ZIMBABWE NATIONAL WATER PROJECT

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

GUTU WATER SUPPLY SUBPROJECT

MASVINGO PROVINCE

GUTU DISTICT

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Table of Contents

Abbreviations

AGRITEX	Agriculture Technical and Extension Services
AIDS	Acquired Immunity Deficiency Syndrome
CMB	Cotton Marketing Board
DA	District Administrator
EMA	Environmental Management Agency
EMP	Environmental Management Plan
ESMP	Environment and Social Management Plan
GMB	Grain Marketing Board
HIV	Human Immuno Virus
RDC	Rural District Council
SI	Statutory Instrument
STD	Sexually Transmitted Disease
ZESA	Zimbabwe Electricity Supply Authority
ZINWA	Zimbabwe National Water Authority

EXECUTIVE SUMMARY

Introduction

The Government of Zimbabwe has made a request to the World Bank for financial support to finance a Small Towns Water Supply Improvement Project to be implemented by ZINWA. The project components tentatively include (i) investment in repair and rehabilitation of critical infrastructure in selected water supply stations managed by ZINWA (ii) institutional strengthening of ZINWA including project development and design, financial management, procurement project management and monitoring (iii) technical assistance to assess options for transforming ZINWA to enable it to perform its mandate more efficiently; and (iv) strengthening the capacity of urban and rural local authorities to contract with and oversee operations managed by ZINWA in line with their new mandate of being Water and Sanitation Authorities under the new water policy.

Study Methodology

The safeguards assessments and tools were pitched at a level that satisfies requirements of the Zimbabwe legislation for environmental management (Environmental Management Act) and the relevant World Bank safeguards policies. Tasks undertaken for the project included an outline description of the baseline environmental setting, identification and analysis of expected, known and predicted direct, indirect, cumulative, short and long term as well reversible and irreversible impacts of the project during the planning, construction, operation. The description of the environmental setting and the analysis of identified and predicted impacts were subdivided into biophysical and socio-economic realms. An important insight into the people centered issues was obtained through a limited Stakeholder Consultation with some key stakeholders who included households and key institutions. The ESMP study was expressly meant to specify and propose measures for avoiding or mitigating the identified and predicted negative impacts while equally specifying and proposing ways of enhancing and boosting all identified and predicted positive impacts.

Legal and Institutional Framing

The project screening was conducted in accordance with the World Bank Environmental Assessment guidelines and was categorized in category B due to the limitedness of the potential environmental and social impacts. The subproject was further screened in accordance with the

Environment Management Act (CAP 20:27) and a meeting with the Environmental Management Agency (EMA) and the project was exempt from the requirements of the full environmental and social impact assessment. With this two tie screening, the agreed safeguards tool for the project is the Environment and Social Management Plan (ESMP). Despite being category B, the project triggered O.P 4.01 - Environmental Assessment, OP 4.04 - Natural Habitats and O.P 4.37 Safety of Dams because the water supply project is based on the integrity of the Marumura and Woodlands Dams. This ESMP will address the requirements of the Environmental Assessment Policy and Natural habitat through the accompanying management plan while the Dam safety policy will be addressed through the dam safety inspections that will be carried out by ZINWA and furnished to the World Bank as part of project implementation and monitoring. The ESMP will be reviewed by both the World Bank and the local Environment Management Agency (EMA).

Existing Environment

The baseline data included relief and drainage, climate data, inventory and distribution of flora and fauna, land-use patterns, and related socio-economic attributes and statistics. There were no major issues arising from the project as it relates to the environment and social baseline since the project area is already impacted from prior human development activities.

Stakeholder Consultation

This involved questionnaire and interviews with institutions such as RDCs, Government Departments, Schools and Hospitals as well as Residents Associations. The stakeholders showed a lot of support for the project and their inputs will be considered in the project design, implementation and monitoring. There was no stakeholder that was antagonistic to the proposed project.

Analysis of Environmental Impacts

There are both positive and negative impacts which are predicted to result from project implementation. A number of the socio-economic impacts during the construction and operation such as employment generation and improved availability of water are positive. Most of the biophysical impacts from planning through to operation are negative and likely to occur but are

very few and of a limited nature. These include soil disturbance, reduction of biodiversity through cutting trees, deterioration of air quality and hydrological impacts. These impacts occur within converted/already built-up areas and can be adequately mitigated or in some cases removed through the use of appropriate technology, preventive maintenance and the diligent and prudent application of Safety, Health and Environment (SHE) practices. Most planning and construction phase negative impacts are of limited duration, magnitude and extent with high mitigatory potential. Operational phase biophysical negative impacts are related to increased waste water production as a direct result of the ready availability of water. The projects will have positive social impacts during the operation phase. These relate to improved hygiene, starting income generating projects, local economic development, staff retention, and general improvement in the quality of life of people. The projects are not going to result in the displacement of people or disturb physical natural resources.

Environmental Management and Monitoring Plan

An Environmental Monitoring and Management Plan EMMP is the Management Plan produced in this ESMP document after assessment of the potential impact and outlined for avoiding/mitigating negative impacts and enhancing/boosting positive impacts. The EMMP buttresses the sustenance of existing environmental management interventions, as well as continuous monitoring of critical environmental parameters. Mitigation costs incurred in the implementation of some of the environmental protection initiatives are generally very low and can be easily offset by recovered benefits of more water, better hygiene and sanitary health.

Conclusions and Recommendations

All engineering works will be undertaken within already converted land uses, which imply very limited negative biophysical or even socio-economic interference with environmental/ecological systems and services as well as livelihoods and social well-being of the neighboring and interested human communities. The minor negative biophysical impacts related to the construction and operation phases (construction equipment/vehicle and construction work force

related pollution and externalities and consequences of increasing numbers of residents due to availability of water) can all be adequately mitigated. Furthermore, the health and livelihoods gains by the affected communities from these subprojects are so huge and are bound to overwhelm the minor negative impacts with high mitigatory potential.

CHAPTER 1

INTRODUCTION

1.0 Introduction

1.1 Ministry of Environment, Water and Climate

The Ministry of Environment Water and Climate is an arm of government with the mandate to lead in sustainable environmental and natural resources management for socio-economic development both nationally and with the region.

The MEWC thrives to promote best practices in environmental and natural resources management and operates under the following key result areas

1. Integrated Water Resources Planning, Development and Management
2. Environment and Natural Resources Management
3. Climate Change Management
4. Provision of Seismic, Weather and Climate Information (Forecasts, Warnings, Advisories and Reports)
5. Management and Accountability of Financial, HR and public Assets of the Ministry

1.2 Zimbabwe National Water Authority

The Zimbabwe National Water Authority (ZINWA) is a national organisation, responsible for water resources development and management and providing treated drinking water to small towns, growth centres and government establishments in Zimbabwe. ZINWA has seven sub-offices (catchments) which are based on the seven hydrological catchments in Zimbabwe. ZINWA was established under the ZINWA Act of 1998 and is a body corporate institution which operates on a commercial basis.

In the last decade or so, the performance of ZINWA has been affected by many factors including the economic collapse which resulted in under- funding of both O&M and capital investment. The economic collapse also resulted in loss of skilled human resources especially to

neighbouring countries. As such infrastructure deteriorated resulting in poor service delivery. Consequently customers became unhappy and unwilling to pay for the services leading to low revenue collection. This further reduced the capacity of ZINWA to operate the water and sanitation systems effectively. This did not only affect ZINWA, but also other agencies tasked to provide water and sanitation services in Zimbabwe such as local authorities. The collapse of the water and sanitation services in Zimbabwe was linked to the 2008/9 cholera outbreak which affected over 100,000 people and resulted in about 4,300 deaths.

ZINWA operates about 500 water supply stations throughout Zimbabwe. The systems are an assortment of conventional water treatment and supply networks, groundwater fed systems and sand abstraction systems. Most of the water supply systems are in need of urgent repair and rehabilitation. Water supply is erratic in most areas due to the reduced capacity of the systems coupled with recurrent breakdown of key equipment and components of the systems. There are a lot of areas were water and sanitation coverage is below 100%. In such areas communities have resorted to other alternative forms of water supply, many of them unsafe. Over the last few years especially after the cholera outbreak of 2008/9, a number of activities have been carried out mainly by NGOs and donors to restore and improve water supply and sanitation services in Zimbabwe including in areas managed by ZINWA .The aim has been to prevent a repeat of the cholera outbreak and preserve the water and sanitation infrastructure. However a lot still needs to be done in order to completely restore services and achieve sustainability.

1.3 Overview of the Zimbabwe National Water Project

The Zimbabwe National Water Project will have three components with indicative costing as below; Component 1: Growth Center Water and Sanitation Improvements, Component 2: Technical Assistance, including National Water Resources Master Plan; TA for a Water Services Regulator; TA to Local Authorities; Institutional Strengthening of ZINWA; and Training and Component 3: Project Management

1.3.1.1 Component 1: Growth Center Water and Sanitation Improvements:

This component will finance investments in water supply and sanitation rehabilitation and upgrading in 7 growth centers. Detailed designs (including bills of quantities and tender documents) and preliminary Environmental Impact Assessments (EIAs) were completed for all 7 growth centers in 2014 (with funding from the A-MDTF) in order to address all short, medium and long term investment needs. Investments will include expansion and rehabilitation of water treatment works, boreholes, transmission mains, storage and service reservoirs, distribution system, connections and meter installation and replacement. The works will also include minimal works to restore operation of the wastewater treatment systems in the project areas. The works planned will include clearing and desludging, repairs of inlet works and fencing and operators facilities. The investments are estimated at about US$ 14 million. The project will be implemented in the following catchments and water supply stations: Guruve (in Manyame catchment), Gutu (Runde), Lupane (Gwayi), Madziwa (Mazowe), Mataga (Mzingwane), Nembudziya (Sanyati) and Zimunya (Save).

The seven highest priority stations for the purposes of this Project are all termed "Growth Centers" were selected from the 50 stations, one per water catchment area based on the number of beneficiaries and the expected economic benefit of the Project. The most important consideration for selection of priority stations was to address underserved areas where mostly the poor live, including where new communities have come up, or schools and clinics and other public institutions that need a supply of good, safe water. Practical considerations were also factored in such as the readiness of ZINWA designs, priority stations needing attention particularly for expansion of networks, as well as taking into consideration ZINWA's own recommendations. Financial and economic viability was also taken into account. The selection also targeted stations with minimum environment and social impacts and specifically where there is no resettlements.

1.3.1.2 Component 2: Technical Assistance:

Technical Assistance (TA) will be provided to strengthen the capacity of the relevant national and local institutions needed to ensure the sustainability of the investments and improve the overall planning, regulation and reform of the sector. There will be five sub-components of TA:

i. Sub-component 2.1: National Water Resources Master Plan:

The Government has requested TA under the Project to develop a national water resources master plan. The Master Plan will build on the National Water Master Plan of the early 1990s and the subsequent Catchment Outline Plans developed in the mid-2000s. The Master Plan is expected to cover the following key areas: a full understanding of the quantity, quality and spatial distribution of the water resources available in Zimbabwe (surface water and groundwater); a characterization of the different uses (consumptive and non-consumptive) and users (energy, domestic, recreational, environment, irrigation, industry, mining) and an assessment of the varying demands (across catchments, national, sub-national and transboundary); assessment of the resilience of the water resources to climatic variability and indicative adaptation measures to climate change. The master plan will assess the gap between supply and demand and update previous supply assumptions using the latest climate change modelling data. Investment needs for the sector will be assessed as well as other measures needed to restore meet national development goals. It is expected that MEWC will analyze and outline the institutional mechanism necessary to manage the TA including the option of strengthening the Water Resources Sub-Committee of the National Action Committee (NAC) to assume the role of a Steering Committee for the TA

ii. Sub-component 2.2: TA for a Water Services Regulator:

The Government has decided to set up a water and wastewater services regulatory authority and has approved a Cabinet Memorandum in April 2015 to this effect. The memo proposes the setting up of a single sector regulator that would cover both water resources regulation as well as water and sanitation services. The main purpose of the regulator will be to balance the interest of the consumer – whose interest is best service at least cost – with that of providers who are generally a monopoly position, but need to receive predictable periodic tariff adjustments that are

cost reflective and sustainable along with adequate access to water resources. The regulator will thus ensure that the agreed rules are fairly implemented and that all people are served with at least a basic service and at a minimum acceptable standard. MEWC requested the Bank to support the setting up of the regulator. Bank support will be through the proposed Project and through TA from the Water and Sanitation Program. The following areas of support were proposed: (i) developing a roadmap for the establishment of the regulator based on international good practice detailing: institutional options; required legislative amendments; a business and financial plan for the regulator; (ii) south-south learning exchange; (iii) integrating or interfacing Service Level Benchmarking (SLB) currently being practiced by 32 municipal councils into the regulatory process; and (iv) office setup costs as appropriate.

iii. Sub-component 2.3: TA to Local Authorities:

Two activities have been proposed by the Ministry of Local Government, Public Works and National Housing (MLGPWNH) for consideration under this sub-component. TA to support Local Authorities and ZINWA formalize water service agreements: Six of the proposed investments under this project are all in the jurisdiction of Rural District Councils. The seventh, Lupane, was re-categorized as an Urban District Council in 2015. As the capacity of these councils is limited – most not having or being in a position to hire an engineer – MLGPWNH and MEWC confirmed that the councils would need to develop a service provision agreement with an operator to ensure the sustainability of the proposed investments. In line with the 2013 National Water Policy all of these Local Authorities – as the Water Service Authority – will need to develop a water service provision agreement with a service provider for the investment, operation and maintenance of the water production operations. In some cases this service provision agreement should also cover sewerage. The project will assist Local Authorities and ZINWA pilot these agreements, either through formal Water Service Agreements or through Memoranda of Understanding between both parties. The clear separation of roles between the Water Service Authority (the Local Authority) and the Water Service Provider (in this case ZINWA) will also allow for future potential private sector participation through local operators or other.

