



PROJECT PROPOSAL

KIRINDARA WATER PROJECT - PHASE II

BASIC INFORMATION	
PROJECT TITLE	KIRINDARA WATER PROJECT – PHASE II
PROJECT TYPE	Distribution of Water To Households
PROJECT LOCATION	Igembe North Sub-County
AREAS TO BE COVERED	Ntunene Ward
POPULATION	Approximately 20,000 (Source 2019 Census)
IMPLEMENTING AGENCY	WK Wazalendo Foundation
PARTNERS	The County Government of Meru
BENEFICIARIES	Kirindara Youth (CBO)
PROJECT PERIOD	1 Year
PROJECT PROPONENT	Name: ANDREW MEME Title: Director, WK Wazalendo Foundation Address: P.O Box 22 – 60601, LAARE Tel: +254 723 887 659 / 704 307 121 Email: director@wkwazalendofoundation.org Website: www. wkwazalendofoundation.org
PROJECT BUDGET	KSH. 9,913,530.00

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1.0 INTRODUCTION

1.1. Project Summary

The social, economic and environmental crises are clearly interrelated. The United Nations inaugurated Seventeen (17) Sustainable Development Goals (SDGs) in September 2015. The SDGs can be grouped into three namely **Economic Development Goals** including economic growth, full and productive employment, infrastructure for industrialization and innovation, and sustainable consumption and production patterns. Secondly, **Social Inclusion goals**: end poverty, end hunger, ensure healthy lives, ensure inclusive and equitable quality education, achieve gender equality, Reduce inequality among countries, make cities and human settlements inclusive. Finally, **Environmental Sustainability goals**: ensure availability and **sustainable management of water**, ensure access to energy, combat climate change and its impacts, sustainable use the oceans, sustainable use of terrestrial ecosystems. Whilst SDGs continue the focus on eradicating poverty, they also include universal goals of addressing unsustainable patterns of consumption and production, and protecting environmental resources.

The 2030 Agenda for Sustainable Development and the Sustainable Development Goals pledge to reduce inequality and provides a vision of a shared future that economically, socially and ecologically sustainable. Sustainable development must strike a balance between the economic, social and environmental objectives of society. It has to maximize well-being in the present without compromising the ability of future generations to meet their needs.

This project seeks to provide access to clean water to residents of Ntunene Ward Igembe - North Sub-County. Its primary goal is to provide clean-piped water to more than 2,000 native residents of the area and 10,000 external beneficiaries. Thus, the project will integrate social and economic development with environmental sustainability.

1.2. Contextual analysis

Water scarcity affects more than 40 percent of people, an alarming figure that is projected to rise as temperatures do. Although 2.1 billion people have improved water sanitation since 1990, dwindling drinking water supplies are affecting every continent. More and more countries are experiencing water stress, and increasing drought and desertification is already worsening these trends. By 2050, it is projected that at least one in four people will suffer recurring water shortages.

Safe and affordable drinking water for all by 2030 requires countries to invest in adequate infrastructure, provide sanitation facilities, and encourage hygiene. Protecting and restoring water-related ecosystems is essential (UNDP 2015).

Ntunene Ward community with estimated population of 20,000 suffers from lack of steady water supply throughout the year. This area being an ASAL region receive insufficient rainfall throughout the year and has no rivers or streams flowing in and out, reason being the ground water resources are low and saline because of the basement rock systems.

The average distance to nearest water point/source in most households is about 8 kilometers. With Women, children or donkeys having to ferry water from these sources to their households.

Lack of consistent water supply is a drawback to the livelihoods, as we know water is life. This problem contributes up to 70% of poverty in the Ntunene Ward since a lot of productive time and energy is used in water collecting.



Women, children and donkeys fetching water

1.3. Project Justification

Kirindara Water Project - phase II, will make it possible for piped water to flow to the villages around Ntunene Ward, thus cutting the water shortage problem by more than 50%. Most households will be connected to tap water while water kiosks (distribution points) will be setup for those who do not subscribe to individual connections. This will address the issue of long distance treks in search of water by the residents of Ntunene ward.

