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02/10/2025

THE SENATE

02/15/25

FOURTH SESSION

THIRTEENTH PARLIAMENT

THE REPORT OF THE SENATE STANDING COMMITTEE ON LAND,  
ENVIRONMENT AND NATURAL RESOURCES

ON

THE PETITION CONCERNING THE DELAYED COMPLETION OF THE  
CHANGARA WATER PAN-WORLD BANK FUNDED PROJECT IN BUSIA  
COUNTY

SEPTEMBER, 2025

PAPERS LAID	
DATE	7-10-2025
TABLED BY	Chairperson
COMMITTEE	Land
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## ABBREVIATIONS

BQ	-Bill of Quantity
CEO	-Chief Executive Officer
EACC	-Ethics and Anti-Corruption Commission
MCA	-Member of County Assembly
PMC	-Project Management Committee
PPRA	-Public Procurement Regulatory Authority
RFQ	-Request For Quotation
WB	-World Bank

## PREFACE

**Mr. Speaker sir,**

The Standing Committee on Land, Environment and Natural Resources is established pursuant to standing order 228(3) of the Standing Orders of the Senate. As set out in the Fourth Schedule, the Committee is mandated to consider all matters relating to lands and settlement, housing, environment, forestry, wildlife, mining, water resource management and development.

### **Committee Membership**

The Committee comprises of the following Members.

1. Sen. Mohamed Mwinyihaji Faki, CBS, MP - **Chairperson**
2. Sen. Karen Nyamu, MP - **Vice-Chairperson**
3. Sen. Johnes Mwashushe Mwaruma, MP
4. Sen. Allan Chesang, CBS, MP
5. Sen. Mohamed Haji, MP
6. Sen. James Murango, MP
7. Sen. Joe Nyutu, MP
8. Sen. Beatrice Akinyi Ogola, MP
9. Sen. Mariam Sheikh Omar MP

## **CHAIRPERSON'S FORWARD**

At a sitting of the Senate held on Thursday 11<sup>th</sup> October, 2023, the Honorable Speaker of the Senate, reported to the Senate that a Petition had been submitted through the Clerk, from residents of Changara, Teso North Sub-County, Busia County regarding the Changara Water Pan Project. The petitioners made a complaint on the delayed implementation and subsequent stalling of the Changara Water Pan World Bank funded Project.

Pursuant to standing order 238(1) and the Fourth Schedule to the Standing Orders of the Senate, the Petition was committed to the Standing Committee on Land, Environment and Natural Resources.

Pursuant to Articles 37 and 119(1) of the Constitution, section 5(2) of the Petition to Parliament (Procedure) Act and standing order 238(2) of the Senate Standing Orders, the Committee is mandated to consider the Petition and respond to the Petitioners within the prescribed period.

To facilitate a careful determination of the Petition, the Committee resolved to conduct an inquiry on the issues raised in the Petition. In this regard the Committee requested the Petitioners to submit written submissions to elaborate further on the issues raised in the Petition and to supply supporting evidence on the same.

The Committee proceeded to seek responses from the CEO, Ethics and Anti-Corruption Commission and the Office of the Governor of Busia County, to address the issues raised in the Petition.

The Committee further proceeded to carry out a site visit to Busia County in the area that has been mentioned in the Petition and met the Petitioners and the area residents in the presence of the Local Administration.

### **Committee Observations**

#### **Prayer one:**

That the Committee investigates the procurement process and determines how Berodi Company was awarded the contract for the project.

The Committee observed that there were numerous irregularities in the award of the tender through the RFQ method. The committee further observed that public procurement laws and regulations were disregarded which resulted in the mismanagement of the procurement process.

**Prayer Two:**

That the Committee examines and addresses any misappropriation or misuse of funds allocated to the project and hold accountable all individuals and officials found culpable of compromising the project's objectives

The Committee observed from the submissions by the EACC, that in the management of public resources, the County government department in charge may be culpable of procurement malpractices and that any public resources that could have been lost, due to acts of commission or omission, must be fully recovered and put back into the completion of the project.

**Prayer Three:**

That the Committee facilitates the timely completion of the project to deliver its intended benefits to the community.

The Committee observed that the County Government has indicated that remedial measures are being taken to ensure completion of the project. The Committee however observed that the County Government should expedite the completion and operationalization of the water pan project to ensure that the residents benefit from its intended purpose of irrigation and increasing crop yields for food security.

**Committee Recommendations**

**The Committee having investigated the matter in accordance with its mandate under the standing order 228(4) of the Senate Standing Orders recommends as follows -**

1. That the EACC expedites the completion of investigations into various malpractices that were committed during the tendering process and a report be shared with the Committee within three (3) months of tabling this report in the

Senate.

2. That once the investigations are complete by the EACC, any financial resources that were misappropriated and attendant interests should be recovered and ploughed back into the completion of the project;
3. The County Government should ensure that there is security that safeguards the water pan assets and equipment to avoid further vandalism.
4. That the County Government institutes immediate plans to complete and operationalize the water pan project and thereafter properly handover the water pan to the community within the Financial Year 2025/26 and ensure its sustainable use and maintenance;
5. That the County government should seek legal redress on the observed breach in contract during construction of the water pan and that future public projects should follow strict adherence to the procurement laws and procedures and ensure public participation is conducted adequately as per the provisions of the Constitution; and
6. That the County Government provides a status update on the project within three (3) months of adoption of the report by the Senate.


## **ACKNOWLEDGEMENT**

The Committee thanks the Offices of the Speaker of the Senate and the Clerk of the Senate for the support extended to the Committee in the execution of its mandate. The Committee further extends its appreciation to the Petitioners and the CEO of the EACC and the Office of the Governor of Busia County for their submissions and contribution to the resolution of this matter.

**Mr. Speaker Sir,**

It is now my pleasant duty and privilege, on behalf of the Committee, to present this Report of the Standing Committee on Land, Environment and Natural Resources on the Petition by the Residents of Changara in Busia County concerning delays in implementation and completion of the Changara Water Pan World Bank funded project.

Signed:



Date: 30 / 09 / 2025.

**SEN. MOHAMED MWINYIHAJI FAKI, CBS, MP,**  
**CHAIRPERSON,**  
**SENATE STANDING COMMITTEE ON LAND, ENVIRONMENT AND**  
**NATURAL RESOURCES.**

## CHAPTER I

### INTRODUCTION

1. At the sitting of the Senate held on 11<sup>th</sup> October, 2023, The Rt. Hon Speaker, reported to the Senate a Petition by the residents of Changara in Busia County concerning delays in both implementation and completion of the Changara Water Pan, a World Bank funded project.

**a. Underlying Constitutional and Statutory Provisions**

2. **Article 1(1) and (2)** of the Constitution, vests all sovereign power in the people of Kenya and shall be exercised only in accordance with the Constitution.
3. **Article 1(3) (a)** of the Constitution delegates sovereign power of the Constitution to, *inter alia*, Parliament and the legislative assemblies in the county governments.
4. **Article 37** of the Constitution provides that *every person has the right, peaceably and unarmed, to assemble, to demonstrate, to picket, and to present petitions to public authorities* while **Article 119(1)** of the Constitution provides that *“every person has a right to petition Parliament to consider any matter within its authority, including to enact, amend or repeal any legislation.”*
5. **Section 5(2)** of the Petition to Parliament (Procedure) Act, provides that *a petition that is tabled in Parliament under this Act shall be considered in accordance with the Standing Orders of the relevant House.*
6. **Article 201 of the Constitution of Kenya 2010** outlines the principles of public finance which sets the foundation for how public resources should be managed in a responsible, transparent, and accountable manner.
7. **Article 227 of the Constitution of Kenya 2010** stipulates that all state organs and public entities shall conduct procurement of goods and services through a system that is fair, equitable, transparent, competitive, and cost-effective. It mandates Parliament to enact laws that provide a framework for public procurement and asset disposal.
8. **Public Procurement and Asset Disposal Act, 2015:** Provides for procedures and

principles of procurement to ensure integrity and transparency.

**b. Background of The Petition**

9. The Changara Water Pan Project was allocated Kshs. 24.8 million in June 2019, funded by the World Bank through the National Government.
10. Implementation responsibility of the project was delegated to the County Government of Busia through its Department of Agriculture and Fisheries Development.
11. The project aimed to provide clean piped water and irrigation for over 5,000 families in Changara area.
12. Scheduled for completion by February 2020, the project remains incomplete and stalled.
13. **Conflict of Interest:** The contract for construction was allegedly awarded to a relative of the then Member of the County Assembly (MCA) of Nambuku-Namboboto Ward
14. **Oversight Issues:** The Project Management Committee (PMC) was denied critical oversight documents, including the Bill of Quantities (BQs) and the Environmental Assessment (EA) report.
15. The dimensions and capacity of the constructed water pan are unclear and substantially below expected standards.
16. Water pipes were installed above ground and not at the recommended depth, exposing them to damage.
17. Many of the pipes are leaking, even though the project has not yet been commissioned.
18. The embankment walls were poorly compacted, endangering lives downstream.
19. **Lack of Public Participation:** The project was initiated without community engagement or public participation.
20. **Non-compliance by County Officials:** Officials in the Agriculture Department allegedly by-passed the PMC, undermining transparency and accountability.

21. **Lack of Independent Oversight:** The contractor did not have an independent site office or engineer; supervision was solely provided by Department engineers with alleged conflict of interest.
22. **Community Inconvenience:** Feeder roads around the project site were blocked, leading to accidents and restricted access.
23. Complaints have been raised with the County Government of Busia, the Public Procurement Regulatory Authority (PPRA), the Ethics and Anti-Corruption Commission (EACC), and the World Bank without resolution.
24. **Judicial Status:** The matters raised are not before any court or legal body.

**c. The Petitioners prayed that:**

25. The Committee Investigates the procurement process and determines how Berodi Company was awarded the contract for the project.
26. The Committee Examines and addresses any misappropriation or misuse of funds allocated to the project and hold accountable all individuals and officials found culpable of compromising the project's objectives
27. The Committee Facilitates the timely completion of the project to deliver its intended benefits to the community.

## LEGAL BASIS FOR PETITIONS

28. Petitions to the Senate are governed by the Constitution, the Petition to Parliament (Procedure) Act, No. 22 of 2012 and the Senate Standing Orders.

29. **Article 37** of the Constitution provides that *every person has the right, peaceably and unarmed, to assemble, to demonstrate, to picket, and to present petitions to public authorities* while **Article 119(1)** of the Constitution provides that *“every person has a right to petition Parliament to consider any matter within its authority, including to enact, amend or repeal any legislation.”*

30. **Section 5(2)** of the Petition to Parliament (Procedure) Act, provides that *a petition that is tabled in Parliament under this Act shall be considered in accordance with the Standing Orders of the relevant House*. In this regard, standing order 238 of the Senate Standing Orders provides as follows-

31. *Committal of Petitions (SO 238)*

- a. *Every Petition presented or reported pursuant to this Part, shall stand committed to the relevant Standing Committee.*
- b. *Whenever a Petition is committed to a Standing Committee, the Committee shall, in not more than sixty calendar days from the time of reading the prayer, respond to the petitioner by way of a report addressed to the petitioner or petitioners and laid on the Table of the Senate and no debate on or in relation to the report shall be allowed, but the Speaker may, allow comments or observations in relation to the Petition for not more than thirty Minutes.*

32. Standing order 239 requires the Clerk to, within fifteen days of tabling of the report on a petition under Standing Order 238 (Committal of Petitions), submit a copy of the report to the petitioner or petitioners.

## CHAPTER 2

### CONSIDERATION OF THE PETITION

#### Approach taken by the Committee

33. In considering the Petition, The Committee noted that it would be crucial to confirm the facts claimed in the Petition when evaluating it. As a result, the Committee decided to investigate the matters brought up in the Petition.

34. In this regard the Committee received the Petition from the Petitioner through the House and further requested for written submissions and evidence from the Petitioners. The Committee further met the Petitioners during a site visit that was conducted where the Water Pan project is located in Busia County.

35. Thereafter the Committee invited the CEO of EACC and the Governor of Busia County who provided responses to the matters raised in the Petition.

#### *A. Petitioners Submissions*

36. Vide a letter REF: SEN/DSEC/LENR/3/2023(140) dated 8<sup>th</sup> November, 2023, the Committee invited the Petitioners to physically appear before the Committee on 15<sup>th</sup> November, 2023. Further, the petitioners also availed written submissions.

37. The Petitioners began by submitting the documents and giving a brief background on their initial engagement with World Bank who had visited Changara to undertake a feasibility study on whether a water pan could be constructed in order to address the challenge of access to water for domestic use and thus welcomed the opportunity and consented to the project. However, the petitioners reported seeing excavators on the project site without prior communication that would allow community engagement and the formation of a committee to allow transparency and oversight of the project.

38. The Committee was eventually formed after a lot of protest from the community but they were denied oversight tools that had initially been promised. They went on to involve the Busia County Government with a number of officials visiting the site but wound up siding with the contractors who were undertaking the project despite concerns about environmental pollution. The residents expressed concerns regarding the project's impact on the surrounding environs and the unsatisfactory standards of construction, which were not addressed.

39. The Committee inquired further on the documents submitted by the Petitioners to get better clarity and noted with concern that there were indeed discrepancies and variances between what the Petitioners were saying and the Bill of Quantities (BQ).

40. Further, it was noted that there was a significant disconnect in the implementation of the project, and the photographs provided depicted an incomplete water pan.

***B. Site visit to the Changara Water pan situated in Busia County***

41. The Committee conducted the site visit to Busia County at the water pan project located within the Changara area. The visit was conducted on Wednesday, 30<sup>th</sup> April 2025.

42. The Busia County Government began by stating that the project, initiated in July 2019, aimed to enhance irrigation, reduce dependence on rain-fed agriculture, and improve livelihoods across 100 acres of land, targeting 41 farming households.

43. The Committee was informed that the County Government of Busia through the Department of Agriculture and Animal Resources was charged with implementing the project which had a total budget of Kshs. 24.8 million set aside, covering the construction of a waterpan, two irrigation lines (1.3 km and 1.7 km), fencing, gating, and a two-door toilet.

44. However, while construction was completed, the project has not been fully operationalized due to vandalism of pipes and the water control chamber. Assessment of the damage had already been conducted by Engineers and was earmarked for repair before official commissioning.

45. On the issues raised in the Petition regarding the tendering process, denial of oversight documents, lack of public participation among others the County stated as follows-

46. Response to Allegations:

**A. Project Scope Misunderstanding:** The county clarified the project was solely for irrigation, not for clean drinking water.

**B. Alleged Irregularities:**

- a) The procurement followed legal procedures; allegations of conflict of interest are denied.
- b) Project documents were available to the Project Management Committee (PMC).
- c) Public participation was conducted and documented.
- d) Claims that pipes were improperly installed and leaking were attributed to vandalism, not poor workmanship.
- e) Embankment walls were deemed stable and safe, even after heavy rains.
- f) An engineer registered with the Engineers Board of Kenya oversaw the project.
- g) A temporary site office existed; the absence of a permanent office did not hinder the project.

47. In concluding their presentation, they stated that a group of engineers have developed new plans and bills of quantities for the repair and enhancement of the

irrigation system. A new procurement process has begun, and the project is expected to be fully operational within two months.

48. The Vice Chairperson then invited the Petitioners representatives to air their grievances on the matters as informed by the County Government.

49. The Petitioners and residents who spoke indicated that, from the initiation of the project, neither local labor nor resources were sourced, thereby denying them employment opportunities. In addition, women highlighted their struggles with lack of access to clean water, which has frequently resulted in cases of illness within the community

50. Members noted that the whole project raises questions in terms of how the funds were utilized and value for money.

51. Below is a pictorial representation of the Committees observation during the visit.



*Figure I: The inspection of the water pan by the Committee (From Left to right) Sen. James Murango, MP, Sen. Joe Nyutu, MP and Sen. Beatrice Ogola, MP accompanied by the Local Residents.*



*Figure II: The sitting of the Committee led by the Vice-Chairperson, Sen. Karen Nyamu, MP during the site visit to listen to the residents of Changara regarding the water pan issue.*



*Fig: III*



*Fig: IV*



*Fig V:*



*Fig: VI*

*Figure III - VI: Pictures of the Water Pan indicating the level of workmanship done.*



*Figure VII: The residents keenly following the Committee deliberations during the site visit inspection.*

52. From the site visit the Committee observed as follows –

- a) That indeed the Water pan embankment walls were poorly compacted during construction thus endangering lives downstream.
- b) That the dimensions and capacity of the constructed water pan are unclear and substantially below expected standards.
- c) There was no water reticulation and sanitation services provided after the construction of the water pan.
- d) Generally poor workmanship was depicted in the construction of the water pan with exposed piping system and vandalism of installations.

### ***C. Responses by the CEO of EACC***

53. Vide Letter REF: SEN/DSEC/DPEAC/LENR/2025(3) (17), dated 16<sup>th</sup> May, 2025, the Committee invited the office of the EACC who appeared before the Committee on Thursday, 5<sup>th</sup> June, 2025. The resolution to have the EACC invited before the Committee was arrived at during the County Visit that was held on 30<sup>th</sup> April, 2025 while the Committee was conducting its visit in Busia County at the site of the Dam.

#### **The EACC responded as follows:**

##### **Background**

The Changara Water Pan Project, located in Teso North Sub-County, Busia County, was part of the Kenya Climate Smart Agriculture Project (KCSAP). KCSAP, a Government of Kenya project jointly supported by the World Bank and implemented from 2017-2022 under the Agriculture Sector Development Strategy (2010-2020) and National Climate Change Response Strategy (2010), aimed to increase agricultural productivity and build climate change resilience in targeted communities, with provisions for emergency response.

##### **Investigations Details**

On 4<sup>th</sup> May 2020, the EACC received a complaint alleging procurement irregularities in the award of Tender Number KCSAP/BSA/CHA/1/2018-2019 for the Proposed Expansion and Installation of Irrigation System on the Changara Water Pan Project. The tender was awarded to Berodi Company Limited for Kshs. 24.8 Million in FY 2018/2019, was investigated by the Commission.

Investigations revealed that the project was procured via Request for Quotation (RFQ), inviting three prequalified bidders: Berodi Company Limited (Kshs. 19,930,203.00), Warono Builders Limited (Kshs. 20,309,430.00), and Karuok General Services Ltd (Kshs. 20,903,890.00). The evaluation committee recommended the award to Berodi as

the lowest bidder at Kshs. 19,930,203.00. The Head of Procurement Management prepared a Professional Opinion recommending award to Berodi on June 24, 2019. Notification of award was sent to and accepted by Berodi on the same day, and the County Government of Busia executed the contract with Berodi also on 24<sup>th</sup> June 2019.

Instructions were issued to Berodi on 25<sup>th</sup> June 2019, and an Implementation Committee was nominated on 27<sup>th</sup> June 2019. Crucially, the tender opening, evaluation, and contract signing all occurred on the same day (24<sup>th</sup> June 2019), contravening Section 135 of the Public Procurement Disposal Act, CAP 412A, which requires contracts to be signed after a 14-day lapse post-award. Additionally, there was no site handover certificate.

The RFQ method was improperly used for this Kshs. 24 million procurement, exceeding the Kshs. 2 million threshold stipulated in the Second Schedule of the Public Procurement Disposal Act Regulations, 2006. Payments totaling Kshs. 17,741,581.25 were made to Berodi Company Limited via four certificates: Kshs. 5,636,349.60 on 9<sup>th</sup> January 2020; Kshs. 6,702,750.35 on 13<sup>th</sup> July 2020; Kshs. 2,571,524.01 on 8<sup>th</sup> June 2021; Kshs. 1,526,025.20 on 13<sup>th</sup> January 2022; and the 10% retention of Kshs. 1,304,932.00 on 11<sup>th</sup> September, 2023.

### **Probable Offences**

Preliminary investigations identified probable offences including: **failure to comply** with procurement laws/procedures/guidelines contrary to Section 45(2)(b) as read with Section 48(1)(a) of the Anti-Corruption and Economic Crimes Act, CAP 65, specifically due to exceeding the RFQ threshold; **fraudulently making payments** from public revenue contrary to Section 45(2)(a) as read with Section 48(1)(a) of the same Act; and **fraudulent acquisition** of public property contrary to Section 45(1)(a) as read with Section 48(1) of the Anti-Corruption and Economic Crimes Act, CAP 65.

The investigation is currently at an advanced stage. Upon completion, the resultant inquiry file is to be forwarded to the Director of Public Prosecutions with necessary recommendations.

*D. Responses by the Governor, Busia County*

**The Governor responded as follows;**

Background information:

The Changara Waterpan Project, located in Teso North Sub County, Angurai East Ward, was funded to solve constraints to agricultural production in the county, specifically over-reliance on rain-fed agriculture, by enabling the storage and utilization of rainwater for irrigation.

The project's specific objectives were to increase the area of land under irrigation for crop production, reduce crop failure due to dry spells and rain-fed dependency, improve livelihoods, and increase crop production and productivity.

The project commenced on 16<sup>th</sup> July 2019 with a scope including the construction of a waterpan, installation of a 3 KM irrigation line, fencing and gating of the waterpan, and construction of a two-door toilet.

The implementation status indicates that the water pan was constructed, with two lines of the irrigation system (1.3km and 1.7km) that were installed, the water pan was fenced with a gate installed, and a two-door toilet was constructed. The project has 41 direct beneficiary farmers and a total acreage earmarked for irrigation of 100 acres.

However, the utilization status report indicates that a section of the irrigation system is vandalized and the outlet water control chamber is damaged. In response to the Petition's issues, the County Government confirms that the Changara Waterpan project was funded to the tune of Kshs. 24.8 million. This total cost comprised the following components:

- a) the Changara Waterpan Project itself costing Kshs. **19,903,203** (see the LSO attached...*Annex 3 of the governor's response*),
- b) fencing and gating costing Ksh. **1,242,724.9**, and
- c) piping costing Ksh. **3,157,643.5**.

## CHAPTER 3

### ISSUES FOR CONSIDERATION

#### I. Whether there existed a conflict of interest in the awarding of the contract for the construction of the water pan in Changara?

##### **The petitioners submitted evidence as follows:**

The Petitioners submitted that the contract for construction was allegedly awarded to a relative of the then Member of the County Assembly (MCA) of Nambuku-Namboboto Ward.

##### **The Governor office responded as follows:**

That the award of the tender was done pursuant to strict procurement laws and regulations via the Request for Quotation (RFQ) method. Further to this is that the project implementation stages contained the tender evaluation report and notification of award, with the tender being awarded to the lowest responsive bidder as per the laid down procedures. This therefore proves that the tender award was done in a transparent and fair manner void of any prejudice.

##### **The CEO EACC responded as follows:**

That the RFQ method was improperly used for this particular project of Kshs. 24 million procurement, hence exceeding the Kshs. 2 million threshold stipulated in the Second Schedule of the Public Procurement and Asset Disposal Act Regulations, 2006. Also, Instructions were issued to Berodi Ltd. on 25th June 2019, and an Implementation Committee was nominated on 27th June 2019. Consequently, the tender opening, evaluation, and contract signing all occurred on the same day (24th June 2019), contravening Section 135 of the Public Procurement and Asset Disposal Act, CAP 412A, which requires contracts to be signed after a 14-day lapse post-award. Further, there was no site handover certificate. This therefore proves that procurement laws were contravened during the tendering process.

##### **Committee Observation**



The Committee observed that the failure of the County Government to adhere to the prescribed procurement procedures may have contributed to delays in the completion and commissioning of the project, and may also have led to the mismanagement of resources allocated for the construction of the water pan. The Committee therefore recommends that this matter be fully investigated by the EACC, and that, should the inquiry reveal any contraventions of the law by the officers responsible for tendering, appropriate prosecution be instituted.