Promoting Sanitation Improvements in Small Towns: Sanitation in small towns is a major challenge and institutional responsibility for it is unclear. It is proposed that MLGPWNH will develop a TOR for a sanitation assessment to be carried out. Some investments will be channeled towards improving identified sanitation needs as appropriate. In two of the small towns (Gutu and Zimunya) existing waste stabilization ponds, currently under the management of ZINWA, will be rehabilitated. Options for community mobilization for sanitation will be identified, and where necessary potential for community revenues using wastewater implemented (small irrigation, growth of duck weed, etc). Sanitation promotion and hygiene education will also be considered during project preparation.

iv. Sub-component 2.4: Institutional strengthening of ZINWA:

In 2014, at the request of ZINWA, the Bank financed a skills audit and strategic gap analysis to identify key areas to strengthen ZINWA. Three key areas were identified as priorities: (i) a need to separate the utility and water resources function of ZINWA – as identified in the National Water Policy; (ii) a lack of commercial orientation and (iii) a lack of customer focus and poor stakeholder management. The following areas have been proposed for support under the project.

a. **Improving the commercial and customer care orientation and functions of ZINWA:** Financial records of ZINWA indicate that it is currently not in a good financial situation and is making losses. Some of the key drivers for ZINWA to be in this situation include high non-revenue water and low revenue collection. The assessments carried out on ZINWA highlight the institutional inadequacies of ZINWA as one of the key issues needing attention. There is no full-fledged commercial department in ZINWA that is charged with managing its day-to-day commercial functions that include (i) customer care, (ii) dedicated debt management (iii) connections, and (iv) metering; (v) non-revenue reduction and (v) billing. ZINWA has recently established a "commercial unit", however the mandate of this unit is to explore new business opportunities for ZINWA. Under the project it is proposed that a consultant be hired to assist ZINWA to design and setup an

effective commercial services department which shall have as its main functions revenue generation through connections, metering, billing, and revenue collection including debt management. The consultant will assist ZINWA in developing/refining its service and customer charters, set up a customer care unit and propose a road map for a fully-fledged modern and responsive customer care unit. The improvement in customer care functions will improve the image of ZINWA and lead to better complaints handling resulting in enhanced willingness to pay by customers. The commercial services department will also manage customer care function.

b. Citizen Engagement:

There is a realization that effective engagement of citizens will lead to better service delivery and accountability. The Beitbridge Impact Assessment, for example, makes a number of general recommendations on how to maximize state building dividends in infrastructure projects, such as: (i) identify and address inequalities that may be long-standing or that have emerged during recent crises; (ii) support local authorities (in this case RDC/ULA and ZINWA) to clearly brand improvements in service delivery to ensure citizens recognize that it is government institutions that are delivering results; and (iii) collect base-line and end-line data on citizen attitudes and confidence in domestic institutions to assess whether investment has changed citizens perceptions. Government is moving towards requesting state enterprises including ZINWA to provide people-centered services. It is also pressing for greater citizen engagement and accountability. The National Water Policy also states the need for customer and stakeholder involvement as a way of increasing accountability in the water sector. In recent months ZINWA has established water committees in areas where it supplies water including some of the project areas. The project will finance a TA to develop a citizen engagement and commercialization strategy for ZINWA building on current initiatives by ZINWA and drawing from the general guidelines and recommendations of the water policy and other government policy documents. This activity will require close consultation and collaboration between ZINWA and local authorities. The strategy should address among other things gender and vulnerable groups including HIV and Aids. The TA should also propose possible institutional arrangements/realignment of ZINWA to be able to effectively deal with citizen engagement.

Activities including under citizen engagement, which will most likely fall under the commercial department, will also need to be complementary with the stakeholder consultation under the safeguards work.

c. Gender:

The Bank will assist the Government to develop a gender strategy for the Project, and suggested that the Government consider involving the Ministry of Gender in the appropriate way.

v. Sub-component 2.5: Training:

MEWC will develop a training plan, together with ZINWA and other relevant agencies, for support under the Project. The training plan will include training needs of all project implementing entities, such as MEWC, MLGPW, and Local authorities in the project areas, but will focus on the operational training needs required by ZINWA to implement the project and ensure sustainability of the investments. There will also be on-the-job training through mentoring by consultants hired to support the PIU. The needs assessments have identified capacity gaps in the areas of utility management (commercial and customer care functions, non-revenue water management), asset management, project management, procurement, safeguards and, monitoring and evaluation. From the assessments and discussions with ZINWA and other key stakeholders it is evident that there is need to strengthen ZINWA, and other agencies, in these areas. ZINWA is also not familiar with World Bank procedures and policies for project implementation. This is due to the absence of World Bank support for nearly two decades during which period most government entities including ZINWA has not implemented Bank financed projects.

1.3.1.3 Component 3: Project management:

ZINWA will set up a Project Implementation Unit (PIU) to manage the project. The PIU will directly manage component 1 and act as secretariat to the various lead ministries for sub-component 2.1, 2.2 and 2.3. The PIU will be staffed with 5-7 staff, including a Project Manager and include competence in engineering, procurement, financial management, safeguards and monitoring and evaluation. The PIU may also have secondees (focal point officers) from other entities participating in the project. The Project Manager, shall be the link person with the World Bank and will work closely with each Project Implementation Team (PIT) established in the catchments. The PIU shall be responsible for monitoring progress in each catchment and shall be responsible for all procurement. The PIU shall also be responsible for : (i) overall coordination of project activities; (ii) managing the project's special account and ensuring proper and timely project accounting and reporting of project expenditures (iii) preparing consolidated progress reports. The Project Manager will use the quarterly reports from the PITs in the catchments to prepare a consolidated progress report. The report should cover: (i) progress to date in the implementation of the project; (ii) challenges and proposed actions to address them; (iii) status of the procurement process of key goods and materials; and (iv) status of disbursement and projection (v) the environmental and social safeguards and (vi) monitoring and evaluation. The PIU shall submit the report to the Government and the Bank. The PIU will also serve as its Secretariat and shall coordinate the PSC meetings and prepare minutes of the PSC meetings.

1.3.1.4 Project Implementation Team:

A Project Implementation Team (PIT) will be established at catchment level to implement the sub-project in the catchment and coordinate all other project activities that will involve the catchment. The PIT shall comprise the Operations Engineer, safeguards and financial support staff, secondees from the Local Authorities and other staff as appropriate. The Operations Engineer shall be the PIT Team leader and shall report to the Project Manager and the Catchment Manger via the Operations Manager. The Catchment Manger shall be tasked with overseeing progress on works in the catchment. The PIT will be responsible for day-to-day activities related to the project. It shall be responsible for drawing/approving specifications of goods, works and services in the catchment including preparing procurement requests to be forwarded to the PIU.

The PIT shall also be responsible for daily supervision and certification of works, preparation of payment certificates, receiving and verifying material specifications as well as maintaining accurate project records (materials, work done and labor and equipment returns). The PIT shall also oversee the consultants working on activities in the catchment. The PIT is expected to meet regularly and shall prepare progress reports covering progress to date, disbursement progress , update on procurement , safeguards compliance, monitoring and evaluation aspects, bottlenecks affecting progress and proposed measures to address them and plan of action for remaining works and, progress and disbursement projection.

1.3.1.5 Monitoring and Evaluation:

The project will play close attention to M&E as this is the first investment project in Zimbabwe in over a decade, and can inform future investments in the water sector and other sectors. ZINWA will set-up an M&E system in the PIU that will report to the Project Steering Committee and the Bank. The PIT in each catchment will conduct regular (monthly) reviews to assess physical progress, progress towards targets including connections, identify implementation bottlenecks and propose solutions to speed up progress and a program. The PIT will prepare monthly reports based on these reviews and forward to the PCU. The Project Coordinator will use the quarterly reports from the catchments to prepare a consolidated progress report. A consultant will be hired to assist the PCU and PIT in conducting periodic monitoring and evaluation and preparing M&E progress reports. The PCU should send the monthly progress report to the SC and share the same with the Bank.

1.4 Scope of the ESMP

The main objective of this ESMP is to promote sustainable development by ensuring that the water supply project does not undermine critical resource and ecological functions or the well being, lifestyle and livelihood of the communities and peoples who depend on them. As a decision making tool, the assessment sought to inform the decision making process by

identifying the potentially significant environmental effects and risks of the proposed project activities, assessing them, evaluating the possibility of alternatives and proposing the mitigation measures of any significant negative impacts through an environmental management plan.

Only those elements of the environment that have a direct bearing on the impact assessment process of the project are discussed. The severity of the potential impacts is largely determined by the state of the receiving environment.

This ESMP is only meant for rehabilitation works earmarked for the rehabilitation works of Gutu Water supply infrastructure under the auspices of the World Bank. The works are expected to start in the year 2015 however the duration of the project is yet to be determined.

1.5 Potential users of the ESMP

- ZINWA- for project implementation and monitoring.
- Contractors -for project implementation, ~~mention that~~ this will constitute part of the bidding documents for contractors.
- General public- for ensuring that their interests are covered and also their informed participation in the project design, implementation, monitoring and evaluation.
- EMA -for monitoring.
- RDC- for monitoring.

CHAPTER 2

PROJECT DESCRIPTIONS

2.1 Introduction

The town is located within the Runde Catchment/Mutirikwi Sub-Catchment, Gutu District in Masvingo Province. It is situated within Agro-ecological region III/IV with average annual rainfall of 450-750 mm. The core livelihoods in surrounding areas are subsistence mixed farming by rural populations and scattered medium sized cattle Ranches. Within the fledgling town, the major livelihoods are small General Dealer shops and their workers as well as government employees (mainly police, teachers and nurses as well as RDC and DA and service parastatals such as ZINWA etc. The bulk of the population is involved with vending of a variety of goods and wares ranging from vegetables, grain, clothing and hardware in structured or open markets.

The town's population is estimated between 15 000 and 17 000. Although the former Growth Point was recently awarded a town status, it still remains under the jurisdiction of Gutu Rural District Council. The project is aimed at catalyzing the connection and delivery of water to approximately 4 000 residents in addition to boosting the delivery of water to existing connected residents numbering about 11 000. There is a total of 600 serviced and yet-to-be serviced stands in the town broken down as follows; Hwiru (300), Mpandawana Extension (200) and Chomfuli (100). There are six schools in the town, comprising three high schools and three primary schools. There is also a referral District Hospital and an RDC Clinic.

The town's raw water sources are Turramura and Woodlands dams with a combined capacity of 5.5million m^3, which is more than adequate for the projected increase in demand with the coming on stream of the new residents and the adequate supply to all existing connected residents. The Treatment Plant has a design capacity of 200 m3 per hour but is currently producing 210m3/hr. The Treatment Plant, Raw Water and Treated Water Mains, as well as the Reticulation networks will need to be both refurbished and upgraded. Limited clearance for expansion work on the Treatment Works, Reservoirs and Reticulation Networks will be carried

out and the necessary applications have already been done, complete with way-leaves. There will also be very limited treatment backwash waste water as well as an increased wastewater generation as water becomes more available to the residence. The increased water abstraction from the raw water sources will have some environmental impacts in terms of energy consumption in pumping the raw and treated water, and the operation of sewer treatment facilities.

2.2 Project location

Gutu is located in Masvingo province 135 km south of Chivhu in the Runde catchment. Runde catchment offices are located in Masvingo. The GPS coordinates for the centre of the town are as follows:

South: 190 40,605'

East: 310 08,338'

Elevation: 1117m

2.3 Project description

2.3.1 Current Treatment System

Gutu has 2 sources of raw surface water, being Turamura Dam and Woodland Dam. The former source was the original source with the latter only being brought into service due to the inadequacies experienced with the Turamura source which dries up for 4 months of the year.

Woodlands is nearly 5km away so ZINWA prefer to use Turamura as it is nearly adjacent to the WTW and consequently the pumping costs are lower. Both abstraction pump stations deliver to the same point at the head of the WTWs.

