ZIMBABWE NATIONAL WATER PROJECT

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

NEMBUDZIYA WATER SUPPLY SUBPROJECT

MIDLANDS PROVINCE

GOKWE NORTH DISTICT

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Abbreviations

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

EXECUTIVE SUMMARY

Introduction

The Government of Zimbabwe has made a request to the World Bank for financial support to finance a Small Towns Water Supply Improvement Project to be implemented by ZINWA. The project components tentatively include (i) investment in repair and rehabilitation of critical infrastructure in selected water supply stations managed by ZINWA (ii) institutional strengthening of ZINWA including project development and design, financial management, procurement project management and monitoring (iii) technical assistance to assess options for transforming ZINWA to enable it to perform its mandate more efficiently; and (iv) strengthening the capacity of urban and rural local authorities to contract with and oversee operations managed by ZINWA in line with their new mandate of being Water and Sanitation Authorities under the new water policy. A needs assessment survey of 50 small towns and Growth Points resulted in the prioritization of seven stations (one in each of the seven Catchments of Zimbabwe), which are Guruve (Manyame), Gutu (Runde), Lupane (Gwayi) Madziwa (Mazowe), Mataga (Mzingwane), Nembudziya (Sanyati) and Zimunya (Save). As part of the assistance to ZINWA to fully prepare subprojects in the seven ZINWA stations for investment, Castalia reviewed preliminary safeguards (environmental and social) assessment carried out by ZINWA for the 7 priority areas.

Project location

Nembudziya is located in Gokwe North District, Midlands Province in the North-Western part of Zimbabwe. The town lies about 288 km South-West of Harare via Kadoma. It is 148km west of Kadoma.

Proposed project activities and beneficiaries

The proposed Nembudziya subproject consists of the following activities; Rehabilitation of three boreholes, Rehabilitation of boreholes 1 at More wear tank. This includes replacement of a 12 – 18m^3 per hour franklin or Grundfos pump that fits into a 100m diameter casing. Fencing and flood lights, Rehabilitation of borehole 2 behind Grinding Mills. This covers replacement of a

18m^3/hr franklin or Grundfos pump complete with electrical. Fencing and flood lights, Rehabilitation of borehole 3 near Chiefs homestead. This covers replacement of a 7 – 10m^3/hr Grundfos or Brisan pump. Fencing and Flood lights. Rehabilitation of Maselukwe pumping main, Rehabilitation of eight 18m^3 elevated tanks at Maselukwe, Police, Near Operators house and Ministry of Transport, Rehabilitation of existing reticulation system, Replacement of non-functional meters, Installation of isolation valves and Installation of DMAs. 95% of the proposed activities will be implemented within the existing ZINWA premises.

Legal and policy review

The project screening was conducted in accordance with the World Bank Environmental Assessment guidelines and was categorized in category B due to the limitedness of the potential environmental and social impacts. The subproject was further screened in accordance with the Environment Management Act (CAP 20:27) and a meeting with the Environmental Management Agency (EMA) and the project was exempt from the requirements of the full environmental and social impact assessment. With this two tie screening, the agreed safeguards tool for the project is the Environment and Social Management Plan (ESMP). Despite being category B, the project triggered O.P 4.01 - Environmental Assessment. This ESMP will address the requirements of the Environmental Assessment Policy. The ESMP will be reviewed by both the World Bank and the local Environment Management Agency (EMA).

Environmental and social baseline conditions

An environment and social baseline assessment was carried out in the formulation of this ESMP and the project area consists of formally planned residential areas that have wide servitude areas for the installation of the distribution network. There are no encroachments in the road reserve and service lanes such that there is no chances of resettlement impacts. The residents are very keen to have the water supply installations and have pledged to fully support the project implementation in all facets. Nembudziya Rural District Council has also been enforcing the construction byelaws consistently such that there are no temporary structures within the routes of the distribution network. The residents constructed their structure in anticipation of the future water connections so there has been close cooperation and integration between the local authority and the residents. The biophysical environment has already been impacted during land clearing for residential housing construction such that there will be no incremental impact on vegetation as a result of this project.

Consulted stakeholders

A number of listed stakeholders were consulted during the ESMP formulation, these include and not limited to the Nembudziya RDC, residents associations, schools, business operators and also the District Administrator and other Government departments. In all the consultations, the stakeholders showed great reception and support for the project.

Conclusions and recommendations

The assessment concluded that the proposed subproject has insignificant negative environment and social impacts since there are no involuntary resettlements, negligible disruption to vegetation. The aquatic habitat will also not be affected since the works are confined to ZINWA work areas.

CHAPTER 1

1.0 INTRODUCTION

1.1 Ministry of Environment, Water and Climate

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

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

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

1.2 Zimbabwe National Water Authority

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

In the last decade or so, the performance of ZINWA has been affected by many factors including the economic collapse which resulted in under- funding of both O&M and capital investment. The economic collapse also resulted in loss of skilled human resources especially to neighbouring countries. As such infrastructure deteriorated resulting in poor service delivery. Consequently customers became unhappy and unwilling to pay for the services leading to low revenue collection. This further reduced the capacity of ZINWA to operate the water and

sanitation systems effectively. This did not only affect ZINWA, but also other agencies tasked to provide water and sanitation services in Zimbabwe such as local authorities. The collapse of the water and sanitation services in Zimbabwe was linked to the 2008/9 cholera outbreak which affected over 100,000 people and resulted in about 4,300 deaths.

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

1.3 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, implementation of this 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

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

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

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

1.5 Potential users of the ESMP

- ZINWA- for project implementation and monitoring.
- Contractors -for project implementation, mention that this will constitute part of the bidding documents for contractors.

- General public- for ensuring that their interests are covered and also their informed participation in the project design, implementation, monitoring and evaluation.
- EMA -for monitoring.
- RDC- for monitoring.

CHAPTER 2

PROJECT DESCRIPTIONS

2.0 Introduction

Nembudziya is a small town in Gokwe North District, Midlands Province in the north-western part of Zimbabwe. The town lies about 288 km south-west of Harare via Kadoma. It is 148km west of Kadoma. The responsible local authority is Gokwe North Rural District Council. Nembudziya lies in Ward 13 and Ward 36 of Gokwe North RDC. Nembudziya Water Supply Station falls within the Sanyati Catchment as demarcated by the hydrological boundaries in Zimbabwe managed by the Zimbabwe National Water Authority (ZINWA). The water supply station supplies borehole water to Nembudziya and its surrounding areas.