**II. Whether the PMC was denied oversight documents such as Bill of Quantities, Plans and Environmental Assessment report?**

**The petitioners submitted evidence as follows:**

That the project was initiated without community engagement and public participation and that the contractor did not have an independent site-office engineer to supervise the construction. It is alleged that supervision was solely provided by County Department engineers with alleged conflict of interest.

**The CEO EACC responded as follows:**

That an Implementation Committee was nominated on 27th June 2019. Thereafter, the tender opening, evaluation, and contract signing were done on the same day (24th June 2019), contravening Section 135 of the Public Procurement Disposal Act, CAP 412A, which requires contracts to be signed after a 14-day lapse post-award. Additionally, there was no site handover certificate.

**County Governor responded as follows:**

The County Governor made submissions to the effect that all the documents associated with the water pan project were available for public scrutiny whenever they are requested. The County Government further stated that during public participation

meetings with the PMC all the project documents were made available for any verification process and further that no formal complaint had been made to the county regarding unavailability of the BQs, project plan and the environmental and social impact assessment report.

### **Committee Observation**

The committee observed that the county government provided names of persons who allegedly attended public participation forums. The Committee however observed that no evidence was provided to show the availability and accessibility of the procurement documents to the public.

### **III. Whether the size of the approved water pan project was not disclosed to the public and whether its poor construction rendered the project unviable?**

#### **The petitioner submitted evidence as follows:**

The Petitioners submitted that initially the project size was intended to supply water to 5000 residents however during the construction of the water pan the design was changed to a lower quantity size without the involvement of the public. This therefore brought about poor workmanship with the final design of the constructed project not commensurate with the value for money which was allocated initially.

#### **County Governor responded as follows**

That the approved proposal and concept which was stated in the initial planning of the project as 56,000 cubic meters was attained during the construction. Consequently, submissions were made with regard to the actual size of the embankment and spillway of the water pan design. The irrigation system design which included the delivery pipe diameter and the water design flow with the road crossings design showed the actual plan of the water pan constructed.

### **Observations of the Committee**

The Committee observed that upon visiting the site and review of the project documents, it was evident that the actual size of the project contradicted the initial plan as set out in the project documents. This therefore did not show value for money spent in the constructed project.

#### **IV. Whether the supply pipes of the water pan were exposed to the surface and not laid to the prescribed depth?**

##### **The petitioner submitted evidence as follows:**

The petitioners submitted photographic evidence to show that there were water pipes exposed to the surface of the ground. This phenomenon has made the water supply inaccessible to the residents which therefore invalidates the initial objectives of the project. None of the residents has been able to optimally utilize the water for irrigation purposes and the water pan has remained unused since its alleged completion.

##### **County Governor responded as follows:**

The Governor made submissions of the photos of the project pipes during the construction process to prove that the supply pipes were laid to the required depth and specification. The County also asserted that the constructed pipes were vandalized hence causing the exposure and leakages as per the petitioner's complaint. They also stated that the responsibility for provision of security towards safeguarding the project assets and equipment was to be done by the residents within the area community setup. The Governor further responded that measures have been taken to address the issues –

1. The levels of vandalism of the project assets were investigated by a team of Engineers on 14<sup>th</sup>-15<sup>th</sup> January 2025.

2. Public participation and Environmental Social impact assessment was done where the residents expressed their urge to have the project operationalized.
3. The engineers and inspectors have since developed and operationalization design to ensure the installation of irrigation sprinklers to supply the water to the residents' farms.
4. There has been preparation of a plan and BQs for the repair of the project to enable its operationalization.
5. Approvals for the procurement process have been completed and the award of tender for completion to begin immediately.

### **Observations of the Committee**

The Committee observed that there were indeed exposed pipes which were as a result of the poorly constructed embankment walls of the water pan. This made it impossible for the residents to reap the benefits of the project which was intended for irrigation and agricultural purposes. Also, the lack of security for the project assets exposed it to vandalism and this could be prevented with the proper involvement of the community in construction and handover of the water pan.

## CHAPTER 4

### COMMITTEE OBSERVATIONS

#### **Prayer One:**

That the Committee investigates the procurement process and determines how Berodi Company was awarded the contract for the project.

The Committee observed that there were numerous irregularities in the award of the tender through the RFQ method. The committee further observed that public procurement laws and regulations were disregarded which resulted in the mismanagement of the procurement process.

#### **Prayer Two:**

That the Committee examines and addresses any misappropriation or misuse of funds allocated to the project and hold accountable all individuals and officials found culpable of compromising the project's objectives

The Committee observed from the submissions by the EACC, that in the management of public resources, the County government department in charge may be culpable of procurement malpractices and that any public resources that could have been lost, due to acts of commission or omission, must be fully recovered and put back into the completion of the project.

#### **Prayer Three:**

That the Committee facilitates the timely completion of the project to deliver its intended benefits to the community.

The Committee observed that the County Government has indicated that remedial measures are being taken to ensure completion of the project. The Committee however observed that the County Government should expedite the completion and operationalization of the water pan project to ensure that the residents benefit from its intended purpose of irrigation and increasing crop yields for food security.

## CHAPTER 5

### COMMITTEE RECOMMENDATIONS

**The Committee having investigated the matter in accordance with its mandate under the standing order 228(4) of the Senate Standing Orders recommends as follows –**

1. That the EACC expedites the completion of investigations into various malpractices that were committed during the tendering process and a report be shared with the Committee within three (3) months of tabling this report in the Senate.
2. That once the investigations are complete by the EACC, any financial resources that were misappropriated and attendant interests should be recovered and ploughed back into the completion of the project;
3. The County Government should ensure that there is security that safeguards the water pan assets and equipment to avoid further vandalism.
4. That the County Government institutes immediate plans to complete and operationalize the water pan project and thereafter properly handover the water pan to the community within the Financial Year 2025/26 and ensure its sustainable use and maintenance;
5. That the County government should seek legal redress on the observed breach in contract during construction of the water pan and that future public projects should follow strict adherence to the procurement laws and procedures and ensure public participation is conducted adequately as per the provisions of the Constitution; and
6. That the County Government provides a status update on the project within three (3) months of adoption of the report by the Senate.

## APPENDICES

### *ANNEX I: MINUTES OF THE MEETINGS*

- a. Minutes of the 54<sup>th</sup> sitting held on Wednesday, 15<sup>th</sup> November, 2023– Meeting with the Petitioners;
- b. Minutes of the 57<sup>th</sup> sitting held on Wednesday, 30<sup>th</sup> April, 2025– Meeting with the Petitioners during site visit in Busia County;
- c. Minutes of the 68<sup>th</sup> sitting held on Thursday, 5<sup>th</sup> June, 2025 – Meeting with Busia County Government and EACC
- d. Minutes of the 70<sup>th</sup> sitting held on Tuesday, 15<sup>th</sup> July, 2025 – Consideration of the Committee Report on the Petition.
- e. Minutes of the 82<sup>nd</sup> sitting held on Monday, 22<sup>nd</sup> September, 2025 – Adoption of the Committee Report on the Petition.

***ANNEX II: SUBMISSIONS BY KEY STAKEHOLDERS***

**Annex II (A)** – County Government of Busia Submissions responding to the Petition

**Annex II (B)** – PPRA Submissions responding to the Petition

**Annex II (C)** – EACC Submissions responding to the Petition

***ANNEX III: SUBMISSIONS BY THE PETITIONER***

**Annex III (A)** – Petition as tabled in the Senate

**Annex III (B)** – Submissions presented by the Petitioner as evidence backing their  
Petition

# Annex I: Minutes of the Committee



**MINUTES OF THE EIGHTY SECOND (82<sup>ND</sup>) SITTING OF THE STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES HELD AT FOUR POINTS BY SHERATON, MACHAKOS COUNTY ON MONDAY, 22<sup>ND</sup> SEPTEMBER, 2025 AT 2:00 PM**

**PRESENT**

- |  |               |
|--|---------------|
| 1. Sen. Mohamed Mwinyihaji Faki, CBS, MP | - Chairperson |
| 2. Sen. Johnes Mwashushe Mwaruma, MP     | - Member      |
| 3. Sen. James Murango, MP                | - Member      |
| 4. Sen. Joe Nyutu, MP                    | - Member      |
| 5. Sen. Mariam Sheikh Omar, MP           | - Member      |

**ABSENT WITH APOLOGIES**

- |                                   |                    |
|-----------------------------------|--------------------|
| 1. Sen. Karen Nyamu, MP           | - Vice Chairperson |
| 2. Sen. Beatrice Akinyi Ogola, MP | - Member           |
| 3. Sen. Abdul Haji, MP            | - Member           |
| 4. Sen. Allan Chesang, CBS, MP    | - Member           |

**IN ATTENDANCE**

1. Mr. Victor Bett
2. Ms. Ivy Nyambura
3. Mr. Andrew Nyairo
4. Mr. John Gichia
5. Ms. Keziah Muthama
6. Mr. Simon Muinde
7. Mr. Boniface Mbithi

**SECRETARIAT**

- Clerk Assistant I
- Clerk Assistant III
- Legal Counsel II
- Research Officer III
- Fiscal Analyst III
- Audio Officer
- Serjeant at Arms

**MINUTE SEN/LENR/443/2025:**

**PRELIMINARIES**

The Chairperson called the meeting to order at 10.14 am followed by a word of prayer.

The Chairperson began by informing the meeting that eleven (11) draft reports in total to be considered that had been scheduled for discussion. The Secretariat then proceeded to take the Members through the reports highlighting the Petition backgrounds, engagements with various stakeholders, investigations and county visits conducted as well as the key observations and recommendations.

In the course of deliberations, the Committee examined the draft reports presented and took note of the recommendations advanced by individual Members and resolved that the necessary amendments and refinements be incorporated into the drafts.

Upon conclusion of the discussions and having satisfied itself that the reports adequately captured the issues raised in the petitions and the Committee's determinations thereon, the Committee unanimously resolved to adopt a total of eight (8) Petition Reports as amended with the three (3) remaining Petitions requiring further stakeholder engagements.

The Secretariat was accordingly directed to effect the agreed amendments and prepare the final versions of the approved and adopted reports for tabling before the Senate.

The following reports were approved and adopted with amendments as follows-

- i. **Petition by the Residents of Changara in Busia County concerning delays in implementation and completion of the Changara Water Pan World Bank funded project;**
- ii. **Petition on historical injustices and illegal alienation of L.R. No. 7153/1, 7153/2, 7153/R, also known as L.R. 12825 in Kiambu County;**
- iii. **Petition by Nyandarua IDPs on delayed compensation and occupation of parcels of land;**
- iv. **Petition regarding the plight of the landless in Muthanthara, Embu County;**
- v. **Petition by Marungu residents within Mghange Mwanda Ward, Taita Taveta County on the alleged threatened eviction from their ancestral land by Mghange Catholic Parish;**
- vi. **Petition on ownership dispute over Mwananchi Settlement Scheme in Mwatate Constituency in Taita-Taveta County;**
- vii. **Petition concerning recognition of land ownership rights and redress of Historical Injustices in Mombasa County; and**
- viii. **Petition by the Mwabundusi land squatters on delayed allocation of land by way of resettlement or compensation for their ancestral land.**

The following reports were deemed unsatisfactory and thus need further engagements with various stakeholders to be completed-

- i. **Petition regarding eviction of Korogocho Community living in the Nairobi River Corridor after its declaration as a special planning area, Nairobi County;**
- ii. **Petition to the Senate concerning land injustices against the Olderkesi Community Members in Narok West Constituency, Narok County concern; and**
- iii. **Petition by CECARE on behalf of Pumwani residents, concerning the conversion of the LR NO. 209/ 2378/1 Pumwani Majengo from public to private land.**

**MINUTE SEN/LENR/445/2025**

**ANY OTHER BUSINESS**

There was no other business discussed.

**MINUTE SEN/LENR/446/2025**

**ADJOURNMENT AND DATE OF NEXT MEETING**

The meeting was adjourned at 6.34 pm. The date of the next meeting was to be called on notice.

SIGNED.....

DATE.....

**SEN. MOHAMED MWINYIHAJI FAKI, CBS, MP**

**CHAIRPERSON**

**STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES.**



**MINUTES OF THE SEVENTIETH (70TH) SITTING OF THE STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES HELD ON TUESDAY, 15<sup>TH</sup> JULY, IN COMMITTEE ROOM 8, FIRST FLOOR, BUNGE TOWER BUILDING 2025 AT 10:00 AM**

**PRESENT**

- |  |                    |
|--|--------------------|
| 1. Sen. Mohamed Mwinyihaji Faki, CBS, MP | - Chairperson      |
| 2. Sen. Karen Nyamu, MP                  | - Vice Chairperson |
| 3. Sen. Beatrice Akinyi Ogola, MP        | - Member           |
| 4. Sen. Johnes Mwashushe Mwaruma, MP     | - Member           |
| 5. Sen. Joe Nyutu, MP                    | - Member           |
| 6. Sen. Mariam Sheikh Omar, MP           | - Member           |
| 7. Sen. James Murango, MP                | - Member           |

**ABSENT WITH APOLOGIES**

- |                                |          |
|--------------------------------|----------|
| 1. Sen. Allan Chesang, CBS, MP | - Member |
| 2. Sen. Abdul Haji, MP         | - Member |

**IN ATTENDANCE**

**A. MINISTRY OF MINING, BLUE ECONOMY AND MARITIME AFFAIRS**

- |                     |                         |
|---------------------|-------------------------|
| 1. Mr. Harry Kimtai | - PS, Mining            |
| 2. Ms. Linet Bulei  | - Legal Advisor, Mining |
| 3. Mr. Paul Mirie   | - Director Planning     |

**B. SECRETARIAT**

- |                             |                                    |
|-----------------------------|------------------------------------|
| 1. Mr. Victor Bett          | - Clerk Assistant I                |
| 2. Ms. Ivy Nyambura         | - Clerk Assistant III              |
| 3. Mr. Andrew Nyairo        | - Legal Counsel II                 |
| 4. Mr. John Gichia          | - Research Officer III             |
| 5. Ms. Keziah Muthama       | - Fiscal Analyst III               |
| 6. Mr. Simon Muinde         | - Audio Officer                    |
| 7. Mr. Jack Lemeteki        | -Assistant Media Relations Officer |
| 8. Ms. Christabelle Wasilwa | -Assistant Public Comms. Officer   |
| 9. Ms. Cynthia Waithera     | -Intern                            |

**MINUTE SEN/LENR/364/2025:**

**PRELIMINARIES**

The Chairperson called the meeting to order at 10.10 am followed by a word of prayer.

**MINUTE SEN/LENR/365/2025:**

**ADOPTION OF THE AGENDA**

The agenda of the meeting was adopted after having been proposed by Sen. Beatrice Akinyi Ogola, MP, and seconded by Sen. James Murango, MP as follows-

1. Prayer;
2. Adoption of the Agenda;
3. **Meeting with the Cabinet Secretary, Ministry of Mining, Blue Economy and Maritime Affairs to deliberate on-**
  - i. Eight (8) Statements pending before the Committee;
  - ii. Issues raised by the Kenya Chamber of Mines; and
  - iii. Status of transfer of mineral royalties collected from Financial Year 2016/2017 to Financial Year 2024/2025.
4. **Consideration of following Committee Draft Petition Reports-**
  - i. Petition concerning the recognition of land ownership rights and redress of historical injustices in Mombasa County;
  - ii. Petition on Changara Water Pan, a World Bank funded project in Busia County; and
  - iii. Petition by CECARE on behalf of Pumwani residents, concerning the conversion of the LR NO. 209/ 2378/1 Pumwani Majengo from public to private land.
5. Any Other Business; and
6. Date of the Next Meeting and Adjournment.

**MINUTE SEN/LENR/366/2025:**

**MEETING WITH THE CABINET SECRETARY, MINISTRY OF MINING, BLUE ECONOMY AND MARITIME AFFAIRS**

The Committee was in receipt of a request by the Cabinet Secretary, Ministry of Mining, Blue Economy and Maritime Affairs via letter Ref: MIBEMA/SDM/CLK/38/2(14) dated 9<sup>th</sup> July, 2025 submitting responses to Statements and matters that were raised by the Committee, indicated he's unavailability and was requesting that the Permanent Secretary for Mining Mr. Harry Kimtai, CBS appears on he's behalf.

The Committee acceded to the request by the Cabinet Secretary and the Permanent Secretary proceeded to table the responses. The Committee resolved that on Statements,

they be shared with the respective Senators who had requested for them, and should there be supplementary questions then the Cabinet Secretary will be recalled.

On the matters raised by the Kenya Chamber of Mines and on the matter of Royalties to Counties and Communities, the Committee will reinvoke the Cabinet Secretary at an appointed time when he is available.

The Committee nevertheless sought the opinion of the Permanent Secretary on the delay in issuing the royalties and he outlined as follows;

- i. That the Ministry had requested the National Treasury to open a royalties account and deposit royalties in accordance with the Public Finance Management (PFM) Act;
- ii. That the regulations required to operationalize the accounts had been finalized and submitted to the Office of the Attorney General; and
- iii. That the Ministry will be submitting information on the intended beneficiary counties as from the commencement of the Mining Act.

**MINUTE SEN/LENR/367/2025:**                      **PETITION CONCERNING THE  
RECOGNITION OF LAND OWNERSHIP  
RIGHTS AND REDRESS OF HISTORICAL  
INJUSTICES IN MOMBASA COUNTY;**

The Committee considered the draft report on the Petition concerning the recognition of land ownership rights and redress of historical injustices in Mombasa County. The Committee resolved to await the appearance of the National Land Commission, scheduled for Tuesday, 22nd July 2025, before concluding its consideration and adoption of the report. The Committee further requested clarification on the findings and submissions relating to Ali Bin Salim. Additionally, the Committee resolved that those issues pertaining to Thathini Development Company be addressed in a separate paragraph within the report.

**MINUTE SEN/LENR/368/2025:**                      **PETITION CHANGARA WATER PAN, A  
WORLD BANK FUNDED PROJECT IN  
BUSIA COUNTY;**

The Committee was taken through the aforementioned draft report highlighting the legal basis for consideration, Petitioners submissions and responses by the County Government of Busia, EACC and PPRA.

The following were the proposed recommendations presented-

- i. That the EACC expedites the completion of investigations into various malpractices that were committed during the tendering process. This will ensure timely finalization of the complaint and that any person found culpable should be held accountable as per the law.

- ii. The Committee recommends that once the investigations are complete, any financial resources that were misappropriated should be recovered and ploughed back into the completion of the project.
- iii. The immediate provision of security towards safeguarding the water pan assets and equipment to avoid further vandalism. The County government should work hand in hand with the local community in ensuring that the water pan project is safe from destruction.
- iv. That the County government should make immediate plans to complete and operationalize the project and thereafter properly handover the water pan to the community to ensure its sustainable use and maintenance.
- v. That future public projects should follow strict adherence to the procurement laws and procedures and ensure public participation is conducted adequately as per the provisions of the Constitution.
- vi. That the County Government provides a status of the project within three (3) months of adoption of the report.

The Committee resolved to– propose to the County Government of Busia to initiate civil proceedings to recover public funds expended on the project; and to recommend that clear timelines be established for following up with the Ethics and Anti-Corruption Commission (EACC) on the matter.

The Committee further resolved to finalize and adopt the draft report for tabling in the Senate at its next meeting.

**MINUTE SEN/LENR/369/2025:**

**PETITION BY CECARE ON BEHALF OF PUMWANI RESIDENTS, CONCERNING THE CONVERSION OF THE LR NO. 209/2378/1 PUMWANI MAJENGO FROM PUBLIC TO PRIVATE LAND;**

The Committee reviewed the draft report on the Petition by the Centre for Community Action Research (CECARE) on behalf of the residents of Pumwani, regarding the alleged conversion of Land Reference No. 209/2378/1, Pumwani Majengo, from public to private land.

Following deliberations, the Committee resolved to write to the Director of Survey, through the Ministry of Lands, Public Works, Housing and Urban Development, requesting:

- (i) A survey report on LR No. 209/2378/1;
- (ii) The current status of the land, including any ongoing or concluded subdivision, allocation, or development activities;

- (iii) The original survey plans of the land; and
- (iv) Copies of titles issued in respect of LR No. 209/2378/1.

**MINUTE SEN/LENR/370/2025**

**ANY OTHER BUSINESS**

1. The Committee resolved to send follow-up letters to the Governors of Bungoma, Kakamega, Migori and Turkana Counties regarding the Financing Locally Led Climate Action Program (FLLoCA), reinviting them;
2. Noted that Turkana County has received 100% of their allocation yet they have indicated that there were delays in the exchequer releases; and
3. Further, the Committee directed the Secretariat to conduct research and provide a report on the (14) fourteen counties currently benefiting from the fund that is being given alongside FLLoCA.

**MINUTE SEN/LENR/371/2025**

**ADJOURNMENT AND DATE OF  
NEXT MEETING**

The meeting was adjourned at 12.24 pm. The date of the next meeting was to be called on notice.

SIGNED: \_\_\_\_\_



DATE: 17/07/2025

**SEN. MOHAMED MWINYIHAJI FAKI, CBS, MP,  
CHAIRPERSON,**

**STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL  
RESOURCES.**



**MINUTES OF THE SIXTY-EIGHTH (68<sup>TH</sup>) SITTING OF THE STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES HELD ON THURSDAY, 5<sup>TH</sup> JUNE, 2025 IN COMMITTEE ROOM 1, FIRST FLOOR, BUNGE TOWER AT 10:00 AM**

**PRESENT**

- |  |               |
|--|---------------|
| 1. Sen. Mohamed Mwinyihaji Faki, CBS, MP | - Chairperson |
| 2. Sen. Beatrice Akinyi Ogola, MP        | - Member      |
| 3. Sen. Mariam Sheikh Omar, MP           | - Member      |
| 4. Sen. Johnes Mwashushe Mwaruma, MP     | - Member      |
| 5. Sen. James Murango, MP                | - Member      |
| 6. Sen. Joe Nyutu, MP                    | - Member      |

**ABSENT WITH APOLOGIES**

- |                                |                    |
|--------------------------------|--------------------|
| 1. Sen. Karen Nyamu, MP        | - Vice Chairperson |
| 2. Sen. Allan Chesang, CBS, MP | - Member           |
| 3. Sen. Abdul Haji, MP         | - Member           |

**IN ATTENDANCE**

**A. EACC**

- |                          |                                 |
|--------------------------|---------------------------------|
| 1. Mr. Paschal Mweu, OGW | -Director Investigations        |
| 2. Mr. George Ojowi      | -Deputy Director, Asset Tracing |
| 3. Mr. Michael Kasilon   | -Deputy Regional Manager        |

**B. BUSIA COUNTY GOVERNMENT**

- |                        |                         |
|------------------------|-------------------------|
| 1. Dr. Paul Otuoma     | - Governor              |
| 2. Mr. John O. Juma    | - CEC, Agriculture      |
| 3. Dr. Allan F. Ogendo | - Director, Agriculture |
| 4. Mr. Elijah Mwaro    | - Chief Officer         |

**C. SECRETARIAT**

- |                    |                     |
|--------------------|---------------------|
| 1. Mr. Victor Bett | - Clerk Assistant 1 |
|--------------------|---------------------|

- |                              |                                    |
|------------------------------|------------------------------------|
| 2. Ms. Ivy Nyambura          | - Clerk Assistant III              |
| 3. Mr. Andrew Nyairo         | - Legal Counsel II                 |
| 4. Mr. John Gichia           | - Research Officer III             |
| 5. Ms. Janice Lekuton        | - Research Officer III             |
| 6. Ms. Keziah Muthama        | - Fiscal Analyst III               |
| 7. Mr. Simon Muinde          | - Audio Officer                    |
| 8. Mr. Boniface Mbithi       | - Serjeant at Arms                 |
| 9. Mr. Jack Lemeteki         | -Assistant Media Relations Officer |
| 10. Ms. Christabelle Wasilwa | -Assistant Public Comms. Officer   |
| 11. Ms. Cynthia Waithera     | -Intern                            |

**MINUTE SEN/LENR/350/2025:**

**PRELIMINARIES**

The Chairperson called the meeting to order at 10.30 am followed by a word of prayer.