2.3.2 Existing water supply system components

a) The capacity and condition of intake civil works and raw water transmission mains

Turramura Abstraction

The pump station at Turamura dam is located above water level in a tower connected to the wall by a concrete bridge that also carries the electrical supply cables and the delivery main. The pump station was originally fitted with 3 pumpsets, capable of a 4m suction lift, operating on a 2 duty/1 stand by

basis. At present only 1 pumpset is operational with one pump being dismantled and another taken to Zaka. 2 of the motors are missing. All 3 starters are in place but the operational status of the unused units is unknown. There is a working bulk water meter on the 250mm NB steel delivery pipeline that indicates a flow rate of 212m^3/hr which confirms the operator's estimate of a raw water delivery rate of 205m^3/hr.

The station has very poor internal lighting and no overhead hoist and chain. The temperature and vibration of the working pump and motor bearings are acceptable. The pump station is supplied from a transformer on the shore that has no name plate visible or ZESA identification label. One fuse is missing, there is evidence of oil leaks and no desiccant bowl is apparent.

Woodland Abstraction

Location - S 19^0 42,521', E 31^0 06,701.

The arrangement of tower, bridge and pump station is the same as at Turamura. There is however an additional complication in that 2 plinths have been built in the dam, adjacent to the pump station but at a lower level, so that when the dam level drops below the suction capabilities of the pumps one of the pumps can be lifted down to either plinth connected with flexible hoses to the delivery main and electrical cables to a separate MCC thus ensuring raw water delivery.

The station was designed to be equipped with 3 pumpsets operating on a 2 duty/1 stand by basis. None of the pumpsets are in place with the only recently operational unit having been moved to Great Zimbabwe in 2012-2013. There is a bulk meter installed in a steel section of the delivery main, which is otherwise AD, and NRVs have been installed for both permanent and temporary pump locations. There are 4 starters installed for the 3 permanent pump locations and the temporary locations.

In the case of 2 of the permanent locations the starters have been damaged by fire/flashing and would need to be replaced. There is no way of knowing the delivery capability of the pump station but the operators say that the WTW achieves the same rate of treated water when this station is being used so an assumption of at least 200m^3/hr would be a reasonable estimate. The station has very poor internal lighting and no overhead hoist and chain.

There are 150mm gate valves after the pumps, valves on the raw water transmission main. There no air valves or NRV after the Turamura low lift pumps. A 150mm NB Kent meter, functional, is installed by the pump station.

The pump station is supplied from a transformer on the shore that has no name plate visible or ZESA identification label. There are 2 broken arrestors which need to be replaced.

b) **Sufficiency of supply – that is, if the source of supply meets demand**

The supply from Turamura dam does not meet the demand from the WTW for 4 months of the year, September to December. The supply from Woodland is sufficient although one pumpset has to be relocated to outside of the pump station and the costs of using this facility are higher than for Turamura.

c) Capacity and condition of filters and other treatment works

The WTW is of a standard ZINWA design rated at 200m3/hr clear water production. There is a working bulk water meter but readings were not taken to indicate flow rate. However the OIC stated that the plant is meeting the 200m3/hr design output.

Clarifiers - generally in good condition, some minor leaks to be addressed, additional handrails required.

Filters - generally in good condition, filter media and nozzles to be replaced.

d) Chemical treatment, e.g., alum and chlorine dosing systems are working or not

Alum - solution is mixed by hand, dosed by bucket with a plug at clarifier inlet, no dosing pumps.

Chlorine - solution is mixed by hand using HTH, dosed by bucket with a plug at clear water reservoir, no dosing pumps.

This situation is common to most WTW. Discussions with the Save Catchment Manager would suggest that ZINWA are aware of this problem but would not in general like to revert to the original method of dosing using pumps given the additional maintenance required.

e) Capacity and condition of clear water pump station and transmission main

The original clear water pump station was fitted with 3 multi-stage horizontal pumps and motors operating as 2 duty/1 stand by. When these pumps failed, and they are more difficult to repair, 2 pumpsets were imported from Gwenoro dam outside Gweru. On the demise of these units, in 2010, 2

new pumpsets, operating as 1 duty/1 stand-by were sourced from China and installed. These are installed in a seperate lightweight sheds outside of the pump station. Both of these relatively new pumpsets are working, use the same suction connections to the clear water reservoir, and connect into the existing delivery main. New starters were also supplied with the pumpsets. The condition of the starter for P2 is of serious concern as the back of the panel is open to allow for cable entry and therefore the live 44V bus bars are exposed. This not only presents a serious danger to people but also allows the ingress of animals and dust. At present P2 cannot be used as an inline valve has been removed and the discharge line is incomplete.

The transformer for the WTW is a pole mounted unit located within the site. 2 fuses are missing and no arrestors are installed. It would appear as if the 2 connections on the downstream side of the 500A breaker are for the old pump station and the new starter to P2 that the loops to P1. There are reports of several breakdowns on the clear water transmission man. These bursts occurred by the road crossing. The Road Authority upgraded the road and somehow this affected the work on this stretch. The burst occurred where the exposed pipe passes through a culvert. Currently the pipe has been anchored in position by means of steel pegs driven into the ground. There is a 250mm NB NRV by the high lift pump station. This NRV is not working, and gate valve installed on the same place was affected by water hammer and is no longer working. Currently this section is being by passed and a 150mm gate valve is being used instead There is a 250mm gate valve at reservoir inlet and this is not functional. A 250mm bulkmeter at high lift pump station is also out of order.

f. General building and services condition

In general the condition of the buildings structures is acceptable. The small power and lighting systems need to be replaced to allow maintenance at night. External lighting is insufficient and raises safety and security concerns. The perimeter fence is complete so there is control over access to the facility.

g. Capacity and condition of storage

There are two concrete ground reservoirs which are in a fairly good condition. There are external ladders, but there is need to provide internal ladders. Reservoirs at Gutu are 2280m³and 1000m³. The inlet and outlet valves to each of these tanks are 250mm NB CI, Ladders to these tanks need to be replaced. The tanks need minor repairs where the concrete was chipped near top.

There is insufficient storage to take care of the minimum 2 day storage.

h. Distribution system analysis including service connections and meters or water points

The water distribution system within Gutu only covers the original area of the town dating from the mid eighties. The reticulation system is predominantly below ground asbestos cement pipework with galvanised steel individual connections to the plots. These connections vary in size depending on the plot use with domestic connections being 25mm in general. Pipeline routes are mainly within road servitudes, there are no pressure relief valves fitted and minimal zone valves. Where recent repairs have been carried out some of the AC pipework has been replaced with uPVC.

There are no air valves in the reticulation system, but there are 150mm NB zone valves installed in the reticulation system. Some of these zone valves are no longer functional. There is need to install air valves in the system.

i. Service pressures

The existing reticulation is gravity fed from the storage reservoirs. This gives a static head available at the reticulated areas of approximately 40m which would account for the absence of pressure controlling valves.

2.4 Proposed

2.4.1 Immediate improvements

The proposed immediate improvement for Gutu is as follows:

- Equipment package for leak detection (pipe locator box locator, ultrasonic clamp on meter, 2 X acoustic listening stick, basic leak noise correlator, ground microphone, noise logger (set of six), 10 X sampling customer meters)
- House to house survey (to update customer data base for connections, meters, identify illegal connections, etc
- Topographical survey (to plan distribution system based on road layout, prepare network maps, etc)
- Install Woodland low lift pump sets
- Dosing Equipment (injectors - alum + chlorine)
- Supply, fix and install new filter media for filters X 2

  Total Cost Estimate is $80 865.00

2.4.2 Medium term investment needs

The proposed medium term improvements to the system in Gutu are as follows:

- Establish 2 pilot DMA's (bulk meter, pulse sensor, data logger, 3 X pressure gauges/ pressure logger, meter box, 5 X isolation valves)
- Provision for pipe network rehabilitation including distribution mains, service pipes, valves, etc
- Procure Low lift pumpset and starter, high lift pumpset and starter, & Install bulk water meters, Low level switch to clear water reservoir,
- Replace valves,
- Construct new reticulation main. Allow for pipe connections.
- Procure motor bike & bicycle.

  Total Cost Estimate is $309 162.00

2.4.3 Long term investment

The proposed long term developments are:

- Extension to the WTW, 50m³ /hr
- Install raw water pumpset and starter,
- Reinforce raw water transmission main
- New PVC distribution mains max 110mm, includes excavation, backfilling, supply, load and offload, handing

Total Cost Estimate is $559 157.00

CHAPTER 3

LEGAL AND INSTITUTIONAL FRAMEWORK

3.0 Zimbabwean Legal Framework

The Zimbabwean legal and policy framework for environmental assessment and management highlights the following points:

a) Environmentally responsible investment and development in Zimbabwe must be encouraged through transparent, predictable, equitable and effective administration of the EIA policy.

b) The long-term ability of natural resources to support human, plant and animal life must be maintained. A broad diversity of plants, animals and ecosystems must be conserved.

c) Natural processes such as the recycling of air, water and soil nutrients must be conserved.

d) Irreversible environmental damage must be avoided and any inevitable environmental damage must be minimized through innovative mitigation.

e) The basic needs of the people affected or likely to be affected by a development proposal, including food, water, shelter, health and sanitation must be met.

f) Social, historical and cultural values of people and their communities must be conserved.

In brief, the purpose of the EIA policy is based on the incorporation of sustainability principles in project planning, evaluation and monitoring. It is also based on the understanding that many decisions concerning the environment are dependent upon meaningful public consultation and that upon being accepted, various government agencies with a mandated interest which include the Environmental Management Agency (EMA), should implement the EIA results on behalf of the Ministry of Environment Water and Climate. EMA is accordingly responsible for the EIA/EMP review, implementation and enforcement. The EIA policy also explicitly pays particular attention to the distribution of project costs and benefits in the spirit that as much as possible, development projects should support local as well as national growth. ***A minimum standard is that local people must be no worse off than they were before a project is implemented.*** It is in this spirit that formal ESMP documents should be openly accessible to all stakeholders during the scoping stage.

3.1 Administration of the EIA Policy

The Director-General of EMA has been delegated the responsibility for overseeing the processing of ESIP and ESMP submissions. The Minister is empowered to prescribe any activity, policy or program that in his/her view may cause significant environmental impacts or community disruption. A prescribed activity cannot receive the required authorizations to proceed from the relevant permitting authorities unless, and until, the Ministry has exempted the activity from the requirements of the EIA policy or has granted 'EIA Acceptance'. EIA acceptance is granted when the Ministry determines that the assessment of an activity has been sufficiently thorough to adequately identify the environmental impacts, which it is likely to cause, as well as measures for managing them. All formal submissions under the EIA Policy are made to the Ministry through the Environmental Management Agency (EMA). Pertinent pieces of legislation include;

3.1.1 Environmental Management Act (20:27)

The Environmental Management Act provides for the sustainable management of natural resources and protection of the environment; the prevention of pollution and environmental degradation. The Act covers Environment Impact Assessment for new projects, standards to be adhered to on emissions, conservation of resources and environmental monitoring. Several aspects of this Act are relevant to the seven water supply upgrade projects. While water abstraction projects are prescribed projects listed in the First Schedule as activities for which environment impact assessment is required, the current projects qualify for exemption on the grounds that they are refurbishment/upgrade projects which occur on converted sites. The Act and Statutory Instruments are based on set principles that serve as guidelines for decision-making on policy implementation and these are summarized as follows;

- the EIA must enhance and not inhibit development by contributing to environmental sustainability and is a means for project planning, not just evaluation,
- the EIA policy depends on the normal regulatory functions of permitting authorities to implement the EIA results,

- the EIA policy involves the participation of all government agencies with a mandated interest in the benefits and cost of a project
- the EIA policy pays particular attention to the distribution of project costs and benefits, and
- identification of project impacts and public consultation is an essential part of the EIA policy

The current subprojects, subject to EMA exemption, will need an ESMP for purposes of managing the few negative impacts as well as boosting the obvious positive impacts.

A number of Statutory Instruments (SIs) have been promulgated in support of the Act as follows;

Waste and Solid Waste Disposal Regulations – SI 6 of 2007

This SI regulates the disposal of waste (solid waste and effluent). It prohibits any person from disposing waste into a public stream or ground water without a licence. The SI uses the polluter pays principle through licensing which is according to the following classes:

- ***Blue****: in respect of a disposal that is considered to be environmentally safe*
- ***Green****: in respect of disposal that is considered to present a low environmental hazard*
- ***Yellow****: in respect of a disposal which is considered to present a medium environmental hazard, and*
- ***Red****: in respect of a disposal that is considered to present a high environmental hazard*

This means that the waste streams from the project from the planning through construction phase to the operation phase should not be in the red category. **In line with SI 6 of 2007, ZINWA should obtain effluent discharge licenses for the backwash effluent. For Zimunya, it is expected that the license will be in the blue owing to the land application of the effluent.**

Environmental Management (EIA and Ecosystem Protection) Regulations - SI 7 of 2007

The SI deals with regulation of the EIA process and protection of ecosystem. Part II of the Act provides that no project shall be implemented without an EIA having been done. These regulations provide the method of doing the EIA. The developer has to submit a prospectus

to EMA who will screen the project for the fully EIA, ESMP or complete exemption. In preparing an EIA, a developer is obliged to consult widely with all stakeholders. The Statutory Instrument prohibits extraction, possession, transportation of sand and clay deposits for commercial purposes without a licence issued by the Agency. The SI also provides for the prevention of veld fires, protection of wetlands and public streams.

