MINISTRY OF ENVIRONMENT, WATER AND CLIMATE
ZINWA

ZIMBABWE NATIONAL WATER PROJECT
ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

GURUVE WATER SUPPLY SUBPROJECT

MASHONALAND CENTRAL DISTRICT

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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

A needs assessment survey of 50 small towns and growth points managed by ZINWA was carried out. This followed request by Government of Zimbabwe to World Bank for funding rehabilitation of water supply stations. The outcome of the assessment resulted in prioritization of 7 stations in seven catchments of which Guruve in Manyame Catchment was chosen to benefit from the World Bank financial support.

Project Description

In Manyame Catchment, The project is mainly focusing on rehabilitation of existing water infrastructure. Guruve Service Centre will benefit through weed removal from Dande pick up weir, rehabilitation of treatment plant, construction of a reservoir, improved water quality monitoring, water reticulation extension and connection of 2548 residential

Legal Requirements

Pieces of legislation required for this project are the Environmental Management Act and associated Statutory Instruments, NSSA- Occupational Health and safety in Zimbabwe and World Bank Policies. ZINWA will comply with the EMA requirements through application and issue of effluent disposal license for backwash. NSSA requirements will be complied with through implementation of sustainable occupational health and safety procedures in all work areas. The World Bank O.P 4.01 Environmental assessment has been complied with through this ESMP while the O.P 4.37 Safety of dams will be complied with through the implementation of dam inspections and reporting to the World Bank.

Project Environmental and social baseline

Guruve water supply is located near Dande Dam which is on Dande River and abstracts its raw water from Dande Pick up weir. The Dam is infested with weeds at the abstraction point and this affect the performance of the suction screen on the suction main. The pipelines are to be laid within residential areas which are already developed and this will result in minimal environmental impacts.

The beneficiaries are from both Guruve North and South Constituency and hence demand for water is high during the day as most people come to conduct business during the day at the centre. Residential areas get water from the station although some areas are not yet connected to piped water supply. The residents comprise of newly developed residential areas which are not yet connected to piped water supply and existing which have not been accessing water. Some old residential areas were experiencing erratic supplies due to various factors such as aged/dilapidated pipeline and station not functioning at full capacity and high water loses due to leakages. There are currently plans for expansion to have additional residential and commercial stands for development within Guruve. The proposed water reticulation will cover part of the

housing developments in Guruve which are Tsatse, Aerodrome and Ministry of Roads high density areas and Heroes medium density are residential developments

2548 households are to benefit from the extension on reticulation for areas which had not been connected to the main water supply. High and medium density stands were developed without water and sewer reticulation hence the project also targets to extend water reticulation to the new high and medium density areas

Stakeholder Consultations

A stakeholder consultative meeting was organised and invitations were send to various stakeholders. The meeting was attended by Chief for Guruve, The Chief executive Officer for Guruve RDC and the District Engineer, representatives from Residents Association, Deputy Minister for Tourism and Hospitality and MP Guruve, Member of Parliament for Guruve South, DDF, Business community representatives.. Issues raised by stakeholders include the following:

- highlighted that the sanitation /sewage component was not included in the project
- Problems to do with water loses hence need have functional water management committees at district level since residents representatives are on the ground
- Need to support local industry through procurement of items such as building materials was emphasized
- Problem of water loses as a result of longer time taken by operators to get to clear water tanks when they are full water lose will be high.
- A question was raised on the preparedness of residents to pay for water to ensure sustainability of operations. The answer was that they are more prepared to pay for the water.
- Concerns were raised on whether the reservoirs would have adequate capacity. The project will look at having an additional reservoir as well.
- It was mentioned that women always have problems of having unsafe alternative water sources. A proposal was made to have boreholes at strategic points.
- The issue of engagement of local community so that the community will benefit through employment. It was highlighted that for skilled jobs the contractor can bring his own but for semi-skilled and unskilled they should employ from the local community people.
- Safety issues were also raised especially to do with digging of trenches. dug trenches not to exceed a month without being close and need for signages as well.
- An issue was also raised on the figure/amount to be used directly for the rehabilitation. A request was made to have a breakdown for the budget and emphasis was made to have more of the money going towards hardware.

Impact evaluation

The negative impacts likely to emanate from the project on the environmental side are likely to be minimal since its focusing on rehabilitation works and not on new works. The reservoirs will be constructed within an industrial area already allocated to ZINWA by the local authority. Currently, dug up and unlined settling ponds are situated just outside the treatment plant within ZINWA area which require upgrading.

The downstream national parks will not be affected by the increased uptake of water from Dande Weir since release environmental flows will be maintained.

Minimal impacts experienced such as opening trenches during construction phase. The opened trenches are to be closed within a period of 1 month to reduce risk of soil loosened being washed away into rivers and people injured if they fall in trenches. Vegetation clearing will also be minimal will be selective. Other impacts are social impacts common where there are construction activities and people are attracted to such places resulting in increased prevalence of diseases such as STIs and HIV. Education and awareness on diseases with help reduce the problems of spread of diseases.

Reduction of biodiversity through cutting trees, deterioration of air quality and hydrological impacts. The removal of the weeds will actually promote productivity of the lake due to reduced organic pollution levels, increased light penetration into the reservoir and increased dissolved oxygen levels. These impacts 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. Operational phase biophysical negative impacts are related to increase waste water production as a direct result of the ready availability of water.

The projects will have positive social impacts during the operation phase.

The project will result in increased production output and clean water supply to consumers. The community of Guruve will benefit through increased access to clean water supply and areas which were not connected to piped water supply will enjoy access to piped water. This will result in improved hygiene for the community, local economic development, and general improvement in the quality of life of people.

Replacement of old pipes will also result in reduction of water losses and ZINWA will save costs.

The project will enhance gender mainstreaming as women and girls will get easy access to piped clean water supply. This gives women and girls more time to do productive work. The other disadvantaged groups such as the elderly and people with disabilities with have easy access to clean water supply. A number of the socio-economic impacts during the construction and

operation such as employment generation and improved availability of water resulting in improved livelihoods.

The projects are not going to result in the displacement of people or disturb physical natural resources. Their impacts on the Bank's policy areas are very minimal and as such can be easily mitigated

Conclusions and Recommendations

The refurbishment and upgrade engineering works planned for Guruve station will largely be limited to replacement/upgrading of pumps and motors, raw and clear water mains/pipelines, reticulation extension, tanks and in most cases, backwash mains and settling ponds and acquisition of water quality testing equipment, reservoir.

The upgrading of the treatment plant to cater for the growing population in the town will be critical in the near future considering the design capacity which is almost at its maximum. Given the fact that quality of final water produced at the end is dependent on the design capacity to ensure adequate retention time for all stages of water treatment processes.

In conclusion, the project is a positive development to the Guruve community as it will improve the supply of water to the local residents and boost business in the area.

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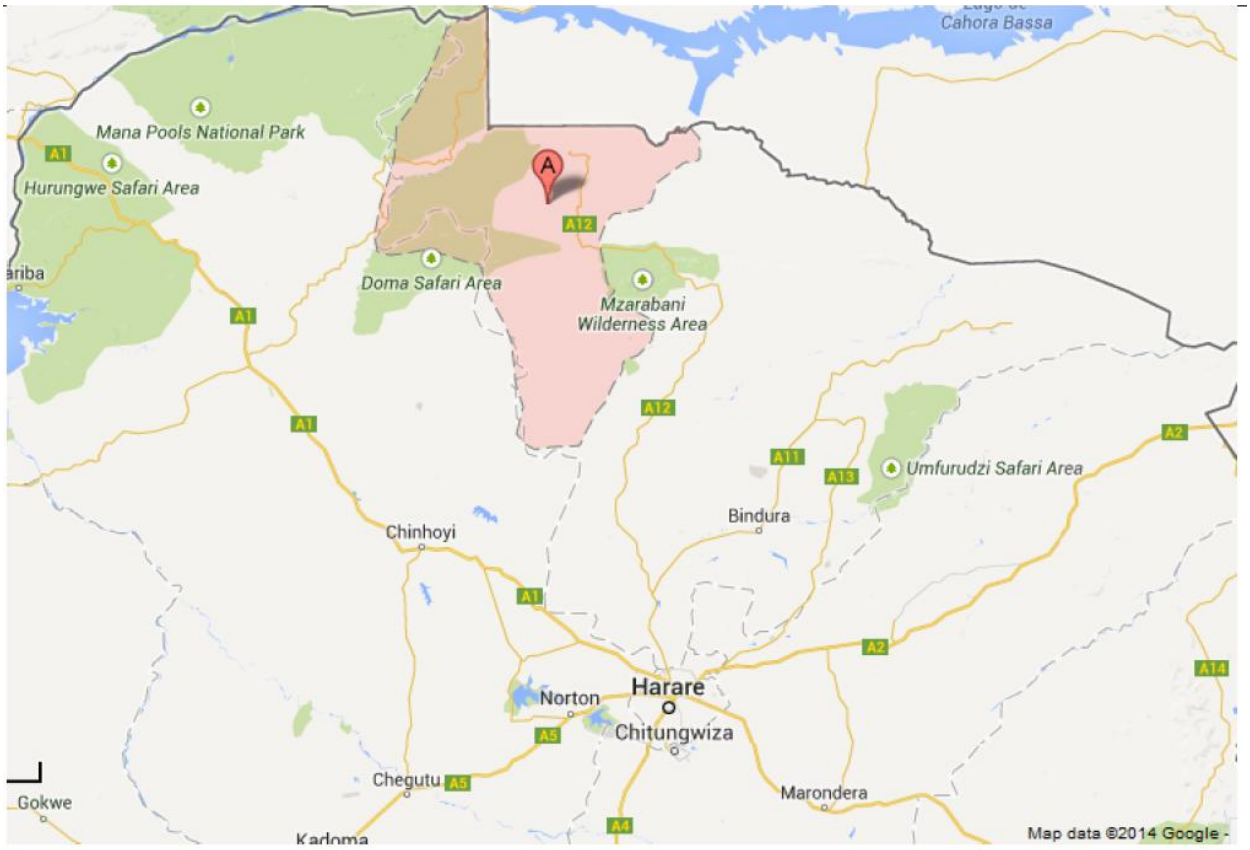
CHAPTER 1

INTRODUCTION

1. Introduction

Guruve is located in Mashonaland Central Province and is situated approximately 150 kilometers north west of Harare along the Harare-Mvurwi highway via Mazowe. Guruve is an agricultural region rich in fertile soils and is surrounded by large commercial farms. The responsible local authority is the Guruve Rural District Council.