Nembudziya is a small town that is rapidly growing and that has seen development increase sharply over the last few years. Nembudziya was a small growth point established due to the cotton farming activities in the area. The area is well known for cotton and maize farming. There has been an increase in migration of people moving into the area to seek accommodation and employment on the farms. There are large Cotton Companies located in Nembudziya. The service centre presently comprises of a large number of shops, a government complex, ARDA, GMB, schools, churches, CBZ Bank, a mission hospital, Police camp and a large General District Hospital. There are four schools in the town, comprising two secondary schools and two primary schools.

Nembudziya's current population is estimated at about 13,500. This figure is an estimation provided for by the operations engineer in his report, as exact figures from the 2012 Census database could not be established. Currently, there are plans for additional housing and commercial development in Nembudziya. There are existing areas where stands have been allocated by the RDC and houses have already been built. However, these houses have not been connected with water.

The water works is able to produce 5700 m^3/month.

2.1 Project location

Nembudziya is located in Gokwe North District, Midlands Province in the North-Western part of Zimbabwe. The town lies about 288 km South-West of Harare via Kadoma. It is 148km west of Kadoma.

2.2 Project description

2.2.1 Available sources of water

Nembudziya water works abstracts water from good yielding boreholes in the area. There are 3 boreholes for Nembudziya. The first borehole (BH3, Chief) has a safe yield capacity of 15m^3/hr, although presently the pump that was installed only pumps 4m^3/hr. The second borehole (BH2) has a pumping yield of 18m^3/hr and the third borehole (BH1) at the Morewear tank has a capacity of 20m^3/hr. There are no other sources of water in the area that are reliable for treatment. The area relies on borehole water.

The groundwater supply in Nembudziya from historically water supply data never dried up however locals complained of drying up of their own shallow wells. The boreholes supplying Nembudziya currently are at 81m, 170m and 200m respectively.

There are no gazetted wetlands around the sites for the current and proposed boreholes, hence there is no fear of affecting or disturbing wetland areas.

2.2.2 Existing water supply system components

a. The capacity and condition of intake civil works

All water for the station is through the pumping of water from boreholes. The area is known to have good yielding boreholes. The condition of all boreholes is generally poor. Although, there is pumping, a lot of civil and electrical works are required to upgrade the boreholes in terms of capacity and infrastructure. The pumping main to Maselukwe location was damaged by a truck and requires replacing.

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

Nembudziya is currently unable to meet its demand for water. The station is having serious problems of supply and meeting its customers' demand. The boreholes are pumping well below their design capacities due to the installation of small pumps and this affects the storage of water available for consumers. It is estimated that there is at least 52% of water losses. On average 5700m3 is produced, and 3000m3 is sold per month.

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

There is no chemical treatment to the borehole water.

d. Condition of pumping mains

There is a 110mm diameter PVC pumping main from BH3 and it is in poor condition. Sections of this main are damaged. The 63mm diameter PVC main from BH2 is in relative good condition although some valves need replacing. BH1 is at the tanks.

e**. General building and services condition**

There are two staff houses, of which one is in a deplorable state and the other in a fair state, hence the need to construct two more staff houses.

f. Capacity and condition of storage

There are nine reservoirs in total at Nembudziya Water Works station.

- There is a 320m^3 steel modular elevated reservoir. This is in good condition and is operational. This reservoir supplies most of the town. It also supplies the General Hospital.
- There are eight 18m^3 elevated storage tanks. Four near ZINWA house, one at Ministry of Transport, one at Police station and two at Maselukwe. These tanks were decommissioned and are at present not operational. The condition of these tanks is very poor, and they require replacement.

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

The distribution system to consumers is old and requires major attention at some sections. A majority (almost 90%) of consumer meters are non-functional. There are leaks along this distribution main to consumers and operators attend regularly to these leaks. The distribution main reduces from 100mm diameter G.I. to smaller 63mm PVC and 50mm PVC diameter service connections. Connected customers have water meters connected on the service main to each water point.

i. Service pressures

There are no pressure gauges at the station and at the distribution mains.

2.2.3 Proposed Project Activities

a. Immediate improvements

1. Rehabilitation of three boreholes.

- ✓ Rehabilitation of boreholes 1 at More wear tank. This includes replacement of a 12 – 18m^3 per hour franklin or Grundfos pump that fits into a 100m diameter casing. Fencing and flood lights.
- ✓ Rehabilitation of borehole 2 behind Grinding Mills. This covers replacement of a 18m^3/hr franklin or Grundfos pump complete with electrical. Fencing and flood lights.
- ✓ Rehabilitation of borehole 3 near Chiefs homestead. This covers replacement of a 7 – 10m^3/hr Grundfos or Brisan pump. Fencing and Flood lights.

2. Rehabilitation of Maselukwe pumping main.
3. Rehabilitation of eight 18m^3 elevated tanks at Maselukwe, Police, Near Operators house and Ministry of Transport.
4. Rehabilitation of existing reticulation system.
5. Replacement of non-functional meters.
6. Installation of isolation valves.
7. Installation of DMAs.

Total Cost Estimate is $303 848.65

Medium term investment

8. Construction of two operators houses and electrification of existing one.
9. Reticulation extension covering 500 new stands.
10. Drilling, equipping and electrification of three boreholes that have already been sited and construction of the pumping mains linking them to the reservoirs.
11. Installation of a 500m^3 modular tank.

Total Cost Estimate is $760 857.06

Long term investment

12. Construction of a 2000m^3 concrete reservoir.
13. Construction of booster station.
14. Drill and equip 3 more boreholes.
15. Construct 2 staff houses.
16. Construct pumping main.