Clean water and sanitation is Sustainable Development Goal's number six and it plays a big role in realizing sustainable development goal 1 – No poverty. We believe that Kirindara Water Project phase II, will have tremendous effects on the livelihoods in Ntunene Ward because time saved from treks and search of water on a daily basis will be put into productive use and income-generating activities.

Project Benefits

1. Social Economic benefits, in that the community will save time used in sourcing for water for other social economic activities.
2. More residents will take up Sustainable Agriculture, thus increasing food security and income generation.
3. Clean water for domestic use will be available
4. Children will focus more on education instead of taking up too much time used in fetching water
5. Creation of opportunities for Kirindara Youth CBO, through a memorandum of understanding with WK Wazalendo Foundation

Positive Impacts on the youth

Youth face many challenges in the society ranging from lack of job opportunities, drug abuse, crime and poverty. WK Wazalendo Foundation through an MOU with Kirindara Youth CBO, will task Kirindara Youth to run the project in order to uplift the economic activities through various programs under WK Wazalendo Foundation youth empowerment that include;

1. Creation of job opportunities meaning income to their pockets
2. Bee farming
3. Dairy Farming
4. Agro-Forestry Tree Nurseries
5. Poultry farming

This project will influence the youths of Ntunene Ward positively while opening more opportunities for them to build a sustainable future for the CBO and the coming generations.

1.4. Project Location & Information

Ntunene Ward

Ntunene Ward is located in Igembe North Constituency one of the electoral constituencies in the Igembe North Sub County part of the larger Meru County. The ward has a population of approximately 20,000 as at 2018 when the census was conducted and an area of 145.10 km². It lies between Latitude 0°19'46.3"N and Longitude 37°56'00.7"E.

The proposed Kirindara Water Project will target the following villages in Ntunene Ward:

1. Kirindara Market
2. Akolene,
3. Kiriba,
4. Kilili ,
5. Mwerene ,
6. Kiraro.

This presents a total 2,000 direct beneficiary households targeted with piped borehole water.

Topography

The project area is relatively sloppy towards the north and gradual slopes towards the south. Average farm size per farmer is 1/4 Acre. Average slope is estimated at 10%.

Soils

Soils in the farm are well-drained mixture of sandy barns of below average fertility. The soils are deep enough allowing for rooting depths of both food and horticultural crops. Some sections are characterized with stony out crops with very shallow soil depths.