Guruve Water Supply Station falls within the Manyame Catchment as demarcated by the hydrological boundaries in Zimbabwe managed by the Zimbabwe National Water Authority (ZINWA). The water supply station supplies potable water to Guruve and its surrounding areas.

1.1 Ministry of Environment, Water and Climate

The Ministry developed its vision, mission statement, and core values, to confirm that these over-arching institutional goals are fully aligned to the ZIMASSET document. The ministry's vision is to provide a safe, clean environment with adequate quality water, metrological and seismological services for sustainable socio-economic and climate resilient development. Its mission is to develop, implement and coordinate policies pertaining to environment, water, climate, creating and marinating a clean, safe and healthy environment, ensuring management, conservation and the sustainable use of natural resources. The core values include patriotism, integrity, teamwork, transparency, dedication and result-orientation.

The overall functions of the ministry of environment, water and climate are to:

1. Develop, implement and monitor environment, water and climate polices and legislation for sustainable development.
2. Coordinate and domesticate multilateral and regional protocols and agreements that Zimbabwe has ratified.
3. Provide leadership in the advocacy and awareness of environmental, water and climate issues.
4. Coordinate the resource mobilisation for government and other projects in the environment, water and climate sectors.
5. Facilitate and coordinate capacity development in the areas of environment, water and climate.
6. Ensure the proper use of all resources allocated/ raised by the Ministry.
7. Ensure the proper management of all Parastatals and State Agencies under the Ministry.

The Ministry's overall functions are further broken down into departmental functions so as to put in place a "focused" approach towards the achievement of objectives.

1.2 Zinwa

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.

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.

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.

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, delivery of the ESMP, 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

This ESMP shall be restricted to a 4 year implementation period. The project is a rehabilitation and upgrade program in which the original baseline has been distorted by the current development.

Immediate improvements.- to be covered within a period of (1 ½ years).
These are short-term investment needs that are urgent generally low cost but make a big impact such as

- removal of weeds in the Dam
- installing dosing equipment.
- Supply, fix and install new filter media for filters
- Supply and fix new Kent bulk raw water meter
- Replace existing MCC starters/breakers (for low lift pump)30kW

- Supply & install new Pressure Gauge at Raw Water P/S
- Supply & install new Pressure Gauge at Clear Water P/S
- Procure water quality test equipment for the station to ensure quality control.

Medium term investment needs.

These are related to rehabilitation or renewal of existing assets, such as

- replacing old pumps and leaking pipes or service connections;
- distribution networks,
- installing new service connections in existing service areas.
- Supply new MCC starters/breakers (for Flyght pump 3Supply & install new pump (standby) - clear pump/station
- Supply & install new motor (standby) - clear pump/station
- Supply new MCC starters/breakers (for high lift pump)90kW
- Supply & install new 150mm Gate Valves (Sed+Filter Tanks)Supply & install new 150mm Scour Valves (Sed+Filter Tanks)
- Replace 23m3 backwash tank
- Interconnect existing storage tanks 200mm mainsm10
- New distribution mains
- Provision for pipe fittings
- New connections (existing service area)
- Motobike (one for each station/operator-in-charge

3) Long term

- Construct new 1000m^3 storage reservoir
- New distribution mains
- New connections (new service areas

1.5 Potential users of the ESMP

1. **ZINWA for project implementation and monitoring.**

   ESMP will help ZINWA in planning purposes especially in anticipation of the positive impact relating to increased supply of clean water to residents of Guruve. More new areas being developed mean the Authority can plan with accurate information on volumes of water for new consumers, can also use for identifying gaps for future improvements. It will also use the ESMP during rehabilitation of the plant to ensure compliance with

environmental issues highlighted and to take mitigatory measures that will minimise negative social impacts to stakeholders and environmental impacts.

2. **Contractors for project implementation** - this will constitute part of the bidding documents for contractors. Document can assist in ensuring compliance to legal requirements during implementation stage through adoption of mitigation measures listed in the ESMP minimise environmental damage

3. **General public** for ensuring that their interests are covered and also their informed participation in the project design, implementation, monitoring and evaluation. The majority of the beneficiaries are residents from high, medium and low density areas. The town houses schools, district referral hospital, GMB depot, and hotel, local government, small industries. There is also mining at Eureka and Tengenenge Mines. Cotton growing is done commercially and communally in the hinterland.Guruve is also the administrative centre for Guruve District. The beneficiaries appreciate the challenges faced by ZINWA under the current economic conditions. Key stakeholders other than direct beneficiaries include the Ministry of Water, ZESA, farmers from surrounding areas, councilors and other politicians.

4. **The Environmental Management Agency** will use this document to monitor environmental and social aspects. This document outlines any impacts (positive and negative) of the project as well as any mitigation steps hence EMA will ensure compliance to national, regional and local interests in terms of environmental and social issues . EMA is accordingly responsible for the EIA/EMP review, implementation and enforcement.

5. **Rural District Councils:**

Guruve Rural District Council is the Development and Planning authority within its respective area of jurisdiction. In this regard, the ESMP will be useful to them to plan for the overall development of the District in line with the works to be done in the area. It will guide and assist to monitor implementation of the project and for coordinated and collective approach to development.

CHAPTER 2

PROJECT DESCRIPTION

2.1 Project location

Guruve is located in Mashonaland Central Province and is situated approximately 150 kilometers north west of Harare along the Harare-Mvurwi highway via Mazowe. See maps attached in appendix A.

2.2 Project description

Water supply to Guruve has been affected by the aged raw and clear water pumping equipment. As a result there are frequent breakdowns. The design capacity of $80m^3$/hr is able to cater for the current demand and will be upgraded to $110m^3$/hr and a 100% increase in population if the pumps are revived. The town has a population of approximately 7 500 people .Guruve has recorded steady growth over the past few years. It is a farming area and has grown with regards to expansion of housing stands, commercial and industrial complexes. Guruve water supply station abstracts raw water from the Dande Dam via 150mm diameter AC suction main. Total treatment plant output is at $100m^3$/hr. The plant consists of conventional processes (coagulation, sedimentation (2 x $50m^3$/hr sedimentation tanks), filtration (2x $50m^3$/hr and $35m^3$/hr filtration units) and disinfection). The 200mm diameter AC clear water pumping main up to the storage reservoirs is 2816m.The clear water is pumped from $250m^3$ sump to a 1000 m^3, $2000m^3$ and a $23m^3$ reservoirs before distribution.

The treatment plant will include backwash as one of its major processes. Initially the design didn't include an allowance for managing the wastewater from the backwash process, but the design team has included a design for a settling/recycling pond and a recycling pump to ensure that all wastewater is collected into the pond before being pumped back into the system for treatment. This will ensure that all water discharged to the environment will be of recommended standards.

i. Challenges at Guruve water supply.

- Guruve being an industrial, mining, agricultural and commercial town has also been affected.
- It is therefore necessary to get the system to operate at its maximum present capacity, which is sufficient to meet the current (including the unserviced stands) maximum daily demand of $1200m^3$ per day.

- Maintenance tools for use by staff are insufficient. There is need to procure a new set of tools for staff.

ii. Projected Works

- ***Raw Water Pumping Plant.*** Raw water pumping equipment is broken down. Even the standby plant is out of order. A standby unit is also required.

- ***Clear Water Pumping Plant*- C**lear water pumping equipment is broken done, standby plant is out of order. It is urgent and imperative to replace and upgrade non-working and old pump units and pipelines and provide a standby unit.

- **Booster Pumps**. Only one pump is operating with no standby.

- **Purification**. The sand in the sand filters needs to be replaced and chemo-feeders need to be procured and installed.

- **Clear Water Pumping Main**. Old 150mm main is dilapidated and always breaking down, feeds only some of the reservoirs. The new 200mm main only feeds the other reservoirs. It is therefore necessary **t**o interconnect existing reservoirs to facilitate the use of the new 200mm pipeline.

- **Reticulation.** A total of 1500 high and medium density stands were developed without water and sewer reticulation by council. The project also targets to extend water reticulation to the new areas, including the 424 high and medium density stands.

Proposed priority investments (immediate, medium and long term as per Castalia study

A) Immediate Works

(i)Water abstraction point rehabilitation.

(ii) Bulk raw water meter installations

(iii) Raw and Clear water pressure gauges

(iv)New raw water MCC starters/breakers

(v)New filter media for filters

(vi)Dosing equipment for alum and chlorine

(vii) Non revenue water leak detection equipment

Total estimate cost is US$ 107,438.55

B) Medium Term

(i)Clear water pump sets (duty and standby) and MCC starters/breakers

(iii) New 150mm gate valves installations

(vii) New backwash tank

(iv)Expansion of distribution system and New connections- 14000m of new reticulation and 700 new connections

(v) Establish 2 pilot DMAs

(vi)Motorbike and bicycles for operators

Total cost estimate is US$ 590,757.30

C) Long Term

(i)1000m3 reservoir construction

(ii)New distribution mains (16000m)

(iii)New 800 connections

Total Estimate Cost is US$ 809,071.20

Estimated Total costs for priority investment total for station is **$1,507,267.05**

CHAPTER 3

LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 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.**

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 Guruve baseline since there are no game parks or any noted wildlife presence within the project area which has already been affected by human settlement.

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.

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 Dande 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.