**MINUTE SEN/LENR/351/2025:**

**ADOPTION OF THE AGENDA**

The agenda of the meeting was adopted having been proposed by Sen. Beatrice Akinyi Ogola, MP, and seconded by Sen. Mariam Sheikh Omar, MP as follows-

1. Prayer;
2. Adoption of the Agenda;
3. Confirmation of Minutes of the previous sitting;
4. Matters Arising;
5. **Meeting with the following stakeholders to deliberate on the Petition regarding Changara Water Pan, a World Bank funded project in Busia County-**
  - i. The Governor, Busia County;**
  - ii. The Chief Executive Officer, Ethics and Anti-Corruption Commission;**
  - and**
  - iii. The Director General, Public Procurement Regulatory Authority.**
6. Any Other Business; and
7. Date of the Next Meeting and Adjournment.

**MINUTE SEN/LENR/352/2025:**

**CONFIRMATION OF MINUTES OF THE PREVIOUS SITTING**

The confirmation of minutes was deferred to the next meeting.

**MINUTE SEN/LENR/353/2025:**

**MATTERS ARISING**

There were no matters arising.

**The Director General, Public Procurement Regulatory Authority (PPRA)**

The secretariat tabled a letter received from the Director General, PPRA Ref: PPRA/DG/2/11 VOL. II (36) dated 4<sup>th</sup> June, 2025. The letter stated that the authority had engaged the County Government of Busia on 27<sup>th</sup> May, 2025 vide letter Ref: PPRA/DG/2/11 VOL.11 (34) requesting for submission of certified copies of procurement documents on the subject contract through the Public Procurement Information Portal (PIIP) by 31<sup>st</sup> May, 2025 for their review but they were yet to do so. The request was that they be given another date after they have gotten a chance to go through the documents on the project.

**The Chief Executive Officer, Ethics and Anti-Corruption Commission**

The Members were informed that the CEO had sent a letter Ref: EACC.6/15/40 (68) dated 5<sup>th</sup> June, 2025 indicating that he was away on an official engagement and appointed a team to represent him in responding to the issues raised. The Committee acknowledged the contents of the letter and proceeded with a round of introductions, after which the EACC team presented the Changara water pan investigation report to the members.

During the discussion, senators raised several questions regarding the timely consideration of investigation on crucial projects. The EACC officers indicated that they encounter a number of challenges that cause delays in investigations such that by the time they conclude, the money has already been used up. Failure to furnish documents by the County Government and other agencies poses a challenge and instance where the right documents are not submitted.

On the question of who is responsible when the procurement act is grossly violated, EACC clarified that they have only presented a few charges so far with more charges to follow on the charge sheets.

The committee sought clarification on where the recovered money goes after EACC has recovered it. The team explained that the money recovered is taken to a consolidated account and can be reclaimed back but through a defined process.

The team from EACC thanked the Committee for the invitation and mentioned that they will work timely and will work on the Committees advice. Further, the committee was requested to engage the EACC officers embedded in the senate during site visits and such committee meetings to strengthen their outreach.

### **The Governor, Busia County**

The meeting with the Governor of Busia County and his delegation commenced with a brief round of introductions. The Governor then tabled his response to the committee for consideration.

The committee members interrogated the document and raised several concerns. The senators observed that –

1. There were discrepancies between the report and what was witnessed during the site visit. Examples cited were the absence of the double door toilet that was mentioned in the documentation, the compactness of the constructed wall during the visit appeared weak yet the submissions reflect an opposite, that the entire land parcel during the visit and had not been fenced, yet the documentation indicates that the dam is fenced.

#### **Governors Response:**

In response, the Governor and his team maintained that the project was complete and clarified that the toilet had been constructed on a different parcel of land. They presented photographic evidence to the committee to substantiate their submission.

2. The senators further noted that the size of the water pan as indicated in the report differed from what was observed on the ground.

#### **Governors Response:**

The Governor's team acknowledged that the technical team would be in a better position to provide comprehensive responses to these technical queries.

3. The Senators observed with concern that several critical documents were absent from the report presented by the Governor's delegation. The missing documentation included tender and bid documents, signed agreements executed by successful bidders, letters of contract award, handover and completion certificates, and payment certificates. In light of these omissions, the Committee resolved to direct the Governor and his team to furnish the Committee with all outstanding documents within a period of **fourteen days**.

4. The Committee further requested that the Governor provides a comprehensive report detailing whether the project in question had ever been operational, and if so, the duration of its functionality. This information was deemed essential for the Committee's assessment of the project's viability and performance.
5. The Senators expressed concerns regarding the procurement process, particularly questioning the expedited timeline whereby the entire procurement process was completed within a single day. The Committee sought clarification on the procedures followed and whether due process was observed in accordance with established procurement regulations.

**Governors Response:**

In response to the Committee's inquiries, the Governor and his delegation acknowledged that the project had indeed been functional for a limited period. However, they attributed the subsequent breakdown to vandalization of the pipes. The Committee noted that this explanation was not entirely satisfactory and required further substantiation.

The Governor's team further submitted that upon handover of such projects to beneficiary communities, the responsibility for security and maintenance transfers to the community members. They indicated that this challenge was prevalent across multiple water projects, citing lack of community accountability as a systemic issue affecting project sustainability.

The Committee took note of these submissions while reserving its position pending receipt of the requested documentation and reports.

The Chairperson thanked the Governor and his delegation for honouring the invitation and attending the meeting. He further informed the Governor that the Committee would be undertaking subsequent visits to exercise its oversight role on projects funded under the Financing Locally-Led Climate Action (FLLoCA) programme.

In conclusion, the Chairperson urged the Governor and his team to continue serving the people diligently, noting that both levels of government are working towards a common goal of improving the lives of the citizenry.

The Committee resolved that –

- i. The County Government of Busia County submits the following additional documents regarding the aforementioned Petition-
  - a) Tender/Bid document;

- b) Signed agreements by bidders who won;
  - c) Letters of contract awards;
  - d) Handover/Completion certificates and
  - e) Payment Certificates.
- ii. It will be considering inviting EACC to send officers to accompany the Committee on site visits on projects with questionable procurement issues;
  - iii. It will be proposing for an amendment regarding the transfer of recovered funds by EACC from the consolidated funds directly back to Counties to serve the people;
  - iv. The representatives from EACC, Office of the Busia Senator and the County Government of Busia to visit the Changara Water Pan and ascertain that indeed part of the fund were used to build a washroom;
  - v. The Committee invites the Governor, Busia County on the issue of FLoCCA and plan a visit to see some projects on FLoCCA;

**MINUTE SEN/LENR/355/2025**

**ANY OTHER BUSINESS**

The Committee deliberated on the following matters and resolved to-

- i. Postpone the planned visit to Narok County on the Olderkesi Petition from 13<sup>th</sup> June, 2025 to 11<sup>th</sup> July, 2025; and
- ii. The secretariat does an interim report on the Nyandarua and Embu site visits on Petitions regarding the Petition on settlement of IDPs with recommendations to the Ministry of Lands, Housing and Urban Development regarding the original allottees in both instances.

**MINUTE SEN/LENR/356/2025**

**ADJOURNMENT AND DATE OF NEXT MEETING**

The meeting was adjourned at 1:24 pm. The date of the next meeting was to be called on notice.

**SIGNED:**



.....

**DATE: 17/07/2025**

**SEN. MOHAMED MWINYIHAJI FAKI, CBS, MP**

**CHAIRPERSON**

**STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES**



**MINUTES OF THE FIFTY SEVENTH SITTING OF THE STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES HELD ON WEDNESDAY, 30<sup>TH</sup> APRIL, 2025 IN CHANGARA WARD, BUSIA COUNTY AT 10:30 AM**

**PRESENT**

- |                                   |                    |
|-----------------------------------|--------------------|
| 1. Sen. Karen Nyamu, MP           | - Vice Chairperson |
| 2. Sen. Joe Nyutu, MP             | - Member           |
| 3. Sen. James Murango, MP         | - Member           |
| 4. Sen. Beatrice Akinyi Ogola, MP | - Member           |

**ABSENT WITH APOLOGIES**

- |  |               |
|--|---------------|
| 1. Sen. Mohamed Mwinyihaji Faki, CBS, MP | - Chairperson |
| 2. Sen. Mariam Sheikh Omar, MP           | - Member      |
| 3. Sen. Johnes Mwashushe Mwaruma, MP     | - Member      |
| 4. Sen. Allan Chesang, CBS, MP           | - Member      |
| 5. Sen. Abdul Haji, MP                   | - Member      |

**IN ATTENDANCE**

**A. COUNTY GOVERNMENT OF BUSIA**

- |                       |                                 |
|-----------------------|---------------------------------|
| 1. Mr. John O. Juma   | -CEC, Water Resource Management |
| 2. Ms. Mercy Imo      | -Chief Officer                  |
| 3. Mr. Ken Mbaja      | -Chief Officer                  |
| 4. Dr. Allan Ogendo   | - Director                      |
| 5. Ms. Maureen Barasa | -Economist                      |

**B. PETITIONERS**

1. Ms. Winnie Hellen
2. Mr. Evans Cheroben
3. Mr. Dennis Wafula
4. Mr. Brian Opeto

### **C. SECRETARIAT**

- |                        |                                    |
|------------------------|------------------------------------|
| 1. Mr. Victor Bett     | -Clerk Assistant 1                 |
| 2. Ms. Ivy Nyambura    | - Clerk Assistant III              |
| 3. Mr. Andrew Nyairo   | - Legal Counsel II                 |
| 4. Mr. John Gichia     | - Research Officer III             |
| 5. Mr. Simon Muinde    | - Audio Officer                    |
| 6. Mr. Jack Lemeteki   | -Assistant Media Relations Officer |
| 7. Mr. Boniface Mbithi | -Serjeant At Arms                  |

### **MINUTE SEN/LENR/291/2025:**

### **PRELIMINARIES**

The Chairperson called the meeting to order at 10.38 am followed by a word of prayer.

### **MINUTE SEN/LENR/292/2025**

### **MEETING WITH PETITIONERS ON THE PETITION REGARDING DELAYED COMPLETION OF THE CHANGARA WATER PAN- WORLD BANK FUNDED PROJECT IN BUSIA**

The Busia County Government began by stating that the project, initiated in July 2019, aimed to enhance irrigation, reduce dependence on rain-fed agriculture, and improve livelihoods across 100 acres of land, targeting 41 farming households.

The Committee was informed that the County Government of Busia through the Department of Agriculture and Animal Resources was charged with implementing the project which had a total budget of Kshs. 24.8 million set aside, covering the construction of a waterpan, two irrigation lines (1.3 km and 1.7 km), fencing, gating, and a two-door toilet.

However, while construction was completed, the project has not been fully operationalized due to vandalism of pipes and the water control chamber. Assessment of the damage has already been conducted by Engineers and are earmarked for repair before official commissioning.

On the issues raised in the Petition regarding the tendering process, denial of oversight documents, lack of public participation among others the County stated as follows-

### **Response to Allegations:**

- i. **Project Scope Misunderstanding:** The county clarified the project was solely for irrigation, not for clean drinking water.
- ii. **Alleged Irregularities:**
  - o The procurement followed legal procedures; allegations of conflict of interest are denied.
  - o Project documents were available to the Project Management Committee (PMC).
  - o Public participation was conducted and documented.
  - o Claims that pipes were improperly installed and leaking were attributed to vandalism, not poor workmanship.
  - o Embankment walls were deemed stable and safe, even after heavy rains.
  - o An engineer registered with the Engineers Board of Kenya oversaw the project.
  - o A temporary site office existed; the absence of a permanent office did not hinder the project.

On concluding their presentation, they stated that a group of engineers have developed new plans and bills of quantities for the repair and enhancement of the irrigation system. A new procurement process has begun, and the project is expected to be fully operational within two months.

The Vice Chairperson then invited the Petitioners representatives to air their grievances on the matters as informed by the County Government.

The Petitioners and residents who spoke, stated that from the initiation of the project local labor or resources was never sourced, denying them working opportunities. Equally, women shared their struggles on lack of access to clean water thus having many instances where members of the community fall ill.

Members noted that the whole project raises questions in terms of how the funds were utilized and value for money.

The Committee resolved as follows -

- i. To summon the Governor, Busia County and all mentioned parties to provide further insight on the detailed expenditure regarding the utilization of the 19 million that was spent in the construction of the Dam;

- ii. The Chief of Officer of the Department of Agriculture and Fisheries Development in Busia County Government to submit the BQs to the secretariat within 7 days; and
- iii. Invite the EACC arising from concerns regarding misuse of public resources.

**MINUTE SEN/LENR/293/2025**

**ANY OTHER BUSINESS**

There was no other business discussed.

**MINUTE SEN/LENR/294/2025**

**ADJOURNMENT AND DATE OF  
NEXT MEETING**

The meeting was adjourned at 6.25 pm. The date of the next meeting was to be called on notice.

SIGNED: .....



DATE: 17/07/2025

**SEN. MOHAMED MWINYIHAJI FAKI, CBS, MP**

**CHAIRPERSON**

**STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL  
RESOURCES**



**MINUTES OF THE FIFTY FOURTH (54<sup>TH</sup>) SITTING OF THE STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL RESOURCES HELD ON WEDNESDAY, 15<sup>TH</sup> NOVEMBER, 2023 IN COMMITTEE ROOM 4, FIRST FLOOR, MAIN PARLIAMENT BUILDINGS AT 8:30 AM**

**PRESENT**

- |  |                    |
|--|--------------------|
| 1. Sen. (Dr.) Steve Lelegwe Ltumbesi, MP | - Vice Chairperson |
| 2. Sen. Wamatinga Wahome, MP             | - Member           |
| 3. Sen. Beatrice Akinyi Ogola, MP        | - Member           |
| 4. Sen. Mariam Sheikh Omar, MP           | - Member           |

**ABSENT WITH APOLOGIES**

- |  |               |
|--|---------------|
| 1. Sen. John Muhia Methu, MP               | - Chairperson |
| 2. Sen. William Cheptumo Kipkiror, CBS, MP | - Member      |
| 3. Sen. Johnes Mwashushe Mwaruma, MP       | - Member      |
| 4. Sen. Issa Juma Boy, MP                  | - Member      |
| 5. Sen. Agnes Kavindu Muthama, MP          | - Member      |

**IN ATTENDANCE**

**A. FRIEND TO THE COMMITTEE**

1. Sen. Okiyah Omata, MP

**B. PETITIONERS**

1. Mr. Thomas Crispin
2. Mr. Bildad Masake
3. Mr. Cornel Ebu
4. Mr. Cleophas Okisai

**C. STAREHE BOYS CENTRE STUDENTS**

1. Mr. Hockings Juma
2. Mr. Yasir Adam
3. Mr. Roy Victor Tana

#### **D. SECRETARIAT**

- |                       |                        |
|-----------------------|------------------------|
| 1. Mr. Victor Bett    | - Clerk Assistant I    |
| 2. Ms. Ivy Nyambura   | - Clerk Assistant III  |
| 3. Ms. Angela Kagunyi | - Legal Counsel II     |
| 4. Mr. John Gichia    | - Research Officer III |
| 5. Ms. Keziah Muthama | - Fiscal Analyst III   |
| 6. Ms. Shirley Milimu | - Audio Officer III    |

#### **MINUTE SEN/LENR/309/2023**

#### **PRELIMINARIES**

The Chair called the meeting to order at 8:55 am. This was followed by a word of prayer.

#### **MINUTE SEN/LENR/310/2023**

#### **ADOPTION OF THE AGENDA**

The agenda of the meeting was adopted after having been proposed by Sen. Beatrice Akinyi Ogola, MP and seconded by Sen. Mariam Sheikh Omar, MP as follows-

1. Prayer;
2. Adoption of the Agenda;
3. **Meeting with Petitioners on the Petition regarding the Changara Water Pan, a World Bank funded project in Busia County;**
4. Any Other Business; and
5. Date of the Next Meeting and Adjournment.

#### **MINUTE SEN/LENR/311/2023**

#### **MEETING WITH PETITIONERS ON THE PETITION REGARDING THE CHANGARA WATER PAN, A WORLD BANK FUNDED PROJECT IN BUSIA COUNTY**

The Petitioners began by submitting the documents and giving a brief background on their initial engagement with World Bank who had visited Changara to undertake a feasibility study on whether a water pan could be constructed in order to address the challenge of access to water for domestic use and thus welcomed the opportunity and consented to the project. However, the petitioners reported seeing excavators on the project site without prior communication that would allow community engagement and the formation of a committee to allow transparency and oversight of the project.

The Committee was eventually formed after a lot of protest from the community but they were denied oversight tools that had initially been promised. They went on to involve the Busia County Government with a number of officials visiting the site but wound up siding with the contractors who were undertaking the project despite concerns environmental

pollution. The residents raised concerns that went un answered within the environs of the project and the underwhelming standards of construction that was taking place.

The Committee inquired further on the documents submitted by the Petitioners to get better clarity and noted with concern that there was indeed discrepancies and variances between what the Petitioners were saying and the Bill of Quantiles (BQ).

Further, it was noted that there was a lot of disconnect on how the project was conducted and that the photos shared showed an incomplete water pan.

On further deliberations the Committee resolved to-

- i. Conduct a site visit to Changara Water Pan in Busia County to ascertain the concerns raised by the petitioners;
- ii. Seek for documents relating to the Changara Water Pan project from the Busia County Government including the completion and handover certificates given to the contractor on handing over the project, if any; and
- iii. Seek for the initial specifications and Bill of Quantities Plan from the World Bank.

**MINUTE SEN/LENR/312/2023**

**ANY OTHER BUSINESS**

The Committee proposed to retreat to Mombasa County from Thursday 23<sup>rd</sup> to Sunday 26<sup>th</sup> November, 2023 to consider the four (4) Bills pending before the Committee.

**MINUTE SEN/LENR/313/2023**

**ADJOURNMENT AND DATE OF NEXT MEETING**

The meeting was adjourned at 9:30 am. The date of the next meeting was to be called on notice.

Signed:  Date 15/02/2024

**SEN. JOHN MUHIA METHU, MP**  
**CHAIRPERSON**  
**STANDING COMMITTEE ON LAND, ENVIRONMENT AND NATURAL**  
**RESOURCES**

Annex II:  
Submissions  
by key  
Stakeholders



COUNTY GOVERNMENT OF BUSIA  
OFFICE OF THE GOVERNOR  
P.O. PRIVATE BAG – 50400  
BUSIA, KENYA



May 29, 2025

**The Clerk of the Senate  
Clerk's Chambers  
Parliament Buildings  
P O Box 41842-00100  
Nairobi**

Dear Sir,

**RE: RESPONSE TO THE PETITION REGARDING THE CHANGARA WATER PAN-A WORLD  
BANK FUNDED PROJECT IN BUSIA COUNTY.**

Reference is made to the letter authored by the Clerk of the Senate Ref: **SEN/DSEC/DPEAC/LENR/2025(3)(170)** dated 12<sup>th</sup> May 2025 regarding the above matter. The County Government of Busia submits herewith its Response to the issues raised in the Petition as hereunder.

**Background Information On Changara Waterpan Project**

1. The project was funded with the aim of solving the constraints to Agricultural production in the County such as over-reliance on rain-fed agriculture, storage & utilization of rain water for irrigation.

***See Figure 1.***

2. The specific objectives of the project were:
  - i. Increase area of land under irrigation for crop production
  - ii. Reduce crop failure due to dry spells and over-reliance on rain-fed agriculture
  - iii. Improve livelihoods
  - iv. Increase crop production and productivity

**Project Location:** Teso North Sub County, Angurai East Ward  
**Start Date:** 16<sup>th</sup> July 2019

**Scope:**

Construction of Waterpan, installation of 3 KM irrigation line, fencing and gating of Waterpan and Construction of Two-Door Toilet

**Implementation Status**

**To date,**

- The Water pan was constructed
- 2 lines of Irrigation system installed (**1.3km and 1.7km**)
- Water pan fenced and gate installed
- 2-door toilet constructed
- Number of direct beneficiaries: 41 farmers
- Total acreage earmarked for irrigation: 100 acres.

**Utilization status of the project:**

- A section of the irrigation system is vandalized.
- The outlet water control chamber is damaged.

In view of the above, the County Government submits the following as its Response to the issues raised in the Petition.

**RESPONSES TO ISSUES RAISED IN THE PETITION.**

1.1 Changara Waterpan project was funded to the tune of Kshs. 24.8 Million

**This is correct. The project included the following components:**

**a) Changara Waterpan Project costed at Kshs. 19,903,203. The LSO is attached**

**Folio 01**

**b) Other components were as follows:-**

- i) Fencing and gating at Ksh. 1,242,724.9**
- ii) Piping at Ksh. 3,157,643.5**



**iii) Construction of 2-Door Toilet at Ksh. 346,000**  
**Total Contract Sum for the Whole Project was Ksh. 24,676,562.**

1.2 The project was implemented by The County Government of Busia through the Department of Agriculture and Fisheries Development.

**This is correct. the Project was implemented by The County Government through the Department of Agriculture and Animal Resources.**

1.3 The project was to benefit more than 5,000 families living in Changara through the clean piped water and irrigation.

- a) **The overall objective of the Changara Waterpan project was to increase crop production through irrigation.**
- b) **It did not have a clean piped water component for human consumption. This was explained to the members of the public during the inaugural public participation baraza held on the 31<sup>st</sup> of October 2019**

**See Folio 2**

- c) **The scope included excavation of the waterpan and laying of two piped irrigation lines, fencing, gating and construction of 2-door toilet and Bathroom.**
- d) **The project was to benefit 41 households and a coverage of 100 Acres as per the attached proposal**

**See Folio 03**

1.4 The project has not been completed.

- a) **The project was completed as per the design and bills of quantities. It has not been operationalized due to vandalism of some crucial piping components. These have been assessed for repair.**
- b) **The Departmental Agricultural Engineers conducted an assessment of the extent of vandalism and the report is attached herewith.**

**See Folio 04**

1.5 The project has stalled due to massive irregularities.

- a) The project has not stalled. However, the project is not in full operation due to breakages of some pipes that were vandalized. The Project Management Committee (PMC) took cognizance of this fact and convened at the Busia ATC under the guidance of the technical Department to discuss the matter.
- b) The PMC meeting was held on the 19<sup>th</sup> of July 2023 at the ATC. Members agreed to do resource mobilization to realize full benefit of the project to the people of Changara. The minutes are attached herewith. The PMC agreed on the handing over date and discussed sustainability measures of the project.

See **Folio 05**

## **2. RESPONSES TO ALLEDGED IRREGULARITIES**

2.1 There was conflict of interest during awarding of the contract since the contractor was a relative of the then sitting Member of County Assembly of Namboboto Ward, Samia Sub County.

- a) **Response: The award of the tender was done following the laid down procurement procedures using the Request For Quotation Method.**
- b) **The tender evaluation report and notification of award is attached herewith. The tender was awarded to the most responsive and lowest bidder.**

See **Folio 06a**

2.2 The Project Management Committee was denied oversight documents, Bills of Quantities, Plans and Environmental Assessment report.

- a) **The project-related documents were available and are still available for scrutiny by the Project Management Committee upon request through the project manager.**
- b) **Reference was made to these documents in all the PMC meetings and public participation meetings. The department has not received any formal request to avail the said documents. The documents including bills of quantities, plans and ESIA reports are attached herewith**

See **Folio 06b**

2.3 The size of the approved waterpan is unknown to the public but what was constructed covers a very small area and it is shallow, making it unviable.

- a) **The approved proposal and concept stated the size of the waterpan as 56,000 cubic meters. The design and construction ensured that this was attained. The design is attached herewith**

**See Folio 07**

2.4 The pipes drawing water from the waterpan to the beneficiaries' farms are all exposed since they were not laid to the recommended depth.