Total Cost Estimate is $1 076 716.00

CHAPTER 3

LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 3.0 Zimbabwean Legal Framework

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

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

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

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

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

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

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

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

3.1 Administration of the EIA Policy

The Director-General of EMA has been delegated the responsibility for overseeing the processing of ESIP and ESMP submissions. The Minister is empowered to prescribe any activity, policy or program that in his/her view may cause significant environmental impacts or community disruption. A prescribed activity cannot receive the required authorizations to proceed from the relevant permitting authorities unless, and until, the Ministry has exempted the activity from the requirements of the EIA policy or has granted 'EIA Acceptance'. EIA

acceptance is granted when the Ministry determines that the assessment of an activity has been sufficiently thorough to adequately identify the environmental impacts, which it is likely to cause, as well as measures for managing them. All formal submissions under the EIA Policy are made to the Ministry through the Environmental Management Agency (EMA). Pertinent pieces of legislation include;

3.1.1 Environmental Management Act (20:27)

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

- the EIA must enhance and not inhibit development by contributing to environmental sustainability and is a means for project planning, not just evaluation,
- the EIA policy depends on the normal regulatory functions of permitting authorities to implement the EIA results,
- the EIA policy involves the participation of all government agencies with a mandated interest in the benefits and cost of a project
- the EIA policy pays particular attention to the distribution of project costs and benefits, and
- identification of project impacts and public consultation is an essential part of the EIA policy

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

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

Waste and Solid Waste Disposal Regulations – SI 6 of 2007

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

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

This means that the waste streams from the project from the planning through construction phase to the operation phase should not be in the red category. **In line with SI 6 of 2007, ZINWA has no need to obtain effluent discharge licenses since the water treatment system does not produce 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 does not need to obtain hazardous substances storage license since there are no chemicals storage and use.**

- 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 licenses for processes that are prescribed under the SI. These licenses also embody the "polluter pays" principle. The licenses 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 licenses are issued subject to the following conditions; the license expires on the 31st of December of the year of issue, the license 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 project baseline since there are no game parks or any noted wildlife presence due to the human habitation.**

3.1.4 Public Health Act (15:09)

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

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

3.1.5 Forestry Act (19:05)

Section 38 of the Act provides for the preservation and protection of trees or fruit produce. Section 39 provides for the protection of forest or trees from cutting. The proponent should comply with provisions of this Act. The location of the project infrastructure will be in such a way as to minimize the cutting down of trees and protect all endangered species if any are identified within the proposed project site. Construction workers will be discouraged from cutting down trees for fuel/energy. Section 34, Part 2, of this Act stipulates that the reduction of a

national forest by more than 1% will require the written permission from the Minister of Environment.

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. Due to the limited scope of project activities, the O.P 4.04 Natural Habitat is not triggered.

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

The proposed project is not based on any dam as the source of water therefore the policy is not triggered.

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.

CHAPTER 4

ENVIRONMENT AND SOCIAL BASELINE

4.1 Environmental baseline

4.1.1 Geology

The geology of the country around Nembudziya Growth Point is dominated by thick Kalahari Sand cover overlying Karoo basalts and a variety of Karoo arenites and argillites. The project area does not have any rock outcrops and there will be no chance of blasting. In the event of encountering some rock during trenching, there rock will be drilled and not blasted considering that the project area is already habituated and blasting may endanger the host community.

4.1.2 Topography

The terrain around the Growth Point is characterized by flat and rolling topography with isolated knolls and hills formed by exposed basalts or well indurated sandstones. Average altitude is about 800 meters above sea level.

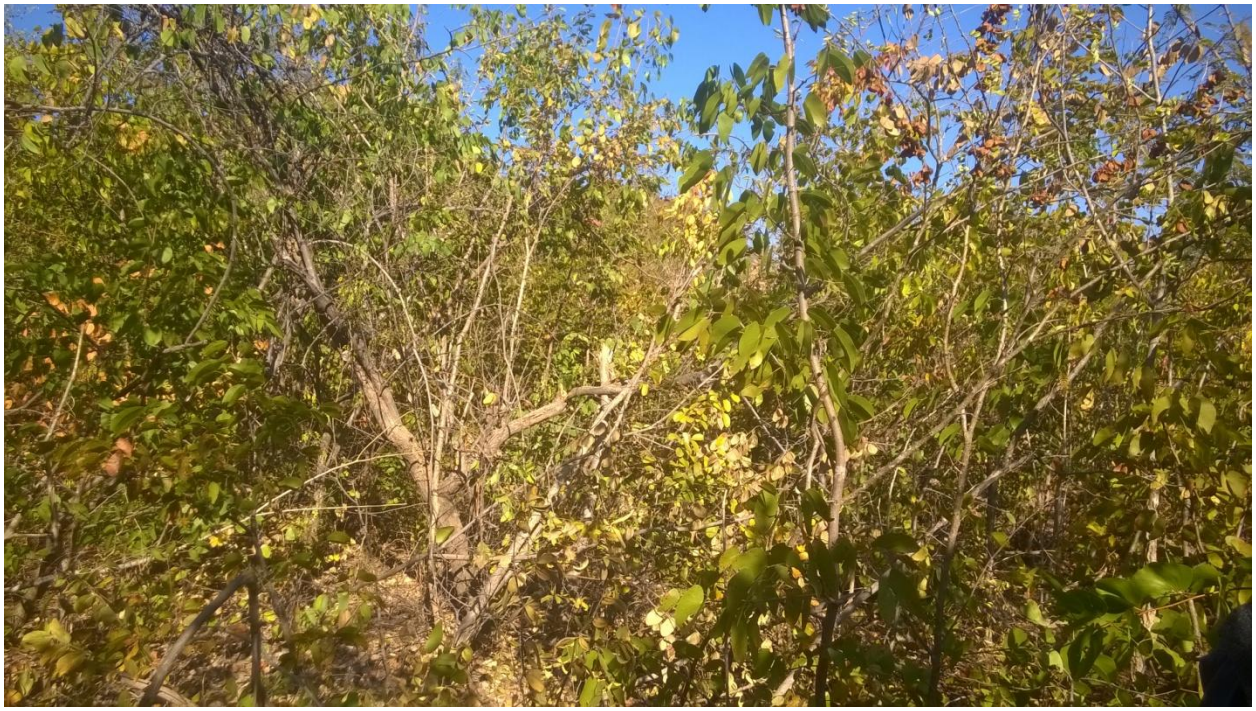
4.1.3 Soils

The soils in the vicinity of Nembudziya are largely derived from the Kalahari Sands and are typically grey sandy loams of generally low cation exchange capacity and therefore of low fertility.