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

Guruve water supply is predominantly dependent on the integrity of the Dande dam therefore the O.P 4.37 Safety of Dams is triggered. In line with this policy, ZINWA will conduct dam safety inspections consistent with the policy requirements and furnish the World Bank with such reports as part of project implementation and monitoring.

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.

Fig 3.1 Distribution areas showing clear road reserves and service lanes

Chapter 4

Environment and Social Baseline

4.1 Environmental baseline

4.1.1Geology

The general geology of Guruve consists of: The Bulawayan system mainly of basaltic greenstones. These are massive amygdaloidal rocks occurring together with Pillow lavas. The Shamvarian system consisting of greywacke qairtzites, arkses and conglomerates. The Great Dyke mainly of serpentines rock. The granites are at places that are fine –grained and at others porphyroblastic. Where perphyroblastic, these grains form hilly terrains. The local geology do not show any signs of potential blasting. Drilling will be used in case of rock outcrops since the area is already habituated.

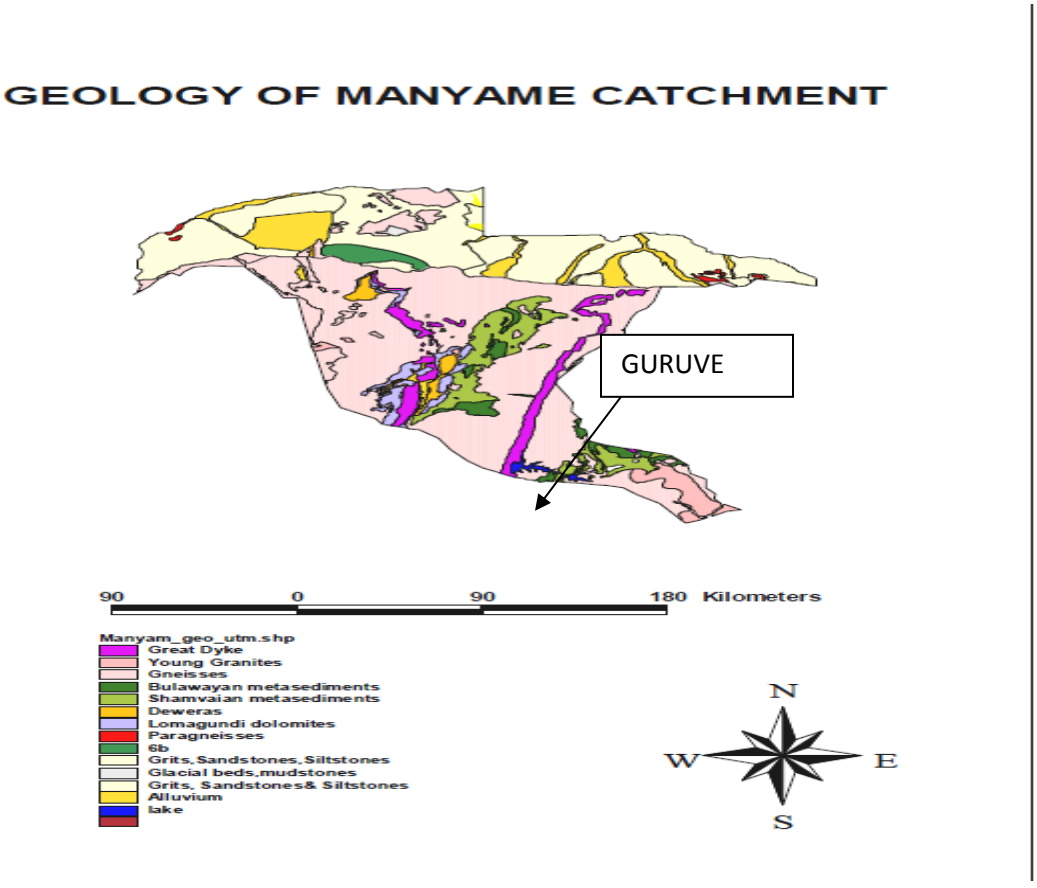


Fig 4.1 Manyame Geology Map

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4.1.2 Topography

The terrain around the Guruve is characterized by rolling topography with isolated knolls and hills. Altitude ranges between 1000 and 1183 meters above sea level. The area also has existing infrastructure in the form of road network and the project implementation need to take note of such infrastructure and ensure there is restoration of the road crossings.

4.1.3 Soils

The soils in and around Guruve are largely derived from the greenstone rocks and are typically red clayey soils of generally high cation exchange capacity and therefore of medium to high fertility.

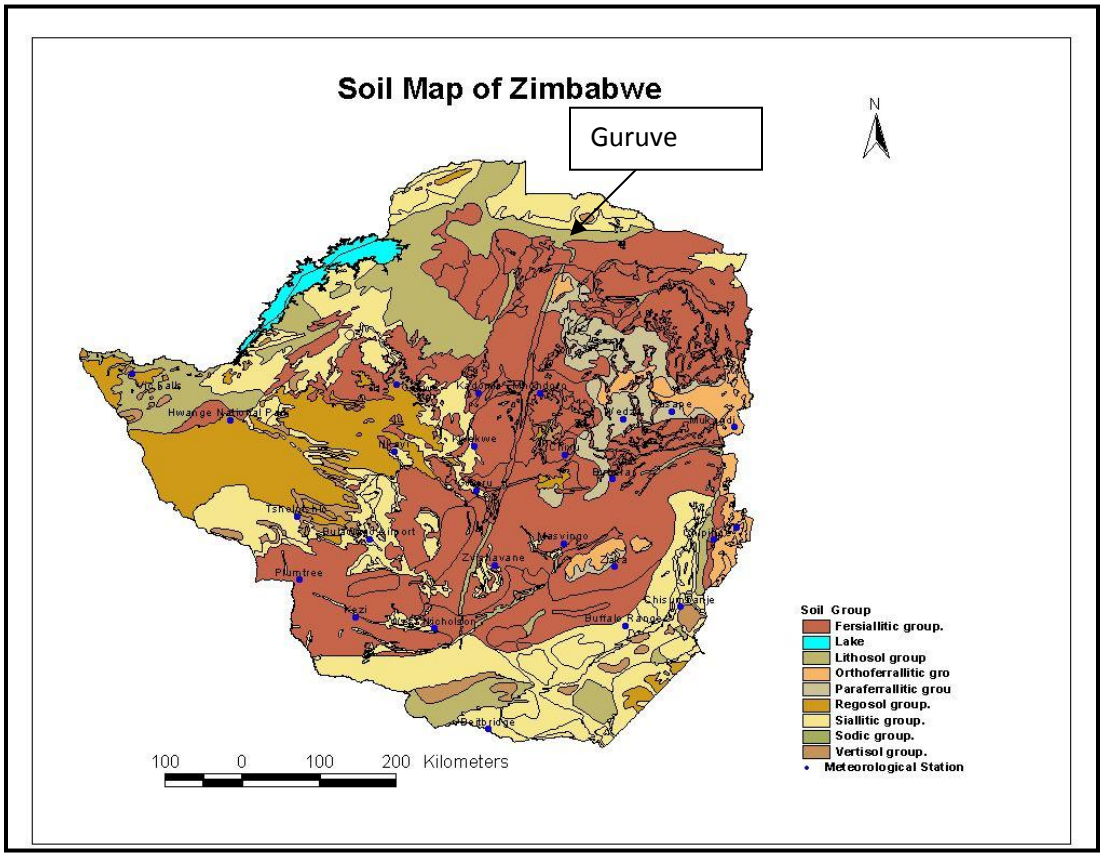

Fig 4.2 (Soils Maps Zimbabwe)

4.1.4 Ecology (Fauna and Flora)

The vegetation consists of Miombo woodland (Brachystegia species) on high and well drained ground while acacia bush occupies the low lying areas .Muriranyenze (albizia antunesina.) and mipangara (dichrostachys cinerea) and weeping schotia are also visible within the area of the project. Grass species occupy intervening areas. No notable plant and scarce species were noted within Dande Dam and its surrounding areas.

4.1.5 Climate

Guruve is located within agro-ecological region IIa which is classified as humid to moderately humid, with moderate to high annual rainfall averaging between (750-900 mm /annum). 90-year old rainfall records were broken when Guruve recorded 145mm of rain. The highest recorded rainfall that Guruve had received prior to Saturday the 3rd of January 2015 was 90mm, recorded on the 30th of January 1924. (http://www.zbc.co.zw/news-categories/top-stories/51187-new-rainfalls-records-set 05 January 2015). The typical tropical seasons are divided into winter and summer with winter temperatures ranging between 11 and 29 degrees Celsius and summer temperatures ranging between 23 and 32 degrees Celsius. There are occasional incidences of frost in winter. The area receive high rainfall and the project implementation should ensure that trenching is planned for off the rain season period.

Table 4.1 Temperature figures for Guruve area.

	Temperature		
Months	**Normal**	**Warmest**	**Coldest**
January	20.6°C	26.0°C	17.0°C
February	20.3°C	25.7°C	16.8°C
March	20.0°C	26.0°C	16.0°C
April	18.9°C	25.6°C	14.0°C
May	16.8°C	24.2°C	11.1°C
June	14.7°C	22.4°C	8.7°C
July	14.6°C	22.4°C	8.3°C
August	16.6°C	24.6°C	9.7°C
September	20.1°C	28.0°C	13.0°C
October	22.2°C	29.4°C	15.8°C
November	21.9°C	28.3°C	16.8°C
December	20.7°C	26.2°C	16.9°C

4.1.6 Water quality

Water quality sampling is carried out at least once a month. Quality if water is reported to be good, except during the rainy season where there are challenges to control and manage turbidity. This information was collected from the operators and Quality Assurance Scientist. pH and chlorine tests are done at the station and the more complex water quality tests are carried out at catchment level.