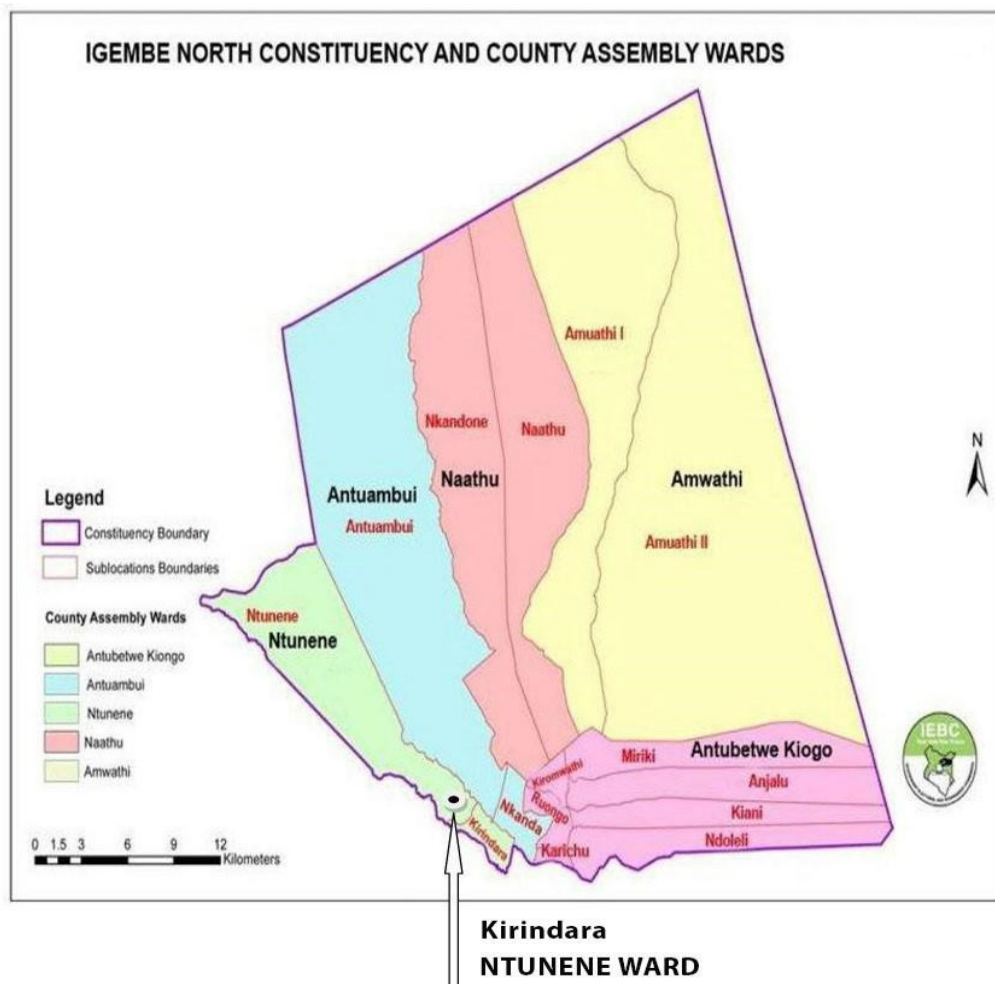
Hydrology

The proposed water source is Kirindara Bore Hole, which has enough flows.

Socio-economic Setup of Ntunene

Most of the Ntunene community populace live below average and job opportunities are negligible. A small portion of the population (30%) has income in the range of Ksh. 10000 and above while the remaining (70%) population has income below Ksh 5000 per month. Majority of the residents are involved in Miraa farming, traditional agriculture, and unskilled workers who work on daily wage basis in the Ntunene area. The well of people are either working outside Igembe North or operating businesses in the surrounding towns. Majority of the youth are jobless and make up the 70% of the population.

Map of Igembe North Constituency and County Assemblies



Project History

The idea of starting Kirindara Water Project started with the local community in the year 2018. The County Government carried out sensitization of the community and the idea of a water project was born. The County Government proceeded in the Implementation of the project together with the community.