This is pertinent for the current project. The proponent will need to ensure that no veld fires are caused by workers at the project site. Licences may be necessary for sand abstraction and transportation, if required. **This ESMP is part of the fulfillment of the requirements of this legislation.**

- **Hazardous Substances, Pesticides and Toxic Substances Regulations - SI 12 of 2007.**

This instrument prescribes the conditions which have to be observed by employers over the handling of hazardous substances at the workplace, conditions for transporting hazardous substances and procedures to be followed when there is an accidental spillage of the hazardous substances. EMA is empowered to issue spot fines to any person who violates the law. In addition, any person whose substances affect the environment is liable to pay for the cost of restoring the environment i.e. polluter pays principle. The offender is also liable to pay compensation for any damage caused by the offence to any person. The hazardous substances handled during the construction phase of the subprojects include oil and fuel. **In line with this legislation, ZINWA needs to obtain hazardous substances storage license for its chemical storage at the water treatment plants.**

- Environmental Management (Atmospheric Pollution Control) Regulations, 2009

The objective of the SI is to provide for the prevention, control and abatement of air pollution to ensure clean and healthy ambient air. It provides for the establishment of emission standards for various sources such as mobile sources (e.g. motor vehicles) and stationary sources. It also covers any other air pollution source as may be determined by the Minister in consultation with EMA. Emissions limits for various facilities and vehicular transport have been set. EMA will issue emission licences for processes that are prescribed under the SI. These licences also

embody the "polluter pays" principle. The licences have four bands that is the blue, green, yellow and red. Classification depends on two important variables, the concentration of the emission and the mass flow. Any process which emits emissions above the red class upper threshold value will not be licensed. The emission licences are issued subject to the following conditions; the licence expires on the 31st of December of the year of issue, the licence is not transferable. The SI will affect emissions from vehicles, generators and pumps/engines as well as dust emissions. **There is no real legal compliance requirement for the project besides that ZINWA should ensure the mobile equipment, diesel engines and vehicles are serviced adequately, but there is no license required for such.**

3.1.2 Rural District Councils Act (29:13)

Section 71 (First Schedule) lists the powers of the Rural District Council. Among other things, these include conservation of natural resources, control of bush fires, grazing, animal diseases, sewerage works, pollution, and effluent or refuse selection, collection and disposal etc. In addition to the powers bestowed upon them, Rural District Councils are the Development and Planning authorities within their respective areas of jurisdiction. In this regard, the Act empowers them to plan for the overall development of the Districts.

As development and planning authorities, they are also expected to be aware and guide all development activities carried out by governmental and non-governmental organizations and the private sector within their jurisdiction. Any development that takes place within the Rural District Council's area of jurisdiction should be carried out within the provisions of the council's priorities and approved development plans to allow for coordinated and collective approach to development. **RDCs also issue permits for sand abstraction and this project will have to comply with the necessary permits from the RDC.**

3.1.3 Parks and Wildlife Act (20:14)

The Act is administered by the Zimbabwe Parks and Wildlife Authority and deals with preservation of plants and animals, including specially protected animals and indigenous plants. Special protected plants may be protected on land for construction purposes and these should be replanted. The construction and development team should not engage into activities which

violate this Act. The lists of specially protected animals and indigenous plants are specified in the Sixth and Seventh schedule of this Act respectively. No person shall hunt or pick any specially protected species unless they have a permit to do so.

Section 40 of the Act lays down controls on hunting and removal of animals and plants thereof from national park areas and the sale of products thereof. Any person hunting any animal in a parks area, removing any animal or part of it, or selling any animal, plant or part of it which has been hunted or which has died in or been removed from a park area, in contravention of regulations for the park area shall be guilty of an offence. **This act does not really apply to the Zimunya baseline since there are no game parks or any noted wildlife presence due to the human habitation.**

3.1.4 Public Health Act (15:09)

This piece of legislation creates the legal framework for the protection of public health in Zimbabwe. Part IX of the Act prohibits the creation of nuisances. Nuisances are defined in this section and local authorities are required to maintain cleanliness and prevent nuisances. Nuisances include premises that promote the spread of infectious diseases, pools of water that may serve as breeding places for mosquitoes, polluted domestic water and accumulation of refuse and any overcrowded dwellings as to be injurious or dangerous to the health of inmates. Relevant to this proposed project is the possible nuisance arising from litter, dust, noise and stagnant pools of water especially during the construction phase.

Under the Act if a person has been served a notice to remove a nuisance and fails to comply, they will be required to face a magistrate and pay a fine for not complying with the requirements of the notice within the specified time period. Nuisances are of importance in all phases of the operations and care should be taken to keep the project sites clean and free of any nuisances. **In line with this regulation, ZINWA should ensure that there is adequate water and sanitation facilities for the employees and contractors.**

3.1.5 Forestry Act (19:05)

Section 38 of the Act provides for the preservation and protection of trees or fruit produce. Section 39 provides for the protection of forest or trees from cutting. The proponent should

comply with provisions of this Act. The location of the project infrastructure will be in such a way as to minimize the cutting down of trees and protect all endangered species if any are identified within the proposed project site. Construction workers will be discouraged from cutting down trees for fuel/energy. Section 34, Part 2, of this Act stipulates that the reduction of a national forest by more than 1% will require the written permission from the Minister of Environment.

The World Bank Forests Policy is not triggered since the developments are mainly focused on upgrading of existing infrastructure. Upgarding of the water treatment

3.1.6 Water Act (20.24)

Section 101 of the Act contains legislation against pollution of any water and this is also reinforced by regulations from the Environmental Management Act. The discharge of effluent or waste water into any water body will be regulated by permits to which conditions will be attached, subject to prescribed standards and for which fees are payable (see also EMA Act). Permits relating to water abstraction and water storage are granted in accordance with this act. The various waste streams will be subjected to this legislation.

3.1.7 Regional Town and Country Planning Act (29:12)

The Act provides for the planning of regions, districts and at the local level in order to conserve and improve the physical environment. It is also concerned with efficiency and economy as well as providing mechanisms for the control of all developments. Development permits for new projects are granted under this Act. This has since changed and local Authorities can only issue licences to developers after first having sight of the licence from EMA confirming that an approved EIA has been done or an exemption certificate has been issued. **In line with the requirements of this legislation, the proposed areas for distribution are well planned and not haphazard, therefore eliminating issues of involuntary resettlement arising from project activities interacting with the houses and other infrastructure.**

3.1.8 National Museums and Monuments Act (25:11)

The legislation provides for the preservation of ancient, historical and national monuments, relics and other objects or artifacts of historical or scientific value. Section 20(c) requires all commercial developers to carryout archaeological and paleontological impact assessments before any development takes place. Part IV of the Act, Section 21 provides for the notification of discovery of ancient monuments and relics to the National Museum and Monuments. In terms of Section 24, no person shall excavate any ancient monument, and in terms of Section 25, alter, damage or remove from its original site any national monument or relic without the consent of the Executive Director of National Museum and Monuments. **It is however important to note that the proposed project area has already been disturbed and no knew findings are expected. This is also relevant to the 'Physical Cultural Resources' World Bank Environmental and Social Safeguard Policy.**

3.1. 9 Road Traffic Act (13:11)

The legislation provides for the promulgation of regulations for the control of traffic movements, traffic noise, fumes, safety and the erection of traffic signs. This is particularly important during the construction phase of the subproject where a lot of material movement will be taking place.

3.1.10 Occupational Health and Safety in the Work Place in Zimbabwe

At a general level, occupational health and safety laws that are applicable to all employers and employees across sectors are the Labour Act, Chapter 28.01 and NSSA (Accident Prevention) (Workers Compensation Scheme) Notice No. 68 of 1990. There are also sectoral occupational health and safety laws. **In line with these regulations, ZINWA needs to ensure that together with its contractors, they provide a safe working environment for the employees. This is most applicable considering that the employees are exposed to risks such as falling from elevated work areas, drowning and injury from chemicals.**

3.2 World Bank Environmental and Social Safeguards Policies

The objective of the World Bank environmental and social safeguards is to prevent and mitigate undue harm to people and their environment in the development process. The ten thematic areas covered by World Bank environmental and social safeguards are;

- Environmental Assessment
- Natural Habitats
- Pest Management
- Involuntary Resettlement
- Indigenous Peoples
- Forests
- Physical Cultural Resources
- Safety of Dams
- Common Property Resources
- Conflicted Jurisdictions

The World Bank environmental and social safeguards whose applicability will be reviewed below are;

- O.P 4.01 - Environmental Assessment.
- OP 4.04 - Natural Habitats
- OP 4.36 – Forests
- OP 4.11 - Physical Cultural Resources
- OP 4.12 - Involuntary Resettlement

3.2.1 O.P 4.01 Environmental Assessment

The application of the Environmental Assessment safeguards policy aims to ensure the environmental and social soundness and sustainability of the planned water supply subprojects. This policy supports the integration of environmental and social aspects of the seven subprojects into the decision making process, including both the location/site and technology choices, which started with the ZINWA screening reporting. The Environmental

Assessment has a two-pronged approach intended to satisfy both the national environmental legislation and the World Bank safeguard policies.

The project screening was conducted in accordance with the World Bank Environmental Assessment guidelines and was categorized in category B due to the limitedness of the potential environmental and social impacts. The subproject was further screened in accordance with the Environment Management Act (CAP 20:27) and a meeting with the Environmental Management Agency (EMA) and the project was exempt from the requirements of the full environmental and social impact assessment. With this two tie screening, the agreed safeguards tool for the project is the Environment and Social Management Plan (ESMP). The ESMP will be reviewed by both the World Bank and the local Environment Management Agency (EMA).

3.2.2 OP 4.04 Natural Habitats

This safeguard policy promotes environmentally sustainable development by supporting the protection, conservation, maintenance and rehabilitation of natural habitats and their functions. The impacts on natural habitats and biodiversity is extremely limited as the water supply projects will be in the form of refurbishment and equipment upgrade, largely taking place within the confines of existing and already converted land uses. Despite the limited scope of project activities, the O.P 4.04 Natural Habitat was triggered on precautionary basis considering that the raw water sources are a dam and the Mpudzi River which are a habitat for some aquatic species. The mitigation for the policy will be implemented along with the general mitigation measures in the ESMP that ensure that there is no water use conflict between the urban, rural and the aquatic environment itself.

3.2.3 OP 4.36 – Forests

Realization of the potential of forests to reduce poverty in a sustainable manner and the protection of vital local and international services and values of forests are key goals of this policy. The restriction of the water supply subprojects to existing sites and infrastructure means that there will be very limited direct degradation or conversion of critical forest areas or related critical natural habitats as already alluded to. There are no gazetted forests within the project area, therefore the policy is not triggered. However; efforts to minimize

vegetation destruction will be implemented throughout the project. It should be noted that since the project is a rehabilitation and upgrade project minimal clearance is expected as most of the area have already been impacted when the existing infrastructure was installed.

3.2.4 OP 4.11 - Physical Cultural Resources

This policy seeks to preserve Physical Cultural Resources and avoiding their damage or destruction. Physical Cultural Resources include resources of archaeological, paleontological, historical, architectural, religious, burial and grave sites and aesthetic structures. Again, the fact that the projects are being implemented in converted land sites means that there will not be any issues of such physical cultural resources needing preservation. The policy is therefore not triggered.

3.2.5 O.P 4.37 Safety of Dams

The water treatment plant will be fed with raw water from the Taramura and the Woodlands Dams. The project therefore triggers the Safety of Dams O.P 4.37 because the success of the project is based on the integrity of the above dams. In line with this policy, ZINWA will submit dam inspection reports as a measure to ensure that the dam is kept in good working order.

3.2.6 O.P 4.12 Involuntary Resettlement

Resettlement screening was conducted as part of the ESMP formulation and there are no chances of involuntary resettlement within this subproject. The project area is well planned and the anticipated distribution network is targeted to a well-planned area with no encroachments along road reserves or service lanes. The policy is therefore not triggered. Below are some of the project areas that show clear servitude areas and no encroachments on the road reserve. Despite the fact that there will be no involuntary resettlement, the residents will actually apply for water connection to the RDC so that they can avert the water availability problem within the community. Showing also on the insert below is the existence of the electricity distribution lines,

the project will co-exist with the existing infrastructure since there is adequate space for such service facilities to be installed without disrupting the other.