Table 4.3 Water Quality

Parameter	**Average result for Raw water**				**Average result for Clear water**			
Year 2015 Monthly average results	**Mar**	**April**	**May**	**June**	**March**	**April**	**May**	**June**
pH	7.4	7.4	7.4	7.1	7.2	7.2	7.0	7.0
Turbidity	5.5	5.0	3.5	4.0	1.5	0.8	1.2	1.8

Total Chlorine					1.0	1.2	1.0	0.8
Residual Chlorine					0.2	0.3	0.3	0.2

Year 2014 Analytical results for Guruve Water Supply –Average monthly

Parameter	**Results**	**SAZ**	**Unit**
pH Raw Water	7.2	6.5-8.5	
pH Clear Water	7.0	6.5-8.5	
Turbidity Raw Water	1.6		NTU
TurbidityClear Water	0.6	<5	NTU
Residual Chlorine	0.3	0.2-0.5	
Total Chlorine	1.0	0.8-1	Mg/L

4.1.7 Hydrogeology and Hydrology

The hydrogeology of the different aquifers mentioned are described as follows:

GRANITES AND GNEISSES

Granites and gneisses have poor ground water potential as they have no primary permeability and porosity. Hence groundwater occurrence is controlled by the development of secondary structures such as faults, fractures and mostly weathered zones. Borehole yields are 0.5–100 m3/day.

GREENSTONES

These are very good aquifers particularly in the broad depressions and valley floors .In these aquifers groundwater is controlled by the development of secondary structures such as fractures, faults and contacts and boreholes are the most important development facilities. Yields range from 5-500 m^3/day depending on the geographical locations of the zones, their dimensions and permeability properties.

Groundwater occurrences in sandstones and alluvium deposits is as a result of primary porosity GW development potential is high and the water is suitable for primary supply, piped water supplies and irrigation schemes. The corresponding yields fall in the range 40-5200 m^3/day.

4.1.8 Current effluent disposal system

Guruve is on septic tanks and the quality of the groundwater maybe threatened. The sewage class for all these local authorities are blue because the effluent is contained, is mainly domestic and population under this service is below two hundred thousand.) only 65 households of the existent household is reticulated.

The treatment plant at Guruve water supply will require sludge ponding system for treating effluent so that we do contaminate the source. Parameters which include turbidity, pH and settleable solids are to be analysed. Putting up of sludge ponds with adequate design capacity will ensure that all effluent is contained and sludge settles in the ponds and water is used for irrigation.

4.2 Socio-Economics

4.2.1 Administrative arrangements

District Administrator.

The definition section of the Rural District Councils Act defines a "district administrator "as being *"the district administrator within whose district the council area or proposed council area lies*" District Administrators have thus been assigned to chair land and food distribution committees, and generally appear to regard all administrative matters relating to government as falling within their purview.

Council

Council is governed by the Rural District Council Act, is fully constituted and functions on a committee system. Different Committees discuss specific mandated issues and make recommendations to Full Council, which in turn endorses or rejects Committee recommendations i.e. resolves or makes resolutions using Committee recommendations Council has internal and external accountability mechanisms mainly through **Full Council** and the **Committee System, Public Meetings and Consultations** through its social services committee. The Council provides secretarial services to the DWSSC through the Department of Social Services while its Technical Services Department is responsible for roads, water supply, sanitation, planning and real estate. These functions are guided by the Road Act, Regional and Town Planning Act and the Public Health Act, among others

Guruve's rural service delivery models and performance, like for other Councils depend on national institutional arrangements. For specific service areas (water, sanitation, roads, energy, health, and education) the arrangements reflect the extent of decentralization where central government institutions are directly involved. Despite this institutional multiplicity Guruve Rural District (GRDC) retains the responsibility to develop its area through sound planning, implementation and management of services. As such, the capacity of a Council (Councillors, staff and citizens/residents) matters.

Table 1:- WASH related service providers

NAME OF SERVICE	SERVICE PROVIDER	AVAILABILITY IN DISTRICT
Water	ZINWA/GRDC/NGOs/Private players/DDF	Moderate
Sanitation	GRDC/Individual/NGOs	Moderate
Roads	GRDC/ZINARA/DDF/Moots	Poor
Energy	Min of Energy/ZETDC/NGOs/Petrol Trade	Poor
Health	MoHCC/GRDC/Missions/GRDC/Private/NGOs	Moderate
Education	MoPSE/Missions/ GRDC/Private/NGOs	Good
Communication	Zimpost/Private/Telone/Media Houses/Power Tel/Electronic and Print Media/MoTC	Moderate

Key

RATING	ASSUMED LEVEL OF SERVICE
Excellent	81 to 100%
Good	61 to 79%

Moderate	41 to 60%
Poor	21 to 40%
Very Poor	0 to 20%

A Council has the general powers relating to administration to be expected of a local governmental authority, including the power to make by-laws. However, all by laws made by the Council must be approved by the Minister, and the Minister himself may make by laws where he feels the Councilor ought to have but has not. The Minister has substantial control over the finances of a Council and must approve any borrowings. As with a Provincial Council, the Minister has the power to give directions to a Rural District Council, to require reports from the Council, and to investigate the affairs of the Council. In addition to these powers, the Minister may direct any resolution of a Council to be rescinded and give notice that resolution so notified matters require his approval.

The Rural District Development Committee

This is in theory the most important, practical and functional of all development committees as the next Committee in the hierarchy is the Provincial Development Committee, which is concerned with broad policy issues relating to development and does not consider or authorize development plans from the Rural District Development Committee.
Rural District Development Committee consists of:
a) the District Administrator, who chairs the Committee;
(*b*)the chairman of every other committee established by the Council;
(*c*)the chief executive officer of the Council and such other officers of the Council as the Council may determine;
(*d*) the senior officer in the district of:
(i) the Zimbabwe Republic Police;
(ii)the Zimbabwe National Army;
(iii) the President's Department (read CIO);
(*e*) the district head of each Ministry and department of a Ministry within the district that the Minister may designate by notice in writing to the district administrator;
(*f*) such further persons representing other organizations and interests as the Minister, on the recommendation of the district administrator, may permit.
The function of the Committee is to consider ward development plans, prepare annual and long term development plans for submission to the Council, and to monitor implementation.

The District Development Fund

Currently they chair WASH meeting at Provincial level and coordinate all the activities. The DDF is a Fund under the Trusteeship of the Minister of Local Government, established by the District Development Fund Act. Its monies derive from provisions made in this regarding the National Budget and various taxes and levies payable under a wide variety of statutes and regulation such as the Mines and Minerals Act. The Minister may declare any area to be" *a development area*", and thereafter the Minister has the power to "apply the money and other assets of the Fund for any purpose which he considers to be in the interests of the development of Communal Land or development area sort the inhabitants thereof."

ZINWA

The water supply is managed by ZINWA, and RDc is involved in the adminstartion of the province. Rural Districts Councils were not affected by the 2006 and 2009 government directives (that handed over water supply management to ZINWA and then back to the local authorities). This may explain why relations between ZINWA and Rural District Councils are better compared to those between ZINWA and urban councils.

The Ministry of Health and Child Care (MOHCC) is a key agency. Its role relates to sanitation and hygiene. The EHT gives health awareness education and sites and supervises Blair latrine construction for both the communities and service centres. In addition the EHTs are supposed to carry out water quality monitoring on public water sources to ensure public safety. The EHTs also carry out health inspections for all businesses to ensure compliance with minimum health requirements as per the Public Health Act. The health report is then used by Council to award new licences and or renew existing ones

DISTRICT WASH (DWSSC)

The RDC Act of 1996 recognises the RDC as the unit responsible for delivery of WASH services. This function is managed differently in different Councils in terms of both policy and executive responsibility. For most RDCs central government agencies under the Rural District Development Committee (RDDC) coordinate most of the planning and implementation of services including for WASH. The specific WASH sub-committee of the RDDC is the District Water Supply and Sanitation Committee (DWSSC). Council representation in the DWSSC is often the responsibility of the Department managing WASH activities, usually Social Services, Works or Projects.

There are many agencies that play a critical role in the delivery of WASH services in Guruve District. These include, *inter alia*, central government Ministries and departments, parastatals, NGOs, business, the community, individuals and Council. . The DWSSC is responsible for the WASH services and activities in the district. Key DWSSC members are the Ministry of Health

and Child Care, Ministry of Education, Ministry of Labour and Social Services, Ministry of Indigenization and Youth Empowerment, ZINWA, EMA, Ministry of Local Government, Public Works and National Housing and the District Development Fund. The Ministry of Health and Child Care is responsible for environmental health and DDF is responsible for groundwater supply whilst ZINWA has the responsibility for surface water systems. ZINWA and DDF are also active in the district as custodians of water delivery in urban and rural areas respectively. There are several NGOs active in the district. However, only one NGO, Farm Community Trust of Zimbabwe (FCTZ) focuses on WASH activities in rural areas.

The DA who chairs DWSSC provides leadership for all government stakeholders relevant for WASH. The DA has been dealing with council issues for more than 10 years and is capable of making each stakeholder feel the pressure to deliver on their own set goals. The DA ensures that each one of the key DWSSC members feels answerable to their line of service. However, whilst the desire to deliver is there the absence of equipment and other associated enabling conditions works against delivery of the service by members. HRDC is in need of borehole drilling equipment given the fact that many areas in the resettlement area that were formerly serviced by white commercial famers now fall under the jurisdiction of the LA to provide WASH services.

The DWSSC is fully constituted by the relevant government departments and civil society organizations operating in the district. The assessment found the DWSSC to be functional as evidenced by minutes of the meetings held. WASH planning in the district is done by DWSSC, for example planning on borehole inventory and maintenance. The financial commitments for these plans are guided by previous expenditures whilst their thrust is based on current national WASH strategies, for example, Zero Open Defecation. However, there are no long term plans in place and the availability of funds determines the intensity, range and duration of DWSSC activities. The assessment team had an opportunity to attend one DWSSC meeting. The main observation from the meeting was that DWSSC members do not feel like they service the RDC. Instead they are of the notion that the RDC is not important in the execution of their functions. DWSSC members have a strong opinion that the capacity building interventions should be targeted at them and not the RDC. This opinion is premised on the view that it is them (DWSSC members) who carry out the WASH activities and therefore need the capacity and not the Council.