Present Situation

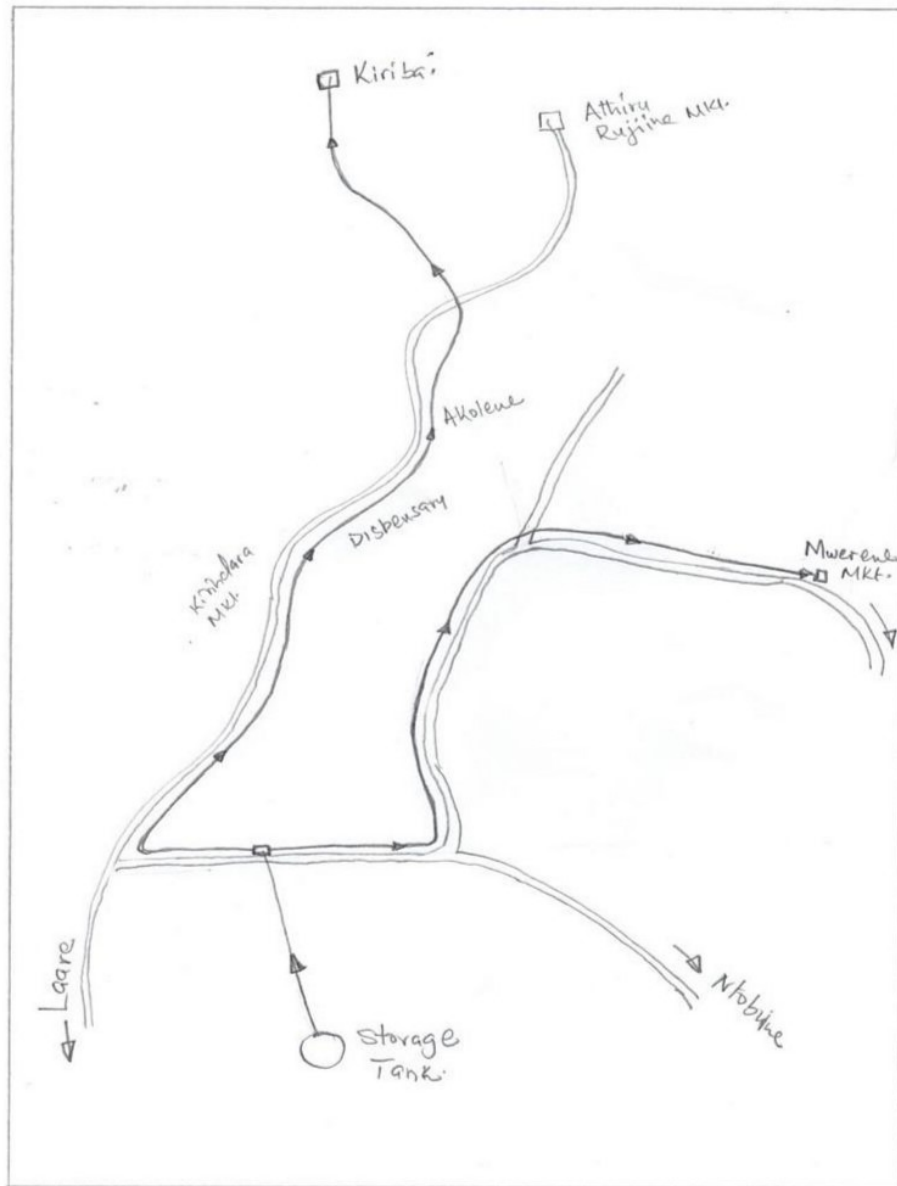
The present situation is as follows:

1. Drilling and Equipping of Bore Hole is complete
2. Installation Solar Panels for Power generation done to completion
3. Construction of main Storage tank is complete
4. Storage Tank of 10,000 installed at Kirindara Primary School
5. Construction of water kiosk in progress

Sketch of Proposed Kirindara Water Project Extension

The proposed project will start from Kirindara where the borehole is located, and will flow down to the households in the village.

SKETCH SHOWING PROJECT AREA



1.5. Proposed Project Objectives

Project Objective-1

To provide clean drinking water to the people of Ntunene Ward and enable them to mobilize their resources for their own betterment.

Project Activities under Objective-1

1. WK Wazalendo Foundation along with the local community leaderships will undertake a survey to determine individual water supply to households and suitable points for installation of water kiosks.
2. Formation of committees and leadership for the implementation and management of the project.
3. WK Wazalendo Foundation and partner organizations of goodwill will start to generate sufficient funds for the project
4. A contractor capable of undertaking the project from start to completion will be identified and hired preferably from the local community
5. Work shall commence under strict supervision of the WK Wazalendo Project Coordinators, The Contractor and Project Committee
6. On completion, WK Wazalendo Foundation will issue certificate of completion to the Contractor
7. The committee will generate formulation of beneficiary list
8. Project commissioning

Project Objective-2

To empower the local Youth Community Based Organization to implement and undertake the water supply programme for income generation and proposed sustainable village development scheme under Ntunene Ward Poverty Eradication Program that will see residents participate in environmental and farming activities.