- a) **The pipes were laid to the required depth and specification. Photos of the pipe laying during the construction are attached**

**See Folio 8, 9, 10**

2.5 The project was conceived and implemented without public participation.

- a) **There was public participation by the residents of Changara before the initiation of the project. The minutes and attendance lists are herewith attached.**

**See Folio 11**

- b) **Community members welcomed the project as stated in the stakeholders meeting on the 15<sup>th</sup> of January 2021**

**See Folio 12**

2.6 The project Management Committee was ignored by employees of the Busia County Department of Agriculture who were manipulating the project.

- a) **The Project Management Committee was fully involved in the implementation of the project as per the attached minutes. The PMC was trained on project management as per the attached**

**See Folio 13**

2.7 The pipes drawing water to the waterpan to the beneficiaries' farms are all exposed, since they were not laid to the recommended depth.

- a) **The pipes were properly laid to the required depth. Photos of the said piped during and after laying are attached herewith.**

**See Folio 14**

2.8 Most of the pipes are already leaking despite the project not having been completed.

- a) **There have been cases of vandalism on the projects' pipes hence causing leakages. Provision of security to the project assets and equipment was part of community contribution.**

2.9 People downstream are and will be in considerable danger of being washed away if the embankment walls collapse since the walls were not properly compacted

- a) **The embankment walls were properly compacted hence are very stable and this could be seen when there was heavy rains and high volumes of water. There is regular assessment by The Department's Engineers.**

2.9.1 The contractor did not have an independent site engineer, instead relied on the Agriculture Departmental Engineers who were reasonably termed compromised

- a) **The project manager was a competent Engineer registered by the Engineers Board of Kenya. Attached is the appointment letter. (Folio 15) The allegation of them being compromised cannot be ascertained since these are individuals of high moral standing in the society.**

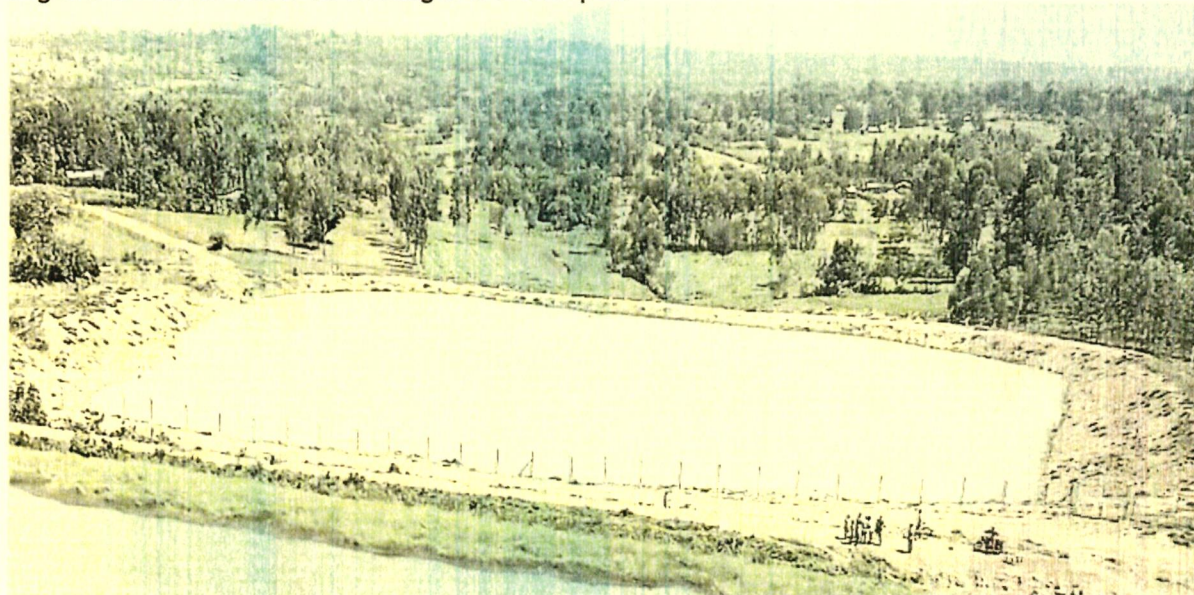
2.9.2 The contractor did not have an independent site office, making it impossible for any necessary intervention

- a) **There was a temporary site office**

2.9.3 The feeder roads passing through the project sites were blocked causing unnecessary inconveniences and accidents to the residents.

- a) **The embankment was properly compacted and leveled and is in use by the public as a major road hence opening up the area and easing transportation of people and goods.**

Figure 1. Aerial View of Changara Waterpan



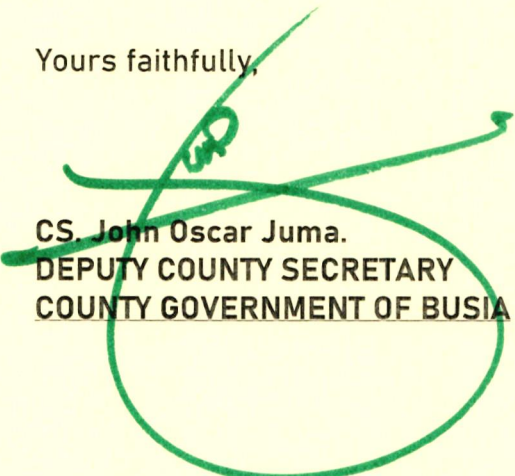
### **Measures Being taken By The Department Of Agriculture To Ensure Full Utilization Of The Project**

1. On the 14<sup>th</sup> and 15<sup>th</sup> of January 2025 a group of Engineers visited the site to ascertain the levels of vandalism that were impeding the operationalization of the project.
2. On the 19<sup>th</sup> of March 2025, public participation and Environmental and Social Impact Assessment was done and members expressed their desire to have the project operationalized.
3. The Engineers developed a design of operationalization of the project and installation of irrigation sprinklers.
4. The Engineers developed a Bill Of Quantities For The repair and operationalization of the project
5. Project approved for completion through the NAVCDP Project
6. Procurement process for award to begin immediately. Documents already prepared.

7. The Project to be operational in two months

The County Government of Busia appreciates the role played by the as an oversight organ respective to the functions of the County. We assure you of our resolve to abide by the recommendations made following the deliberations on the subject Responses.

Yours faithfully,



CS. John Oscar Juma.  
DEPUTY COUNTY SECRETARY  
COUNTY GOVERNMENT OF BUSIA









F-2

KENYA NATIONAL CHARTER AGRICULTURE PROJECT



Kenya Climate Smart Agriculture Project (KCSAP) COUNTY LEVEL COORDINATION UNIT BUSIA COUNTY



Plot 1000 BUSIA (K) kcsap@busia.go.ke

MINUTES OF KCSAP COUNTY LEVEL CTAC PUBLIC PARTICIPATION AND ELECTION OF CHANGARA WATRE PAN SUB PROJECT MANAGEMENT COMMITTEE MEETING HELD ON 31ST OCTOBER 2019 AT CHANGARA CHIEF'S OFFICE GROUNDS.

Members present.

Table with 3 columns: NO., NAME, DEPARTMENT. Lists 11 members including Mr. Samson Khachina, Dr. Allan Ogendo, Mr. Maurice Okisegere, Mr. Alfred Makokha, Mr. Samuel Omijo, Mr. Jim Osiromo, Mr. Levi K Eloit, Mr. Linus Osangiri Jakar, Mr. Chemuor K Abel, Mr. Emmanuel Otwani, and Members of the Community-34.

Absent with apology.

- 1. Eng Richard Achiambo - Chief Officer, Department of Agriculture & Animal Resources.

Agenda.

- 1. Opening prayer and Introduction.
2. Remarks from the Project Coordinator and Chair of CTAC
3. Criteria for selection of Project Management Committee and their Roles.
4. Election of Chairman, Secretary and other Management Committee members.
5. A.O.B

Min. 1/31/10/2019: Opening Prayer and Introduction

The meeting was called to order by ward Agriculture Officer at 10.30am and a word of prayer from Mr. Kevin Adwera. This was followed by a self-introduction, starting with community members, ward officers and KCSAP team. The area Chief welcomed the visitors, farmers to the meeting and appreciated KCSAP project through department of Agriculture, Busia county for identifying and selecting Changara water pan for expansion.

5-7

**Min. 2/31/10/2019: Remarks from the County Project Coordinator and County Director of Agriculture**

The County Project Coordinator apologized for coming late to the gathering of the road by members of public who were demonstrating along Busia –Malaba Road.

He appreciated them for being patient. He emphasized the importance of Changara Water pan once complete will serve the community with water for domestic use, watering livestock and irrigation (horticulture). He requested support and good will of the community to ensure that the project succeeds. Community participation was very key and a requirement for success. He told the gathering that the objective of the meeting was for public participation and representation of the Project Management Committee who will work closely with KCSAP and the Technical Department in during and after project implantation on behalf of the community.

**Remarks by County Director of Agriculture**

The director emphasized the use of water pan by all community members both upstream and lower stream to avoid conflicts in future. He told the gathering that the irrigation project was targeting setting up a water pan and 100 acres of land in two blocks for irrigation for vegetables production. This was targeting increasing agricultural productivity, improved household incomes, and food and nutrition security.

The community was told to elect the management committee to manage the project and take care of their interest in the project.

**Remarks by Ward Administrator**

Told the community to avoid politics and complains, which delays project implementation. He informed the public that it was their choice to elect a new or re-elected management committee and the Project Management Committee (PMC) was to serve the people in view of their special interests.

**Min. 3/31/10/2019: Election of Project Management Committee and Sub Committees and their Roles.**

The Monitoring and Evaluation officer made a presentation on the Criteria and their roles of the Project Management Committee in the implementation of the sub-project.

**Criteria for selection of the PMC Members and their Roles**

- Election of members should be gender sensitive.
- High integrity (well-respected, honest and willing to accept their responsibilities).
- The sub-committees will be answerable to the PMC through their chairs.

The executive committee of the PMC (Chair, Secretary and Treasurer) will perform the role of finance sub-committee.

- (i) Executive/Finance committee.
- (ii) Social Audit and Integrity Committee (SAIC).
- (iii) Procurement Committee

Each sub-committee will be composed of 3 members: chair person, secretary and treasurer

#### **Executive/ Finance Sub-Committee**

- i. Prepare all books of accounts including the cash book, community contribution book and budget control summaries.
- ii. Keep all financial records including payment vouchers, bank statement and reports.
- iii. Report all financial transactions to the PMC.
- iv. Prepare financial progress reports.
- v. Display all financial information on the display board.
- vi. Provide all accounts and records to the Social Audit and Integrity sub-committee for auditing.

#### **Social Accountability and Integrity Sub-Committee (SAIC)**

1. Responsible for social audit of activities in the project.
2. Ensure that the PMC and community sub-committees constantly follow the agreed upon guidelines, rules and procedures in their operation.
3. Verify PMC books of accounts.
4. Report any financial irregularities with suggestions for corrections to the PMC.
5. Conflict resolution between the members/Beneficiaries.
6. Maintaining complaints log register.
7. Collect more information about complaints, conflicts and other issues when called upon by the PMC or the KCSAP project.
8. Present their reports on the operations of the PMC and community sub-committees to the entire community.
9. Suggest ways of correcting the errors and deviations in the functioning of the community committees.
10. Participate in monitoring the progress of project interventions.

#### **Procurement Sub-Committee**

The Procurement sub-Committee will consist of 3 members.

Two thirds of the total membership will constitute a forum for business to be conducted.

Responsibility for the Procurement sub-Committee (PSC) will be as follows:

- (i) Assist the PMC in the procurement of materials, goods and services for micro- projects as per their procurement plan.
- (ii) Prepare plans so as to guide procurement activities within the context of the work- plan.
- (iii) Carry out procurement in line with the principles of value for money, efficiency, equal opportunity, and transparency.

(iv) Ensure that all the procured goods, supplies and works will be handed over to the PMC for the Sub-project implementation.

(v) Keep all the procurement related records.

(vi) Follow up on the guarantees or complaints on the procured items.

(vii) Report the details of procurement to PMC.

(viii) Enter all the items procured in the stock register.

**Election of the PMC members:**

The Community agreed to carry out election of the 13 PMC members, three being ex-officio (GOK/COG) officers and 10 community members based on their three sub locations; Changara, Akobwait and Aterait Sub locations. Each s/location was allocated 3 slots apart from the Akobwait which is the host of the project was allocated 4 slots in the PMC.

The following were elected as members of the Changara water project PMT and its sub committees as indicated below

**CHANGARA WATER PAN -PROJECT MANAGEMENT COMMITTEE MEMBERS:**

No	Name	ID	TEL	SUB COMMITTEE	POSITION	S/LOCATION
1	Bildad Masake	24412371	0713203872	Executive	Chair person	Changara
2	Livingstone Otwane	2314056	0727782773	Executive	Secretary	Akobwait
3	Phauzia Issa	7908179	0723124548	Executive	Treasurer	Aterait
4	Cornell Ebu	2806110	0706813806	SAIC	Chair Person	Aterait
5	Thomas Ipalei	27211635	0703902803	SAIC	Secretary	Changara
6	Carol Ikate Otwane	37476327	0798381669	SAIC	Treasurer	Changara
7	Tobias Cheseto	28707512	0701053876	Procurement	Chair Person	Akobwait
8	Douglas Omande	2975290	0703806495	Procurement	Secretary	Aterait
9	Gladys Nakhungu	21607355	0724406682	Procurement	Treasurer	Akobwait
10	Boniface Emuruon Okwamong	27114580	0757667625	-	Member	Akobwait
11	Jim Osirom		0799260136	-	Ex Officio	Chief
12	George O. Ikwara	10706244	0713414680	-	Ex Officio	Ward Admin
13	Emmanuel Otwane	29482368	0714798591	-	Ex Officio	Ward Agric. Officer

**Min. 4/31/10/2019: A.O.B.**

Being no other business, the meeting was closed with a word of prayer from Mrs. Everlyne Ayoroh at 4.30 pm.

Chairperson: *Samson Abachina* Date: *31/10/2019* Sign: *Abachina*

Secretary: *Alfred Makwani* Date: *31/10/2019* Sign: *Alfred*

hydraulic conductivity (0.002-0.02m/day). Therefore the soils have impeded internal drainage and because of the relatively gentle ground slope experience temporary ponding during the rainy seasons. The soils are 1.6-2m deep with a thin murrum layer at a depth of about 1.6m

### 2.3 Climate

The area belongs to the lower midland in the ecological zone LM3 (marginal sugar cane zone with a long cropping season followed by a (weak) medium to short one and intermediate rains. The rainfall ranges from 1200mm to 1500mm per year. The long rain is from March to May while the short rains are from September to November.

Evaporation averages 1600mm to 2200mm over a 10 year period. The temperatures average to 22°C over the year from maximum of 30°C to a mean minimum of 17°C. The hottest months are January and February while the wettest are April and May.

Table 1: 1: Rainfall figures for station 8434111: Angurai Chief's center

Month	Rainfall (mm)	ET	Excess Rainfall (mm)	Deficit rainfall (mm)
January	89	180		91
February	83	163		80
March	152	179		27
April	260	157	103	
May	268	149	119	
June	110	129		19
July	101	134		33
August	135	148		13
September	171	152	19	
October	222	166	56	
November	170	155	15	
December	92	170		78

#### Average Evapotranspiration (ET<sub>o</sub>)

Month	Average potential evapotranspiration (ET <sub>o</sub> )										
	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov
180	163	179	157	149	129	134	148	152	166	155	170

## *2.4 Hydrology*

All the runoff from the hills collects into channels in the valleys which then drain into R. Malaba. Some parts have a seasonal water logging problem hence the water table is above the ground level twice in a year. The catchment area is approximately 50 ha.

## *2.5 Present Situation*

### *Land tenure and land holding*

Land has been adjudicated and registered in the area and is now in freehold ownership. Each farmer has his own title deed. Average family holding is 1.6ha.

### *2.5 Present situation of agriculture*

The predominant land use in the well drained area is smallholder cropping and livestock systems. The farmers practice subsistence farming where they grow beans, groundnuts, cassava, maize, cowpeas, kales, and sorghum. However, they grow tobacco and cotton in the short rains. Fruit trees like mangoes are grown not so much for commercial purposes but to provide shade at home and for home consumption. Sugarcane production has been introduced in the area in the recent past and this has led to encroachment to low lying lands that were traditionally used as dry season grazing fields.

The main trees grown in the well drained areas Grevillia, Eucalyptus, Mangoes and Citrus trees.

The access roads have been demarcated but no improvements have made.

The main land use in the poorly drained area is dry season grazing of natural pasture. The main irrigated crops are French beans, Asian Vegetables, tomatoes, onions, peas and kale. Bananas, sugar cane and arrow roots are grown along the river. Maize, beans, pigeon peas, cassava, sorghum and sweet potatoes are grown on plots where drainage has been developed. Few Grevillia and sesbania trees are growing in the poorly drained area.

The major problem facing the farmers is the shortage of water during the dry season.

## *2.6 Crop Production*

The preliminary indications are that the soils are fertile and suitable for crop and pasture production, when water is available for irrigation. The high water holding capacity of the soil provides sufficient soil water (water holding capacity of 200mm/m) to satisfy the crop water requirements for a substantial period during the dry season (an additional 20 days at an Etc 5mm/day assuming 50% of the water to be readily available). Irrigation development is expected to increase crop yield, allow for the introduction of high value crops and reduce crop loss due to dry spells..

Cash crops grown are paw paw, mangoes and citrus trees; kale, peas, French beans, tomatoes, onions and sugarcane.

Food crops grown are maize, beans, sweet potatoes, sugar cane, bananas, sorghum and cassava.

The pastures are sweet potato vines, napier grass, Rhodes grass, sesbania.

Trees (Gravellia robusta, Sesbania sesbia and Eucalyptus)

Fruit trees (Mangoes, jack fruit, pawpaw)

## *2.7 Livestock Production*

Most of the poorly drained area is currently used as dry season grazing area by the farmers owing the nearby well drained farms. The grass biomass production is high and the area can support one livestock unit per hectare in its natural state so long as an alternative feed for the wet season could be found. It is however envisaged that as the population grows, the current free access to the natural pasture will be curtailed and farmers currently using this land forced to develop alternative source of fodder.

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## Chapter 3.

### 3. THE PROJECT PROPOSAL

#### 3.1 *Scope of the project*

##### Project Objectives

- i. The main goals of the proposal project are
- ii. Increase land area of land under crop production
- iii. Reduce crop failure due to dry spells
- iv. Improve the living standards of the community
- v. Reduce distance covered to reach water points
- vi. Increase crop yields.

These goals will be achieved by planning and implementing a water storage project that meets the requirements of the farmers and environmental conservation and that is affordable.

The farmers have a lot of effort to grow crops throughout the year to be food secure. However, due to lack of technical knowledge, they did not succeed in making an effective irrigation system. Thus, it is proposed that to reduce the cost / time of implementation rehabilitation of the old pan to store water and act a silt trap and construction of a new water pan will be carried out. The new water pan will a capacity of 56,000m<sup>3</sup>.

Two main, Four secondary pipelines and field distribution lines will form the major conveyance system. Their purpose is to convey the harvested water originating from the pans to the farms for irrigation, livestock and domestic use. This will greatly reduce the distance covered to reach a water point.

### 3.2 Proposed Land Use

In order to promote self-sufficiency the farming system is expected to provide the household with the basic requirements, namely: food, firewood, fodder and cash. The proposed land allocation per enterprise is presented in table 2. Land use is expected to vary from farm to farm as the priorities allocated to various enterprises differ. For the design purpose, the model land proposed (see figure 3) changes slightly from season to season.

Food crops are expected to occupy 0.8 ha during the 1<sup>st</sup> cropping season. Following a successful crop, the farmer can reduce the area under food crops during the second season. The area taken out of food crop production can be used for increasing area under cash crop and grazing (if some Stover could be grazed). A five year rotation program is proposed (see table 3). Anticipated crop yields for some crops are presented in table 4).

Although trees are currently planted along the farm boundary and in homesteads it is recommended that more should be planted as shown in figure 3. Eucalyptus will be used to provide the household with its fuel wood needs, Grevellia will provide mulching material (from annual pruning), poles and timber needs after 10 years, while sesbania will provide livestock fodder needs (particularly goats).

Table 3:1: Allocation per enterprise

Enterprise	Land area (ha)	
	1 <sup>st</sup> cropping	2 <sup>nd</sup> cropping
Food crops	0.8	0.6
Cash crops	0.4	0.6
Pasture	0.3	0.3
Homestead and trees	0.1	0.1

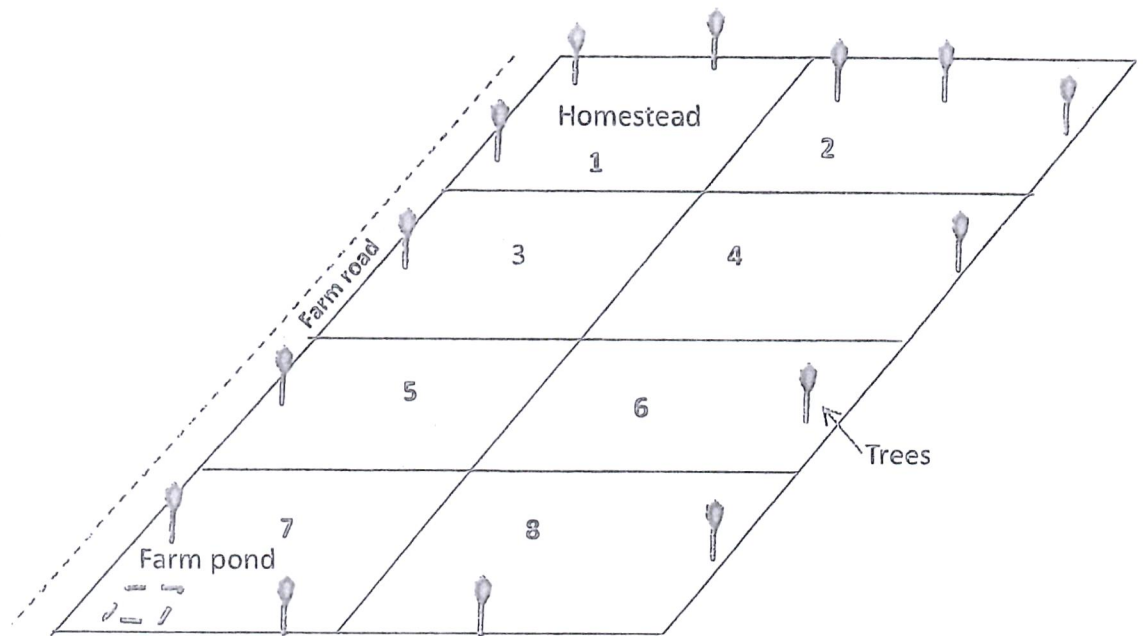


Figure 3.1: Land use plan on a model farm

Table 3: 2: Farm rotation program

Plot Number	YR1		YR2		YR3		YR4		YR5	
	S1	S2	S1	S2	S1	S2	S1	S2	S1	S2
2	FC	FC	CC	CC	FC	CC	FC	P	FC	FC
3	FC	FC	FC	FC	CC	CC	FC	CC	FC	P
4	FC	P	FC	FC	FC	FC	CC	CC	FC	CC
5	FC	CC	FC	P	FC	FC	FC	FC	CC	CC
6	CC	CC	FC	CC	FC	P	FC	FC	FC	FC
7	Pasture									
8	Pasture									
1	Homestead and trees									

Legend: YR-year, S- Season, FC-Food crops, CC-Cash crops, P-Stover feeding

Table 3:3: crop yields

Crop	Yields (Kg)	
	Before irrigation	After irrigation
Maize	6,000	15,000
Beans	360	600
French beans	1,000	10,000
Tomatoes	2,000	20,000
Kales	3,000	10,000

### ***3.3 Irrigation Development***

The period of excess and deficit water situation is presented in table 1. The main source of excess water are surface runoff from the well drained catchments area and in-situ rainfall. The excess rain water shall be stored in the water pan and be used during times of shortage.