The functions[1] of the DWSSC include the following:

1. Linking with/to PWSSC, Council and sub-Council WASH structures;

2. Leading district WASH visioning, programme planning, standard setting and adaptation and innovation facilitation;
3. Direct implementation of WASH activities;
4. Steering Council-wide appreciation of WASH policy, legislation and institutional arrangements at district level; and
5. Monitoring and Evaluation, practice reflections and documenting (reporting on) WASH activities;

WASH resource mobilization

Councillors work in committees to provide an oversight role but this role in incapacitated by their limited understanding of what exactly they are supposed to look for when in these committees. It is critical that relevant trainings are given to WASH-aligned committees so that they question and plan from an informed point of view as what happens in the committee ultimately has a bearing on the extent to which WASH will get financed by Council. In this instance Finance, Works and Social Services are the most important Council Committees that will need training to improve appreciation.

4.2.2 Livelihoods

This is a growth point and there is Guruve Business centre. At the centre there are 4 general dealers, 13 bottle stores, 2 grinding mills, and 3 bottle stores. There are also 2 workshops and 1 fuel station. There are 2 vending areas, 1 GMB and 3 CMB depots. There is 1 GMB depot servicing the needs of the entire district. There is 1 post office and 1 commercial bank to meet the financial needs of the community. Eureka mine has closed in 2009 but most "its workers "are staying at Guruve service centre. (Guruve South Constituency Report, 2013).

There is also **Guruve District Hospital**. The government owns it. It is manned by 1 doctor and there are 78 general beds. Guruve hospital and Shinje clinic have electricity, piped water, communication services and a security fence.

There are 13 projects, which are being funded by the Ministry of Gender, and they are in the retailing, construction, manufacturing and agricultural business. They are being run by 7 females and 6 males (Guruve South Constituency Report, 2013).

The bulk of the population is involved with vending of a variety of goods and wares ranging from fruits and vegetables, grain, clothing and hardware largely in open markets. The average income is around $120 per month. However, this income is seasonal as the surrounding

population is into mining and farming and usually gets incomes after harvests. (Guruve South Constituency Report, 2013).

4.2.3 Population and demographics

Guruve's current population is estimated at about 7,000. This figure is an estimation as exact figures from the 2012 Census database could not be established. There are currently about two new major housing developments being planned for the area and this is a sign that the town is steadily growing year by year. Guruve has recorded steady growth over the past few years. It is a farming area and has grown with regards to expansion of housing stands, commercial and industrial complexes. There are a number of schools, both primary and secondary in the area, Churches, a Hotel, Government departments, small industries, shops and a hospital.

There are currently plans being approved by the rural district council to add an additional 2489 low and high density residential stands within the area. Town development plans which have been located for Guruve.
These in summary of areas already occupied are:

- Tsatse High Density - 279 stands - 150 already built
- Heroes Medium Density - 35 stands
- Aerodrome High Density - 500 stands
- Ministry of Roads High Density - 200 stands

The centre is able to pay around 80% of its water bill per month for the current only. The total bills collection including debts accumulated from 2013 write-offs the collection rate is around 25%.

Table 4.3 Schools in Guruve

Name of School	**Level/ Status**	**Year Built**	**Boys**	**Girls**	**Ownership**	**Hot Seating**	**Teachers**
Chimanikire	Primary	1924	361	348	Council		18
Guruve	Primary	1980	304	306	Council	Yes	14
Kondo	Primary	1944	577	579	Council	Yes	29

Muzika	Primary	1954	290	290	Council	Yes	17
Ruwinga	Primary	1945	288	316	Council		15
Kondo	Secondary	1988	245	225	Council		20
St Francis Clare	Secondary	1981	476	411	Anglican		44

Guruve water supply station abstracts raw water from the Dande Dam via 100mm diameter suction main. Guruve Police & Prisons Departments are the biggest users of water in the area. The water supply station is supplying purified water at reduced capacity. Total treatment plant output is estimated at $100m^3$/hr. though it's operating at $80m^3$/hr. due to canabalised equipment and aging infrastructure. Water is available on average for 13 hrs per day due to load shedding but at most time ideal pumping to ensure adequacy should be around 19 hours.

4.2.3 Gender mainstreaming

GESI mainstreaming refers to the full integration of policies and procedures that promote gender equity and social inclusion in the planning, implementation, practices, monitoring and evaluation of all initiatives undertaken by and within an organization. According to the census in 2012, 51.9 percent of the total population is female. It is mostly women who currently spend a lot of their time on collecting water from remote sources. Women largely excluded or underrepresented in WASH decision making processes and structures particularly at higher levels.

- Water situation critical in all Local Authorities including Guruve.
- Socially and culturally ascribed gender roles put the burden of water collection on women and girls.
- Women spending long hours in water queues
- Men sometimes fetch water but mostly when wife is ill or pregnant or when there is a funeral or wedding.
- Men use labour serving technologies such as wheelbarrows, cars
- Because of natural processes of menstruating, sex, pregnancy child birth, and breast feeding women reported that they require more water than men.

Fig 4.1 Some 3 school age girls and a small boy coming form fetching water

- Guruve Rural District Council has role to play in WASH gender and social inclusive issues. The Rural District Councils Act (29:15) provides a whole range of powers and functions to be performed by RDCs in relation to WASH.
- Section 71 of the RDCs Act provides for the Powers of Duties of GRDC
- Section 72 Powers in regards to sewerage and drainage.
- Section 74, Section 77, Section 88
- ZimAsset has four strategic clusters:
    i) Food Security and Nutrition;
    ii) Social Services and Poverty Eradication;
    iii) Infrastructure and Utilities; and
    iv) Value Addition and Beneficiation.
- Implementation guided by the Results Based Management (RBM) System
- Clusters (ii) and (iii) above are linked to WASH services delivery

In Zimbabwe Constitution there following sections

Chapter 2 (National Objectives) – Section 22

- Sub section (1) The State and all institutions and agencies of government at every level must recognise the rights of persons with physical or mental disabilities, in particular their right to be treated with respect and dignity.
- Sub section (4) The State must take appropriate measures to ensure that buildings and amenities to which the public has access are accessible to persons with disabilities.

Chapter 4 (Declaration of Rights) Part 2

- Section 77 (a) - Every person has the right to safe, clean and potable water & The State must take reasonable legislative and other measures, within the limits of the resources available to it, to achieve the progressive realisation of the rights set out in this section.

Also the Millennium Development Goals have the following goals;

Goal 3: Promote gender equality and empower women

Indicator

- *Proportion of seats held by women in national parliament*

Goal 7 Ensure environmental sustainability

- Target 7 C - Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and sanitation.
- Indicators
  - *Proportion of population with sustainable access to an improved water source, urban and rural*
  - *Proportion of urban population with access to improved sanitation*

. ***Outcomes and Implications of the Water Situation***

Health Implications

- Pre-natal, delivery and postnatal care – women asked to bring water to clinic, newly born babies not bathed
- For People living with HIV and chronically ill. Because of competition they resort to unprotected sources
- Water shortage affected malaria spraying programme in some areas: pregnant women and babies susceptible to malaria
- In health terms, the shortage of water impacts more negatively on women than on men.
- Lack of adequate equipment, protective clothing and limited water supplies

Implications for Livelihood Activities

- Women currently cannot pursue paid work outside the household because they spend a lot of time collecting water from distant sources, where water is not connected or during. In our households survey we mostly interviewed women because it is mostly them who stay at home during the day for unpaid family work.

- Less time was being spent by women on income generating activities – e.g. when tap water is available, women make $70/week and drops to $10 when queuing at boreholes
- Men collecting water for sale, while women collect mainly for domestic use (unpaid labour)(not common in Guruve)

Security Implications

Gender Based Violence

- Sexual exploitation
- Unwanted pregnancies
- Physical and verbal abuse of women by men
- Men leaving their wives for 'small houses' who practice good hygiene practices - bathing
- Girls dropping out of school

Burden of Care & Women's Dignity

- use of buckets

Implications for Socially Excluded Groups

- Use of buckets
- Bush system
- Fly toilets
- Children Living With Disiability dropping out of school

The Elderly

Elderly people no longer have the physical endurance to attend meetings and thus have limited input into decision making processes. Inability to travel long distances to access WASH services such as boreholes and toilets. Inability to use labour intensive WASH services and infrastructure such as boreholes.

People Living With Disability

PLWD largely excluded from WASH decision making structures and processes which results in their special needs not being addressed by WASH services and infrastructure. Water infrastructure such as boreholes not easily accessible by PLWD because of unfriendly designs that do not take into consideration the needs and conditions of PLWD Toilet facilities, without ramps and rails and with squat holes are not easily accessible by PLWD. Difficult for PLWD to attend hygiene awareness programmes and training in cases where the venue is located far

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).Tobacco farming and wheat farming is also common in the surrounding areas. Cotton farming is now low. Most households rear cattle, goats and sheep. There are some mining activities in surrounding areas. The WTW,

pipelines and storage facilities lie within Guruve Rural District Council. The land for the project belongs to the Rural District Council there is no conflict of use.

4.2.5Sanitation Facilities

Guruve has a inadequate sewage treatment facility and it will become necessary for the center to upgrade its sewage treatment facility as well as connect all the residents to the main sewer system. A comprehensive sanitation survey was carried out by Guruve RDC and forwarded to Ministry of Local Government for consideration. This will in turn however, 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.

4.2.6 Public Health

No cholera cases were reported in 2014.Ministry of Health is prepared to both prevent and contain as appropriate, possible outbreaks of cholera and other epidemic prone diseases. The Ministry has put in place measures in terms of preparedness and response to all outbreaks, and as we talk three teams will travel to the affected districts to support the local teams.