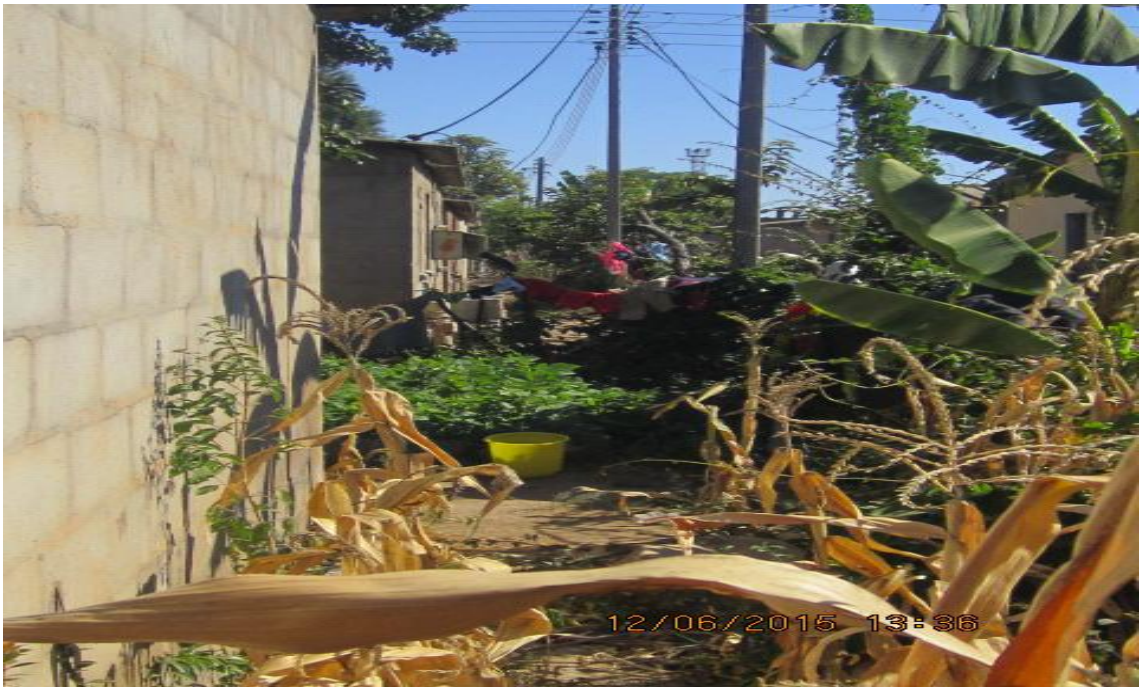

Fig 3.1 showing the housing in gutu area where distribution network will be expanded and service lanes clear of any illegal structures as enforced by the local authority. The distribution

trenches will not be deep and boundary fences will be strategically avoided and installations can be made without bringing down the fences.

CHAPTER 4

ENVIRONMENT AND SOCIAL BASELINE

4.1.1 Geology

The geology in the vicinity of Gutu Mpandawana (GM) town is dominated by a granite gneiss terrain typical of the Northern Limpopo Marginal Zone. The Flexiburg Greenstone Belt which lies to the north of GM is home to the Flexiburg gold mine. The land belongs to Gutu Rural District Council. The project scope involves trenching and replacement of worn out pipes in certain sections of the reticulation. The areas do not have outcropping rocks and as such no blasting is expected. If any rocky area is encountered by chance, other methods such as drilling will be used.

4.1.2 Topography

The GM area is characterized by flat and rolling topography with characteristic granitic/gneissic bornhardts and dwalas. Average altitude is 1350 meters above sea level.

4.1.3 Soils

The soils around the GM area which are derived from the granitic/gneissic terrain are typically greyish/brownish sandy loams of generally low cation exchange capacity and therefore of low fertility.

4.1.4 Ecology (Fauna and Flora)

The vegetation consists of predominant grass species and bush vegetation on low lying areas with Miombo woodland (Brachystegia species) and ueparca kirkiana species on well drained hilly and mountainous areas. Grass species dominate low areas where there is no over grazing. The project is not expected to have any negative impact on the ecology since the area is already impacted with the housing developments.

The increased abstraction of water from Marumura and Woodlands Dams is likely to increase the risk of suction of local tilapia fish species through the inlet facilities, triggering OP4:04

4.1.5 Climate

GM lies within agro-ecological region III/IV which is classified as humid to semi arid, with low to moderate annual rainfall averaging between 550 to 800 mm per annum. The typically tropical seasons are divided into winter and summer with winter temperatures ranging between 15 and 20 degrees Celsius and summer temperatures ranging between 23 and 32 degrees Celsius.

4.1.6 Water and air quality

Surface water is generally of moderate to poor quality due to agriculture induced siltation and in isolated cases, mining induced siltation and process chemical contamination (see Appendix 1). The common open defecation practices at the Growth Point and improperly disposed of hospital wastes result in the pollution of surface water in the regional rivers and their tributaries.

The raw water sources for this supply station are the Turramurra and Woodlands dams. The two dams have more than adequate amounts of water of acceptable quality. There is bound to be an increase in the amount of energy required for pumping after project implementation. The number of consumers is also set to increase sympathetically as more water becomes available.

4.1.7 Hydrogeology

Gutu has 2 sources of raw surface water, being Turamura Dam and Woodland Dam. The former source was the original source with the latter only being brought into service due to the inadequacies experienced with the Turamura source which dries up for 4 months of the year. Woodlands is nearly 5km away so ZINWA prefer to use Turamura as it is nearly adjacent to the WTW and consequently the pumping costs are lower. Both abstraction pump stations deliver to the same point at the head of the WTWs. Woodlands has a 10% yield of 1606ML while the current annul drawdown is normally less than 20% of the yield. There are no competing water requirements except for downstream environmental requirements. ZINWA is the sole permit holder for both dams and has committed all the water to domestic water supply for the town. Information on Turramura is not readily available however it augments the main source for about four months after the rainy season. The current raw water supplies are adequate to meet the domestic water requirements even if the treatment plant is to be upgraded.

4.1.8 Current effluent disposal system

At the treatment plant, backwash water is discharged into two backwash ponds which are in series before it is released into the environment, this allows for settlement of the sediments. The ponds are fenced and slabbed to prevent wild and domestic animal from accessing them. No analysis results are available since the ponds started operating. De-sludging of the ponds is done regularly and the sludge is buried into the ground. The sanitation system is wet off-site. Two sets of waste water stabilization ponds which service different areas are available. The ponds need to be rehabilitated to in order to cope with the anticipated increase increased volumes of return to sewer. Currently there are no analysis results for both ponds.

4.2 Socio-Economics

Gutu's population is estimated between 15 000 and 17 000. Although the former Growth Point was recently awarded a town status, it still remains under the jurisdiction of Gutu Rural District Council. The project is aimed at catalyzing the connection and delivery of water to approximately 4 000 residents in addition to boosting the delivery of water to existing connected

residents numbering about 11 000. There is a total of 600 serviced and yet-to-be serviced stands in the town broken down as follows; Hwiru (300), Mpandawana Extension (200) and Chomfuli (100). There are six schools in the town, comprising three high schools and three primary schools. There is also a referral District Hospital and an RDC Clinic. Connected residents are getting water for 12-24 hrs. Average household bills are around $20. Some areas in the business district do not get water at all. This has been attributed to construction over air valves which blocked the movement of water in the pipes. Other areas are affected by too many connections on small gauge pipes. Council put in small gauge pipes for reticulation to households resulting in congested connections. The Hwiru area is serious affected by this.

4.2.1 Administrative arrangements

Gutu was a growth point that gained town status in 2014. The town is administered by the Rural District Council who is responsible for the roads and solid waste collection. The water infrastructure is owned and operated by ZINWA who are also responsible for the sewage system consisting of gravity reticulation and sewage ponds. There are industrial activities within the town including a Delta depot, an RDC owned abattoir, a GMB depot, a DDF centre (water disconnected), a depot for the Ministry of Transport and traditional light industry (welding shops, vehicle repair, carpentry). Institutional activities include 2 secondary schools, 4 secondary schools, a business school, a rural hospital that has been disconnected and 2 rural health centres. Commercial activities within the town are mainly retail and the town has one commercial bank.

4.2.2 Livelihoods

There are industrial activities within the town including a Delta depot, an RDC owned abattoir, a GMB depot, a DDF centre (water disconnected), a depot for the Ministry of Transport and traditional light industry (welding shops, vehicle repair, carpentry). Institutional activities include 2 secondary schools, 4 secondary schools, a business school, a rural hospital that has been disconnected and 2 rural health centres. Commercial activities within the town are mainly retail and the town has one commercial bank. Vending, prostitution are also rife in the area.

4.2.3 Population and demographics

The town of Gutu originally covered ward 34 of Gutu district but has expanded into other wards. The census of 2012 does not give population figures for the town as such and the estimated population (RDC estimate) is 15 000 and about 8500 being women. Accurate information on the growth of Gutu is not available but according to the RDC there is net immigration to the town so the growth rate can be considered to be above the national average of 1.1% given in the 2012 census. There are 4 new suburbs identified that are either not, or incompletely, connected to the reticulation.

4.2.3 Gender mainstreaming

Water and sanitation safety in Africa affects gender relations and raises several social, cultural, institutional and economic questions. The cultural and social setting power, status, prestige, rights and obligations. It conditions women's access to land, water, education, health and employment compared to men. In this context, women and girls are saddled with chores relative to water fetching, transport, storage and usage, while men and boys are reserved the task of sourcing drinking water points for livestock. Women and girls are also responsible for keeping public or private areas (huts, courtyards, latrines, water points and any living environment) clean. This division of labour, coupled with the rareness of water resources, affects the school enrolment rate of both girls and boys, as well as women's literacy rate. Access to clean water and sanitation facilities located at significantly reduced distances will enable them to save time that can be spent on education, income-generating activities and development projects in their villages. Though their role as users is acknowledged, women and youths are still not involved in managing and developing these resources, because social constraints limit their integration into decision-making bodies. Efforts were made at the stakeholder consultation stage to make sure that views of women and youths were captured and their specific concerns were incorporated and addressed.

Fig 4.1 Woman using water for laundry in Gutu. This area does not have tape water supply, that why the woman is using buckets for storing laundry water.

4.2.4 Land uses

The land use is typically peasant mixed farming with a bias towards cropping. The crops grown are mainly maize with subordinate small grain (millet and sorghum). Most households rear cattle, goats and sheep. The WTW, pipelines and storage facilities lie within Gutu Rural District Council. The land for the project belongs to the Rural District Council and is managed by Gutu Rural District Council and there is no conflict of use.

4.2.5 Sanitation Facilities

The Growth Point has predominantly soak-away sewage facilities. The current inadequacy of the water supply make open defecation a common practice at GM, with serious negative water quality issues for downstream communities. After project implementation, it will become necessary for the center to have a dedicated and expanded sewage treatment facility. This will in turn have negative consequences of increased malaria due to the new breeding grounds for mosquitoes as well as increased volumes of waste water needing more energy and water treatment chemicals.

4.2.7 Occupational health status

ZINWA provides safety clothing to employees which however are not adequate. There is need to improve the lighting conditions at the station since most of the pumping is done during the night when electricity is available. Ladders and walkways need to be provided each time employees are working above the ground. During the construction phase ZINWA as the main supervisor to the contractors shall ensure best standards of occupational health and safety.

CHAPTER 5

STAKEHOLDER CONSULTATION

5.1 Introduction

A stakeholder refers to any person or group who can be affected, is affected by or think that they are affected by or is affected by the results and or actions taken as a result of a developmental process. Environment Management Act (CAP 20:27), section 4 (2c) says that participation of all interested and affected parties in environmental governance must be promoted and all people must be given an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation. As a result ZINWA engaged on a process where these stakeholders participated in the ESMP process by providing needed information which they think will protect them and the host environment and communities. The above process was carried out as a way of ensuring compatibility of the project with other developmental projects already in existence.

5.2 Objectives of the stakeholder consultation process

The stakeholder process aimed at achieving the following objectives;

1. To inform the stakeholders about the proposed project.
2. To identify potential negative and positive environmental impacts associated with the proposed project.
3. To increase public confidence and enhance a sense of ownership in the operational phase of the project.
4. To ensure the negative impacts are mitigated and benefits are maximized.

5.3 Principles governing the consultation process

In the spirit of the Environment Management Act, the following principles were consistently upheld in all the consultancy work;

Inclusivity

The public consultation process covered representation of all relevant stakeholders. To ensure this principle was upheld, the stakeholder list was rationalized by the EMA through the prospectus review.

Open and transparent

In order to enhance this principle, the consultant ensured that all steps and activities of public consultation were understood by all consulted stakeholders.

Relevant

Relevance was also key in this ESMP and was achieved through remaining focused on the project issues that matter. The consultation boundaries also ensured that the consultation process remains relevant to the proposed activities.

Fairness and responsiveness

To achieve the objectives of the stakeholder consultation process there was a need to ensure that the consultation was conducted impartially. All stakeholders were empowered with project information first, and then solicit their informed input.

5.4 Data Collection Techniques

It is also important to note that a there is no one best method of data collection hence a number of these methods were employed in the process. The following stakeholder consultation methods were used

- Questionnaire was administered to government departments.
- A public notice was placed in the Herald for distant stakeholders who do not necessarily reside in the project areas but are interested or affected by the project.
- Public meetings were held for local communities.

With this diversity, the consultant is confident that all potential stakeholders were reached and their views were correctly captured.