### ***3.4 Proposed catchments protection***

Runoff from the well drained catchments area can be reduced by promoting conservation measures. Efforts will be made to reduce run off by increasing the effectiveness of the soil and water conservation interventions (both structural and non-structural).

District and Divisional Soil Conservation Officers will be consulted to identify possible catchment protection.

### ***3.5 Proposed drainage improvements***

The preliminary analysis of the nature and extent of the drainage problems indicated that the main strategies of controlling excess water are:

1. Cutting off surface runoff from well-drained areas;
2. Evacuating excess in-situ rainfall and
3. Preventing river flooding resulting from lack of a clearly defined flow channel for Ong'aroi river.

### ***3.6 Environmental Conservation***

Sustainable development must ensure that any negative environmental impacts that might result from drainage development are mitigated. In the case of Ong'aroi, the potential impacts and mitigation measures are presented in Table 3.4 and 3.5. Mitigation measures are proposed when the level of severity is significant.

Table 4.1 Runoff coefficient, C

Topography and Vegetation	Soil Texture		
	Open Sandy Loam	Clay and silt loam	Tight clay
<b>Woodland:</b>			
Flat 0-5% slope	0.10	0.30	0.40
Rolling 5-10% slope	0.25	0.35	0.50
Hilly 10-30% slope	0.30	0.50	0.60
<b>Pasture:</b>			
Flat 0-5% slope	0.10	0.30	0.40
Rolling 5-10 slope	0.16	0.36	0.55
Hilly 10-30% slope	0.22	0.42	0.60
<b>Cultivated:</b>			
Flat 0-5% slope	0.30	0.50	0.60
Rolling 5-10% slope	0.40	0.60	0.70
Hilly 10-30% slope	0.52	0.72	0.82
<b>Urban Area</b>	30%of area Impervious	50%of area impervious	
	0.40	0.55	0.65
	0.50	0.65	0.80

Source: Hudson, N. 1995. Soil conservation

#### Determination of rainfall intensity I.

Rainfall intensity I, is read from the rainfall intensity charts.

In order to read the rainfall intensity from the chart, time of concentration  $T_c$  is required.

Time of concentration is defined as the time required for a particle of water to travel from the most hydraulically remote point in the watershed to the point of collection.

Or

The maximum or peak runoff rate from small areas usually results from a rain that covers the area uniformly and lasts long enough so that there is concentration of runoff from all parts of the watershed. The time required for this accumulation of runoff is called  $T_c$ .

Numerous methods exist for estimating time of concentration.

The Kirpichs equation and Dransby Williams's equation were used to determine the time of concentration for purposes of comparison:

Kirpichs equation

$$T_c = 0.0078 \frac{L^{0.77}}{S^{0.385}} \dots\dots\dots 4.1$$

and

Dransby Williams equation

$$T_c = 21.3 \frac{L}{5280A^{0.1}S^{0.2}} \dots\dots\dots 4.2$$

Where

$T_c$  = time of concentration in minutes

$L$  = the maximum hydraulic flow length in feet

$S$  = slope in percent,  $S = L/H$

$H$  = the difference in elevation in feet between the outlet of the watershed and the hydraulically most remote point in the watershed.

Table 4:2: Time of concentration

Area (ha)	Distance L (feet)	S (%)	Kirpich ( $T_c$ in Minutes)	Dransby Williams ( $T_c$ in Minutes)
10	4950	0.007	36.86	42.79
30	7,425	0.006	53.45	59.31

It is noted that Kirpich method yields very conservative or short times of concentration that results in high peak runoff especially from the Rational formula. It is preferred to use the values derived from the Dransby Williams equation.

Having the time of concentration, the rainfall intensity  $I$ , is read from rainfall frequency atlas of Kenya (R. F. A. K 1978) for Bondo (Amukura division lies in this region) for a return period of 10 years follows:

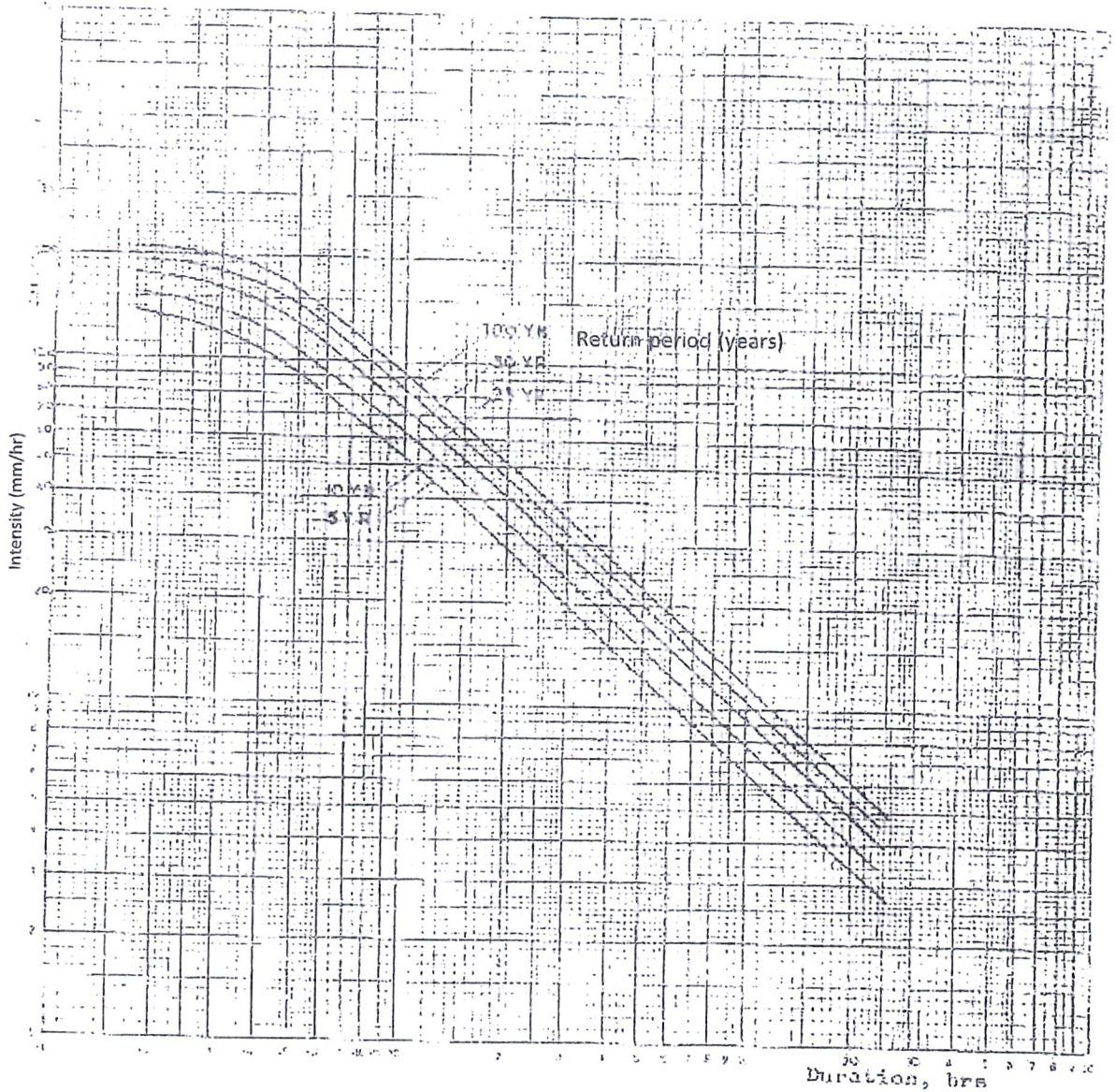


FIGURE A-9. Rainfall Intensity - Duration - Frequency Relationships for Bondo Water Supply Reservoir

Source: Rainfall Frequency Atlas of Kenya. Ministry of Water Development. 1978

Fig 4.2: Rainfall intensity, duration frequency chart for Bondo rainfall station

Table 4.3: rainfall intensity

Area (ha)	Time of concentration, $T_c$ (hours)	Rainfall intensity (mm/hr)
-----------	--------------------------------------	----------------------------

10	0.713	80
30	0.9885	63

### 4.3 Determination of Catchment Discharge

There are two catchment areas with different characteristics. The runoff coefficient for cultivated land 0-5% slope clay and silt loam is assumed to be 0.5 for all the catchments. Substituting the values for A, I, C the resulting runoff values from the well drained catchment areas is given in Table 4.4: catchment areas

Catchment area	Catchment area (ha)	I (mm/hr)	Q <sub>p</sub> (m <sup>3</sup> /s)
A	10	80	1.11
B	30	63	2.625
Total discharge			3.735

### Pan water demands

The various water demands that will be required from the water pan are as follows:

1. Domestic water supply for washing and cooking
2. Livestock watering
3. Irrigation i.e. drip irrigation.
4. Evapo-transpiration
5. Seepage

### Water for Domestic Use

This depends on the particular location of the consumer, which is classified as rural consumer and urban consumer (see table on consumption).

#### Water consumption table

Location	Daily Water consumption rate
Rural consumer	20 ltrs/head/day
Urban consumer	150 ltrs/head/day

Source: Design Manual for Water Supply of Kenya (Ministry of Water dev. 1986a)

With a population of 6000 persons, the daily domestic water requirement will be;

$$= 6000 \times 20 \text{ ltrs/head/day}$$

$$= \underline{120,000 \text{ lts per day} = 120\text{m}^3/\text{day}}$$

Assuming 100 days of no rain at all, human beings will require 12,000m<sup>3</sup>.

#### Water for livestock use

Type and number of livestock.	Daily consumption per animal(liters)	Number of days without rain	Total water Requirement (M <sup>3</sup> )
Milk cows (1,000)	50	100	5,000
Zebu cows (6,000)	27	100	16,200
Goats (3,000)	3	100	900
Sheep (2,000)	5	100	1,000
Chicken (10,000)	0.3	100	300
Total requirement for watering livestock			23,400

#### 4.4 Crop Water Demand (Tomatoes)

Duration of growth 135 days, the planting commences immediately after the rainy season at the onset of the dry spell that is around 10 July of the year. Tomatoes has a high crop water requirement is hereby picked as a representative of all horticultural and cereal crops which will be grown in the 1 acre farm adjacent to the water pans.

Duration and crop factor (K<sub>c</sub>) of Stages of growth of Rice/Tomato

Stage of Growth	Period	Crop factor, (K <sub>c</sub> )
Initial stage	30 days	0.45
Crop dev. Stage	40 days	0.75
Mid season stage	40 days	1.15
Late season stage	25 days	0.80

*Source: Water Requirement for Irrigation in Kenya (Min. of Water Dev. – 1985)*

Evapo-Transpiration factor - E<sub>T0</sub>

E<sub>T0</sub> is the pan evapotranspiration characteristic that was used for the sites from the nearest Meteorological observation station – Angurai Chief's office weather station.

Calculations for Tomato/Rice Crop Water Requirement

Month	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
E <sub>T0</sub> (mm/day)	6.2	6.6	6.4	5.5	5.2	4.8	4.6	5.2	5.6	5.8	5.5	5.9
Crop stages							I	II	III		IV	
K <sub>c</sub> per gr. St.							0.45	0.75	1.15		0.80	
K <sub>c</sub> per month							0.45	0.64	0.91	1.15	0.80	
E <sub>Tc</sub> (mm/day)							2.07	3.32	5.10	6.67	4.4	
E <sub>Tc</sub> (mm/month)							64.17	103.0	153.0	206.8	110	
Days month	31	28	31	30	31	30	31	31	30	31	30	31
Demand volume (m <sup>3</sup> ) for 10 acre							2566.8	4120.0	6120.0	8272.0	4400.0	

Evapotranspiration demand

The topography survey conducted found the reserve space for the water pan to be 153 m by 84 m which gives a surface area of about 12,000 m<sup>2</sup>.

**Table: Calculations for Evapotranspiration Demand**

Month	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec
ET <sub>o</sub>	180	163	179	157	149	129	134	148	152	166	155	170
Demand ET <sub>o</sub> for pan 12,000m <sup>2</sup>	2160	1956	2148	1884	1788	1548	1608	1776	1824	1992	1860	2040

#### 4.5 Estimation of runoff volume

Month	Rainfall (mm)	Runoff coefficient	Runoff volume		Total	Cumulative
			10ha catchment	30ha catchment		
January	89	0.4	3560	10680	14240	14240
February	83	0.4	3320	9960	13280	27520
March	152	0.4	6080	18240	24320	51840
April	260	0.4	10400	31200	41600	93440
May	268	0.4	10720	32160	42880	136320
June	110	0.4	4400	13200	17600	153920
July	101	0.4	4040	12120	16160	170080
August	135	0.4	5400	16200	21600	191680
September	171	0.4	6840	20520	27360	219040
October	222	0.4	8880	26640	35520	254560
November	170	0.4	6800	20400	27200	281760
December	92	0.4	3680	11040	14720	296480
Total			74120	222360	296480	

#### . Infiltration demand

Infiltration rate is taken to be less than 5 mm/hr and therefore it will not be considered for this case. This is augmented by the fact that the existing pan does not exhibit severe water loss due to deep percolation.

#### Reservoir capacity

The size of the pan to be constructed determined by the analytical method. The greatest deficit of water gives the size of the pan. Multiplying rainfall by the catchment area and a factor of 40% gives the available water for storage. This also gave the dimension of the pan.

Month	Rainfall (mm)	Total Runoff (m <sup>3</sup> )	Cumulative runoff (m <sup>3</sup> )	Human and livestock demand (m <sup>3</sup> )	Irrigation demand (m <sup>3</sup> )	ET <sub>o</sub> (m <sup>3</sup> )	Deficit (m <sup>3</sup> )	Cumulative deficit (m <sup>3</sup> )
January	89	14240	14240	35400		2160	23320	21160
February	83	13280	27520	35400		1956	24076	45236
March	152	24320	51840	35400		2148	13228	58464
April	260	41600	93440	35400		1884		
May	268	42880	136320	35400		1788		
June	110	17600	153920	35400		1548	19348	19348
July	101	16160	170080	35400	2566	1608	20848	40196
August	135	21600	191680	35400	4120	1776	15576	55772
September	171	27360	219040	35400	6120	1824	9864	65636
October	222	35520	254560	35400	8272	1992	1872	67508
November	170	27200	281760	35400	4400	1860	10060	77568
December	92	14720	296480	35400		2040	22720	100288
Total		296480			25478	22584		

A reservoir of capacity 100,288m<sup>3</sup> is required to satisfy the all the needs of the people of Changara. For a depth of 3.5m the required area is 169m \* 169m.

From the topographic survey undertaken a pan area of 12,000m<sup>2</sup> is available to store 56,000m<sup>3</sup> of water. This means that a second water pan has to be constructed adjacent to the above to store the remaining 44,288m<sup>3</sup> of water.

There is an existing pan that is being used now but its capacity not known. Nevertheless, this existing pan may be used a silt for the new pan.

#### 4.6. Pan design

##### Pan axis

From the map of the area, we can able to see the highest and the lowest points of the site. The contours show the constriction where the embankment wall would require the least fill material.

##### Embankment

From the dam axis, it can be depicted that the pan will be on the lower point of the area, hence the embankment is in the straight line. This shows the location of the pan axis which was selected in a way to minimize the fill material. The best location is shown on the map.

##### Embankment height

The height was obtained from the elevation difference of the area.

Highest point=1376m

Lowest point=1372m

Height (Z) =4m (<5m, Ok.)

##### Crest width

Crest width was calculated from the embankment height as shown below.

$$W = (Z/5) + 3$$

$$= (4/5) + 3$$

$$= 3.8\text{m}$$

4m used because machinery is used in the construction of the pan.

#### Crest length

The alignment was selected basing on the contour layout to give the shortest crest length and allow for the economical location of the spillway route. The crest length taken to be 180m from the dimension of the pan.

#### Pan freeboard

It was determined by calculating the following parameters; wind set up, significant wave height and wave run up.

Assuming a maximum wind speed of 130km/day for Changara

#### Wind set up

The fetch and depth found from the pan size, shown above thus wind set up calculated using the formula:

$$Z_s = (V_w^2 * F) / (63,200 * d) \text{ meters}$$

$$\text{Pan fetch (F)} = 180\text{m}$$

$$\text{Mean wind speed (V}_w) = 130\text{km/day} = 5.41\text{km/hr}$$

$$\text{Reservoir depth (d)} = 4\text{m}$$

$$Z_s = (4.752 * 180) / (63,200 * 4)$$

$$= 0.0033\text{m}$$

#### Significant wave height

Using the wind speed and the fetch, significant wave height ( $Z_w$ ) can be found as;

$$Z_w = 0.005 V_w^{1.06} F^{0.47} \text{ (m)}$$

$$= 0.005 * 5.41^{1.06} * 180^{0.47}$$

$$= 0.34\text{m}$$

#### Wave run up

To calculate the wave run up, wave period calculated as;

$$t_w = 0.32 V_w^{0.44} F^{0.28} \text{ (min)}$$

$$= 0.32 * 5.41^{0.44} * 180^{0.28}$$

$$= 2.88\text{min}$$

Using wave period, wavelength calculated as shown;

$$\lambda = 1.56 t_w^2$$

$$= 1.56 * 2.88^2$$

$$= 9.59\text{m}$$

The ratio of significant wave height to wavelength ( $Z_w/\lambda$ ) should not exceed 0.7, hence wave run up is finally calculated as;

$$Z_r = 0.7 * (Z_w/\lambda)$$

$$= 0.7 * (0.34/9.59)$$

$$= 0.025 \text{ m/min}$$

#### Required minimum pan freeboard

Freeboard calculated by summing up wind set up, significant wave height and wave run up

$$\text{Freeboard} = Z_s + Z_w + Z_r$$

$$= 0.0033 + 0.34 + 0.025$$

$$= 0.37\text{m}$$

Note- A freeboard of 1m allowed. The value of the freeboard calculated above shows that, the wave action on the pan has negligible effects.

#### Embankment slope

From the soil map, the soil has granular distribution. Given embankment height being equal to 4m, hence slope selected from the table below;

Upstream slope= 2.5, Downstream slope= 2

**Embankment slopes**

Embankment height	Fill material	Slope	
		Upstream	Downstream
≤5m	Good granular distribution/clay	1/2.5	½
5m to 10m	Good granular distribution	1/2.5	½
	Clay	1/2.5	1/2.5

Source: guidelines for the design, construction and rehabilitation of small dams and pans in Kenya (Kenya- Belgium water development programme Nairobi, June 1992)

**Embankment protection**

To protect the embankment against wave action and erosion, grassing of both downstream and upstream slope is required.

Fencing also of the pan helps to prevent the animals getting in to the pan, this is accomplished by building water troughs outside the pan and fed using delivery pipes of 5cm in diameter. Also protected by planting stabilizers.

Again for the protection of a pan latrines and bathrooms built around the place so that as people bring their livestock, they can take a bath also.

**Spillway design**

For the case of design, its proposed to have a pan height of 4m. It is a medium risk pan. For this reason, a return period of 10 years was adopted. A cut spillway with a general trapezoidal section was designed. The spillway is located on the entrance of the pan, two spillways on opposite sides are designed.

**Design procedure**

- i) Time of concentration was calculated as 42.79 and 59.31 from the two catchments.
- ii) Peak flow was found to be 3.735m<sup>3</sup>/s

$$P = b + 2h\sqrt{1 + m^2} \dots\dots\dots 4.7$$

$$R = \frac{A}{P} = \frac{(b + md)d}{b + 2m\sqrt{1 + m^2}} \dots\dots\dots 4.8$$

Where

S = ground slope if resulting velocity is less than maximum otherwise reduce slope

Q = Discharge in m<sup>3</sup>

A = Cross sectional area in m<sup>2</sup>

P = Wetted perimeter in m

R = Hydraulic radius

S = Friction slope

d = water depth in m

b = Bottom width in m

m = Horizontal value of side slope

$K_m$  = Coefficient of roughness = 20

For cut-off drains

$$Q_p = 3.735 \text{ m}^3/\text{s}$$

$$m = 2$$

$$S = 0.001 \text{ to } 0.005$$

Let  $b/d = 2$

$$B = 2d$$

$$P = 2d + 2d\sqrt{1+2^2} \dots\dots\dots 4.9$$

$$P = 6.472d$$

$$A = (b + md)d$$

$$A = (2d + 2d)d = 4d^2$$

$$R = \frac{A}{P} = \frac{4d^2}{6.472d} = 0.618d$$

$$AR^{2/3} = \frac{Q}{K_m S^{1/2}}$$

$$4d^2(0.618d)^{2/3} = \frac{1.206}{20 \times 0.001^{1/2}}$$

$$4d^2(0.618d)^{2/3} = \frac{3.735}{20 \times 0.001^{1/2}}$$

$$2.9021d^{8/3} = 5.9055$$

$$d = 1.3053$$

$$b = 2.611$$

**Earthwork volume**

The volume of earth to be excavated and compacted was calculated from the drawings attached.

Excavation Volume = 26,000m<sup>3</sup>.

Storage capacity of the pan = 56,000m<sup>3</sup>.

## 4.7 IRRIGATION SYSTEM DESIGN

### Delivery Pipe Diameter

#### Irrigation Water Requirement (IWR)

Using the Bukura ATC rain gauge peak monthly value of open surface evaporation ( $E_o$ ) occurs in the month of January and is 236 mm/month

$$ET_o = E_o \times f_e$$

$$ET_c = ET_o \times K_c$$

Where

- $ET_o$  is reference crop Evapotranspiration
- $E_o$  open water surface evaporation
- $f_e$  is a conversion factor. For Kenya  $f_e$  is 0.75 for altitude above 1100m and 0.80 for altitude below 1100m)
- $ET_c$  is actual crop Evapotranspiration
- $K_c$  is crop factor. From section 2.9 an average crop factor of 0.9 is used here

(Source: Ministry of water and irrigation practice manual, 2005)

From ET equations above and given altitude is about 1390m above sea level (see section 2.4),

$$ET_c = 158.33 \text{ mm/month} \times 0.75 \times 0.9$$

$$= 106.9 \text{ mm/month}$$

$$= 3.56 \text{ mm/day (say 4.0 mm/day)}$$

An  $ET_c$  of 5.0mm/day shall be used in the design.

$$NIR = ET_c - P_e - G_e - S_s$$

Where,

- NIR is Net Irrigation Requirement mm/day
- $ET_c$  is actual crop Evapotranspiration, mm/day
- $P_e$  is Effective rainfall, mm /day
- $G_e$  is groundwater contribution, mm/day
- $S_s$  is Soil moisture storage, mm/day

For high value crops whose yields are severely affected by slight moisture shortages and where rainfall is fairly unreliable, the rainfall can be ignored (Effective rainfall assumed negligible). The ground water table during peak irrigation period is over 1.5m The average top clay layer is 0.85m and is underlain by sandy clays of varying depth. The contribution of groundwater table under such circumstances is assumed negligible. Lastly peak irrigation demand falls in the months of January and February when there is little or completely no rainfall in certain years. The soil moisture storage is hence assumed negligible.

From the above

$$NIR = ET_c = 5.0 \text{ mm/day}$$

$$GIR = NIR + LR + W_L$$

Where,

- GIR is Gross irrigation Requirement, mm/day
- NIR is Net Irrigation Requirement from above, mm/day
- LR is Leaching requirement, mm/day
- $W_L$  is Irrigation water losses, mm/day

The leaching component is required to wash away any excess salts in the root zone. This can be done during the irrigation or at the end of the irrigation period. It is noted that the area has adequate annual rainfall which automatically washes away any excess salts from the root zone.