Table 4.4 (NAC Report - HIV and AIDS, Sono)

Site	Males	Females	Counselling only	C & T	+VE Males	+VE Females	% Positivity rate	Total
Guruve Centre	49	21	0	70	5	3	11.4	70
Matsvitsi	11	19	0	30	3	2	16.6	30
Impinge	46	38	1	83	1	3	4.8	84
Nyangavi	56	34	2	88	4	5	10.2	90
Mudhindo	*55*	*90*	*2*	*143*	*3*	*6*	*5.5*	*145*
Total	**214**	**199**	**5**	**414**	**16**	**19**	**8.5**	**419**

Source: PSI monthly NARF Report February 2011.

Key +VE == Positive

Zimbabwe is committed to achieving "zero AIDS related deaths" by 2015

National response to HIV and AIDS

Currently there are five NGOs who are operating in the district namely Zimbabwe HIV and AIDS Prevention and Support Organization, FACHIG, Northern Tobacco, Campaign for Female Education (CAMFED), HOPE Humana (DAPP) and Women's Action Group (WAG). The remainder of the stakeholders in the national response are government departments that are implementing HIV and AIDS activities. There are 55 primary schools and 24 secondary schools in the District which are also implementing HIV and AIDS activities. Campaign for Female Education (CAMFED) and BEAM programmes have been assisting orphans in the schools with the payment of school fees as well as buying of school uniforms and stationery for the CAMFED programme. (NAC 2011)

4.2.7 Occupational health status

Basic occupational health and safety measures are followed, and operators are provided with basic essentials such as work suits, overalls or jackets and gumboots. The catchment offices report that equipment such as facemasks and gloves for operators dealing with hazardous substances are provided along with regular health checkups; however, this was not confirmed in the field visits.

The overall picture is that much like the training, the occupational health and safety is no longer addressed in a systematic way. One of the topics for training should be occupational health and safety. In addition, the safety equipment provided to staff should be reviewed and a standard package of clothing and equipment provided to staff, as well as routine health checkups for any staff working with hazardous substances.

The original water treatment works were designed with mixing chambers with alum and lime dosing systems. In all cases, these have been abandoned. Likewise, the systems were designed with a chlorine contact tank and chlorinator system. The chlorine contact tanks are still there, but the chlorinators are no longer to be found. Chemical dosing using aluminum sulphate, soda ash, and chlorine granules ("HTH") is now done by a rudimentary 'hole-in-bucket' method.

The current practice of "hole-in-bucket" chemical dosing should be reviewed, and if necessary alternative methods adopted. This can include training, as well as provision of new equipment for alum and lime dosing, and chlorine dosing.

Ladders and water treatment units without support rails present occupational risks

Occupational safety risks are prevalent at the current works , this may include working on elevated workplaces without support structures and railings, handling of hazardous chemical without appropriate protective gear, risk of being bitten by crocodiles and snakes at raw water intakes etc. We are preempting these hazards so that we create a starting point for project implementation, OSH will feature strongly in the ESMP so we need to capture the baseline.

Points to look for at pump houses

- Transformer fuses and arrestors
- Evidence of fire damage to cables at ground level

Stand by pump, motor and starter availability

- Non-return Valves (and condition)
- Internal lighting for pump stations
- External lighting, fencing and handrails for sedimentation tanks and filters
- Valve failure (from operators)
- Condition of electrical board internals
- Air valves on transmission mains

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 stakeholder consultation

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 consultations

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 in puts

Table 5.1 Stakeholder breakdown

Stakeholder	Description	Numbers Done
Council	CEO	1
	Head of Departments	2
	Officers	2

	Councillors	2
Other Stakeholders	DA's office	2
	DDF	2
	ZINWA	1
	Women Affairs and Gender	1
	Youth and Indigenization	1
	Education	1
	Health and Child Care	1
Total Numbers		**16**

Source: Fieldwork 2013

5.6.1 GOVERNMENT DEPARTMENTS

Table 5.2 Government departments

Name of stakeholder	Stakeholder concern/ in put	Response/Action
1. RDC Engineer	Water project does not include sanitations component so this will likely affect water borne disease control.Council has finally sent a report to Ministry of Public works for sanitation and landfill in the tune of around $1.2m. Soil erosion.	World bank project scope did not include sewer but council can sent in bids through relevant ministry This will be mitigated through quick rehabilitation and avoiding trenching during the rainy season
2.	Council financial capacity severely constrained in particular as a consequences of debt cancellation. Council efforts to mobilize sufficient resources for service delivery not successful. Rate payers reportedly resisting to pay. Obsolete equipment for service delivery. Dysfunctional septic tanks and soak away systems especially lack of water, leading to clogged systems, requiring use of hone suckers.Existing Ponds have not been functional. There are also inadequate borehole in the service centre for emergency.	Council has drilled two extra boreholes which are yet to be equipped.
4.EMA	Which access roads will be affected (cut) and for how long will the affected access roads be closed off? Engagement of landlords where there are tenants. Unplanned developed with no guaranteed water	This will be done in liaison with the GRDC, Notifications and consultations with stakeholders will be made

	supplies. • Water pollution by car wash in Dande Weir dam. • Tobacco nurseries on wetlands and chemical pollution . • Lack a certified dump site at GRDC centre. • Lack of sewer disposal system like ponds. • Apostolic sects meeting in the entire districts without sanitation facilities • No functional solid waste collection system which is no longer functional. • High levels of siltation of water sources and reduced water table due to climate change.	proactively. Reinstatement will be made. ZINWA will engage all stakeholders for source water protection.
3. Nurses at Guruve Hospital	When would the project commence and how long it will take to complete.	Tentatively commences in July 2015 and may take a year to complete.
5.ZINWA	ZINWA has no program for regular testing and maintaining of meters. There is no systematic exercising program for valves. The community plays an important part in leak detection Representativeness of ZINWA including catchment councils and role and responsibility clarifications Billing system- use of previous estimates needs to be improved	ZINWA will implement water quality monitoring in the whole supply chain.
DDF	• Lack equipment, spare parts and transport for mobility in servicing boreholes in communities. DWSSC • Incentives for sustained performance in	Noted

	WASH programs	

GURUVE RURAL Water and Hygiene Thematic Area Strategies and Strategic Objectives

Water availability is one of the challenges being faced by many people across the district given the number of people that live in Guruve. Water needs and expectations are high among the communities for the LA to improve water services in the district for communal, resettlement and urban areas. The needs of the socially disadvantaged groups such as women and girl child who have the burden of collecting water at household level need urgent attention. Problems associated with water availability and strategies that can be employed to address water challenges are heighted in table 4 below:-

KEY ISSUE	STRATEGIC OBJECTIVE	ISSUES/ PROBLEMS	STRATEGIES
1. Poor Water Quality	• To improve the quality of portable water to meet the minimum WHO standards by 31 December 2018.	• Shortage of chemicals • Unprotected wells • Contaminated water sources • No water analysis at user ends	• Opt for less polluted points of abstraction and sources • Invest in portable water quality testing kits and training of manpower. • Encourage protection of family wells • Enforcement of water pollution regulation
2.Inadequate water infrastructure	• To increase the supply of potable water from 40% coverage to 80%	• No standby power at water treatment plants • Inadequate storage facilities in SUCs • Need for repair and expansion of infrastructure (Drilling and connections) throughout the district • Lack of alternative	• Installation of dedicated power lines of water treatment works and or generators/Solar-(renewable energy) • Construction of additional reserves and reticulation facilities • Drilling and equipping of boreholes and (alternative) water sources which can be used for variously) in service centre.

		sources for emergencies and or disaster	• Increase community Boreholes
3. Insufficient resources for maintenance of water infrastructure	• To increase resources for water maintenance from 20% to 60%	• Broken down boreholes , water points and pipes systems • Water points vandalized	• • Increased P.P.Ps in wash programmes • Increase council budget allocation to WASH operations • Establishment and training of water point committees. Procurement of WASH equipment. • Honey sucker • Tractor • Trailers • Skip Bin • Service vehicle(twin curb) • Protective clothing • Plastic bins • Drain rods •
4.Shortage of skilled wash personnel	• To engage ZINWA on staff improvement	• Few personnel	• ZINWA to work with other departments with skills

5.Lack of proper GESI in wash water services provision	• To improve gender and social inclusion in water provision and access from 10% to 60%	• Long distances to water points • Unfriendly facilities and systems • Poor hygiene practices at water points. • Rape and security cases	• To increase the number of points and availability of safe water by reducing distance to water points. • Construction of disability and elderly friendly water supply infrastructure • Awareness campaigns through CHC, PHHE, Media etc • Motorize boreholes to cater for communities with distant water points

3.6.2 LOCAL COMMUNITY AND LEADERSS

Stakeholder Consultation

Fig 5.1 Stakeholder meeting in progress

Stakeholders consulted for Guruve included interviewing Guruve RDC Chief executive Officer, Mr. Marisa, the District Administrator – Mr Gatsi, Guruve, Councillor Sadza,

residents and commercial enterprises at Guruve Business Centre. The RDC provided crucial insights into current water problems and projected growth of the centre. Residents were interviewed to get information on where they were currently getting water, how many hours per day water was available, their willingness to pay for water and perceptions on the impacts of an improved water supply or getting a connection with running water.

RDC Responses

The RDC, through the CEO and the DA indicated that the problem of water had affected developments in Guruve Business Centre. Existing developments also have challenges whereby the water pipes are old and there are frequent pipe bursts. Planned expansion had been negatively affected by the very erratic supply of water to the town. Whilst ZINWA was supplying water to the business centre was not enough for the existing developments as there were periods during the day when water was not available especially when there is load shedding or a breakdown. Planned commercial and residential developments could not take off without water. Currently there are over 900 houses that are not connected in Guruve alone. There are also some houses and businesses not connected at Guruve Business Centre.

The main issues raised with regard to water supply at the business centre included:

- Inconsistent water supply due to pipe bursts and other challenges experienced by ZINWA. Water is generally available for about 8 hours per day.
- Guruve residents is able to pay about 80% of its monthly water bill. The monthly water bill is around $30 000.
- The water challenges have limited the development of the centre and also affected the business investment.
- Improved water supply will have the following benefits:
    - Continuous supply of clear, safe and adequate water.
    - Supply of sufficient water to cater for the Guruve centre.
    - Improved business and increased housing developments/
    - Provision of sufficient storage.
    - Improved hygiene and reduced effects of water borne diseases.