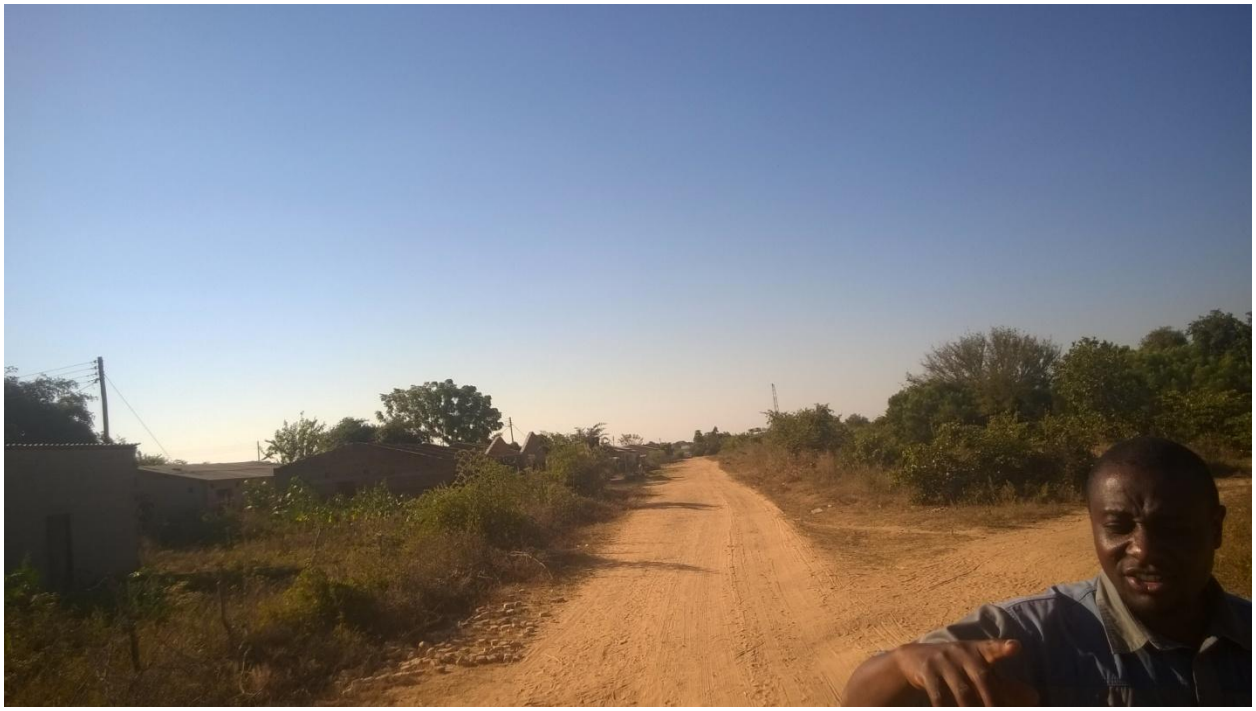
4.1.4 Vegetation

The vegetation consists of predominant acacia bush vegetation on low lying areas with Mopani woodland on well drained basalt and sandstone hilly areas. Grass species dominate low areas where there is no over grazing.

In Nembudziya sites for new boreholes are minimally disturbed and as such are highly vegetated, whilst the areas for rehabilitation works are cleared up areas with minimal to nil natural vegetation. For instance the reticulation lines to be rehabilitated are along a gravel road which at some portions at the road embankments still has significant trees.



Typical Mopani vegetation at the new borehole site



New residential areas where vegetation has already been affected

4.1.5 Climate

Nembudziya is located within agro-ecological region III which is classified as humid to semi arid, with low to moderate annual rainfall averaging between 600 to 0 mm per annum. The typical tropical seasons are divided into winter and summer with winter temperatures ranging between 15 and 20 degrees Celsius and summer temperatures ranging between 23 and 32 degrees Celsius. There are occasional incidences of frost in winter.

4.1.6 Water and air quality

Due to the widespread cover of Tertiary aged Kalahari Sands in the area, there is very limited surface water limited to some small dams or spring fed rivers and streams. The water is usually salty and of moderate to poor quality. Water supply for Nembudziya is therefore entirely from groundwater sources via boreholes. This water source will come under severe pressure as the Center grows and the water table becomes depressed. It will certainly become necessary to explore the sourcing of raw water from the Sanyati River.

There is bound to be an increase in the amount of energy required for pumping the water up from the ground and into elevated reservoirs especially after project implementation, likely with new boreholes drilled. The number of consumers is also set to increase as more water connections are become available.

4.1.7 Hydrogeology

The area generally has got high ground water potential with average boreholes yielding above 14m3/hr.

4.1.8 Current effluent disposal system

There is no treatment at the station as water is from boreholes hence there are no effluent discharges to the environment

4.2 Socio-Economics

The core livelihoods in surrounding areas are subsistence mixed farming with a bias towards cropping, mainly cotton and maize. Major livelihoods strategies and occupations in the growth centre are small General Dealer (hardware and grocery shops) and its work force as well as government employees (mainly Agriculture, Home Affairs, Education, Health, Youth and Women's Affairs and Environment, Water and Climate. The rest of the workforce comprises of local authorities (RDC and DA) and service parastatals such as ZINWA, Agritex, CMB and other Cotton companies, GMB, TelOne, Mobile Networks (NetOne, Econet and Telecel) ZESA and Delta . There are a few light industries (welding, wire knitting, carpentry and milling) and commercial enterprises such as banks and insurance companies. 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 Growth Point's population is estimated at about 13500 consisting of about 530 connected households and an equal number of households requiring connection. The project is aimed at connecting 25 commercial stands and 10 institutional stands while boosting supply to the existing 45 commercial and 10 institutional stands.

Average income is around $100 per household and this is seasonal from cotton farming.

Water is generally available for 12 hrs per day when all the three boreholes are functioning. Breakdowns will normally affect those in higher locations where water will not be available. When only one borehole is working households get water for 2 hrs per day.

Sources of water for households not connected include shallow wells and boreholes. Residents get water particularly from Olam Zimbabwe, which has its own borehole and allows residents to draw water for free. On average households are taking 45 minutes per trip to collect water from the borehole. Some residents also get water from boreholes in the surrounding rural areas. Others make monthly payments to collect water from those who are connected.