Hence,

$$GIR = NIR + W_L$$

The losses are computed based on irrigation efficiencies. The following efficiencies have been assumed:

- Conveyance = 0.95 (main pipeline)
- Distribution = 0.80 (canals)
- Application = 0.70 ( Source: Water and Irrigation Practice Manual )

Choice of the above efficiencies was based on:

- Conveyance is through pipeline and canal on black cotton soils.
- Distribution will be essentially through pipelines.
- Application is on clay loam soils which have low deep percolation losses. Methods of irrigation will involve drip and furrow systems.
- Adequate training will be provided to farmers on scheme water management to improve water application efficiencies to the above level.

The overall efficiency (Project Efficiency) is thus  $0.95 \times 0.80 \times 0.70 = 0.532$  (approx. 0.53).

$$GIR = \frac{NIR}{Efficiency} = \frac{5.0}{0.53} = 9.4mm / day$$

#### 4.7.1 Scheme Flow (Design Flow)

Assume the following;

- 8hr irrigation period
- Irrigable farm area is 21 ha

For continuous flow, the required (8hr) flow per hector

$$9.4mm \frac{mm}{day} \times \frac{m}{1000mm} \times \frac{day}{24hr} \times \frac{hr}{3600s} \times \frac{10,000}{ha} = 0.0011m^3/s$$

That comes to 1.1/s.

The total area is 60ha. About 6% of the area is assumed to be taken up by structures. Also since water is limited not the whole area can be irrigated. Each house hold can only irrigate 0.5ha. The net area available for actual irrigation is 40 ha.

The scheme flow is therefore,

$$1.10l / s / ha \times 19.8ha = 21.78l / s$$

$$1.1l/s \times 20ha = 22l/s$$

Normally the recommended irrigation duration for community managed schemes is 10 – 12 hr/day for 6 days per week (Source: Pump-fed Irrigation Systems for Individual Smallholder by IDB,

1990). However, it is proposed that a 8 hr irrigation day and 7 day week based on experience with group projects in this area. The required scheme flow is

$$\text{Scheme flow} = 22\text{l/s} \times \frac{24}{8} = 66\text{l/s}$$

#### 4.8 Water Availability

The proposed water source for the project is the water pan. The source has a capacity of 56,000m<sup>3</sup>.  
Irrigation Interval

The following data applies;

- Soil type Clay
- Available Moisture 20 – 30 mm/10cm (IDB Pump-fed Manual)
- Readily Available Moisture 10 – 15 mm/10cm (IDB Pump-fed Manual)
- Design Average 12.5 mm/10cm
- Crops to be grown include assorted horticultural crops such as kales, tomatoes, onions, okra, chilies, cucumber, baby corn, French beans, etc).
- The limiting rooting depth is taken as 30 cm. (see section 2.9)

The available moisture over the root zone is thus given by

$$12.5\text{mm} \times \frac{30\text{cm}}{10\text{cm}} = 37.5\text{mm}$$

The soil moisture depletion rate is equal to the crop water requirement (ET<sub>c</sub>) which is 5.0 mm/day  
Maximum irrigation Interval then becomes

$$\frac{37.5\text{mm/day}}{5.0\text{mm/day}} = 7.5\text{days}$$

For convenience 7 days is recommended. Note that for crops with deeper root zones a longer irrigation interval is theoretically applicable as show here below

Type of crop	Rooting depth (cm)	Irrigation Interval(days)
Onion	30	7.5
Kales	60	14
Tomatoes	120	28

Now design flow is 66 l/s

The economic delivery pipe diameter is given by

$$D = 0.965Q^{\frac{1}{2}}$$

Where

D = pipe diameter, m  
Q = flow in pipe, m<sup>3</sup>/s

$$D = 0.965 \times 0.066^{0.5} = 0.248\text{m}$$

D= 250mm or D=250m (10")

Alternatively, IDB pump-fed manual recommends a maximum velocity of flow in pipes as 1.5 m/s. Restricting the flow velocity in the pipe to a maximum allowable value of 1.5 m/s and using circular pipes, the required pipe diameters is

$$D = \left( \frac{4Q}{\pi V} \right)^{0.5}$$

$$D = \left( \frac{4 \times 0.066}{\pi \times 1.5} \right)^{0.5} = 0.237m$$

= 0.237 m (say 250mm or 10"Ø pipe)

A pipe diameter of 10 inches (250mm) is recommended

### Total Dynamic Head

#### a). Friction Losses

##### i). Pipe Resistance to flow

Hazen-Williams Equation given below is used in the calculation of friction losses in pipes

$$h_f = 10.67L \frac{Q^{1.85}}{C^{1.85} \times D^{4.87}}$$

Where,

- $h_f$  = head loss due to friction, m of water
- L = length of pipeline in m
- Q = discharge in the pipe in  $m^3/s$
- C = roughness coefficient for pipe material
- D = internal diameter of pipe, m

Given discharge,  $Q = 0.055 m^3/s$ , the internal diameter of pipe,  $D = 0.25m$ , length of pipe,  $L = 750m$  and roughness coefficient for pvc pipes,  $C = 140$  the head loss in pipe is given by:

$$h_f = 10.67 \times 750 \times \frac{0.055^{1.85}}{140^{1.85} \times 0.25^{4.87}} = 3.42m$$

##### ii) Friction Losses in fittings:

Friction losses in the fittings are computed by the use of the equation below

$$h_f = \frac{KV^2}{2g}$$

Where,

- $h_f$  = head loss in the fitting, m
- K = resistance coefficient for the fitting
- V = velocity of flow in the pipe, m/s
- g = acceleration due to gravity, 9.81m/s

Given discharge,  $Q = 0.055m^3/s$  and internal pipe diameter pipe,  $D = 0.250m$ , the velocity of flow in the pipe is given by;

$$V = \frac{4Q}{\pi D^2} = \frac{4 \times 0.055}{\pi \times 0.250^2} = 1.12m/s$$

### Summary of Computed Heads

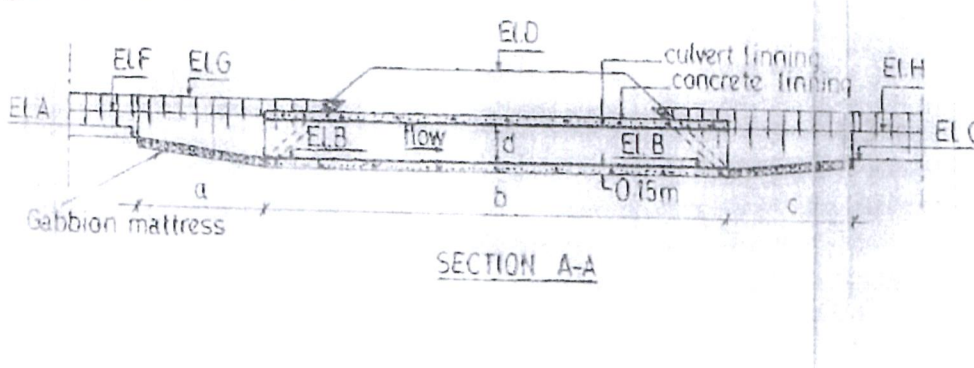
$$\begin{aligned}
 \text{TDH} &= \text{Delivery losses} + \text{friction losses} \\
 &= 3.42 + 1.12\text{m} \\
 &= 4.54\text{m}
 \end{aligned}$$

The elevation of the scheme head is 1370 while intake is 1372m. This is a gravity system.

#### 4.9. Design of Road crossings

Pipe and box culverts and bridges are the feasible options for road crossings. Pipe culverts are considered to be the most suitable from the construction requirements point of view.

Figure 4.7: Cross section of culvert



$$Q = \frac{VD^2}{4} \dots\dots\dots 4.13$$

Where:

Q= maximum water flow in the pipe culvert (m<sup>3</sup>/s)

V= velocity of flow (m<sup>2</sup>/s)

D= Diameter of pipe (m)

The diameter of culverts pipe was selected on the basis of the following criteria.

1. Maximum flow velocity of 1.5m/s
2. minimum diameter 0.45m
3. maximum diameter 1.0m (based on case of transport to site)
4. Only standard size culverts available in the market shall be considered.

$$Q = 3.735 \text{ m}^3/\text{s}$$

$$V = 1.5 \text{ m/s}$$

$$Q = AV$$

$$V = 1.5 \text{ m/s}$$

$$A = Q/V = Q/1.5$$

$$A = 3.735/1.5 = 2.49 \text{ m}^2$$

$$A = \pi D^2/4$$

$$D = 1.78 \text{ m}$$

Use three parallel culverts of diameter 1.0m

The flow through each culvert ring becomes

$$q' = 3.735/3 = 1.245 \text{ m}^3/\text{s}$$

$$a = 0.83 \text{ m}^2$$

$$v = q'/a = 1.259 \text{ m/s}$$

$$d = 1.03 \text{ m}, 1 \text{ m}$$

## 5. OPERATION AND MAINTENANCE

Operation and maintenance will ensure that the facilities for water conveyance and passage of machinery and people are functioning well.

Lack of organized and timely operation and maintenance of the drainage infrastructure leads to:

- Deterioration of the facilities making it more expensive to repair with time and in the end it might even be cheaper to rehabilitate or replace the facility.
- Poor performance of the facility.

### *5.1 Determination of O & M plan*

The plan shall depend on the following factors

- Cropping calendar
- Weather conditions
- Availability of funds
- drainage stakeholders
- Strength of WUA
- Project life span
- The skills of operation

Operation and maintenance of irrigation schemes is the responsibility of the beneficiaries

### *5.2 Levels of operation*

There shall be 3 levels of operation of the drainage system:

(a) WUA level

The activities shall be:

- Cleaning of the main drainage canals
- Care of drop structures and culverts
- Scheme organization
- Prevention of outside interference

(b) Sub-main drain level

- Care of irrigation sub-main drains and accompanying structures.

(c) Farm level

- Cleaning of all field drains on individual farms.

**Maintenance of drainage systems**

**Purpose**

- To achieve the desired design flow

- Ensure the structures remain operational
- To lower the repair and maintenance costs

Work involved

Removal of vegetation, weeds, trashes – never use chemicals

- Plugging holes
- Profiling the water course

### ***5.3 Maintenance plan***

Long term operation of irrigation and drainage installations depends upon simple maintenance carried out by the farmers.

Maintenance of irrigation infrastructure is classified into 3:

- Operational maintenance (day to day)
- Corrective or breakdown maintenance – unplanned e.g. elnino effects
- Planned or preventive maintenance- carried out after certain period, deferred, regular, runs throughout the useful life of the project.

### ***5.4 Distribution of work***

Organized and carried out in 3 levels

- On-farm channels and drains
- Sub-main drains
- Main canal, main drain

### ***5.5 Sources of funds for O & M***

- It has to come from the farmers themselves through
  - Annual subscription fees
  - New membership fees
- Sale of scheme surplus assets
- Bank loans
- Sale of shares
- Government through
  - Grants, emergency funds, economic stimulus packages
  - Loans to youth, women
- Donors/NGOs through grants, soft loans

Chapter 6

6. BILLS OF QUANTITY

**BILL NO 1: PRELIMINARY AND GENERAL**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
1	<b>Contractual Requirements</b>				
1.1	Allow for mobilize and demobilize of plants and equipment, personnel to the site and camp setting up.	Lump sum	1.00	400,000.00	400,000.00
1.2	Provide a provisional sum for erection and maintenance of project sign post as directed by the Project Engineer	No	1.0	60,000.00	60,000.00
1.3	Provide provisional sum for supervision to be expended as directed by the Project Engineer	Lump sum	1.00	400,000.00	400,000.00
1.4	Allow a provisional sum of Kenya Shillings one hundred thousand for design review	Lump sum	1.00	400,000.00	400,000.00
1.5	Provide provisional sum for access road to site as directed by the Project Engineer	Lump sum	1.00	200,000.00	200,000.00
1.6	Allow for provisional bid security	Lump sum	1.00	50,000.00	50,000.00
1.7	Include a percentage for contractors overheads and profits for items (1.3) and (1.4) above	Sum	10%	600,000.00	600,000.00
<b>TOTAL BILL NO 1 CARRIED OVER TO GRAND SUMMARY</b>					<b>1,390,000.00</b>

**BILL NO 2: BUSH CLEARING AND SUB REMOVAL**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
2	Bush clearing				
2.1	Clear site of all trees (less than 500mm diameter), bushes, shrubs including stubs removal, girth and carting away	SM	14,000.00	35.00	490,000.0
<b>TOTAL BILL NO 2 CARRIED OVER TO GRAND SUMMARRY</b>					<b>490,000.0</b>

**Bill No. 3: EARTH WORKS**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
<b>3.1</b>	<b>Reservoir excavation</b>				
3.1.1	Excavate over site average 300mm deep to remove vegetable soil, load, wheel and cart away, but stock pile selected vegetable soil for reuse on the downstream dam embankment	M <sup>3</sup>	4,000.00	250	1,000,000
3.1.2	Excavate for dam core trench not exceeding 1.5 m deep commencing from stripped level and stock pile excavated materials for embankment construction	M <sup>3</sup>	432	250	108,000
3.1.3	Excavate for draw off / scour pipe trench not exceeding 1.0 m deep from stripped level and stock pile excavated material for embankment construction	M <sup>3</sup>	50	500	25,000.00
3.1.4	Excavate for embankment materials from stripped area not exceeding 3.0 m deep from stripped level while maintaining a berm of 5 – 10 m away from the upstream embankment toe line and stock pile excavated material for embankment construction	M <sup>3</sup>	22,000.00	250	5,500,000
<b>3.2</b>	<b>Embankment Construction</b>				
3.2.1	Spread, water and compact to 95% MDD selected suitable embankment material in three layers of 300mm to attain the height indicated in the drawing and a crest of 4m wide. Trim the embankment slopes to 1:2.5 on the upstream and 1:2.5 on the down stream	M <sup>3</sup>	20,000.00	80	1,600,000
<b>3.3</b>	<b>Spillway Earth Works</b>				
3.3.1	Clear site of all sizeable bushes, trees & vegetable cover and cart away	M <sup>2</sup>	500	100	50,000.00
3.3.2	Excavate over site average 300mm deep to remove vegetable soil, load, wheel and cart away	M <sup>3</sup>	700	200	140,000

3.4.3	Excavate for spillway channel not exceeding 1.5m depth from the stripped level with side slopes of 1:1, channel backward slope of 0.25% and dispose / stock pile as instructed by Engineer	M <sup>3</sup>	475	200	95,0
3.4.4	Provide for a concrete class 15 / 20 spillway sill 300mm thick (insitu cast) across the channel not exceeding 1.0m depth	M <sup>3</sup>	15	15,000.00	225
3.4.5	Provide for rip rap protection to spillway and outflow channel with hardcore stone materials as shall be directed by Engineer	M <sup>2</sup>	50	2,000.00	100
3.4.6	Allow for excavation of a silt trap as shown in the working drawing	M <sup>3</sup>	600	250	150
3.4.7	Allow for excavation of inlet channels as shown in the working drawing / instructed by the Engineer for directing water into the reservoir	M <sup>3</sup>	30	400	12,0
<b>TOTAL BILL NO 3 CARRIED OVER TO GRAND SUMMARRY</b>					<b>9,00</b>

**Bill No. 4: Fencing the water pan**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT	
					SH	CTS
	<b>Concrete posts</b>					
4.1	Supply and fix Reinforced concrete posts 21,000mm length, spaced at 2.5m centre to centre	No	505	2500	1,262,500	
4.2	Excavation of holes to anchor posts ( 450mm * 450mm * 600mm)	No	505	200	101,000	
					0	
4.3	Concrete class 1:3:6 for anchoring the posts	CM	25	8,500	212,500	
4.4	Supply and fix barbed wire gauge 14 at 400mm	M	1,516	50	75,800	
					0	
4.5	Supply and fix chain link gauge 14 at 1,500mm height	SM	3032	250	758,000	
					0	
4.6	Provide a provisional sum for construction of a gate to the reservoir compound to be expected as directed by the Engineer	No	1	50,000	50,000	
	<b>SUB TOTAL</b>				2,459,800	
	<b>ALLOW FOR 10% CONTINGENCY</b>				245,980	
	<b>GRAND TOTAL</b>				2,705,780	

**Bill No. 5: Draw off system**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
<b>5.1</b>	<b>Drawoff System</b>				
5.1.1	Provide for a standard intake of tower using perforated 4'' GI pipes with wire mesh screens 3m high using concrete mix of ratio 1:2:4 (cement, sand, and ballast). Provide a dead storage of 0.5m on the pipe as described in the working drawings	Lump sum	1.00	65,000.00	65,000.00
5.1.2	Provide, lay and connect to intake tower, using UPVC class B pipes of 75mm draw of system to the community water point and cattle troughs as detailed in the working drawings and reduce to levels for water drawing	No	30.00	500	15,000.00
<b>5.2</b>	<b>Valve Chamber</b>				
5.2.1	Allow for excavation, provide for materials and construct lockable masonry chambers with internal dimensions of 1000mm * 1000mm * 1000mm as indicated in the working drawing and as directed by the Engineer (rates to include formwork)	No	1.00	30,000.00	30,000.00
<b>5.3</b>	<b>Community Watering Point</b>				
5.3.1	Provide all materials and construct complete masonry community water point complete with two water taps mounted on risers of 1.0 m above the concrete base of 1.5m * 0.03m	Lump sum	1.00	20,000.00	20,000.00
<b>5.4</b>	<b>Cattle Trough</b>				
5.4.1	Construct a standard 2 No cattle troughs of size 0.8m internal with by 0.5m internal depth by 5.0m long and of 300mm thickness of class 20 /20 concrete wall with smooth finish	No	2	-	
5.4.2	Excavation works	M <sup>3</sup>	5.00	1,000.00	5,000.00

5.4.3	Concrete class 20 / 20	M <sup>3</sup>	11.00	15,000.00	165,000.00
5.4.4	Provide for water regulation chamber with self-regulatory water valves	No	2.00	20,000.00	40,000.00
5.4.5	Provide for rip rap protection to the water troughs of 2.0m around the troughs	M <sup>2</sup>	10.00	20,000.00	20,000.00
<b>TOTAL BILL NO 4 CARRIED OVER TO GRAND SUMMARRY</b>					<b>408,000.00</b>

**Bill No. 6: Pipeline for Block 1**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT	
					SH	CTS
<b>6.1.</b>	<b>Site clearance</b>					
6.1.1	Clear site of all trees(less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material from site	m <sup>2</sup>	1672	30	50,160	
6.1.2	Clear site of all trees(less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material from site from	m <sup>2</sup>	1000	100	124,000	
6.1.3	Trees of more than 500 mm diameter (provisional)	No	10	500	2,500	
<b>6.2</b>	<b>Excavation and Backfilling</b>					
	Rates for excavation and backfilling in trench shall include for trimming trench bottom and for providing selected bedding and surround materials from the excavations in accordance with the specifications					
6.2.1	Excavation and Backfilling in normal soil for Dia 250 mm to a depth n.e 1.5 m	m <sup>3</sup>	500	300	60,000	

6.2.2	Ditto for dia 160 mm from chainage	m <sup>3</sup>	400	300	210,000
6.2.3	Ditto for dia 50 mm	m <sup>3</sup>	1,000	300	600,000
6.3	<b>uPVC Pipework</b>				-
	Provide, lay, joint and test the following flexible spigot and socket pipe and fittings with rubber ring joints. Rates to include for all jointly materials, cutting wastage.				-
	Note: The following have been used on the drawings to specify pipe diameters/types/classes. Pipe dimensions/working pressures shall conform to KS-06-149 Part 2:2000.				-
	Class Working Pressure (m)				-
	B 60				-
	C 100				-
	D 125				-
	E 160				-
	<b>Class B</b>				-
6.3.1	250 mm dia	m	750	2,000	1,500,000
6.3.2	160 mm dia	m	500.00	1,500.00	750,000
6.3.3	50 mm dia	m	1,000	250	250,000
6.4	<b>Fittings</b>				0
	<b>Provide , lay, joint and test Fittings</b>				0
6.4.1	250 x160 for Block 1	No.	1	5,000.00	5,000
6.4.2	160 x 50 for block 1	No.	1	4,000.00	4,000

6.4	<b>AIR VALVES</b>				
6.4.1	Excavate for, provide all materials and construct complete air valve chambers. Internal dimensions 1200 x 1200 x 1200 mm. Rates to include for all thrust blocks , pipe supports, inspection covers, etc as detailed in the drawings.	No.	2	20,000	40,000
6.4.6	50 mm flanged gate valve	No.	15	7,000.00	105,000
6.5	<b>Saddle clamps</b>				
6.5.1	50 x 25 mm dia	No.	30	300	9,000
6.5.2	50/25 mm dia GI / uPVC adaptor	No.	2	400	800
					-
6.6	<b>SECTION VALVE CHAMBERS</b>				
6.6.1	Excavate for, provide all materials and construct complete inspection valve chambers of internal dimensions 1200 x 1200 x 1200 mm at the pipe junctions. Rates to including thrust blocks, pipe supports as shown in the drawings.	No.	1	20,000	20,000
6.7	<b>Road Crossing - Block 1</b>				
6.7.1	Provide for 1 No. road crossing of 6m width, for 160mm dia pipelines at the chainage as per drawing and in accordance with specifications. Rates to include for excavation and backfilling, culvert, concrete surround and all jointing materials and other fittings in accordance with specifications.	No.	1	50,000	50,000

6.7.2	Saddle clamp fittings (and other uPVC fittings) for distribution into the infield system as % of the pipeline costs	%	20			
<b>TOTAL CARRIED OVER TO TENDER</b>					<b>3,780,460</b>	

**Bill No. 7: Pipeline for block 2**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMO (KES)
					KES
7.1	<b>Site clearance</b>				
7.1.1	Clear site of all trees(less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material from site	m <sup>2</sup>	300	30	9,000
7.1.2	Clear site of all trees(less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material	m <sup>2</sup>	400	100	40,000
7.1.3	Trees of more than 500 mm diameter (provisional)	No	10	500	5,000
7.2	<b>Excavation and Backfilling</b>  Rates for excavation and backfilling in trench shall include for trimming trench bottom and for providing selected bedding and surround materials from the excavations in accordance with the specifications				
7.2.1	Excavation and Backfilling in normal soil for Dia 250 mm to a depth n.e 1.5 m	m <sup>3</sup>	300	300	90,000
7.2.2	Ditto for dia 160 mm	m <sup>3</sup>	500	300	150,000
7.2.3	Ditto for dia 50 mm .	m <sup>3</sup>	2,000	300	600,000
7.3	<b>uPVC Pipework</b>  Provide, lay, joint and test the following flexible spigot and socket pipe and fittings with rubber ring joints. Rates to include for all jointly materials, cutting wastage.				

Note: The following have been used on the drawings to specify pipe diameters/types/classes. Pipe dimensions/working pressures shall conform to KS-06-149 Part 2:2000.