Activities Planned Under Proposed Objective -2

1. Meeting with the Kirindara Youth CBO
2. Signing Memorandum of Understanding (MoU) between WK Wazalendo Foundation and Kirindara Youth CBO on roles and responsibilities in running the water project
3. Formation of Committees (Project Committee, Operations and Maintenance Committee)
4. Setting out operation and maintenance plan
5. Setting out implementation strategy and plan for various activities of the project
6. Village level mass meeting before implementation
7. Weekly meetings with the committees

Documentation of outcomes of meetings by WK Wazalendo Foundation

WK Wazalendo Foundation as the Project implementing Agency will document all the meetings and processes in paper and digital media. This will eventually help in project monitoring, evaluation and reporting.

2.0 DESIGN AND COST ESTIMATE

2.1. Design of the project

Kirindara Borehole Information

Depth	= 270 m
Discharge	= 21 m ³ /hr. = 21000 lts/hr. = 350lts/min = 5.83lts/sec
Diam. Out let Pipe	= 63 mm (Already Installed)

Determination of Static Head (Main Line)

Total static head from Bore Hole Ground Level

(1) Level at Bore Storage Tank	= 1724.00 (m. a.s.l)
(2) Level at END of Line	= 1572.459 (in. a.s.l)
(3) Static head	= 32.91 in

Proposed Water Distribution

The water conveyance and distribution system will include:

1. Bore Hole and Accessories Main Line
2. Storage tank
3. Main Valve Chamber
4. Main line (Storage tank to Kirindara Primary. School)-Kiriba
5. Sub-Main line (Storage tank to Kirindara Primary. School)-Mwerene

Expected pipe discharge from the 10,000 lts storage tank is as follows

CHAINAGE	L	C	Q	D	A	V	D (mm)
0	0	150	0.001	0.036	0.0010	1.003	35.63706
10	10	150	0.002	0.050	0.001994	1.003	50.39841
20	10	150	0.004	0.071	0.003988	1.003	71.27412
30	10	150	0.005	0.080	0.004985	1.003	79.68689
40	10	150	0.006	0.087	0.005982	1.003	87.29261
50	10	150	0.007	0.094	0.006979	1.003	94.2868
60	10	150	0.008	0.101	0.007976	1.003	100.7968
70	10	150	0.009	0.107	0.008973	1.003	106.9112
80	10	150	0.01	0.113	0.00997	1.003	112.6943
100	20	150	0.02	0.159	0.019939	1.003	159.3738
140	40	150	0.03	0.195	0.029909	1.003	195.1922
180	40	150	0.04	0.225	0.039878	1.003	225.3886
220	40	150	0.05	0.252	0.049848	1.003	251.9921
260	40	150	0.06	0.276	0.059817	1.003	276.0435

From the above , the 63 mm Diam. Pipes will be able to have the following

Discharge (Q) = 5.83 lts./ sec
Flow Velocity = 1.003 m/ sec

HYDRAULIC CALCULATIONS (Excel Spreadsheet)

Hydraulic calculations in the design will be carried using Hazen William formula given below:-

$$1. H_f = \frac{6.843L (v)^{1.852}}{(C)^{1.852}} / d^{1.167}$$

Where :-

H_f = meters (m)