5.5 Stakeholder list

The following stakeholders were listed for consultation

i. District Administrator.
ii. Ministry of Women Affairs, Gender and Community Development.
iii. Ministry of Health and Child Welfare.
iv. Ministry of Public Works.
v. Local Authority
vi. ZRP.
vii. Local Community groups (Women groups, youth groups, old aged group where applicable).
viii. Residents Association where applicable.
ix. Water committee where applicable.

x. Ward Councilors.

xi. Local Village Head.

xii. Local Chief

xiii. Local business community (representative number)

xiv. Local NGO community

5.6 Summary of stakeholder inputs

Table 5.1 Stakeholder in puts

Name	**Sex**	**Organization represented**	**Concern**	**Responds/Action by ZINWA**
Mavis Nhamoinesu	F	Gutu resident trust	The quality of water is sometimes not up to standard and people sometimes go for three days without water	The systems should be upgraded.
Magwede william	M	Ministry of health	There is an inconsistent supply of water which might lead to the spread of diseases Dam may dry up due to excessive use.	Consistent water supply should be maintained -Regular water sampling and testing should be done up to household level.
Mashavira J.M	M	Councillor	Current supplies of water are not enough.	Increase the volume of water supplied.
Vengai Kaberere	M	Vendor	Current supplies of water are not enough	Noted

Taona .C	M	Informal sector	Burst clear water pipes take too long to be attended to and impurities seen in tap water are a cause for concern.	Noted
Chikonye L	M	Gutu Business development Association	The system of water treatment is way below the needs of Mpandawana town General labour should be sourced from the locals Construction materials should be sourced locally Discarded material e.g. old pipes and rubbles should be properly discarded. Long run planning must be taken into account to cater for population growth	Rope in Gutu RDC engineer, EMA and local residence association during implementation may solve these problems. Educate residents on wise use of water and infrastructure
Lorence Mazodza	M	Mpandawana Light Industrial site representative	The current clear water supply is not enough -It is currently not possible to start anew project which needs plenty of water.	Overhaul the water system from the source tanks up to the taps. -If possible prepaid water meters should be

				introduced.
Mutanda.M	M	Gutu High School Head	Insufficient water supplies. -Care not to displace locally settled communities `s gardens, crop fields and grazing lands. -ensure safety measures to workers during the course of the work. -employ locals. -Avoid over budgeting and procurement of expensive materials. -Extension should exploit bare ground and less vegetated land to reduce deforestation. -Dig all trenches across the slope to avoid accelerating runoff and soil erosion.	Ensure to recycle all used water and not to discharge into rivers. -fence the ponds using diamond mesh. -Plant trees around and within the yard. -Seek monetary and material assistance from local investors e.g. banks, individual business people, churches to minimize costs which may force the organization to hike water rates.
Killion Matuka	M	Resident	Water is sometimes dirty and people get up to 3 days without water.	Upgrade the system.
Daison .C	M	Gutu Residents Association	Water is not enough and is sometimes dirty.	Discourage stream bank cultivation
Mavhiya	M	Gutu Residence	Water is sometimes	A study of the

Edward		Association	dirty and not enough.	current volumes of water should be done to match the expansion with the available supply.
Maushe Chagonda	M	Gutu Residents Association	Water is not clean and not enough. -lively hoods of the community are improved.	Upgrading the plant to ensure that enough water is supplied to residents.
Dondo Ediel	M	Resident	Water is always dirty and we are going up to 3 days without it.	Clean water supply should be considered and a generator should be purchased. -All old pipes should be replaced by new ones.
Munhundiani Thandeka	F	Chifamba Investment	Water supplied is always dirt.	Waste water treatment plants should be created to reduce pollution
Mutabeni T	M	Social services	Water supply is sometimes dirty and erratic. -Open defecation when water supplies is limited.	Increase the quantity of water supplied.
Manyepwa Oscar	M	Ministry of women `s affairs	The current water supply is clear of any physical impurity but	Improve availability of water.

			availability is sometimes erratic.	
Felix Duta	M	OK	Water is currently not clear.	Improve availability of water.
Mushauri Netsai	F	Local Government	Water supply in Gutu is terrible as water is rarely available.	Improve the water reticulation system.
Museza E	F	Museza hardware	Poor water supply and quality. The project should be done in an unfriendly manner.	Project should involve all stakeholders concerned.[residents, Gutu RDC, business community and individuals
M.F.Mukaro	M	Gutu Business Development Association	Clear water is scarce and breakdowns are not attended to in time. -Sewage pipe bursts taking too long to be repaired.	Council should take over the maintenance of sewage and old pipes should be replaced by bigger ones. Experienced and trained workers should be employed.

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5.7 Overview of the meeting with the RDC

A meeting was held between ZINWA officials and RDC officials on the 15th of June 2015 in the council board room and it was mostly centered on updating each other on the progress made with regards to the project. The RDC officials highlighted that there will not be any conflict with any one since no people will be resettled around the dam and the reticulation will only be replaced and no existing structures will be disturbed . **See copy of the minutes in appendix A.**

Stakeholder Meeting at Gutu-Mupandawana RDC Offices

CHAPTER 6

IMPACT ANALYSIS AND EVALUATION

6.1 Introduction

The main objective of this ESMP is to promote sustainable development by ensuring that the water supply project does not undermine critical resource and ecological functions or the well-being, lifestyle and livelihood of the communities and peoples who depend on them. As a decision making tool, the assessment sought to inform the decision making process by identifying the potentially significant environmental effects and risks of the proposed project activities, assessing them, evaluating the possibility of alternatives and proposing the mitigation measures of any significant negative impacts through an environmental management plan.

Only those elements of the environment that have a direct bearing on the impact assessment process of the project are discussed. The severity of the potential impacts is largely determined by the state of the receiving environment. For example, the construction of a water pipeline in a pristine wetland habitat would have far more significant ecological impacts than the construction of the same in an already built up residential area.

6.2 General Approach

Table 3.1 was used principally during impact identification and analysis. The type/status (positive, negative, neutral), magnitude/Significance, timing (during design / planning, construction, and operation), duration (short term/temporary, medium, long term/permanent), extend/spatial scale (low, medium, high), mitigatory potential (low, medium, high), acceptability (low, medium, high) and degree of certainty (definite, probable, possible & unsure), of impacts that could result from the water supply were assessed in this section. The evaluation approach implemented in this study is a Receptor-Specific Analysis approach addressing the various sources of impacts from the development project. The analysis covers all potential fields of impacts and/ potential receptors:

- Ambient Air Quality

- Water resources
- Soil
- Biodiversity
- Noise
- Dust
- Waste generation
- Socio-economic Impacts
- Occupational health and safety

The general evaluation process included the following stages:

Step 1: Identification of project activities (sources) and environmental aspects;

Step 2: Identification of potential impacts to people and the environment;

Step 3: Evaluation and assessment of the related unmitigated impact significance;

Step 4: Identification of Best Practicable Environmental Options

Step 5: Re-evaluation and assessment of the mitigated impact significance

Table 3.1: Criteria Used For Assessment of Impacts

Assessment Criteria	Rating	Interpretation of rating
Types/Status	Negative	Process detrimental/adverse to environment
	Positive	Process beneficial to environment
	Neutral	Process neither beneficial nor detrimental
Magnitude or significance	High(Red)	Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impact there is no feasible mitigation that could offset the impact, or mitigation is difficult, expensive or a combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt. In the case of beneficial impacts, the impact is of substantial order within the bounds of impacts that could occur.
	Moderate (yellow)	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of impacts that could occur. In the case of adverse impact mitigation is feasible and fairly easily achievable. Social, cultural and economic activities of communities are changed but can be continued (albeit in a different form). Modification of the process design or alternative action may be required. In the case of beneficial impacts, other means of achieving this benefit are equal in time, cost and effort.
	Low	Impact is of low order and therefore not likely to have

Assessment Criteria	Rating	Interpretation of rating
	(Green)	real effect. In the case of adverse impact mitigation is easily achievable, or little will be required. Social, cultural and economic activities of communities can continue unchanged. In the case of beneficial impacts, alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time consuming.
Extent or spatial scale	High	Widespread, far beyond site boundary, Regional/National/ International Scale
	Medium	Beyond site boundary, local area
	Low	Within site boundary
Duration	Long	Permanent, beyond decommissioning
	Medium	Reversible over time, lasts for lifespan of project
	Short	Quickly reversible, less than lifespan of project
Mitigatory potential	High	High potential to mitigate impacts to the level of insignificant effect
	Medium	Potential to mitigate negative impacts. However, the implementation of mitigation measures may still not prevent negative impacts
	Low	Little or no measures to mitigate negative impacts
Acceptability	High	Unacceptable. Abandon project/process in part or in its entirety

Assessment Criteria	Rating	Interpretation of rating
	Medium	Acceptable with regulatory controls and with proponent's commitments
	Low	Acceptable, no risk to public health
Degree of certainty	Definite	More than 90% sure of a particular fact or the likelihood of an impact occurring
	Probable	Over 70% sure of a particular fact or the likelihood of an impact occurring
	Possible	Only over 40% sure of a particular fact or the likelihood of an impact occurring
	Unsure	Less than 40% sure of a particular fact or the likelihood of an impact occurring

Impact Analysis for Gutu

1.1 Planning Phase

Some planning activities for the project have already taken place. The water treatment plant in Gutu requires upgrading in terms of pumps, engines and accessories. Storage tank capacity also needs ramping up. The raw and clear water mains and reticulation for the houses and other institutions which have not yet been connected, need upgrading/refurbishment. Planning phase impacts also arise from activities for pipeline installation and upgrades. The planning phase normally involves the cutting of trace lines by surveyors and pegging. Impacts result from cutting down vegetation, disturbance to soils and dragging of equipment on the ground.

1.2 Biophysical

1.2.1 Vegetation

This impact has already been felt largely. This is because most of the project areas are already built up. It is only in the areas where pipe rehabilitation or construction where careful planning is required as there may be a bit of secondary vegetation. Storage tank sites are already cleared and ready for construction. The other areas for reticulation are devoid of vegetation as these are in the built up residential, commercial, industrial or institutional spaces.

Assessment for vegetation impacts during planning phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Low

Degree of certainty	Probable
Significance before mitigation	Low
Significance after mitigation	Low

This is judged to be an impact of low significance because in more than 95% of the sites, there is no vegetation as the areas are already built up.

Mitigation

Avoid disturbing or cutting trees in areas where there is still some vegetation. Constructions workers will only utilize limited areas and this does not constitute a significant impact.

1.2.2 Wildlife

In Gutu there is no wildlife because the surrounding area is either built or farming area. There is no wildlife in the area which is also surrounding by rural farming areas.

Assessment for impacts on wildlife during planning phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Probable for Lupane
Significance before mitigation	Low
Significance after mitigation	Low

This is an impact of low significance because of the low existence of wildlife and short duration of activities.

1.2.3 Soil impacts

Movement and dragging of equipment on the ground during the time of survey and pegging of lines to be excavated for the pipes to be buried can result in loosening of soil which can potentially result in soil erosion or the generation of dust. However, this is not deemed a significant impact as the pegging and surveying activities are very low key.

Assessment for soils during planning phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Probable
Significance before mitigation	Low
Significance after mitigation	Low

This is an impact of low significance due to short duration and much localized nature of activities.

The best mitigation measure would be to avoid dragging equipment on the ground and to ensure that there is no loose soil that can be blown away by wind or is washed away by water.

1.2.4 Hydrological and fluvial impacts

The effects of sheet erosion on loose soil if left unattended could trigger a host of negative impacts on water quality, levels and the capacity of water bodies. The negative impacts will accrue from siltation as valuable topsoil finds its way into streams.

Assessment for hydrological impacts during planning phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Probable
Significance before mitigation	Low
Significance after mitigation	Low

The impact is of low significance.

The best mitigation measures here would be the one described above for soil.

1.3 Construction Phase

This phase will involve the refurbishment/upgrading of the water treatment works, trenching and laying of water reticulation pipes to residential, industrial and institutional users, in some cases the upgrading and rehabilitation of raw and clear water pipes and the construction of at least one storage tank.

1.3.1 Soil Disturbance

The trenching for the laying of the water reticulation pipes and the rehabilitation of the existing water main pipeline to the water tanks will result in the disturbance of the soil. Trenches will be

dug to lay pipes. This is a temporary impact which will only be felt during the time of digging and laying of pipes.

Assessment for soil disturbance during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Medium
Degree of certainty	Definite
Significance before mitigation	Moderate
Significance after mitigation	Low

This impact will definitely occur during trenching and other earth works but its duration is limited to the construction phase only and can be attended to immediately. The spatial scale is very limited and the impact can easily be mitigated.

The soil will be used to cover the pipes once the laying process has been completed. It is recommended that this is done immediately to avoid having mounds of soils lying around.

1.3.2 Dust

A bit of dust will be generated during the trenching and covering up of pipes. This will be a temporary impact which will last during the trenching and covering up of pipes. It is recommended that wherever possible loose soils are sprinkled with water to avoid the creation of dust. In any case the trenches will be shallow; at most they will be about 0.5m deep.

This means that the pipes will have to be laid at least 0.75-1m deep. The disturbed soil during excavation can easily be washed away by water if left unattended for long periods.