- . This could result in reduction of food bills for the college. It will also result in greening of the environment and improve leisure activities like swimming and golf.

Primary School

An interview was conducted with the primary school acting head, Mr. Chikomo. He indicated that the school the school was facing serious challenges as a result of the water challenges.

The head indicated that an improvement of the water supply to the school would have the following positive impacts;

- Improved staff retention. Turnover of staff would not be as high as it is now.
- Improved health and hygiene for both pupils and staff. Children would not have to consume contaminated water whilst teachers would have adequate water for their household chores
- School and teachers could start income generating projects based on horticulture and poultry.

Business Community

Interviews were also held with some members of the Guruve business community. Interviews were conducted with a restaurant owner and another with a general dealer. They saw the improvement of water supplies to Guruve as having a positive impact on their businesses, particularly from the point of view of increased development of stands.

- Incomes would increase with increased uptake of developed land. It could also speed up construction for those who are constructing at the centre. Business community also wanted to be included during construction by providing supplies for construction since they felt it was unfair for the contractors to procure things like cement, bolts or even small fittings else which they can equally supply.Mr. Chivavaya, a local business man and several others even expressed their interest in being involved during the tenders.

Residents Comments

Residents were interviewed using the guide in appendix 2.

i. Water availability

Residents indicated that water is generally available 6-13 hours per day. Residents indicated that 90% of times water is available at least for 8 hours per day. The few hours that water is not available were associated with power cuts. However, there are times when water has not been available due pump breakdowns at the treatment works. These down times are experienced at least once every two months.

ii. Time/Distances to water sources

About 10% of unconnected households from have made some arrangements with those who have connections from near their houses. However, on average households walk for 40-60 minutes to and from boreholes.

iii. Costs of water

iv. ZINWA Water Tariffs

Block Quantity	High density	Low density
Fixed Charge	$7	$7
0-10/m^3/household	$0.40 /$m^3$	$0.80 /$m^3$
11-20/m^3/household	$0.96/$m^3$	$0.96/$m^3$
21-30/m^3/household	$1.04/$m^3$	$1.04/$m^3$
31-40/m^3/household	$1.12/$m^3$	$1.12/$m^3$
41-50/m^3/household	$1.21/$m^3$	$1.21/$m^3$
Over 50m^3	$1.29/$m^3$	$1.29/$m^3$
Raw Water	**Tariff**	
Industry	$13.17/ML	
Commercial Agriculture	$12.68/ML	
Urban	$11.71/ML	
A1 Farmers	$7.80/ML	
Communal	$5.00/ML	

Source: ZINWA-Finance Division (2014)

Average bills for the business community for water range between $25-40 per month depending on consumption. They expressed their displeasure at the fixed charges of $25.00 for the businesses as they felt they are not making enough business compared to someone in Borrowdale their business are quite small and at least they should pay $7.00 as fixed charges. Estimation of bills is also giving residents a great concern.

v. Hygiene issues

Households also indicated that the improvement of the availability of water for households currently receiving water for limited periods and the connection of those who are not yet connected will result in a huge improvement in their domestic hygiene as they will be able to do their laundry more frequently and regularly. They would also be able to improve on domestic activities requiring more clean water like washing of plates and bathing.

vi. Staff Retention

vii. Local economic development

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.

5.6.3 LOCAL NGOS AND OTHERS

NGOs: There are 7 registered NGOs operating in the ward which are:
WFP focusing on drought relief (food Aid)

- Red Cross and ZNNP+ focusing on home based care and HIV/AIDS
- CESVI majoring on health capacity enhancement
- Zimbabwe-EU Micro project which offers developmental support to the community on various projects
- Cadec focusing on supplementary feeding
- Fachig offers support to the farming community, in terms of farm inputs.
- Institute of Young Women of Zimbabwe is one of the NGO's which sits and talks about water issues in Zimbabwe

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 (Green)	Impact is of low order and therefore not likely to have 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	High	Widespread, far beyond site boundary,

Assessment Criteria	Rating	Interpretation of rating
spatial scale		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
	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

1.1 Main Impacts and Mitigation for Guruve

The impacts for Guruve were analysed using the criteria outlined in above. This current section highlights the major impacts from Guruve only whilst section five summarises impacts from all the seven projects. The impacts are very similar.

1.2 Planning Phase

Activities are of very low visibility. Most of the activities are taking place in already converted environments e.g. the construction of clear water tanks at the treatment works and upgrading of raw water abstraction. The reticulation for the school already exists as they used to use a borehole which was deemed to be contaminated by mining activities. The impacts from this phase are therefore very limited and of very little significance.

1.3 Biophysical

1.3.1 Vegetation

This impact has already been felt in most cases. This is because most of the project areas are already built up. It is only in the areas where the pipeline to the primary school will be dug and main pipe rehabilitation for raw water where careful planning is required as there may be a bit of secondary vegetation. Since the proposed site for the 1000m^3 is within a cleared and impacted area which is already allocated to ZINWA, there will be minimal loss of natural habitat/vegetation

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 90% of cases there is no vegetation as the areas have been built up.

Mitigation

Avoid disturbing or cutting trees in areas where there is still some vegetation. Surveyors and peggers will only utilize small areas and this is not a significant impact.

1.3.2 Wildlife

In the area affected by the project, there is very limited wildlife particularly along the pipeline route to the primary school. This will basically follow the road.

The process of weed removal is likely to impact on the current species of fish and macroinvertebrates found within the dam. However, the removal of the weeds is expected to restore the natural ecology of the dam. Reduction in weed cover is also expected to impact positively on the quality of the water through reduced organic levels and anticipated increase in dissolved oxygen levels hence promoting reservoir productivity.

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
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.

1.3.3 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 and localized.

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.

1.3.4 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.

Siting of the pump house close to the –Dande River River could potentially result in impacts on water quality. However these are short duration activities which can be completed within a day.

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.

1.4 Construction Phase

This phase will involve the construction of pump house close to the - Dande River, trenching and laying of water reticulation pipes to the school and some commercial users and the upgrading and rehabilitation of water pipes and construction of new storage tanks.

1.4.1 Soil Disturbance

The trenching for the laying of the water reticulation pipes to the Airstrip,Tsatse,reticulation1 and 2 and the rehabilitation of the existing main pipeline to the water tanks will result in the disturbance of the soil. The digging of foundations for new storage tanks will also require earth movement. Trenches will be dug to lay pipes to the primary school and reticulation to businesses. 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.

1.4.2 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 leat 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.

1.4.3 Disturbance of Forests and Biodiversity

Most of the area for this project has already been transformed into built up areas. There is very little vegetation and wildlife except along the pipeline to the Airstrip, Tsatse, Reticulation1 and 2. As a result, the impact of the project on vegetation and wildlife will be very limited. The construction site for storage tanks has already been cleared of any vegetation; hence the project has already impacted on the natural vegetation.

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
Significance before mitigation	Low
Significance after mitigation	Low

The best mitigation is to follow the road when laying the pipeline to the primary school. This way, the route will avoid passing through wooded areas. It will also be easy to maintain the pipeline if it is along side the road.

1.5 Operation Phase

Biophysical impacts of the operation phase are very limited. These include possible contamination from back washing of filters.Increased volumes of raw water passing through the filter will entail more frequent backwashing and scouring 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.

Backwash 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. Constant removal of weeds from the dam will be conducted during the construction and operational phases of the project

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

1.6 Social Impacts

1.7 Planning Phase

The planning phase is a continuation of the activities that have already taken place, among them, surveying, pegging and clearing. This is a low-key phase whose socio-economic impacts are not very pronounced unlike those on the physical environment. Most of the impacts are of low significance. This is as a result of the low numbers of workers needed for the tasks on hand.

1.8 Positive Impacts

Employment is a positive impact during this phase. This impact is of low significance, which again is a reflection of the low numbers and short duration of the pre-construction phase of the project.

Assessment for employment creation during planning 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 impacts originate from actual construction of the water storage tanks and the laying of reticulation pipes plus related tasks such as excavation, clerical work, blasting and security. Most of the impacts are mostly of moderate significance.

It is recommended that locals from Guruvebe given first priority, particularly for jobs not requiring any particular skills. The use of local labour for non-skilled and semi-skilled work will have to be written into the tender documents and subsequently used as one of the main scoring criteria for the technical bids by prospective contractors.

1.9 Construction Phase

1.10 Negative Impacts

1.10.1 Health and Promiscuity

The negative impacts arising from these activities are of low to moderate significance. Some will last well into the operation phase while others are permanent. By far the majority of these impacts are of a socio-economic and political nature. Among the principal ones are:

- Increase in prostitution, promiscuity and immorality as gangs of 'liquid' male workers – single or married – seek 'entertainment' and enjoyment.
- Break up of the social fabric caused by local males who are led astray by increased incomes and engage in adultery or bouts of drunkenness, or local females who fall for the 'moneyed' local or outside males working on the factory site.
- Increase in Sexually Transmitted Diseases including HIV/AIDS due to increased prostitution and promiscuity.

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. Making all workers contract workers for a set period will make it easy to get rid of undesirable elements in the workforce.

1.10.2 Safety

Issues of safety – both for workers and particularly school children 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. Elderlly,and children at the primary school 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

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.

To instil a culture of safety, the Contractor will adopt the following;

- Within 6 weeks of signing the Contract, the Contractor shall prepare a Management Plan 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.
- 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.

For the school children and other residents, it has already been highlighted that the soils will need to be backfilled as quickly as possible. The trenches should not be left open for more than 2 day in the school yard. They should be backfilled immediately. All open trenches/construction areas should be temporarily fenced off where there is a risk of community harm. This will forestall the possibility of injuries resulting from people falling into the trenches or injuries to children playing on soil mounds.