Class	Working Pressure (m)
B	60
C	100
D	125
E	160

7.3.1	250 mm dia	M	300	2,000	600,000
7.3.2	160 mm dia	M	500	1,500	750,000
7.3.3	50 mm dia	M	2,000	250	500,000

**7.4 Fittings**

**Provide, lay, joint and test Fittings**

**Reducers for main**

7.4.1	260 x 160 mm	No.	1	5,000	5,000
7.4.2	160 x 50 mm	No.	1	4,000	4,000

**7.5 Washouts**

7.5.1	Excavate for, provide all materials and construct complete washout chambers. Internal dimensions <b>1000 x 750 x 1200 mm</b> . Rates to include for all thrust blocks, pipe supports, inspection covers, etc as detailed in the drawings.	No.	1	20,000	20,000
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Provide, handle, install and test the following steel and uPVC pipes and fittings, valves and specials. Rates shall include for completion and pipe protection at all pipe joints as specified in specifications and drawings

7.5.5	250 mm dia flanged sluice valve	No.	1	40,000	40,000
7.5.6	50 mm single flanged steel pipe 500mm long	No.	12	7,000.00	84,000
7.5.8	50/25 mm dia uPVC / GI adaptor	No.	2	400	800
7.4.6	Saddle clamp fittings (and other uPVC fittings) for distribution into the infield system as % of the pipeline costs	%	20		
<b>TOTAL CARRIED TO TENDER</b>					<b>2,890</b>

**Bill No. 8: construction of auxiliary structures**

ITEM	DESCRIPTION	UNIT	QUANTIT Y	RATE (KES)	AMOUNT (KES)
8.1	<b>2 Doors Toilet and Bathroom</b>				
8.1.1	Allow a prime cost sum of Kenya Shillings three thousand for two doors toilet and a bathroom	Lump sum	1.00	350,000.00	350,000.00
<b>SUB TOTAL BILL NO 5.1</b>					<b>350,000.00</b>

**Bill No. 9: Culverts**

No	Item description	Unit	Quantity	Rate	Cost
9.1	Excavations				
	On channel bed	m <sup>3</sup>	7	200	1,400.00
					0.00
9.2	Concrete culverts 1000mm on	No	18	15000	270,000.00
					0.00
9.3	Cement	bags	54	1000	54,000.00
					0.00
9.4	Sand	m <sup>3</sup>	9	1000	9,000.00
9.5	Ballast	m <sup>3</sup>	20	1100	22,000.00
					0
9.6	Form work				0.00
	Sawn timber 160mm x 25mm	m <sup>2</sup>	12	500	6,000.00
	props (75mm x 50mm)	Lm	20	80	1,600.00
	Round wire nails: 2" 3"	Kg	5	150	750.00
9.4	30% labour				
	<b>Total Carried to collection</b>				<b>364,750.00</b>

## Collection sheet

Bill No.	Description	Amount
1	Preliminary and general	1,390,000
2	Bush clearing	490,000
3	Earth works	9,005,000
4	Fencing of the water pan	2,705,780
5	Draw off system	408,000
6	Pipeline for block 1	3,780,460
7	Pipeline for block 2	2,897,800
8	Construction of auxiliary structures	350,000
9	Culverts	364,750
	Total	21,391,790
	Add 16% VAT	3422686.4
	Grand total	24,814,476

## **ANNEX 5: WORKING DRAWINGS**

The following drawings are prepared and used during implementation.

Drawing No. 1:- Topographic map of Changara water pan

Drawing No. 2:- General layout of Changara pan

Drawing No. 3:-Section profile

Drawing No. 4:- Draw off system

Drawing No. 5:- Culvert scheme

## ANNEX 4: BIBLIOGRAPHY

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- 11 Isaya Sijali et al , 2005, Irrigation systems, their operation and maintenance
- 12 Katsuyoshi Tomono, Tskukuba International Centre, JICA, 2007, “Economic evaluation of projects (Lecture notes)”

F. 04

REPUBLIC OF KENYA



MINISTRY OF AGRICULTURE AND LIVESTOCK DEVELOPMENT  
STATE DEPARTMENT FOR AGRICULTURE  
Agricultural Engineering Services

REPORT ON TECHNICAL EVALUATION FOR THE OPERATIONALIZATION OF CHANGARA WATER PAN AND  
IRRIGATION DEVELOPMENT PROJECT AT Ang'urai East ward, Teso North Busia COUNTY

TO:

CHIEF OFFICER SMART AGRICULTURE, FISHERIES BLUE ECONOMY  
& AGRIBUSINESS - COUNTY GOVERNMENT OF BUSIA

FROM:

MANAGER AGRICULTURAL TECHNOLOGY DEVELOPMENT  
CENTRE (ATDC) SIAYA

EVALUATION TEAM : Eng. Waswa, C. Maloba and F. Odowa

JULY 2024

## 1.0 INTRODUCTION

### 1.1. Brief background

The community driven project is located in Ang'urai East ward, Teso North Sub-County of Busia County. The identification and proposal was done by the community and forwarded to Kenya Climate Smart Agricultural Project (KCSAP) for consideration. After due consideration and fulfilment of the relevant regulatory requirements including Environmental and Social Impact assessment (ESIA) the project was implemented as from the year 2019 and completed in the year 2021.

The reservoir is situated on government land and has a design capacity of 56,000m<sup>3</sup>, the objective was to support small scale irrigation on individual land for the production of African Leafy vegetables (ALVs) and also provide water for domestic and animal production

### 1.2. The objective of the technical Evaluation

- a. To assess the condition of the project
- b. To provide recommendations and the way forward to operationalize the project

### 1.3. Current Status

- ✓ The project is not operational though the dam is filled to capacity with the perimeter fence still intact. The cattle trough was not having any water and could therefore not be used by the animals which were grazing nearby. Utilization of water for irrigation purposes was not ongoing save for a tobacco nursery next to the dam. Most farms within the command area were planted with a maize crop which was approaching physiological maturity.
- ✓ On testing the systems, the mainline on feeder B (Right Side) was found to be punctured along the 110mm diameter pipe and could not transmit water to the other parts of the system. 10 out of the 14 hydrants were nonfunctional owing to various reasons including vandalism, mechanical breakdown and removal for safe – keeping. Two of the valve chambers had their covers vandalized and the control valves are faulty. The air valve chamber and end cork in good working order.
- ✓ The falling main feeder line A (Left Side) was largely okay, though within a gully crossing area, the PVC main pipe was exposed and may require concreting. There was also a problem with the gate valve where the spindle was broken and water could not get transmitted to the rest of the system for accurate assessment. Out of the 8 hydrants, 5 were not functional due to various reasons. The air valve chamber and end cork were functional

**1.4. Factors for Non functionality of the project**

**a. Technical issues**

- ✓ Apart from water supply to the individual farms there was no provision for water application system from the installed hydrants
- ✓ No provision for direct water supply for the cattle trough when the rest of the system is not working

**b. Social issues**

- ✓ The Project Management Committee (PMC) members are from upstream of the reservoir and were technically not beneficiaries hence lack of commitment.
- ✓ Sabotage and vandalism of the system
- ✓ Suspected lack of goodwill from the political leadership

**2.0 RECOMMENDATION AND WAYFORWARD:**

**a) Social Issues**

- ✓ Train the beneficiaries, political and opinion leaders on the intended project output and impact in order to minimize conflict
- ✓ Disband the current PMCs and elect a new one falling in the irrigation command.
- ✓ Establish, train and register an Irrigation Water User Association (IWUA) to oversee all matters pertaining to irrigation in the project
- ✓ Institute and maintain soil conservation measures in the catchment area of the dam to ensure less siltation and hence sustainable utilization of the investment
- ✓ Involve the crops and agribusiness arms of the department in demanding use of the irrigation water to spar high value crop production

**b) Technical issues**

- ✓ Provide for automatic water supply to the cattle trough to allow continuous portable water for the animals
- ✓ Repair all the damaged Main feeder Valve and washout valve chambers
- ✓ Fixed the leakages allow the mainline, valve Chambers and Hydrants
- ✓ Create provision for Irrigation system for all the beneficiaries
- ✓ Provide for waterline Marker post to avoid unintended damages

**c) The estimated bill of quantities for the above technical requirement are as attached**



Frederick Odowa -SSEA

ATDC Siaya

720 266 223. atdcsiaya@yahoo.com

**BILL OF QUANTITIES FOR THE REHABILITATION OF CHANGARA  
WATER PAN AND IRRIGATION DEVELOPMENT PROJECT**

<b>Item No</b>	<b>Item description</b>	<b>QNTY</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
<b>1.0</b>	<b>Masonry chamber</b>				
1.1	Metalic Cover replaced	1	each	18,000	18,000
1.2	Masonry work -repair	1	lump	24,000	24,000
	<b>Sub total</b>				<b>42,000</b>
<b>2.0</b>	<b>Cattle troughs</b>				
2.1	Saddle clamp 160mm - 2''	1	each	3,600	3,600
2.2	Valve socket 63mm-2''	2	each	400	800
2.3	PVC Pipe 63mm class D	3	each	2,500	7,500
2.4	Butterfly Valve 2''	1	each	4,600	4,600
2.5	Float Valve	2	each	4,800	9,600
2.6	Masonry work	1	lump	32,000	52,000
	<b>Sub -total</b>				<b>78,100</b>
<b>3.0</b>	<b>Washout chambers</b>				
3.1	Metalic Cover replaced	3	each	14,000	42,000
3.2	Masonry work- repair	1	lump	42,000	42,000
3.3	Controll Valve 2''	3	each	4,600	13,800
3.4	Valve socket 63mm-2''	6	each	400	2,400
3.5	Pvc Sockets 63mm	6	each	400	2,400
3.6	Pvc pipe 63mm class C	3	each	2,200	6,600
	<b>Sub -total</b>				<b>109,200</b>
<b>4.0</b>	<b>Hydrants 50No</b>				
4.1	Pvc valve FBE 1''	50	each	1,200	60,000
4.2	PPR male adapter 32mm	50	each	300	15,000
4.3	PPR male tee 1''	50	each	220	11,000
4.4	PPR M adaptor Socket 32 x1/2''	100	each	400	40,000
4.5	PVC Valve FBE 1/2''	100	each	500	50,000
4.6	PPR plain pipe 100M x 32mm	1	Roll	16,000	16,000
4.7	PTFE thread tapes	10	Roll	450	4,500
4.9	Saddle clamp 160mm - 1''	24	each	1,800	43,200
4.10	Saddle clamp 110mm by 1''	24	each	1,600	38,400
4.11	Saddle Clamp 63mm by 1''	24	each	550	13,200
	<b>Sub total</b>				<b>291,300</b>
<b>5.0</b>	<b>Movable Sprinkler Unit C/w Flexible laterals</b>				
5.1	Flexible pipe 25mm x15m c/w fittings	100	rolls	2,000	200,000
5.2	GI riser 32''x1/2'' c/w fittings	100	each	800	80,000
5.3	LP sprinkler 1/2'' c/w fittings	100	each	1,200	120,000
5.4	PTFE thread tapes	5	Pkt	450	2,250
	<b>Sub total</b>				<b>402,250</b>



Item No	Item description:	QNTY	Unit	Unit Cost	Total Cost
6.0	<i>mainline repair</i>				
6.1	PVC pipe 160mm Class C	2	each	12,000	24,000
6.2	PVC pipe 110mm Class C	2	each	6,800	13,600
6.3	PVC pipe 63mm Class C	4	each	2,200	8,800
6.4	PVC Socket 160mm	2	each	2,400	4,800
6.5	PVC socket 110mm	2	each	1,600	3,200
6.6	Pvc socket 63mm	4	each	400	1,600
6.7	PVC Adhesive glue	1	kg	2,600	2,600
	<b>Sub total</b>				<b>58,600</b>
7.0	<b>Masonry, Trenching, backfilling and Setting out</b>				
7.1	Unskilled Labour	168	Manday	700	117,600
7.2	skilled labour	84	Manday	1,500	126,000
7.3	Professional Supervision	21	Manday	6,000	126,000
	<b>sub total</b>				<b>369,600</b>
8.0	<b>Transport, logistics and miscellenius</b>				
8.1	Transport	1	lump	30,000	30,000
8.2	Logistics	1	lump	15,000	15,000
8.3	Miscellenius	1	lump	50,000	50,000
	<b>Sub total</b>				<b>95,000</b>
9.0	concrete Marker posts	40	each	2,500	100,000
	<b>Total Rehabilitation Cost</b>				<b>1,546,050</b>



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Water and Irrigation Project

COUNTY GOVERNMENT OF BUSIA

CERTIFICATE OF PRACTICAL COMPLETION

ANNEX GR

Details of work				
Start date	20/06/2018			Client Ministry
Completion date	20/12/2020		Name of Project	KCSAP - Busia
Vote	Prov	No	CONSTRUCTION OF CHANGARA WATER PAN AND IRRIGATION PROJECT	
Contract No.	KCSAP/BSA/1/2018-2019		Name /Address of Contractor:	
			BERODI COMPANY LTD, P.O BOX 51, 50209, MALAKISI (K)	

**Completion of Civil works (Canals, Dams, Headworks, Masonry, Aqueducts, Siphons)**  
 Delete (a) or (b)  
 (a) The contract works- Water pan excavation,  
 (b) Part of the works here listed  
 are substantially completed to my satisfaction subject to the items noted overleaf.

Eng. MANUEL B. WASWA  
 Date 30/04/2021  
 Project Manager

**Completion of Pump stations, Pipeline installation**  
 The pumping station are now completed to my satisfaction subject to the items noted overleaf and are ready to be handed over to the Client Ministry.  
 Pipeline work for Block 1

Eng. MANUEL B. WASWA  
 Date 30/04/2021  
 Project Manager

Release of Retention and Surety Bond  
 Att. Job QS and Contracts Register office  
 The first and second moiety of the retention and surety bond may now be released

Date PROJECT COORDINATOR- KCSAP

Copies CO



KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

COUNTY PROJECT COORDINATION UNIT BUSIA  
P.O. BOX 261 – 50400  
BUSIA (K)  
Email: kcsapbusia@gmail.com



ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMMITTEE (PMC) CHANGARA DAM

VENUE: BULA AITC

DATE: 17TH 5.11.14 JULY 2014

ATTENDANCE LIST

S/N o.	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
1	CORNEL EBU	2806110	0706813806	PMC	ANGURAI EAST	M	192 CHEPTAIS	[Signature]
2	BONFACE EMURU	27114300	0112328583	PMC	ANGURAI EAST	M		[Signature]
3	GLADYS NAKHUNGU	21607305	0724406682	PMC	ANGURAI EAST	F		[Signature]
4	CAROL OTWANE	3747632	0798281605	PMC	ANGURAI EAST	F		[Signature]
5	PHOLIA OISSA	7908179	0723124578	PMC	ANGURAI EAST	F	7 CHEPTAIS	[Signature]
6	THOMAS I CRISPIN	27211635	0704402803	PMC	ANGURAI EAST	M		[Signature]
7	Elud Khyang	1989069463	0724761155	CAE/MIA	BUSIA	M	eludkhyang@cae.gov.ke	[Signature]
8	Jannet Ginyo	20158152686	0738153281	KCSAP	BUSIA	M	jannet.ginyo@kcsap.org	[Signature]
9	Florene Kigunzu	1993023568	0721242403	MOA	BUSIA	F	florenekigunzu@moa.gov.ke	[Signature]
10	S. K. Wachira	189096371	0720990143	Agric	BUSIA	M	cdobusia@gmail.com	[Signature]
11	Maria Chango	2808086246	0725312950	MIA	BUSIA	F	gasc@moa.gov.ke	[Signature]
12	GAD OSHOME	0607175	0719210066	PMC	ANGURAI EAST	M		[Signature]
13	Lydia Epuni	27070130	27070130	PMC	ANGURAI EAST	F		[Signature]

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Kenya Wildlife Service  
Nairobi, Kenya

ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMMITTEE (PMC) CHANGARA DAM

VENUE: BUSIA A.T.C

DATE: 15<sup>TH</sup> JULY 2023

PAYMENT SCHEDULE

S/N o.	NAME	P/No./ ID No.	POSITION	J/G	STATION	RATE (KES)	DAYS	TOTAL	SIGN
1	CORNEL EBU	2806110	PMC member			4,200	2	8,400	[Signature]
2	PHOZIA C. ISSA	7908179	PMC member			4,200	2	8,400	[Signature]
3	THOMAS J. CRISPIN	2721635	PMC member			4,200	2	8,400	[Signature]
4	BONFACE OKWAMON	27114580	PMC			4,200	2	8,400	[Signature]
5	GLADYS NAKHUMBU	21607355	PMC member			4,200	2	8,400	[Signature]
6	CARO OTWANE	37A76327	PMC member			4,200	2	8,400	[Signature]
7	Samuel Onyo	2010152686	ASSISTANT	K		7,000	2	14,000	[Signature]
8	Florence Mwigumbe	1993023568	DKDA	P		7,000	2	14,000	[Signature]
9	Ellud Ktyang	1999069463	Engineer	L		7,000	2	14,000	[Signature]
10	S. K. Wachira	1989096371	CDA	R		10,500	2	21,000	[Signature]
11	AMES GITAO	20080562A6	ADMINISTRATIVE 1 NORTH	A		7,000	2	14,000	[Signature]
12	GAD OCHOME	0607175	PMC			4,200	2	8,400	[Signature]
13	Lydia Omondi	27070130	PMC			4,200	2	8,400	[Signature]





KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

COUNTY PROJECT COORDINATION UNIT BUSIA  
P.O. BOX 261 - 50400  
BUSIA (K)  
Email: kcsapbusia@gmail.com



Kenya Climate Smart  
Agriculture Project

ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMMITTEE (PMC) CHANGARA DAP

VENUE: BUSIA DTC

DATE: 15<sup>TH</sup> JULY 2015

FARE REFUND

S/ No.	NAME	P/No./ ID No.	POSITION	JOURNEY DESCRIPTION	ONE WAY	TOTAL	SIGN
1	Boniface Okunmoye	27114580	PMC member	Changara - Busia	1000	2000	[Signature]
2	GLADYS NAKHUNGU	21607355	PMC MEMBER	CHANGARA - BUSIA	1000	2000	[Signature]
3	CAROL OTWANE	37476377	PMC MEMBER	CHANGARA - BUSIA	1000	2000	[Signature]
4	PHOLIA WISSA	7908179	PMC	CHANGARA - BUSIA	1000	2000	[Signature]
5	CORNER EBV	2506110	PMC	CHANGARA - BUSIA	1000	2000	[Signature]
6	THOMAS W. CRISPIN	27211635	PMC	CHANGARA - BUSIA	1000	2000	[Signature]
7	GAD OSTOME	15607175	PMC	CHANGARA - BUSIA	1000	2000	[Signature]
8	Lydia Egunu	27070130	PMC	Changara - Busia	1000	2000	[Signature]
9	Abba Phaniel	26830468	PMC	Changara - Busia	1000	2000	[Signature]
10	Boniface Emurudu	27114580	PMC	Changara - Busia	1000	2000	[Signature]
11	ENILY EPETO	36629926	PMC	Changara - Busia	1000	2000	[Signature]
12	Ben Nyakonyo	18719466	PMC	Changara - Busia	1000	2000	[Signature]
13	Ronald [Name]	2875097	PMC	Changara - Busia	1000	2000	[Signature]

S/N	NAME	P/No./ ID No.	POSITION	JOURNEY DESCRIPTION	ONE WAY	TOTAL	SIGN
1	B. Williams	18719466	Proc Member	Chankata - Pausig	1000	2000	B. Williams
2	WALTER NIMAI	24868263	Proc member	Chankata - Pausig	1000	2000	Walter
3	FULKIN O TENO	30360695	Proc member	Chankata - Pausig	1000	2000	Fulkin
4	M. JACKSON KIRANA	30925708	Proc member	Chankata - Pausig	1000	2000	M. Jackson
5	LELLY OMAKABA	23216223	Proc Member	Chankata - Pausig	1000	2000	LeLly
6	<del>Amelia Williams</del>	<del>22722965</del>	<del>Proc member</del>	<del>Chankata - Pausig</del>	<del>1000</del>	<del>2000</del>	<del>Amelia</del>
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TRAINING REPORT OF PROJECT MANAGEMENT COMMITTEE, HELD ON  
19/7/2023, AT BUSIA AGRICULTURAL TRAINING CENTRE

PRESENT

S/NO.	NAME	ID NO./P/NO.	GENDER	POSITION	STATION	PHONE
1	Cornel Ebu	28066110	M	PMC Member	Changara	0706813806
2	Bonface Emuruon	27114380	M	PMC Member	Changara	0112328583
3	Gladys Nakhungu	21607355	F	PMC Member	Changara	0724406682
4	Carro Otwane	37476327	F	PMC Member	Changara	0798281668
5	Phozia C. Issa	7908179	F	PMC Member	Changara	0723124548
6	Thomas I. Crispin	27211635	M	PMC Member	Changara	0703902880
8	Eliud Etyang	1989069463	M	Engineer	Busia	0724761155
9	Samuel Omijo	20150152686	M	CESCO	Busia	0733152281
9	Florence Kigunzu	1993023568	F	D/CDA	Busia	0721292403
10	Emmanuel Otwane	20190032261		WAO	Angurai East	0714798591
11	Agnes Oningo	2008086246	F	ASDSP	BUSIA	0725313980
12	Samson Khachina	19890963371	M	CORDINATOR CDA	BUSIA	0720990143
13	Lydia Oporu	27070130	F	PMC member	Changara	-
14	Gad Oshome	0607175	M	PMC Member	Changara	0719210066
15	Emily Opeto	36629926	F	PMC Member	Changara	0799627474
16	Atitwa Phanuel	26830468	M	PMC Member	Changara	0741394693
7	Bonface Emurudu	27114580	M	PMC Member	Changara	0700725509
8	Ben Nyokonyo	18749466	M	PMC Member	Changara	0700725509
9	Ronald Wamukoya	2845697	M	PMC Member	Changara	0715813249
0	Ben Nyakomo	13719466	M	PMC Member	Changara	0725693688
1	Sylvia Otero	30360695	F	PMC Member	Changara	0729722753
2	Rebecca Kiama	30925708	F	PMC Member	Changara	0741731875
3	Nelly Omalaba	23216043	F	PMC Member	Changara	07064227996
4	Violet Amai	24868263	F	PMC Member	Changara	0714799859

**TIMETABLE FOR TRAINING OF CHANGARA WATER PAN PROJECT  
MANGEMENT COMMITTEE.**

**TIME SCHEDULE**

**DAY 1**

<b>TIME</b>	<b>ACTIVITY/TOPIC</b>	<b>FACILITATOR</b>	<b>MODERATOR</b>
08:30 -09:00 AM	Registration	Eliud Etyang	Agnes Oningo
9.00 – 9.30 AM	Introduction	Emmanuel Otwane	Eliud Etyang
	Opening Remarks	Samson Khachina	Eliud Etyang
10:00 AM- 11:00 AM	Group Dynamics	Florence Kingunzu	Agnes Oningo
11:00AM- 11:30 AM	TEA	BREAK	Emmanuel Otwane
11:30 AM- 1:00 PM	Group Dynamics	Florence Kingunzu	Eliud Etyang
1.00 PM -2.00 PM	LUNCH	BREAK	Agnes Oningo
2.00 PM-4.00 PM	Team Building	Agnes Oningo	Florence Kigunzu
4.00 PM – 5.00 PM	Maintenance of Irrigation Structures	Eliud Etyang	Samuel Omijo
5.00 PM-5.30 PM	TEA	BREAK	Emmanuel Otwane
<b>DAY 2</b>			
8.00 AM – 8.30 AM	Recap	Samuel Omijo	Emmanuel Otwane
8.30 PM-10.00PM	Maintenance of Irrigation Equipment	Eliud Etyang	Agnes Oningo
10.00 AM-10.30 PM	TEA	BREAK	Eliud Etyang
10.30 AM-1.00 PM	Field/Practical on maintenance of irrigation structures and Equipments	Eliud Etyang	Samuel Omijo
1.00PM-2.00 PM	LUNCH	BREAK	Agnes Oningo
2.00 PM- 3.00PM	Sustainability Mechanisms	Samuel Omijo	Eliud Etyang
3.00 PM- 4.00 PM	Way forward	Agnes Oningo	Florence Kigunzu
4.00 PM- 4.30 PM	Closing Remarks	Florence Kigunzu	Samuel Omijo
4.30 PM– 5.00 PM	TEA	BREAK	Eliud Etyang

## **HOUSE KEEPING RULES**

1. All participants to keep time
2. All phones should be on silent mode
3. There should be no unnecessary movement
4. Respect each other's opinion/suggestions/point

## **OPENING REMARKS.**

The meeting was opened with a word of prayer by Carro Otwane, followed by self-introduction by all the members present.

The County Director for Agriculture, welcomed all the participants to the meeting and emphasized on the training as it will help the group realize development faster. He urged the committee to recruit more members and make sure that the area is more productive than before.