New commercial stands have not been developed because of lack of water. The growth point has the following establishments:

Residential Stands Allocated -	1700
Developed residential stands-	774
Commercial stands-	134 (45 developed)
Schools -	2
Industrial -	62
Institutional-	10

4.2.1 Administrative arrangements

Nembudziya is a growth point for Gokwe North District. The centre is administered by the Rural District Council who is responsible for the roads and solid waste collection. The water infrastructure is owned and operated by ZINWA. There are industrial activities within the centre which include Cotton companies, GMB, TelOne, Mobile Networks (NetOne, Econet and Telecel) ZESA and Delta .Institutional activities include 2 secondary schools, 2 primary schools, 2 hospitals and several government departments

4.2.2 Livelihoods

The core livelihoods in surrounding areas are subsistence mixed farming with a bias towards cropping, mainly cotton and maize. Major livelihoods strategies and occupations in the growth centre are small General Dealers (hardware and grocery shops) and its work force as well as government employees (mainly Agriculture, Home Affairs, Education, Health, Youth and Women's Affairs and Environment, Water and Climate. The rest of the workforce comprises of local authorities (RDC and DA) and service parastatals such as ZINWA, Agritex, CMB and other Cotton companies, GMB, TelOne, Mobile Networks (NetOne, Econet and Telecel) ZESA and Delta .

4.2.3 Population and demographics

The center lies in ward 13 and 36 of Gokwe North. The census of 2012 does not give population figures for the Nembudziya center as such and the estimated population (RDC estimate) is 13 500. Accurate information on the growth of Nembudziya is not available but according to the RDC there is net immigration to the town so the growth rate can be considered to be above the national average of 1.1% given in the 2012 census.

4.2.3 Gender mainstreaming

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

4.2.4 Land uses

The land use is typically peasant mixed farming, cropping and animal husbandry. The commercial crop grown is cotton while small grain (millet and sorghum) and maize are the food crops. Most households keep small numbers of cattle, goats, sheep and rarely donkeys. All the land belongs to Nembudziya Rural District Council.

4.2.5 Sanitation Facilities

The Growth Point has a dedicated sewage treatment facility which was designed for a far lower population than the current and is therefore overwhelmed. The Rural District Council acknowledged the inadequacy of the facility. The facility is mainly used by the hospital while the bulk of the residents use pit latrines and very often the open defecation system There are pit latrines near borehole number 2 which is behind grinding mills at a distance approximately 60 meters and these might require relocation. After project implementation, it may become necessary for the center to upgrade its sewage treatment facility as well as connect all the residents to the main sewer system. 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 Occupational health status

ZINWA provides safety clothing to employees which however are not adequate. During the construction phase ZINWA as the main supervisor to the contractors shall ensure best standards of occupational health and safety.

CHAPTER 5

STAKEHOLDER CONSULTATION

5.1 Introduction

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

5.2 Objective of the stakeholder consultation process

The stakeholder process aimed at achieving the following objectives;

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

5.3 Principles governing the consultation process

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

Inclusivity

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

Open and transparent

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

Relevant

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

Fairness and responsiveness

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

5.4 Data Collection Techniques

It is also important to note that 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

Name	**Sex**	**Organization represented**	**Concern**	**Responds**
S. Tigere	M	Gokwe North RDC	The acute water challenge faced by the growth point.	The systems should be upgraded.
F. Mupungu	M	MLGPWNH	High volumes of people frequenting the center which is risky and could result in spread of diseases considering water shortages.	Consistent water supply should be maintained as well as upgrading of the existing water supply.

A. Masuka	F	MWAUCD	Nyamuroro Vocational Training Center not connected to water supply.	Upgrade system to meet demand.
E. Dzingiso	F	GNRDC	Failed to conduct District Schools competition due to water shortage.	Upgrade system to meet demand.
Z. Mashindi	M	ZRP	Police camp get water once or twice a week and have leaking water tanks.	Rehabilitation and upgrading of system.
C. Mandima	M	MOH&CC	Maternity cases need water to be always available. Hospital need to be able to store water.	Upgrade system to meet demand.
S. Hove	M	ZANUPF	Need local people employed in the project.	Consider locals where skilled power is not needed.

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 6.1: 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 spatial scale	High	Widespread, far beyond site boundary, Regional/National/ International Scale.
	Medium	Beyond site boundary, local area.

Assessment Criteria	Rating	Interpretation of rating
	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.

Impact Analysis for Nembudziya

1.1 Planning Phase

Three borehole sites have already been done and designs of pumping mains to the storage tanks have been done. Designs for reticulation extensions have also been completed. The state of existing tanks have been assessed and it has been noted that eight elevated tanks are in a deplorable state and needs replacement. There were no negative impacts.

1.2 Biophysical

1.2.1 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 new borehole will be drilled, pipe rehabilitation or construction, where careful planning is required as there may be a bit of secondary vegetation. Even the site for the clear water storage tanks in Nembudziya will likely be within converted land-use and will have largely been cleared of vegetation in the past and hence almost ready for drilling/construction activities. The other areas for reticulation are devoid of vegetation as these are in the built up residential, commercial, industrial or institutional spaces.

Assessment for vegetation impacts during planning phase

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

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

Mitigation

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

1.2.2 Wildlife

In most parts of Nembudziya and immediate surroundings, there is no wildlife because of its built up nature. Small mammals may stray into the Growth Point at night to scavenge for food in refuse bins and pits, but are not considered endangered as they are already partially domesticated. There are no issues of displacement or elimination of wildlife which are obvious.

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.

1.2.3 Soil impacts

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

Assessment for soils during planning phase

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

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

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

1.2.4 Hydrological and fluvial impacts

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

Assessment for hydrological impacts during planning phase

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

The impact is of low significance.

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

1.3 Construction Phase

This phase will involve the drilling of two or three new boreholes, refurbishment/re-equipping of existing boreholes and storage tanks, as well as widening the water mains. Trenching and laying of water reticulation pipes to residential, industrial and institutional users, sinking of boreholes and in some cases the upgrading and rehabilitation of water pipes and storage tanks

1.3.1 Soil Disturbance

The trenching for the laying of the water reticulation pipes and the rehabilitation of the existing main pipeline to the water tanks will result in the disturbance of the soil. Trenches will be dug to lay pipes whilst the rehabilitation works will require trenching to lay bigger pipes. This is a temporary impact which will only be felt during the time of digging and laying of pipes.

Assessment for soil disturbance during construction phase

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

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

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

1.3.2 Dust

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

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

Assessment for dust generation during construction phase

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

This is similar to the above impact on soil disturbance.