V = m/sec

d = pipe diameter

C = coefficient:- upvc =150

Steel= 120

L = Length of Pipe

2. $Q=VA$

Where:-

A = Cross Section Area

V = Flow Velocity

3. Velocity head loss

$$V_f = V^2$$

($g=9.81m/s$) V =velocity

2.2. Cost Estimate

MAIN LINE TO KIBRA					
NO	ITEM DESCRIPTION	UNIT	QTY	UNIT COST KSH.	TOTAL COST KSH.
	EXCAVATION Excavate pipe route to the required depth as	M3	1545	800.00	1,236,000.00
	PIPE LAYING Provide, and test class the following classes of uPVC pipes with rubber rings (Rates to include all jointing)	M	-	-	-
	Flanges 63mm Diam PN6	m	650	150.00	97,500.00
	Flanges 50 mm Diam PN6	m	450	100.00	45,000.00
	Flanges 40 mm Diam PN8	m	250	105.00	26,250.00
	Flanges 40 mm Diam PN10	m	200	70.00	14,000.00
	Flanges 33 mm Diam PN12.5	m	350	50.00	17,500.00
	Flanges 25 mm Diam PN16	m	675	50.00	33,750.00
	SUB TOTAL				1,470,000.00
SUB-MAIN LINE TO MWERENE					
NO	ITEM DESCRIPTION	UNIT	QTY	UNIT COST KSH.	TOTAL COST KSH.
	EXCAVATION	M3	660	800.00	528,000.00
	PIPE LAYING	m	0	-	-
	63mm Diam PN 16	m	400	150.00	60,000.00
	50 mm Diam PN 6	m	500	100.00	50,000.00
	40mm Diam PN 6	m	200	60.00	120,000.00
	SUB TOTAL				785,000.00
INDIVIDUAL HOMESTEAD CONNECTIONS					
NO	ITEM DESCRIPTION	UNIT	QTY	UNIT COST KSH.	TOTAL COST KSH.
	EXCAVATION	M3	5400	300.00	1,620,000.00
	PIPE LAYING	m	0	-	-
	32 mm Diam PN 6	m	60000	40.00	2,400,000.00
	SUB TOTAL				4,020,000.00
MINOR VALVE CHAMBERS					
ITEM	ITEM DESCRIPTION	UNIT	QTY	RATE KSH.	AMOUNT KSH.
	EXCAVATION	NO	1	8000.00	8000.00

	BLINDING	m ₃	1	5,000.00	5,000.00
	REINFORCEMENTS		1	5,000.00	5,000.00
	FOUNDATION PLATE		1	5,000.00	5,000.00
	BLOCK WALLING		1	10,000.00	10,000.00
	MANHOLE COVER		1	8,000.00	8,000.00
	REDUCING TEE		1	30,000.00	30,000.00
	SLUICE VALVES		1	25,000.00	25,000.00
	PLASTERING AND FINISHING		1	20,000.00	20,000.00
	SUB TOTAL				116,000.00
	8 NO. VALVE CHAMBERS		8		928,000.00
CONSTRUCTION OF WATER KIOSKS					
NO.	ITEM /DESCRIPTION	UNIT	QTY	RATE KSH.	AMOUNT KSH.
A	SUB STRUCTURE				
1	EXCAVATION	m ₃	3	10,000.00	30,000.00
2	CONCRETE WORKS	m ₃	3	50,000.00	150,000.00
3	STEEL STRUCTURE	Ton	1	150,000.00	150,000.00
	SUB TOTAL				330,000.00
	3 NO.OF KIOSKS		3	0	990,000.00
SUMMARY OF COSTS					
NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT COST KSH.	TOTAL COST KSH.
	MAIN LINE TO KIRIBA				1,470,000.00
	SUB-MAIN LINE TO MWERENE				785,000.00
	INDIVIDUAL CONECTIONS				4,020,000.00
	MINOR VALVE CHAMBERS				928,000.00
	WATER KIOSKS				990,000.00
	TOTAL				8,193,000.00
	16%VAT				1,310,880.00
	5% CONTIGENCIES				409,650.00
	GRAND TOTAL				9,913,530.00

2.3. Operation and Maintenance Plan

For the sustainability of project, WK Wazalendo Foundation will establish a well-defined system of Operation and Maintenance with respective committees. The maintenance committee will be fully responsible for the operation and maintenance of the project after completion of the project. The committee will be responsible to collect and use the maintenance funds from water User Committees benefited under this scheme. Water User Committees will collect and deposit the money to the relevant accounts managed by WK Wazalendo Foundation.

