specialist as per the specifications of this ToR.

5.5.1 Team Leader

The assignment team is to be led by a Team Leader (TL) who is expected to be present on site for at least 50% of the time during all the activities for the elaboration of the study phases. The TL shall be the contact person between the Consultant and the Client (and stakeholders) on the project and shall be responsible for liaison with other consultants on subsequent phases of the feasibility study. The TL will also be responsible for the record of proceedings for meetings between the Consultant and the Client and/or project meetings to be agreed in the Contract. The TL is expected to be a *Sociologist/anthropologist expert* satisfying all of the following requirements:

Qualification:

- At least Master's Degree in Sociology/Psychology, Social Development or a related field.

General professional experience:

- At least 10 yearsôsocial assessments, with special bias towards water and sanitation service delivery.
- At least 5 yearsôexperience in carrying out demographic and social baseline studies.
- Minimum of 3 years working experience in the SADC Region.
- Knowledge of gender mainstreaming approaches in project planning.

Specific professional experience:

- Minimum 5 years working experience working with communities in Zambia and/or Zimbabwe.
- Knowledge of state of the art social information gathering techniques
- Very good knowledge of carrying baseline surveys in data scarce environments;
- General experience working in Zambia and/or Zimbabwe, with good understanding of public sector financing procedures in both countries.

Language skills:

- Excellent written and spoken English, as well as excellent communication skills.
- Good understanding of local language, especially Tonga, will be an added advantage.

5.5.2 Economist expert

The socio-economic assessment is to be led by an *Economist* shall satisfy all of the following requirements:

Qualification:

- At least Master's Degree in Economics, Business Development or a related field.

General professional experience:

- At least 10 yearsôexperience in transboundary water resources planning, with special bias towards cross border collaboration in service delivery.
- At least 5 yearsôexperience in water supply and sanitation projects at community level.
- Minimum of 3 years working experience in the SADC Region.
- Experience with ICP funding mechanisms will be an added advantage.

Specific professional experience:

- Minimum 5 years working experience in the water, sanitation, environment and related sectors in the SADC region.
- Very good knowledge of project preparation procedures and SADC-ICP cooperation;
- Good knowledge of DFI funding criteria and financing requirements.
- Experience with working in Zambia and/or Zimbabwe will be an added advantage.

Language skills:

- Excellent written and spoken English, as well as excellent communication skills.
- Basic understanding of local language, especially Tonga, will be an added advantage.

5.5.3 Environmental Health specialist

The environmental health assessment is to be led by an *Environmental Health specialist who* shall satisfy all of the following requirements:

Qualification:

- A degree in Public Health or a related field.

General professional experience:

- Minimum 5 years working experience in the water, sanitation, environment and public health related sectors.
- At least 3 yearsôexperience in water supply and sanitation projects at community level.
- Minimum of 3 years working experience in hygiene promotion and related social engineering programs.

Specific professional experience:

- At least 5 yearsôexperience in epidemiological assessments.
- Good knowledge of disease control in high human traffic environments.
- Experience with the management, assessment and reporting of communicable diseases.

Language skills:

- Excellent report writing skills in English, as well as good communication skills.
- Knowledge of the local languages will be an added advantage.

5.5.4 Other experts and support staff

The specified experts are to be understood as the minimum expertise required to successfully undertake the assignment. The consultant is expected to add extra and/or multi-skilled staff (e.g. for the preparation of maps, implementation of surveys, institutional analysis, legal advice, etc.) as he deems necessary and appropriate to accomplish the task based on his professional judgement.

The three (3) key experts must each have international experience of at least 3 years. For the purposes of this contract, international experience is considered to be that gained from projects of international donor agencies outside the country of permanent residence of the expert, preferably for the execution of similar feasibility studies for international donor agencies. Knowledge of international cooperation arrangements and the institutional frameworks in both Zambia and Zimbabwe is a distinct advantage.

5.6 Reporting

All reports shall be submitted in English. Reporting shall be performed in accordance with the consultant's schedule and comprise at least the following reports (in Hard and Soft copy):

1. Inception Report (4 copies to Zambian partners, 4 copies to Zimbabwean partners, 2 copies to SADC and 1 copy to GIZ [All copies in English])

In the Inception Report the consultant shall present a description of revised/adapted methodology and revised work plan, if necessary. He shall also present results of the inception phase as outlined in section 4.2.1.

2. Draft Socio-economic Report (4 copies to Zambian partners, 4 copies to Zimbabwean partners, 2 copies to SADC and 1 copy to GIZ [All copies in English]).

The Consultant shall prepare the Socio-economic Report comprising the baseline findings on economic, social, hygiene and behaviour issues as well as elaborated recommendations for appropriate service interventions (technological, institutional and operational options) as outlined in section 4.2.2. Furthermore, the report a gender analysis and assessment of the socio-economic stratification in the project area.

3. Final Socio-Economic Baseline Report (4 copies to Zambian partners, 4 copies to Zimbabwean partners, 2 copies to SADC and 1 copy to GIZ [All copies in English])

The Final Socio-Economic Baseline Report shall incorporate comments from all key stakeholders and shall form the source document on socio-economic data for the subsequent studies on the technical and financial feasibility as well as the environmental and climate impact studies.

All documents and reports to be prepared by the consultant during project implementation have to be submitted to the Zambian and Zimbabwean project coordinators, SADC Water Division and GIZ.

In all documents and reports the consultant has to list the references for the data presented and used.

All reports shall contain an executive summary and shall be prepared in DIN A4 format. A separate volume in DIN A3 format can be prepared containing plans and drawings. In addition to these hardcopies, all documents (reports and drawings) have to be provided also in digital format (MS Word, MS Excel and pdf-format, drawings in pdf-format) for the Zambian and Zimbabwean project partners, SADC and GIZ.

5.7 Backstopping and quality control

The home office of the Consultant shall maintain continuous support to the team in the project area. Before submitting any report, the home office is obliged to carefully screen the respective documents to ensure the required quality. The consultant has to describe in his proposal, how he intends to secure the required quality for the preparation of the study, and which of his staff will be responsible for backstopping and quality control and how quality assurance will be performed.