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

1.3.3 Disturbance of Forests and Biodiversity

The areas to be connected have already been transformed into built up areas. There is very little vegetation and wildlife. As a result, the impact of the project on vegetation and wildlife will be very limited to nothing. The refurbishment/construction sites for storage tanks have already been cleared of trees. The upgrading/resuscitation of the Nembudziya water supply system will therefore not cause any direct disturbance of forests and diversity

The project area does not fall under gazetted forestry land and the project area will not be affected since borehole installations do not require significant, if any cutting down of trees pipelines will be laid on an already cleared area.

Assessment for biodiversity during construction phase

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

1.4 Operation Phase

Biophysical impacts of the operation phase are very limited. The generic biophysical impacts will result from knock-on effects of increased groundwater pumping, increased wastewater production, increased numbers of residents and private vehicles. The lowering of the water table may have the effect of reduced water supply to some wetlands and water pools with effects on habitats and biodiversity. Increased wastewater production is a natural consequence of improved water supply and this will strain the sewer treatment plants for the subproject with common sewer line bursts resulting in malodorous releases and vector-borne transfers. Increasing resident populations come with increased solid waste generation and vehicular exhaust and noise pollution.

Assessment for impacts during operation phase

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

1.4.1 Social Impacts

1.4.2 Planning Phase

The activities for Nembudziya include drilling and equipping boreholes, erection of overhead storage tanks are basically taking place in environments which have already been converted. Some impacts have already been felt. The planning of the pipeline route from the boreholes to the storage tanks has some social impacts. There will be very little planning in the residential areas and commercial centre as the routing has been determined by the layouts. It is anticipated that at most one or two people or unskilled hands will be employed to assist with the finalization of the surveying and pegging of the pipeline routes in the residential and commercial areas. This is a low significant positive impact because of the numbers involved which are low and the short duration of the activities.

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

Positive discrimination in the handling of access to benefits will have to be exercised. This means that locals from Nembudziya, particularly those in centres will need to be favoured over outsiders in both the allocation of contracts, business licences and the determination of employment quotas.

1.4.3 Construction Phase

The construction phase will have some impacts which may well last into the operation phase. There are both positive and negative impacts.

1.4.3.1 Employment creation

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

Assessment for employment creation during construction phase

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

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

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

1.4.3.2 Health and Promiscuity

This is a negative impact which could affect the social fabric of Nembudziya. This could arise from an increase in prostitution, promiscuity and immorality as gangs of moneyed male workers seek 'entertainment' and enjoyment. It has been mentioned that Nembudziya acts like a transit point. The impact would have regional effects particularly if it results in an increase in Sexually Transmitted Infections including HIV/AIDS due to increased prostitution and promiscuity. It could also result in the breakup 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.

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 moderate significant impact because of the spatial extend and short duration.

MITIGATION

It is recommended that education, counselling and a penal code will address the health and moral problems. From the consultation meeting it was highlighted that the local General Hospital already have structures in place to mitigate against this. During the course of project

implementation these programmes shall be enhanced. 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. Recruiting locals can also help as they will be embarrassed to engage in immoral acts in the eyes of friends and relatives.

1.4.3.3 Safety

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

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

Assessment for safety during construction phase

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

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

Mitigation

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

For the residents, it has already been highlighted that the soils will need to be backfilled as quickly as possible. All open trenches should be barricaded using safety reflective tape. The open trenches should not be left open for more than 2 days. They should be backfilled immediately. This will forestall the possibility of injuries resulting from people falling into the trenches or injuries to children playing on soil mounds.

1.4.3.4 Waste Generation

It is inevitable that the workers will produce some work related waste and also human and domestic waste. The labour that will be recruited to do the construction work have to dispose of human and other material waste somewhere. There will be off-cuts of pipes and wrapping materials which 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

We recommend a careful planning of waste-disposal during the construction phase. 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. No 'ruins' should be allowed to remain after the work. Black plastic sheeting is a possible construction material.

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

1.4.3.6 Disturbance to other services

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

Assessment for disturbance of other buried services during construction phase

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

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

1.4.4 Socio-economic impacts: Operation Phase

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

Positive Impacts

The activities that will generate positive impacts include:

- Investment in Nembudziya
- 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

- Development of ancillary activities for production and services upstream and downstream.
- Improvement in hygiene and health
- Income generating activities at household level

1.4.4.1 Employment creation

As more reliable water becomes available industrial, institutional and commercial establishments sprout, more jobs will become available in Nembudziya. It will be able to attract investment. A new government complex will be constructed and it will employ a lot of people. It is therefore anticipated that as the commercial and industrial areas are developed more jobs will be created. Added to this are the extensive backward and forward linkages that are set to create even more jobs.

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

It is recommended that positive discrimination in favour of locals should be encouraged for the above positive impacts to be realized.

1.4.4.2 Improvement in Hygiene

Hygiene and health of households will generally improve with more water being available for domestic use. Households will be able to use flush toilet. This will reduce the current practice of

using the bush as toilets. This will in turn reduce the risks of contamination arising from this practice. Households will also be able to use clean water for washing clothes plates and engage in other household chores requiring more water. Some households also have pit latrines on their small 200-300m^2 plots. Some of these also have shall wells and there is a huge risk of contamination of the wells by the pit latrines resulting in outbreaks of diseases like cholera and typhoid.

Assessment for hygiene during operation phase

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

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

1.4.4.3 Income Generating Activities and Greening

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

Assessment for income generating activities during operation phase

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

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

1.4.4.4 Time for other chores

At the moment, the female members of the households spend a lot of time fetching water. For some of the households, it can take up to 30 minutes per trip using 20-25 liter containers. On average, they visit the water sources 3-4 times per day. This is time which could have been spend on other chores had water been available. The provision of water will mean that the female members of households will have adequate time for other chores like cooking, cleaning the house or looking after children. Sometimes children have to work up early and go to the boreholes first before going to school.

Assessment for increased time for other during operation phase

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

This impact will definitely occur and will improve the life of household as they will be able to take time off from their duties of fetching for water.

1.4.4.5 Speed up Construction

Construction of houses in the new areas of Nembudziya has slowed down or stopped because of the problem of the availability of water. Those constructing houses have to pay vendors to ferry water from the borehole to their stands. The plot owners pay $5 for a 200 litre drum of water. This makes the construction process expensive and slow. However, it creates employment for those who are in the informal business of ferrying water.