1.10.3 Waste Generation

Solid waste in the form of off-cuts of pipes and wrapping materials will be produced and will need to be disposed off. The logic of labour efficiency will dictate that while they are at work they will opt to dispose of this waste as near to the workstation as possible. Left uncontrolled,

this phenomenon will result in litter and excrement dotted all over the proposed development site.

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

It is recommended that for papers, food leftovers and similar rubbish we propose a well-organise garbage collection and disposal system. 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 and sacred sites. 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.

1.10.4 Traffic

Movement of construction vehicles bringing in pipes and other supplies has the potential to increase traffic conflict with local traffic and also cause accidents with domesticated animals. Whilst this impact is temporary as it will be felt largely during the construction phase, it is potentially significant as it may result in fatalities through accidents. However, construction vehicles will move outside the project area only when they are bringing in supplies and this will

limit the conflict with outside traffic to those times only. Traffic will also increase dust in the area.

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 site 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.

1.10.5 Disturbance to other services

As 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 infrastructure 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.

1.11 Socio-economic impacts: Operation Phase

Most of the impacts related to this phase will last as long the completed project is in existence. Some are direct while a significant proportion.

1.12 Positive Impacts

The activities that will generate positive impacts include:

- Employment creation in provision, operations and maintenance. ZINWA/RDC will need more people to maintain their system
- Increased disposable incomes due to increased availability of paid jobs.
- Increase in local authority/ZINWA income through rates, rents and user charges
- Improvement in hygiene and health
- Income generating activities at household level
- Retention of good quality staff by organizations

1.12.1 Employment creation

The operation of the new water system will require one or two more to be employed. In the business centre, the improvement could also result in increased volumes of sales through increased student intakes. This may necessitate hiring more people.

Assessment for employment creation during operation phase

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

1.12.2 Improvement in Hygiene

Hygiene and health of households will generally improve with more water being available for domestic use. Residents,teachers and school children at the primary school 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..

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.

1.12.3 Change of Tenants

However the water improvement project will hasten the need for tenants who already work in Guruve and can afford other forms of accommodation. There is no resettlement as a result of the project.

Assessment for displacement of households during operation phase

Assessment Criteria	**Rating**
Type/status	Negative
Extent or spatial scale	N/A
Duration	N/A
Mitigatory potential	N/A
Acceptability	N/A
Degree of certainty	N/A
Significance before mitigation	N/A
Significance after mitigation	N/A

1.12.4 Income Generating Activities

. Residents 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 them to engage in these activities. This will also result in savings on their current food bills.

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.

1.12.5 Expanded Market

The increased uptake of household stands will offer an expanded market for shops and vendors at the business centre. Businesses indicated that daily takings increase by over 80% This will be a boon for the businesses and vendors.

Assessment for markets during operation phase

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

1.12.6 Staff Retention

.The youth are facing challenges fo employment and they end up migrating to other towns for employment .Some leave employment because of lack of job security.No diversity of industries.

Assessment for staff retention 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 moderate significant positive impact which can only be encouraged.

1.13 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN FOR GURUVE

Table 4.1: Water Supply Project Environmental Management Plan

BIOPHYSCICAL IMPACT

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	Check for signs of loose soil along trace lines	Planning phase	Negligible
Siltation	Loose soil can potentially result in siltation during the rainy season	• Attend to loose soil immedia tely	ZINWA, Contractor	As above	As above	Negligible
Disturbance of vegetation	Cutting down trees along trace lines and pegging sites	• Avoid cutting down tress • Where trees are cut, replant as close as possible in terms	Contractor, ZINWA	Mark trees to left standing and check for new trees planted	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 species and location. Good practice would be to plant more trees than cut down.				
Alteration of soil compaction properties and exposure to erosion	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 of water pipes	Continuous	1 000
Extermination of indigenous species, appearance of new species which could be dangerous	Cutting down of trees and other vegetation during trenching and for access tracks to reservoirs and other civil works	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 Revegetation with indigenous tree and grass	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)
				species around the reservoir area		
Dust generation	Trenching and backfilling	Sprinkle water on soil and backfill trenches immediately	ZINWA, RDC, Contractor	Regular dust monitoring around the project area and employ dust suppression methods such as spraying water	Construction phase	Negligible
Water contamination	Backwashing activities	Filter integrity to be maintained and a dedicated backwash mains and lined backwash ponds.	ZINWA, RDC,	Regular blowing of the filters and replacement after design period	Throughout operation phase	Routine

Table 4.2: Water Supply Project Environmental Management Plan: Socio-economic Impacts

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	Project cost
CONSTRUCTION PHASE						
Creation of employment	Laborers for digging trenches and working with builders	Employ locals	Contractor	Number of locals youths engaged as labourers	Continuous	Project cost
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 schedule	Continuous	Project cost
Worker safety	Injuries from use of machinery.	Provide adequate protective clothing and	NSSA, ZINWA, Contractor	Check on protective clothing for workers	Construction	2 000

		awareness				
Injury to school children and others	Falling into open trenches	Backfill trenches immediately	Contractor, ZINWA	All open trenches should be fenced off to prevent accidental falling in.	Construction	Project cost
Health and Promiscuity	Moneyed construction workers engaging prostitutes	Awareness campaigns on AIDS and STIs	Contractor	Worker entertainment activities	Construction	Nil
Disturbance and disruption of existing services	Breaking PTC, ZESA cables, roads 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	Project cost.
OPERATION 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	nil
Expanded Market	Increased business from increased		ZINWA, RDC	Volumes of sales per day	Operation phase	

	water supply.					
Improvement in hygiene and health for school	The availability of clean water at primary school will mean of 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 cost
Change of tenants	Landlords charging more as a result of water availability	Tenants negotiate with landlords	Tenants and Landlords	Tenants negotiate with Landlords.	Operation phase	Nil

CONCLUSSIONS AND RECOMMENDATIONS

While the proposed project has minimum direct negative environment and social impacts, ZINWA will need to ensure that the following issues are given priority during project implementation;

1. Water pollution from backwash effluent. ZINWA needs to ensure that the effluent discharge arrangement is compliant with the EMA effluent licensing requirements.
2. Ooccupational Safety and Health. ZINWA needs to identify all applicable occupational hazards and provide for adequate management of such hazards.
3. Staff accommodation. ZINWA needs to ensure that there is adequate accommodation for visiting workshop personnel who will be attending to breakdowns at the water supply stations. This will ensure that such visiting personnel will not be sleeping in the chemical dozing room, a situation that is not acceptable for sustainable management of such chemicals.
4. Water quality management.
5. Gender mainstreaming. Document how the project will benefit women and the girl child.
6. Citizen engagement and feedback. Maintain citizen engagement in the monitoring of the service delivery system.

Environmental Rules for contractor

(i) Ensure service maps are available to prevent disturbances and disruption of buried services such as ZESA or PTC cables or sewer pipes.
(ii) Mark all areas of cultural value if any.
(iii)Give first preference to locals when employing unskilled labour such as assisting surveyors, pegging, trenching, working with builders thereby eliminating need for conflicts.
(iv)Retain as much vegetation around temporary camps as possible and re-vegetate areas not required after construction.
(v) Ensure soil is stockpiled for future use and used to re-profile and rehabilitate closed affected areas.
(vi)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.
(vii) All open trenches should be fenced off with reflective tape at all times. Backfilling of trenches should be done immediately or at most within 48 hours as they will pose a potentially serious safety hazard to the school children and local population (especially at night) or provide proper demarcation and (where needed) fencing of work sites and display warning signs..
(viii) Use dust suppression measures such as sprinkling water on soil in working sites and access roads.
(ix)Ensure all vehicles are regularly maintained to minimize noise and air pollution arising from construction vehicles and reduce the likelihood of accidental spills of oils and lubricants during construction. Accidental spills of oils and lubricants should be cleaned up using appropriate methods to avoid contamination of the environment.
(x) Ensure that refuelling to be conducted at designated areas fitted with impermeable surfacing and oil traps.
(xi)Place speed limits insignia in the vicinity of projects as there will be increased traffic and pressure on roads.
(xii) Maintain local roads and follow a strict road maintenance schedule.
(xiii) Ensure that vehicle washing and machinery maintenance is done only in authorised areas (away from waterways).
(xiv) Provide safety equipment and adequate protective clothing and awareness to all construction workers to prevent or reduce injuries from work related activities.
(xv) 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.
(xvi) Use only approved sites for sand abstraction pits and solid waste disposal.
(xvii) Seek approval for transportation, use, storage of hazardous chemicals.

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

(xix) Prepare a Code of conduct for all contractors and construction personnel that include no hunting, fishing, unauthorized waste disposal or inappropriate interactions with local people**.**

(xx) Ensure that in the event that any physical items of cultural interest (archaeological relics, fossils, human remains, etc) happen to be uncovered during construction works are referred to the National Museums and Monument of Zimbabwe (NMMZ) for advice. Upon discovery, all works in the area should cease while the NMMZ provide their advice on how to proceed.

(xxi) Ensure regular patrols during the night by security to prevent or minimize theft of items such as diesel, construction materials and hardware that are on demand in Zimbabwe.

(xxii) Ensure portable sanitation devices are used and human waste removed to an appropriate facility with the correct approvals for the treatment of human waste once construction has finished.

(xxiii) Defined working period that should be communicated to local people and must be adhered to. Evidence based awareness programs such as flyers with a provision for recipients to sign can be used for area of operation. Official notification of local administrative structures such as the Local Councilors, School Heads or Hospital Administrators should be done.

(xxiv) Consider reuse of waste materials in order to reduce quantities that may require disposal.

APPENDICES

APPENDIX 1. TECHNICAL DRAWINGS

APPENDIX 2 STAKEHOLDER CONSULTATION QUESTIONNAIRES

APPENDIX 3 STAKEHOLDER CONSULTATION MINUTES

APPENDIX 4 DETAILED ENVIRONMENTAL RULES FOR CONTRACTORS

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.