2.4. Environmental Assessment

To analyze the impacts of this project Meru County NEMA office was consulted to carry out a detailed environmental review. The proposed water supply project is environment friendly project and has not any bad impact on environment.

3.0 PROJECT IMPLEMENTATION

Upon receiving approval from the County Government of Meru and relevant authorities, the project will commence.

3.1. Terms of Partnership with Wazalendo Kirindara Youth Group

WK Wazalendo Project Coordinator and Social Workers will arraign a meeting, which shall be attended by Wazalendo Kirindara Youth Group, who are direct beneficiaries of the project. This meeting will be a sensitization meeting where the groups shall be educated on benefits and terms of partnership with WK Wazalendo Foundation.

3.2. Formation of Committees

The implementation and management committee of the project will be constituted during this meeting. All the committee members shall work under WK Wazalendo Foundation Project Coordinator who will be the overall manager overseeing the project.

3.2.1 Project Committee

This committee will be responsible for overall implementation of the project. At least two members will be nominated/elected. Its main responsibilities will include:

1. Supervision and execution of the project
2. Liase with WK Wazalendo Foundation
3. Follow instructions from Project Coordinator
4. Assign duties to Wazalendo Kirindara Youth Group
5. Keep record of the supplies provided by WK Wazalendo Foundation for project
6. Prepare weekly progress report of the project and submit to WK Wazalendo Foundation

3.2.2. Maintenance Committee

This committee will be tasked with preventive maintenance, involving systematic and periodic maintenance procedures for all major system components.

It shall be comprised of at least two members and its main responsibilities will include the following:

- To manage operation and maintenance of the project, after completion
- To generate an amount equal to one year maintenance cost of the project

4.0 PROJECT MANAGEMENT

WK Wazalendo Foundation and Wazalendo Kirindara Youth Group will jointly manage implementation of the project. WK Wazalendo Foundation will be responsible for procurement of project supplies and provision of payment to the Contractor for the works. WK Wazalendo Foundation will be responsible for the project management as described below.

4.1. Construction Management

WK Wazalendo Foundation Project Coordinator, Accounts Manager and Programs Manager will be responsible for execution of the works. The team shall maintain all the supplies and financial records during execution of project. The Project Coordinator will visit the project periodically, check the quality of works and ensure adherence to the design specifications.

4.2. Financial Management

WK Wazalendo Foundation Accounts Department and programs section will be fully responsible for financial management. The responsible Project coordinator with the help of grassroots committee will be responsible to provide financial records to Accounting Department. They will also be tasked to check the project progress and quality at every stage.

5.0 PROJECT COST AND BENEFITS (ECONOMIC ANALYSIS)

This proposed project is an extension of existing Borehole water to the villages of Ntunene Ward. This project will facilitate piped water to household and water kiosks for those who will not meet the home connection costs. The cost of this project will be minimal as compared to its benefits.

- This water project main aim is to enhance the community per capita consumption of water and thus their living standards.

- The project will have intangible benefits (qualitative) in terms of awareness raising, institutional human resource development and developing sense of ownership among the community and tangible (quantitative) in terms of water supply facilities.
- The project is targeted to protect the local population from brunt of diseases by providing them clean water at their homes.
- The project will have a great impact on the neighboring communities and generate a feeling of self-reliance, self-help and self-management in them.

- Women and children in the community are always tasked with the duty of fetching water from distant areas on a daily basis. The implementation of this project will relieve them from this difficult task and ultimately their time will be saved for performing other important household chores. They will be able to take part and utilize their time in other developmental and income generation activities.

With the implementation of the proposed project, Kirindara Youth CBO will be strengthened and empowered. They will be tasked to run the project under supervision of WK Wazalendo Foundation. This project will be an income generator for many youths as they participate on other developmental activities that will engage them on 24/7 basis.