Assessment for speeding construction during operation phase

Assessment Criteria	Rating
Type/status	Positive
Extent or spatial scale	Low
Duration	Long
Mitigatory potential	High
Acceptability	Low

Degree of certainty	Definite
Significance before mitigation	Moderate
Significance after mitigation	Low

1.4.4.6 Resettlement Compensation for Households

The proposed project has no impact on resettlement.

1.4.4.7 Safety around Raised Water Tanks

Safety concerns with regard to overhead water tanks in residential areas have been raised as a major issue. One such facility will be provided in Nembudziya. There is fear that children can wonder to water tank sites and climb up risking falling down or into the water tanks. This can result in serious injury or even drowning.

Assessment for loss of safety around raised water tanks during operation phase

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

Mitigation

This impact can be easily mitigated by fencing off the areas around the tanks and ensuring that there is no easy access. Gates to the tank should always be locked and only those with business at the water tanks are allowed access.

1.5 ENVIRONMENT AND SOCIAL MANAGEMENT PLAN FOR GUTU

Table 7.1: Water Supply Project Environmental Management Plan

BIOPHYSCICAL IMPACTS

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 trench lines	Planning phase	Negligible
Siltation	Loose soil can potentially result in siltation during the rainy season	• Attend to loose soil immediately	ZINWA, Contractor	As above	As above	Negligible
Disturbance of	Cutting down trees along trench lines and	• Avoid cutting	Contractor,	Mark trees to left standing and	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)
vegetation	pegging sites	down tress • Where trees are cut down, replant, best practice is to plant more trees than cut down. The trees should be as close as possible in terms of species and location	ZINWA	check for new trees planted		
Alteration of soil compaction properties and exposure to	Digging of trenches	Backfill all trenches and sprinkle water on loose soil mounds	EMA, RDC, ZINWA	Backfilling should be carried out immediately after the laying of water pipes	Continuous	Negligible

Impact Statement	Process/Activity responsible for impact	Proposed Mitigation on impact	Monitoring and Management Agency	Management and Monitoring activities	Time frame	Budget (USD)
erosion						
Extermination of indigenous species, appearance of new species which could be dangerous	Cutting down of trees and other vegetation during trenching	• There is virtually no indigenous vegetation in the areas. • Avoid the little natural vegetation in the area	Community, EMA, RDC	Check routing of pipes to ensure it does not pass through any remaining vegetated areas	Construction phase	Negligible
Dust generation	Trenching and backfilling	Sprinkle water on soil and backfill trenches immediately	ZINWA, RDC, Contractor	Ensure trenches are not left open for more than 2 days	Construction phase	1 000

Table 7.2: 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 pagers	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 on water tanks	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	Niglid gible.
Worker safety	Injuries from blasting or use of machinery	Approved SHEQ plan. Provide adequate protective clothing and awareness	NSSA, ZINWA, Contractor	Check on protective clothing for workers	Construction	2 000
Injury to children and others	Falling into open trenches	Backfill trenches immediately	Contractor, ZINWA	Trenches to be backfilled at most after 2 days. All open trenches should be	Construction	Accid ental

				barricaded with reflective tape or fenced off where possible to prevent children from falling in.		
Health and Promiscuity	Moneyed construction workers engaging prostitutes	Awareness campaigns on AIDS and STIs	Contractor	Worker entertainment activities	Construction	Not known
Waste generation	Off-cuts, wrappings, packagings, other domestic waste	Reuse all reusable packaging materials Provide proper waste landfill which will be covered after	ZINWA Contractor	Make sure bins are used	Construction	Project cost

		Provide bins				
OPERATION PHASE						
Income generating projects	Availability of water will enable households to embark on poultry and gardening projects and other greening activities	Encourage households to set up projects	RDC, Local leadership,	Number of income generating projects set up	Operation phase	Not known
Improved revenue for ZINWA	Payments for consumption	Implement good billing and collection system Minimize losses through leakages	ZINWA	Amounts collected	Operation phase	TBA
Improvement in hygiene and health	The availability of clean water at primary school will mean of	Ensure water is available for a minimum of 12 hours every day	ZINWA, RDC,	Check down times for water pumping and quantities	Operation phase	-

	flush toilets, clean drinking water			against demand		
Speed up construction	Will no longer rely on buying water from water vendors	Make water available at least for 12 hrs per day	ZINWA, RDC	Numbers of houses/businesses/institutions being constructed	Operation phase	-

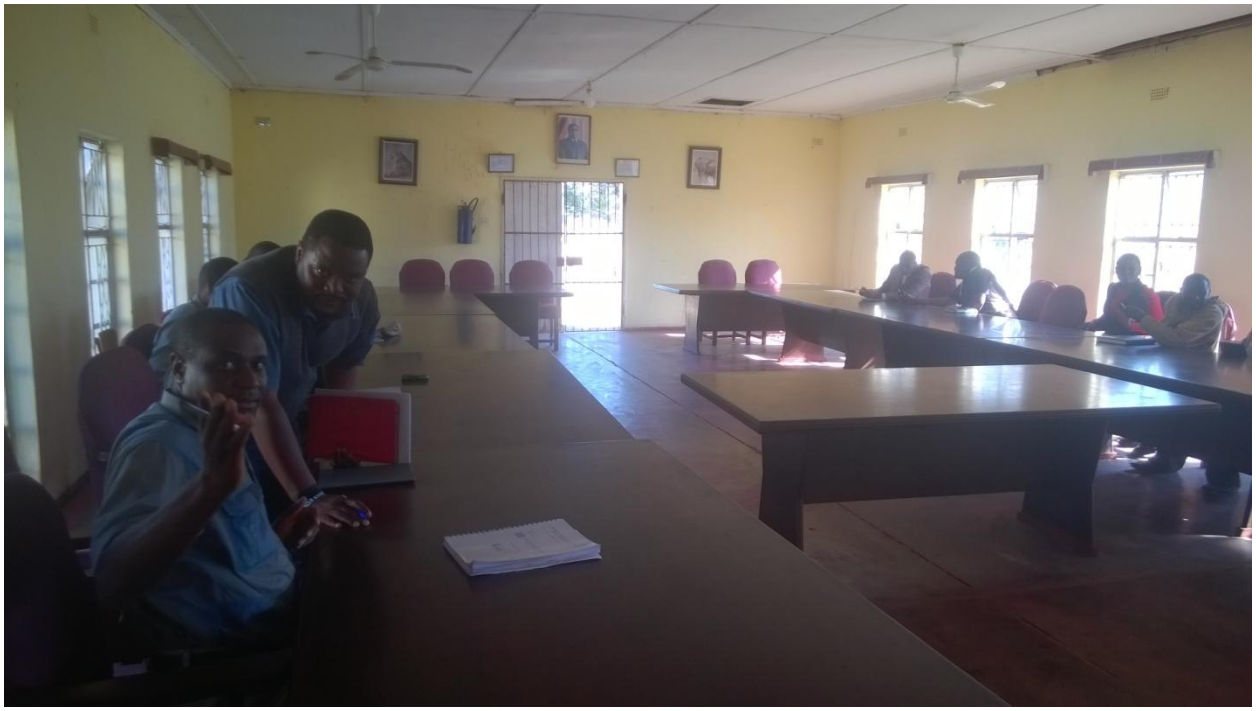
This involved questionnaires and interviews with institutions such as RDCs, Government Departments, Hospitals as well as district ruling party reps. The interviews were carried out as meeting at Nembudziya growth point on the 17th of June 2015, whilst questionnaires were dispatched and collected from various institutions on the 2nd of July at Nembudziya growth point.