Assessment for dust generation during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Medium
Degree of certainty	Definite
Significance before mitigation	Moderate
Significance after mitigation	Low

This is similar to the above impact on soil disturbance.

It is therefore recommended that pipes be covered as quickly as possible to avoid the soil being washed away. Back filling of the pipes should take place within a day or two to reduce dust from the loose soils from the trenches. This will also forestall dust generation from soil piles left unattended for long periods.

1.3.3 Disturbance of Forests and Biodiversity

The areas to be connected have already been transformed into built up areas. There is very little vegetation and wildlife. As a result, the impact of the project on vegetation and wildlife will be very limited to nothing. The construction site for storage tanks is dedicated and cleared. The construction of the Gutu subproject will therefore not cause any direct disturbance of the forest area.

Assessment for biodiversity during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Medium
Degree of certainty	Probable for Lupane
Significance before mitigation	Low
Significance after mitigation	Low

1.4 Operation Phase

Biophysical impacts of the operation phase are very limited as opposed to socio economic impacts. The biophysical impacts include possible contamination of clean water from back washing of filters. Increased volumes of raw water passing through the filter will entail more frequent backwashing to flush out rapidly accumulating debris and particles and regain the filter head pressure loss. Backwash water is very dirty and there is always a need to have a dedicated backwash line, complete with backflow prevention (Zane, 2005). This is either linked to a sewer main or a series of settling ponds, from which the overflow portion can be decanted into a nearby river while the dirt collects at the bottom. Air scouring can increase the backwash process efficiency significantly. Backwash water can also be recycled where water scarcity demands it. When the settling ponds are full, they can be covered up with soil and re-vegetated/reclaimed.

Other generic biophysical impacts will result from knock-on effects of increased water abstraction, increased wastewater production, increased numbers of residents and private vehicles.. These impacts would need to be fully assessed in a full ESIA study. Increased wastewater production is a natural consequence of improved water supply and this will strain the sewer treatment plants for the subprojects with common sewer line bursts resulting in

malodorous releases and vector-borne transfers. Increasing resident populations come with increased solid waste generation and vehicular exhaust and noise pollution.

Assessment for impacts during operation phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Long
Mitigatory potential	High
Acceptability	Medium
Degree of certainty	Definite
Significance before mitigation	Moderate
Significance after mitigation	Low

The improvement in the water treatment system by including an aeration stage in the treatment process, construction of backwash settling ponds and the recycling of backwash water will result in the significance rating after mitigation migrating from moderate to low

1.4.1 Social Impacts

1.4.2 Planning Phase

As has been mentioned for the other towns the social impacts for the planning phase are not so pronounced. The main impact is employment creation but this is of low significance because of the numbers involved. Very few people will be employed and it is recommended that at least for unskilled labour requirements, these should be recruited from Gutu town.

1.4.3 Construction Phase

The main activity for Gutu is trenching and laying of pipes.

1.4.3.1 Employment creation

Employment creation will be a major positive creation during this phase. Depending on numbers involved employment can have other knock on effects. Improved incomes will stimulate purchasing power which will in turn stimulate local businesses.

Assessment for employment creation during construction phase

Assessment Criteria	**Rating**
Type/status	Positive
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Definite
Significance before mitigation	Low
Significance after mitigation	Low

This is a low significance impact on account of the numbers involved and the duration and spatial extend which are very limited.

The use of local labour for non-skilled and semi-skilled work for the Gutu project will have to be written into the tender documents. Having a deliberate bias towards the adoption of labour intensive methods as opposed to capital-intensive methods of construction could widen the labour pool and also protect the environment.

1.4.3.2 Health and Promiscuity

There is a possibility that gangs of labourers may indulge in promiscuous activities with local women resulting in the spreading of STIs and the dreaded HIV/AIDS. In these times of economic hardships even married women may be led astray by moneyed labourers resulting in the break up of homes.

Assessment for promiscuity, health during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

This is a low significant impact because of the duration and spatial extend.

MITIGATION

Education on HIV/AIDS as well as a proactive preventive approach like that used by community health workers will reduce the unfettered spread of STDs, including HIV/AIDS. A penal code on errant workers and household heads, as well as drunkards and those proven to be having a hand in breaking up families may need to be worked out in consultation with legal personnel.

1.4.3.3 Safety

Safety both for workers and residents are important. Worker safety is guaranteed under the laws of Zimbabwe. Those employed during the construction period should be protected from injury. There is potential for employees to be injured as they dig trenches or work on water pipes. They can injure their hands, eyes or other parts of their bodies.

On the other hand, trenches left uncovered can result in injuries to residents. Children can be vulnerable as they see mounds of loose soil as a potential source of entertainment to play with.

Assessment for safety during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

This is a low to moderate significance impact because of the low numbers of people involved and the probability of accidents happening from the low key activities.

Mitigation

The project shall have an approved SHE plan. Workers should be given adequate protective clothing as per the laws of the land. This will depend on which department they will be working under. They will need overalls, heavy duty boots and noise protection kits if they are working in noisy areas.

Workers should be given adequate protective clothing as per the laws of the land. This will depend on which department they will be working under. They will need overalls, heavy duty boots and noise protection kits if they are working in noisy areas.

For the residents, it has already been highlighted that the soils will need to be backfilled as quickly as possible. Trenches should be backfilled immediately, and should not be left open for

more than 2 days. Open trenches should be temporarily fenced off/barricaded using reflective safety tape. This will forestall the possibility of injuries resulting from people falling into the trenches or injuries to children playing on soil mounds.

1.4.3.4 Waste Generation

It is inevitable that the workers will produce some work related waste and also human and domestic waste. If left unattended, this may result in the pollution of the environment. Waste include off-cuts, packaging wrappers and even left over food or waste from work gang activities.

Assessment for waste during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

This is an impact of moderate significance on account of the unacceptability of the impact. However, the impact can be easily mitigated.

Mitigation

We recommend a careful planning of waste-disposal during the construction phase. This will need the provision of bins, the raising of awareness on indiscriminate dumping by the workforce,

and the careful disposal of the rubbish out of site and in a safe place that will not be accessed by scavengers.

For human waste we propose the provision of temporary ventilated pit latrines. These should be set up in such a way that they are spaced across the work area, away from water sources. After the part of the work is done, they can easily be collapsed and covered over gain in a way that will not make it easy for scavengers to access the sites.

1.4.3.5 Traffic

It is anticipated that there will be some limited traffic from time to time bringing in materials like water pipes, cement, sand and other necessities. This traffic could result in conflict with local traffic, especially since this is a built up area. The potential for accidents to occur during the delivery times will increase.

Assessment for traffic during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Short
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Low
Significance after mitigation	Low

This is an impact of low significance as the vehicles are expected once in a while hence the limited duration of the impact.

Vehicles bringing in supplies to the project area should not travel at more than 40 kilometres per hour. This will not only ensure that traffic accidents are kept to a minimum, but will also limit the amount of dust generated.

1.4.3.6 Disturbance of cultural resources

From the field investigations there are no known areas of cultural resources in the area. However, one should not bar the outside remote chance that during the digging, something may be unearthed. The probability of this happening is very low and hence the impact is viewed to be of low significance. If these existed, they could have been disturbed by construction of houses and other buildings. So whilst the Bank's policy on cultural resources (OP 411 Physical Cultural Resources) states that projects avoid these, under the current set up, it is recommended that where they will be construction of water pipelines, contractors avoid areas with grave yards and other known cultural resources like trees with medicinal value or forests used for traditional activities. At the moment the investigation did not come across any such resources. The area for the water tanks has already been cleared.

Assessment for cultural resources during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Long
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

Mitigation measures such as consultations with the local leadership, local authorities and official public notifications to the local communities will result in low rating of the significance of impact.

1.4.3.7 Disturbance to other services

The project will involve digging trenches for laying water pipes. It is possible that in some of these areas there could be other buried services like PTC cables, ZESA lines and sewer lines. Reckless digging may end up severing these services which may be buried under ground resulting serious disruption. This is potentially an impact of moderate significance given its probability of occurrence and the easy with which such an impact can be mitigated.

Assessment for disturbance of other buried services during construction phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	Low
Duration	Low to medium
Mitigatory potential	High
Acceptability	High
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

Such an impact can be mitigated by liaising with the relevant authorities like ZESA, PTC and council sewer services to get maps of any buries services and determine where they run. This should be done prior to trenching activities in any area.

1.4.4 Socio-economic impacts: Operation Phase

This is the phase with the most durable impacts. Most of the impacts related to this phase will last as long the completed water networks are in existence.

1.4.4.1 Improvement in Hygiene

Hygiene and health of households will generally improve with more water being available for domestic use. Households will be able to use flush toilet. This will reduce the current practice of using the bush as toilets. This will in turn reduce the risks of contamination arising from this practice. Households will also be able to use clean water for washing clothes plates and engage in other household chores requiring more water. The risk of contamination of shallow wells from pit latrines will be reduced by the use of flush toilet

Assessment for hygiene during operation phase

Assessment Criteria	**Rating**
Type/status	Positive
Extent or spatial scale	Low
Duration	Long
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

This is a significant positive impact which will last for as the project life time.

1.4.4.2 Income Generating Activities and Greening

Some of the households indicated that they will embark on income generating projects like poultry and vegetable growing if water is available. They indicated that under the current economic situation it would be desirable to have a project that gives them an income, even just a vegetable garden. However, this is difficult without water close by. The introduction of reticulated water will enable the households to engage in these activities.

Assessment for income generating activities during operation phase

Assessment Criteria	**Rating**
Type/status	Positive
Extent or spatial scale	Low
Duration	Short long
Mitigatory potential	High
Acceptability	Low
Degree of certainty	Probable
Significance before mitigation	Moderate
Significance after mitigation	Low

This is a positive impact of moderate significance and will last for as long as the project is in existence.

1.5 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN FOR GUTU

Table 7.1: Water Supply Project Environmental Management Plan

Table 10.1: Water Supply Project Biophysical Environmental Management Plan

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
Soil disturbance	Walking up and down the proposed trench lines may loosen soil.	Avoiding unnecessary movements and pulling of equipment on the ground.	RDCs, EMA, ZINWA, Contractor	Inspections	Planning phase	Negligible
Siltation	Loose soil can potentially result in siltation during the rainy season	Backfill loose soil immediately.	ZINWA, Contractor	Inspections	As above	Negligible
Disturbance	Cutting down trees	Avoid cutting	Contractor,	Mark trees to	As above	Negligible

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
of vegetation	along trace lines and pegging sites	down tress Where trees are cut, replant. Replanting should be as close as possible in terms of species and location. More should be replanted than are cut down.	ZINWA	left standing and check for new trees planted		
Alteration of soil compaction properties and exposure to	Digging of trenches	Backfill all trenches and sprinkle water on loose soil mounds	EMA, RDC, ZINWA	Backfilling should be carried out immediately after the laying	Continuous	Negligible

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
erosion				of water pipes		
Extermination of indigenous species, appearance of new species which could be dangerous	Cutting down of trees and other vegetation during trenching	• There is virtually no indigenous vegetation in the areas. • Avoid the little natural vegetation in the area	Community, EMA, RDC	Check routing of pipes to ensure it does not pass through any remaining vegetated areas	Construction phase	Negligible
Dust generation	Trenching and backfilling	Sprinkle water on soil and backfill trenches immediately	ZINWA, Contractor	Dust suppression measures such as regular spraying of cleared areas	Construction phase	Costed by bidder

Impact Statement	Process/Activity responsible for impact	Proposed Mitigation on impact	Monitoring and Management Agency	Management and Monitoring activities	Time frame	Budget (USD)
				to encourage vegetation establishment		
Water contamination	Backwashing activities	Filter integrity to be maintained and a dedicated backwash mains and lined backwash ponds.	ZINWA	Regular blowing of the filters and replacement after design period	Throughout operation phase	Negligible

Table 10.2: Water Supply Project Environmental Management Plan: Socio-economic Impacts Zimunya

Impact Statement	Process/Activity responsible for impact	Proposed Mitigation on impact	Monitoring and Management Agency	Management and Monitoring activities	Time frame	Budget (USD)

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
Planning Phase						
Employment creation	Laborers to assist surveyors and peggers.	Employ local youths	Local leadership, ZINWA, Contractor	Insist in contractual documents for the employment of locals	Planning Phase	-
Construction Phase						
Creation of employment	Laborers for digging trenches and working with builders	Employ locals	Contractor	Number of locals youths engaged as laborers	Continuous	_
Increased traffic and pressure on roads	Introduction of construction vehicles in the project area	Enforce speed limits; Maintain local roads	ZINWA, RDC Contractors	Place speed limit insignia in the vicinity of project; follow a strict road maintenance	Continuous	Negligible.

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
				schedule		
Worker safety	Injuries from work related activities.	Provide adequate protective clothing and awareness	NSSA, ZINWA, Contractor	Check on protective clothing for workers	Construction	Costed by bidder.
Injury to school children and others	Falling into open trenches	Backfill trenches immediately	Contractor, ZINWA	Trenches to be backfilled at most after 2 days. Fencing or barricading with reflective safety tape to safeguard local community from open excavations	Construction	Costed by bidder.