MINUTES OF THE ENVIRONMENT AND SAFEGUARDS MEETING HELD AT NEMBUDZIYA GROWTH POINT ON 17 JUNE 2015

VENUE : MUTORA RDC BOARDROOM TIME : 1300HRS

ATTENDANCE

Mapanzure. J	ZINWA	Operations Manager, Sanyati
Chari. S	ZINWA	Planning Officer HQ
Muti .W	WORLD BANK	Environment Expert
Mataba. G	ZINWA	Operator In Charge
Manzini. M	AGRITEX	D.A.O
Jinga. E	AGRITEX	Extension Officer
HOVE.S	ZANU PF	Provincial member
Machau .C.M	GNRDC	A.E.O Planning
Masuka. A	MWAUCD	C.D.O
Mandima. C	MOH&CC	C.I.D Env. Health Technician
Mashindi	ZRP	Office In Charge
Hokonya	MLGPWNH	Assistant D.A
Dzingiso	GNRDC	E.O Social Services
Tigere. S	GNRDC	C.E.O
Mupungu. F	MLGPWNH	D.A
Gundani .P	ZINWA	A. O. Engineer



Public Consultation Meeting at Nembudziya Growth Point

The meeting started at 100pm and Mr Mapanzure was chairing.

Opening prayer: Mrs Jinga gave an opening prayer.

Opening Remarks: The Gokwe North RDC CEO Mr Tigere gave the opening remarks. He welcomed all stakeholders that managed to attend the very important meeting. He outlined the acute water challenges that the growth point was facing. He gave the example of how school children cue for water everyday at the council reserve tank as normally there would be no water at the primary schools. He expressed his hope that the coming of world bank should be the beginning of a new era.

Mapanzure: The chairperson gave a brief background of the World Bank Project outlining how they have assisted Beitbridge Town . He further explained how the 50 Small Towns were surveyed and ultimately how seven were prioritised where Nembudziya is one of the seven. He further on explained how supply was failing to meet demand and the impact it had on economic growth and also on the life of the women and the girl child. The technical assessments have been done but it is important that the social and environmental impacts be

openly assessed by the stakeholders as the beneficiaries of the project and also as the people that would be affected by the negative impacts of the project as well.

He then outlined the project scope to enable stakeholders to have a detailed knowledge of the project to enable them to note any impacts if any. The project scope was outlined as follows

- Rehabilitation of three existing boreholes.
- Drilling , equipping , electrification and connection to the tanks of three new boreholes.
- Replacement of elevated tanks at Police, Maselukwe, Transport and High School.
- Increase storage by additional 500m3 more wear tank.
- Rehabilitation of the reticulation system, installation of isolating valves, and non-functional meters.
- Construction of two staff houses.

Mr Chari: Stakeholders please give World Bank enough evidence how the project will affect the women and girl child. Also be honest on the negative impacts of the project if any.

Mr Tigere: The water situation is bad. Because of water shortages women and children wake up very early to fetch water for domestic use before going to school. At school they are the ones again send by teachers to fetch them water for teachers' houses. At school they are again asked to fetch water for toilets and flower beds. All this is done at the expense of girl child's time to concentrate on her books. When educational results are published, no one looks back at how the girl child has been unfairly treated. This ultimately has a bearing on the girl child's career. If water supply is improved, the life of the girl child would have been greatly improved.

Mr Mupungu: This place supports a lot of people most of them are not resident here at Nembudziya Growth Point, all areas around like Choda , Tsungayi are all attended here as district offices are here. This moving populace cannot carry water so they visit the toilets , shake hands with other people and even eat without washing hands. In 2008 Nembudziya was one of the centres that had high cholera figures because of this. Presently there is a cotton company that allows people to fetch water and people are travelling over 3km to get water. The situation is pathetic looking at time taken to bring a few litres of water home.

Masuka: Nyamuroro Vocational Training Centre is not connected to water at all due to inadequate water supply. This poses a health hazard.

Dzingiso: The centre has this year failed to conduct District Schools competitions due to the water situation. This affects economical growth and even the growth of the centre itself. Demand for residential stands is high but expansion is hindered due to water shortages.

Mashindi: At our police camp we get water only once or twice a week, the tanks are leaking and needs replacement. This programme should be speeded up.

Chari: Once the World Bank project starts, there could be rise in cases of prostitution in the area and employment how do you want it done.

Mandima: As the district hospital we already have programmes that mitigate against that. The awareness level is high and structures are place. On another point we would appreciate if we are able to store water. As the hospital we attend to maternity cases and water is needed.

Hove: On the issue of employment, we want the contractors to employment people from this area. Maybe they can just bring skilled manpower when such skills are not found in Nembudziya otherwise employ locals.

Tigere: We would like to appeal to World Bank to expedite this programme as it will go a long way in alleviating the life of women and children in Gokwe North.

There being no further contributions the meeting ended at 2.30pm

Closing prayer: Mr Mapanzure

Minutes are hereby confirmed as a true record by

1.....

2.....

3.....

Attendance Register:

Name	Designation	Organisation	Telephone	Email	Signature
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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.