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
Health and Promiscuity	Moneyed construction workers engaging prostitutes	Awareness campaigns on AIDS and STIs	Contractor	Worker entertainment activities	Construction	Negligible
Disturbance and disruption of buried services	Breaking PTC, ZESA cables or sewer lines	Liaise and consult ZESA, PTC or sewer department for any buries services in areas to be trenched. Get maps of services	ZINWA, Contractor	Ensure services maps are available	Construction Phase	Costed by bidder.
Disturbance of physical cultural resources	Digging of cutting down trees or disturbance of forests of cultural value	Avoid areas of cultural value	ZINWA, Contractor, Local leadership	Mark all areas of cultural value if any Report findings to	Construction Phase	Negligible.

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
				National Museums and Monuments		
Operational Phase						
Income generating projects	Availability of water will enable beneficiaries to embark on poultry and gardening projects	Encourage households to set up projects	RDC, Local leadership,	Number of income generating projects set up	Operation phase	Negligible.
Improvement in hygiene and health for school	The availability of clean water allows for flush toilets, clean drinking water	Ensure water is available for a minimum of 8 hours every day during school time	ZINWA, RDC,	Check down times for water pumping and quantities against demand	Operation phase	Project costed.

Impact Statement	**Process/Activity responsible for impact**	**Proposed Mitigation on impact**	**Monitoring and Management Agency**	**Management and Monitoring activities**	**Time frame**	**Budget (USD)**
Ensure Quality delivery of service.	Water supply	Water quality management activities	ZINWA water quality. Ministry of Health	Water sampling and analysis	Operation	57,560.00
Ensure citizen engagement.	Water supply	Citizen engagement activities.	ZINWA. RDC	Stakeholder meetings.	Operation	TBA

ENVIRONMENTAL RULES FOR CONTRACTORS

Prepared in Line with the ZINWA SHE Policy (2015)

2 General

In addition to these general conditions, the Contractor shall comply with any specific Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an ESMP, and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP after written instruction by the Resident Engineer (RE) to fulfill his obligation within the requested time, the ZINWA as the project implementer reserves the right to arrange through the Project Manager (PM) for execution of the missing action by a third party on account of the Contractor.

2.1 Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable negative environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an ESMP. In general these measures shall include but not be limited to:

2.1.1 Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, land clearing, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity of dust producing activities.

2.1.2 Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

2.1.3 Ensure that there is no disturbance of existing water flow regimes in rivers, streams or dams

2.1.4 Prevent oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, and other natural water bodies/reservoirs, and also ensures that stagnant water within the working area is treated in the best possible way to avoid breeding of mosquitoes.

2.1.5 Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the PIT so that the appropriate authorities, including the NMMZ may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

2.1.6 Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

2.1.7 Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.

2.1.8 Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

2.2 The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant negative impacts arising from such works have been appropriately addressed.

2.3 The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

2.4 Besides the regular inspection of the sites by the RE for adherence to the contract conditions and specifications, the ZINWA appointed a Safeguards Officer (SO) based at Catchment offices to oversee the compliance with these environmental conditions and any proposed mitigation measures. In all cases, as directed by the RE and SO, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

2.5 Ensure service maps are available to prevent disturbances and disruption of buried services such as electricity or telecommunication cables or sewer pipes.

3 Worksite/Campsite Waste Management

3.1 Ensure service maps are available to prevent disturbances and disruption of buried services such as electricity or telecommunication cables or sewer pipes.

3.2 All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable EMA requirements and conditions set in the ESMP.

3.3 All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with EMA's waste and effluent disposal requirements.

3.4 Construction waste shall not be left in stockpiles along the roads, but removed and reused or disposed of on a daily basis at designated disposal points.

4 Rehabilitation and Soil Erosion Prevention

4.1 To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

4.2 Always remove and retain topsoil for subsequent rehabilitation around temporary camps as possible and re-vegetate areas not required after construction. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

4.3 Revegetate with local plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem.

4.4 Ensure soil is stockpiled for future use and used to re-profile and rehabilitate closed affected areas.

4.5 Backfilling should be carried out immediately after the laying of the water pipes to prevent exposure to erosion that result in siltation of rivers and dams.

4.6 All open trenches should be fenced off with reflective tape material as they pose a potentially serious safety hazard to the school children and local population (especially at night) or provide proper demarcation and display warning signs.

4.7 Use dust suppression measures such as sprinkling water on soil in working sites and access roads.

4.8 Use only approved sites for sand abstraction pits and solid waste disposal.

5 Water Resources Management

5.1 Abstraction of water from wetlands shall be avoided.

5.2 No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

5.3 Wash water from washing out of equipment shall not be discharged into water courses or road drains.

5.4 Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

6 Traffic Management

6.1 Access roads shall not traverse wetland areas.

6.2 Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

6.3 Place speed limits insignia in the vicinity of projects as there will be increased traffic and pressure on roads.

6.4 Maintain local roads and follow a strict road maintenance schedule.

6.5 Ensure that vehicle washing and machinery maintenance is done only in authorized areas (away from waterways).

7 Blasting

7.1 Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the RE.

7.2 Blasting activities shall be done during working hours, and local communities shall be consulted and notified on the proposed blasting times.

7.3 Noise levels reaching the communities from blasting activities shall not exceed 90 decibels or as guided by the National Social Security Authority (NSSA)

8 Health and Safety

8.1 In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of HIV/AIDS

8.2 Provide safety equipment and adequate protective clothing and awareness to all construction workers to prevent or reduce injuries from work related activities.

8.3 Provide worker entertainment activities and awareness campaigns on STIs and HIV/AIDS to prevent or minimize the spread of STIs and HIV/AIDS through promiscuity of moneyed construction workers engaging prostitutes.

8.4 Adequate signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points

8.5 Construction vehicles shall not exceed maximum speed limit of 40km per hour.

8.6 Seek approval for transportation, use, storage of hazardous chemicals.

8.7 Handle and store all hazardous materials in line with their corresponding Materials Safety Data Sheets.

9 Repair of Private Property

9.1 Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

9.2 In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation

10 Contractor's Safety, Health and Environment Management Plan (SHE-MP)

10.1 Within 6 weeks of signing the Contract, the Contractor shall prepare an SHE-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works.

10.2 The Contractor shall prepare bi-weekly progress reports to the RE on compliance with these general conditions, the project ESMP if any, and his own SHE-MP.

10.3 It is advisable that reporting of significant SHE incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendices to the bi-weekly reports.

11 Training of Contractor's Personnel

The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project ESMP, and his own SHE-MP, and are able to fulfill their expected roles and functions.

12 Cost of Compliance

12.1 It is expected that compliance with these conditions is already part of standard good workmanship and state of the art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable SHE impacts.

Below Quality Assurance requirements for Gutu water supply ,waste water and safety requirements

No	Component	Unit cost	Quantity Required	Amount
1.	Flocculator	5,000.00	1	5,000.00
2.	Turbidity Meter	1,500.00	1	1,500.00
3.	pH Meter	2,000.00	1	2,000.00
4.	Autoclave (portable)	3,000.00	1	3,000.00
5.	Incubator (Bacteria analysis)	4,500.00	1	4,500.00
6.	DO meter	1,500.00	1	1,500.00
7.	Multi-meter	8,000.00	1	8,000.00
8.	Fluoride meter	1,100.00	1	1,100.00
9.	Arsenator	1,200.00	1	1,200.00

10.	Magnetic stirrer	1,000.00	1	1,000.00
11.	Digital scale	1,000.00	1	1,000.00
12.	Comparator Discs Sets	1850.00	1	1850.00
13.	Glassware beakers	10.00	10	100.00
14.	Glassware measuring cylinders	30.00	2sets	60.00
15.	Syringe sets	50.00	4sets	200.00
16.	Cuvettes	80,00	4	320.00
17.	Respirator sets	40.00	6	240.00
18.	Gloves	20.00	6	120.00
19.	Life jackets	40.00	3	120.00
20.	Motor bike	4,000.00	1	4,000.00
21	Barbed wire (Mpandawana sewage ponds)	100.00	9	900.00
22	Barbed wire (Gona sewage ponds)	100.00	9	900.00
23	Cement for repairing broken embankments and main hole covers	13.00	100	1300.00
24	Dragline for scooping /de-sludging ponds	200/hr	50	10 000.00
25	Fencing poles(2m)	8	300	2 400.00
27	Sampling and analysis of clear water and waste water from backwash ponds and sewage ponds	300/quarter	3	900.00
28	Ladders	500	7	3 500.00
29	Sewage suits(water proof)	60	10	600.00
30	Quarry stones	250	1	250.00
	Total			**57,560.00**

Appendix A: Attendance register and minutes of the stakeholder meeting with the Gutu RDC

GUTU STAKEHOLDERS' MEETING

DATE	NAME	INSTITUTION	ID NO.	CELL NO.	SIGNATURE
8/6/15	MAGWEDE W	HEALTH AND CHILDCARE	83-121655283	0772972224	[illegible]
8/05/15	DAISON C	GUTU RESIDENTS' ASSOCIATION	63-717469S26	0777347460	[illegible]
8/05/15	CHAGONDA M	GUTU RESIDENTS ASSOCIATION	27-127465227	0772740354	[illegible]
8-06-15	Mudhumo M	GUTU RES ASSO	27-012797K27	0773186256	[illegible]
08/06/15	M. MUTANDA	GUTU HIGH SCH	22-091998Q83	0775157811	[illegible]
08/06/15	CHIKONYE L	GUTU BUSINESS DEV. ASS.	15-108208P15	0776036761	[illegible]
08/06/15	SHENJERE V	GUTU RDC	83-111371-W-83	0718116556	[illegible]
08/06/15	KABELELE V	Businessman	38-051432M	0772634744	[illegible]
8/06/15	MASAMURA S	Gutu RDC	27-084089Q27	0773066885	[illegible]
8/6/15	MAFUZO B	RDC	83/064353Z83	0773887047	[illegible]
08/06/15	LUNGA R	ZINWA	0779325172	22-010885V22	Lunga R
12/06/15	Followup consultations Gutu Meeting with Consultant				
"	SHENJERE V	GUTU RURAL DISTRICT COUNCIL	83-111371-W-83	0718116556	[illegible]
"	Masvinyangwa T	ZINWA	22-217143S22	0772379237	[illegible]
12/06/15	BINY C	ZINWA	63-709178F63	0772417602	[illegible]
12/06/15	W Muti	World Bank	75-287598V75	0772244433	[illegible]
12/06/15	S. Chari	ZINWA H/O	63-1254518K63	0773208770	Chari
12/06/15	A - Muzembus	Gutu RDC	22-135922J83	0772403548	[illegible]

15 June 2015

Minutes of a follow-up meeting held between Gutu Council officials ,ZINWA officials and the World Bank consultant .

Members present

See attached list

The meeting started at 1130 in the Gutu Rural District council board room

Welcome remarks

Engineer Masvinyangwa welcomed everyone and introduced ZINWA staff to the consultant and council officials. He updated the house about the processes which have been taken to reach this level.

Discussions on impacts

1. The consultant explained the background of the project and explained that after holding meetings with EMA and reviewing the project scope and there was an agreement that an EMSP should be made and he said that he was there to support the catchment staff in order for the project to be a success.
2. He said that the bank was very particular about water conflict hence there must be consultations with all stakeholders to avoid a situation where the project will be left incomplete after there is a water conflict
3. He asked whether there is a conflict with regards to raw water usage and whether there will be resettlements around the dam which might stop the project in the near future. The response from ZINWA officials was that the dams were solely for supplying the town with water and no any new resettlement will be created since the area is already filled up
4. There is a need to negotiate with the people with illegal structure to avoid conflicts during project implementation. The engineer said since this project will only replace existing pipelines hence no illegal structures are in the way. The consultant encouraged ZINWA to provide pictures and layout of the pipeline to prove that the line to be replaced already exists.
5. The consultant also told the meeting that there was flexibility in the changing of the scope of works in order to avoid conflicts.
6. There is need to include waste water management in the scope of works as there is a need to de-silt one set of sewage ponds to cater for an increase in the volume in discharged waste .
7. He said that the EMP should include the person responsible for a certain duty and an estimated cost
8. He said that there should be a right up from the ministry of women affairs which should be

attached on this document

9. The council promised to supply drawings and a layout of the reticulation system to ZINWA

The meeting ended 1330hrs with a tour of a part of the suburbs which will benefit from the project and a visit to all of the sewage ponds .

Compiled by R. Marangarire

Marangarire R{ZINWA}

ZIMBABWE NATIONAL WATER AUTHORITY
REGISTRY
01 JUL 2015
P. O. BOX 250 MASVINGO
TEL : 262950-2
FAX : 263972

Signed by

GUTU RURAL DISTRICT COUNCIL
CHIEF EXECUTIVE OFFICER
{GUTU RDC}
01 JUL 2015
P O BOX 906 GUTU
TEL: 03[illegible]564

Appendix B: Marked 1:50000 Map of the project area