## **GROUP DYNAMICS : BY FLORENCE KIGUNZU**

### **SUB TOPICS DISCUSSED**

- ❖ What is a group?
- ❖ What is group dynamics?
- ❖ Why group dynamics is important?
- ❖ Why encourage group formation?
- ❖ Disadvantage of groups
- ❖ Principles of group formation
- ❖ Types of groups
- ❖ Governance for groups
- ❖ Process of group formation
- ❖ Identification of felt needs/problems
- ❖ Initial group membership recruitment
- ❖ Group size and participation
- ❖ Stages of group development
- ❖ Factors that help groups stick together
- ❖ Questions and Answers session

## **TEAM BUILDING: BY AGNES ONINGO**

- ❖ What is a team
- ❖ Characteristics of an effective team
- ❖ Types of team members
- ❖ What does it take to work as a team
- ❖ Questions and Answers session

## MAINTENANCE OF IRRIGATION STRUCTURES AND EQUIPMENTS- BY ELIUD ETYANG

S/NO.	STRUCTURE	MAIN WORK	MAINTENANCE
1	Silt trap	To trap all the silt from entering the water pan	Desilt or scoop the silt from the trap regularly or after heavy down pour
2	Inlet	It channels the run off to the water pan	Clear all the grasses /vegetation from covering the water way Remove any objects that block the water from accessing the pan
3	Fence	Protects wild animals/livestock and Human beings from accessing the water pan	Fix fallen posts and broken wire Slash the fence perimeter for easy visibility
	Gate	Prevent unwarranted access to the water pan	Always the gate should be under key and lock to avoid Unwarranted entry and accidents
5	Water pan	To store/ reserve the water for irrigation and any other use	Desilting and cutting down of the grass around the pan
6	Spill way	To remove or drain the excess water	Remove the grass and other vegetation

### EQUIPMENTS

S/NO.	EQUIPMENT	MAIN WORK	MAINTENANCE
1	Sprinklers	To irrigate the field	Drain all the water Grease the rotating parts Remove soils
2	Pipes	To convey the water to the fields	Repair the broken pipes immediately
3	Hydrants	To raise the water to the sprinkles	To remove soils Avoid livestock from tramping on them
4	Man holes	To maintain the flow of water	Cut the grass and repair broken parts

### WAY FORWARD

- 1 To be involved in IGA like production of local vegetable
2. To establish a group tree nursery near the pan
- 3.To be involved in savings and Table Banking
4. To register the group as IWUA
5. To hand over the water pan to the community
6. To carry out Resource mobilization/ proposal writing

Written by: Eliud Etyang

Sign.....



Republic of Kenya

COUNTY GOVERNMENT OF BUSIA

Handwritten initials 'W.S.' and a large blue signature 'F-60' over a circular logo.

Kenya Climate Smart Agriculture Project

Kenya Climate Smart Agriculture Project (KCSAP)  
Project Coordinating Unit – Busia  
P.O. Box 261-50400, Busia (K)

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# THE EVALUATION REPORT

**Standard Bid Evaluation Form**

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**Procurement of Goods or Works**

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**Section I. Bid Evaluation Standard Forms**

**Standard Cover**

**Bid Evaluation Report**

**And**

**Recommendation for Award of Contract**

Name of Project: **Kenya Climate Smart Agriculture Project**

IDA Credit No.: **IDA – 5950 KE**

Contract Name: **Procurement for expansion and installation of irrigation system on Changara Water Pan**

Identification Number: **KCSAP/BSA/CHA/1/2018 -2019**

Date of Submission: **5<sup>th</sup> July, 2019**

**Table 1. Identification**

1.1 Name of Borrower	<b>Republic of Kenya</b>
1.2 Loan/Credit number	<b>IDA - 5945-KE</b>
1.3 Date of effectiveness	<b>07<sup>th</sup> April, 2017</b>
1.4 Closing date (a) original (b) revised	<b>2<sup>nd</sup> July, 2019</b> <b>N/A</b>
1.5 Name of project	<b>Kenya Climate Smart Agriculture Project</b>
1.6 Purchaser (or Employer) (a) name (b) address	<b>County Project Coordinating Unit</b> <b>Box 261 - 50400 Busia</b>
1.7 Contract number (identification)	<b>KCSAP/BSA/CHA/1/2018 -2019</b>
1.8 Contract description	<b>Procurement for expansion and installation of irrigation system on Changara Water Pan</b>
1.9 Cost estimate	<b>KES. 20,000,000</b>
1.10 Method of procurement (check one)	ICB _____ LIB _____ Other: <b>RFQ</b>
1.11 Prior review required	<b>No</b>
1.12 Domestic preference allowed	<b>No</b>
1.13 Fixed price contract	<b>Yes</b>
1.14 Co-financing, if any: (a) agency name (b) percent financed by agency	<b>N/A</b> <b>N/A</b>

**Table 2. Bidding Process**

2.1 General Procurement Notice	
(a) first issue date	<b>N/A</b>
(b) latest update	<b>N/A</b>
2.2 Prequalification, if required	
(a) number of firms prequalified	<b>N/A</b>
(b) date of Bank's no-objection	<b>N/A</b>
2.3 Specific procurement notice	
(a) name of national newspaper	<b>N/A</b>
(b) issue date	<b>N/A</b>
© name of international publication	<b>N/A</b>
(d) issue date	<b>N/A</b>
(e) number of firms notified	<b>N/A</b>
2.4 Standard Bidding Document	
(a) title, publication date	<b>SBDG</b>
(b) date of Bank's no-objection	<b>06<sup>th</sup> April, 2019</b>
© date of issue to bidders	<b>19<sup>th</sup> June, 2019</b>
2.5 Number of firms issued documents	<b>Three (3)</b>
2.6 Amendments to documents, if any	
(a) list all issue dates	<b>1. N/A    2. N/A    3. N/A</b>
(b) date(s) of Bank's no-objection	<b>1. N/A    2. N/A    3. N/A</b>
2.7 Date of pre-bid conference, if any	<b>N/A</b>
2.8 Date minutes of conference sent to bidders and Bank	<b>N/A</b>

**Table 3. Bid Submission and Opening**

3.1 Bid submission deadline	
(a) original date, time	<b>2<sup>nd</sup> July, 2019</b>
(b) extensions, if any	<b>N/A</b>
3.2 Bid opening date, time	<b>2<sup>nd</sup> July , 2019 at 1000 hours</b>
3.3 Record of bid opening, date sent to Bank	<b>3<sup>rd</sup> July, 2019</b>
3.4 Number of bids submitted	<b>THREE (3)</b>
3.5 Bid validity period (days or weeks)	
(a) originally specified	<b>120 DAYS</b>
(b) extensions, if any	<b>N/A</b>
(c) date of Bank's no-objection, if required	

**Table 4. Bid Prices (as Read Out)**

Bidder Identification			Read-out Bid Price(s)		Modifications or Comments (f)
Name (a)	City/State or Province (b)	Country (c)	Currency(ies) (d)	Amount(s) or % (e)	
BERODI COMPANY LTD	BUSIA	KENYA	KES	19,930,203	N/A
WARONO BUILDERS LIMITED	ELDORET	KENYA	KES	20,309,430	N/A
KARUOK GENERAL SERVICES LTD	MALAKISI	KENYA	KES	20,972,890	N/A

**Table 5A. Preliminary Examination**

**EVALUATOR 1.**

<b>Bidder</b> <i>(a)</i>	<b>Verification</b> <i>(b)</i>	<b>Eligibility</b> <i>(c)</i>	<b>Bid Security</b> <i>(d)</i>	<b>Completeness of Bid</b> <i>(e)</i>	<b>Substantial Responsiveness</b> <i>(f)</i>	<b>Acceptance for Detailed Examination</b> <i>(g)</i>
BERODI COMPANY LTD	YES	YES	N/A	YES	YES	YES
WARONO BUILDERS LIMITED	YES <sup>1</sup>	YES	N/A	YES	YES	YES
KARUOK GENERAL SERVICES LTD	YES <sup>2</sup>	YES	N/A	YES	YES	YES

YES<sup>1</sup> - NCA practice license, bank statement not attached  
 YES<sup>2</sup> - NCA registration expired

**EVALUATOR 2.**

Bidder	Verification	Eligibility	Bid Security	Completeness of Bid	Substantial Responsiveness	Acceptance for Detailed Examination
(a)	(b)	(c)	(d)	(e)	(f)	(g)
BERODI COMPANY LTD	YES	YES	N/A	YES	YES	YES
WARONO BUILDERS LIMITED	YES	YES	N/A	YES	YES	YES
KARUOK GENERAL SERVICES LTD	YES	YES	N/A	YES	YES	YES

**Table 5A. Preliminary Examination**

**EVALUATOR 3**

Bidder	Verification	Eligibility	Bid Security	Completeness of Bid	Substantial Responsiveness	Acceptance for Detailed Examination
(a)	(b)	(c)	(d)	(e)	(f)	(g)
BERODI COMPANY LTD	YES	YES	N/A	YES	YES	YES
WARONO BUILDERS LIMITED	YES <sup>1</sup>	YES	N/A	NO	NO	YES
KARUOK GENERAL SERVICES LTD	YES <sup>2,3</sup>	YES	N/A	YES	YES	YES

1. NCA certificate, practice license and bank statement not attached
2. Invalid NCA certificate
3. No bank statement attached

**Table 5A. Preliminary Examination**

**EVALUATOR 4.**

Bidder <i>(a)</i>	Verification <i>(b)</i>	Eligibility <i>(c)</i>	Bid Security <i>(d)</i>	Completeness of Bid <i>(e)</i>	Substantial Responsiveness <i>(f)</i>	Acceptance for Detailed Examination <i>(g)</i>
BERODI COMPANY LTD	YES	YES	N/A	YES	YES	YES
WARONO BUILDERS LIMITED	YES <sup>1</sup>	YES	N/A	INCOMPLETE	NO	YES
KARUOK GENERAL SERVICES LTD	YES <sup>2</sup>	YES	N/A	INCOMPLETE	NO	YES

1. No bank statement, NCA Registration and practicing license attached
2. NCA registration certificate attached I expired (Invalid), NCA Annual practicing license not attached

**Table 5A. Preliminary Examination**

**EVALUATOR 5.**

Bidder <i>(a)</i>	Verification <i>(b)</i>	Eligibility <i>(c)</i>	Bid Security <i>(d)</i>	Completeness of Bid <i>(e)</i>	Substantial Responsiveness <i>(f)</i>	Acceptance for Detailed Examination <i>(g)</i>
BERODI COMPANY LTD	YES	YES	N/A	NO	NO	YES
WARONO BUILDERS LIMITED	YES <sup>1,2,3</sup>	YES	N/A	NO	NO	YES
KARUOK GENERAL SERVICES LTD	YES <sup>4,5,6</sup>	YES	N/A	NO	NO	YES

1. NCA registration certificate not attached

**Table 6. Corrections and Unconditional Discounts**

Bidder  <i>(a)</i>	Read-out Bid Price(s)		Corrections		Corrected Bid Price(s)  $(f) = (c) + (d) - (e)$	Unconditional Discounts <sup>2</sup>		Corrected/Discounted Bid Price(s)  $(i) = (f) - (h)$	
	Currency(i.e.) <i>(b)</i>	Amount(s) <i>(c)</i>	Computational Errors <sup>1</sup> <i>(d)</i>	Provisional Sums <i>(e)</i>		Percent <i>(g)</i>	Amount(s) <i>(h)</i>		
			<b>NOT APPLICABLE</b>						
etc.									

**Note:** Only bids accepted for preliminary examination (Table 5, column *g*) should be included in this and subsequent tables. Columns *a*, *b*, and *c* are from Table 4 (columns *a*, *d*, and *e*, respectively).

<sup>1</sup> Corrections in column *d* may be positive or negative.

<sup>2</sup> If the discount is offered as a percent, column *h* is normally the product of the amounts in columns *f* and *g*. Refer to para. 6(c). If the discount is provided as an amount, it is entered directly in column *h*. A price

increase is a negative discount.

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**Table 7. Exchange Rates**

Currency Used for Bid Evaluation: **Kenyan Shillings (Kshs)**

Effective Date of Exchange Rate: **N/A**

Authority or Publication Specified for Exchange Rate: **N/A**

**Note:** Attach copy of exchange rates provided by specified authority or publication.

**Table 8. Currency Conversion (Multiple Currencies)**

Specify Evaluation Currency: \_\_\_\_\_

Bidder (a)	Currency(ies) of Bid (b)	Corrected/Discounted Bid Price(s) (c)	Applicable Exchange Rate(s) <sup>1</sup> (d)	Evaluation Currency	
				Bid Price(s) (e) = (c) x (d)	Total Bid Price <sup>2</sup> (f)
<b>NOT APPLICABLE</b>					
etc.					

**Note:** This table is to be used for SBDG and Option B of SBDLW. Columns *a*, *b* and *c* are from Table 6, columns *a*, *b* and *i*.

<sup>1</sup> Column *d* is from Table 7.

<sup>2</sup> Column *f* is the sum of bid prices in column *e* for each bidder.

**Table 9. Currency Conversion (Single Currency)**

Specify Evaluation Currency: \_\_\_\_\_

Bidder  (a)	Corrected/Discounted Bid Price (in specified currency) (b)	Payment Composition <sup>1</sup>			Exchange Rate Used by Bidder <sup>1</sup> (f)	Amounts in Currency of Payment (g) = (e) x (f)	Exchange Rate for Evaluation <sup>2</sup> (h)	Evaluation Currency	
		Currency of Payment (c)	Percent of Total Bid (d)	Amount in Evaluation Currency (e) = (b) x (d)				Bid Prices (i) = (g) x (h)	Total <sup>3</sup> (j)
<b>NOT APPLICABLE</b>									
etc.									

**Note:** This table is used for SBDSW and Option A of SBDLW. Columns *a* and *b* are from Table 6, columns *a* and *i*.

<sup>1</sup> Columns *c*, *d*, and *f* are provided in the SBDLW Appendix to Bid and in the (Form of) Contractor's Bid in the SBDSW.

<sup>2</sup> Column *h* is from Table 7.

<sup>3</sup> Column *j* is the sum of bid prices in column *i* for each bidder.

**Table 10. Additions, Adjustments, and Priced Deviations**  
Specify Evaluation Currency: \_\_\_\_\_

Bidder (a)	Corrected/Dis counted Bid Price <sup>1</sup> (b)	Additions <sup>2</sup> (c)	Adjustments <sup>2</sup> (d)	Priced Deviations <sup>2</sup> (e)	Total Price (f) = (b) + (c) + (d) + (e)
<b>NOT APPLICABLE</b>					
etc.					

<sup>1</sup> Column *b* is from either Table 8, column *f* or Table 9, column *j*.

<sup>2</sup> Each insertion in columns *c*, *d*, or *e* should be footnoted and explained in adequate detail, accompanied by calculations. Refer to paras. 6(e), 6(f), and 6(g) respectively of Annex I

**Table 11. Domestic Preference for Goods**  
Specify Evaluation Currency: \_\_\_\_\_

Bidder (a)	Domestic Preference Group <sup>1</sup> (b)	Total Price <sup>2</sup> (c)	Exclusions for Preference <sup>3</sup> (d)	Revised Total (e) = (c) – (d)	Prevailing Tariff (%) <sup>4</sup> (f)	Domestic Preference (%) <sup>5</sup> (g)	Preference Price <sup>6</sup> (h)	Total Comparison Price (i) = (c) + (h)	
			<b>NOT APPLICABLE</b>						
etc.									

<sup>1</sup> Column *b* refers to Groups A, B, or C, as indicated by bidder, subject to verification by Borrower.

<sup>2</sup> Column *c* is from Table 10, column *f*. If the lowest total price is from a Group A or Group B bidder, it is the lowest evaluated bidder, and the remainder of the table need not be filled out. Columns *d* through *h* need to be filled out only for Group C bids.

<sup>3</sup> Column *d* is the sum of costs in columns *d* and *e* from Table 10 plus other costs incurred within the Borrower's country. Footnotes should be provided to explain the significant components of column *d*.

<sup>4</sup> Column *f* is the sum of duties and import taxes on the particular items or group of similar items as a percent of the CIF or CIP price. Refer to para. 7(a) of Annex I.

<sup>5</sup> Column *g* will be the smaller of 15 percent or the prevailing tariff in column *f*.

<sup>6</sup> Column *h* for Group A bidders is zero. Group B bids at this stage should no longer be compared. For Group C bidders, column *h* is the product of columns *e* and *g*.

**Table 12. Domestic Preference for Works**  
Specify Evaluation Currency: \_\_\_\_\_

Bidder <i>(a)</i>	Domestic Preference Group <sup>1</sup> <i>(b)</i>	Total Price <sup>2</sup> <i>(c)</i>	Exclusions for Preference <sup>3</sup> <i>(d)</i>	Revised Total <i>(e) = (c) - (d)</i>	Preference <sup>4</sup> <i>(f)</i>	Total Comparison Price <i>(g) = (c) + (f)</i>
	<b>NOT APPLICABLE</b>					
etc.						

<sup>1</sup> Column *b* refers to Group A (eligible domestic bidders) or Group B (others) as indicated by bidder, subject to verification by Borrower.

<sup>2</sup> Column *c* is from Table 10, column *f*. If the lowest priced bid is from a Group A bidder, it is the lowest evaluated bidder, and the remainder of the table need not be filled out.

<sup>3</sup> Column *d* is the sum of costs in columns *d* and *e* from Table 10. An attachment should be provided to explain the significant components of column *d*. Columns *d* and *e* may be left blank for Group A bidders.

<sup>4</sup> Column *f* for Group A bidders is zero. For Group B bidders, column *f* is 7.5 percent of column *e*.

**Table 13. Proposed Contract Award**

1. Lowest evaluated responsive bidder (proposed for contract award). (a) name (b) address	<b>BERODI COMPANY LTD</b> <b>P.O. BOX 51 - 50401</b>	
2. If bid submitted by agent, list actual supplier. (a) name (b) address	<b>N/A</b> <b>N/A</b>	
3. If bid from joint venture, list all partners, nationalities, and estimated shares of contract.	<b>N/A</b>	
4. Principle country(ies) of origin of goods/materials.	<b>Kenya</b>	
5. Estimated date (month, year) of contract signing.	<b>8<sup>TH</sup> July, 2019</b>	
6. Estimated delivery to project site/completion period.	<b>100 days</b>	
	Currency(ies)	Amount(s) or %
7. Bid Price(s) (Read-out) <sup>1</sup>	Kenya Shillings	<b>19,930,203.00</b>
8. Corrections for Errors <sup>2</sup>	"	-
9. Discounts <sup>3</sup>	"	-
10. Other Adjustments <sup>4</sup>	"	-
11. Proposed Award <sup>5</sup>	"	<b>19,930,203.00</b>
12. Disbursement Category <sup>6</sup>	<b>1(one)</b>	

<sup>1</sup> From Table 6, columns *b* and *c*.

<sup>2</sup> From Table 6, column *d*.

<sup>3</sup> From Table 6, column *h*. Include any cross-discounts. See Annex I, para. 7(b).

<sup>4</sup> All adjustments should be explained in detail.

<sup>5</sup> Sum of the prices in Items 7–10. For single currency bids, express secondary currency amounts as percentages.

<sup>6</sup> From the Loan Agreement.

## Annex I. Evaluation Guide

1. **Identification, Bidding Process, and Bid Submission**

Tables 1, 2, and 3 provide for the filing of basic information on the procurement process. This information is necessary to monitor compliance with the Loan Agreement, and particularly paras. 2.7 and 2.8 on advertising and notification of the *Guidelines*.

2. **Bid Opening<sup>1</sup>**

All bidders or their representatives are invited to attend the bid opening, where bids are read out and recorded, along with a list of attendees. The record is prepared for prompt transmittal to the Bank. Copies should be sent to all bidders. Bid opening procedures are described in the ITB. To assist in carrying out the opening and preparing of the record, a checklist is provided in Annex II. The checklist should preferably be filled out for each bid during the actual reading out at the meeting. The reading should be from the original version of each bid, and the actual amounts and other key details read out should be circled for later verification. If bids are expressed in a single currency, other currency needs expressed as a percentage should be recorded. It may also be desirable to read out exchange rates used by bidders (see para. 6(d)(ii) in this Annex).

Any envelopes containing substitutions, modifications, or withdrawals must be subject to the same level of scrutiny, including the reading out of critical details, such as price changes. Failure to read out such information and include it in the written record may result in denial of its inclusion in bid evaluation. If a bid has been withdrawn by cable, it should nonetheless be read out and should not be returned to the bidder until the authenticity of the withdrawal notice has been confirmed.

As stated in the ITBs, no bids should be rejected at the bid opening except those received after the deadline for receipt of bids. Such bids shall be returned unopened to the bidder. A summary of the read-out bid prices should be provided in Table 4.

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<sup>1</sup> See *Guidelines*, para. 2.44. The record should be sent promptly to the Bank after bid opening and therefore does not usually accompany the bid evaluation report.

### 3. Bid Validity

The duration of the validity of each bid should be the one specified in the ITB and should be confirmed in the signed (form of) bid. If exceptional circumstances occur in which award cannot be made within the validity period, extensions in writing should be requested of bidders, in accordance with the ITB (also *Guidelines*, para. 2.56). Extensions to the validity of bid security should also be requested of bidders, if necessary.<sup>2</sup> Note that for fixed price contracts subject to prior review, a no-objection by the Bank is necessary for extensions longer than sixty (60) days and for any subsequent extensions (*Guidelines*, Appendix 1, para. 2(d)).<sup>3</sup> Note any extensions in Table 3.

### 4. Principles of Evaluation

After the public opening of bids, information relating to the examination, clarification, and evaluation of bids shall not be disclosed to bidders or other persons not officially concerned with this process until the successful bidder is notified of the award of contract (*Guidelines*, para. 2.46). The Bank recommends appointment by the Borrower of an evaluation committee, consisting of a minimum of three qualified members who should work in a secure office where all bidding documents can be kept. There may be a considerable advantage if the same members participated in the preparation of the bidding documents.

On occasion, the Borrower may request clarifications of bidders concerning ambiguities or inconsistencies in the bid. As required in the ITBs, such requests shall be in writing, and no change in the price or scope of the originally offered goods, works, or services shall be sought or accepted, except for the correction of arithmetic error. The responses from bidders shall also be in writing. (Refer also to *Guidelines*, Appendix 4, para. 10.) No circumstances shall justify meetings or conversations between the Borrower (or its consultants) and bidders during the

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<sup>2</sup> Particular care must be taken in cases where the deadline for *submission* (or for opening) of bids can be extended, as the duration of bid security is frequently provided in terms of an expiration date. In contrast, bid validity is specified in terms of an interval after the deadline for receipt or the date of bid opening.

<sup>3</sup> Revised to eight (8) weeks, in the first (January 1996) reprint of the 1995 edition of *Guidelines*.

bid evaluation process.<sup>4</sup>

Bidders frequently attempt to contact the Borrower during bid evaluation, directly or indirectly, to query progress of evaluation, to offer unsolicited clarifications, or to provide criticisms of their competition. Receipt of such information should be acknowledged as to receipt only.<sup>5</sup> Borrowers must evaluate bids on the basis of the information provided in the respective bids. However, additional information provided may be useful in improving the accuracy, speed, or fairness of the evaluation. Nonetheless, no changes in the bid price or substance are allowed.

### **5. Preliminary Examination of Bids**

The evaluation process should begin immediately after bid opening. The purpose of preliminary examination is to identify and reject bids that are incomplete, invalid, or substantially nonresponsive to the bidding documents and therefore are not to be considered further. The following checks should be applied:

- (a) Verification: Attention should be directed toward deficiencies that, if accepted, would provide unfair advantages to the bidder. Sound judgment must be used: for example, simple omissions or mistakes arguably occasioned by human error should not be grounds for rejection of the bid. Rarely is a bid perfect in all respects. However, the validity of the bid itself, for example, its signatures, must not be in question. If the bidder is a joint venture, the joint venture agreement must be submitted; if the bidder is an agent, an authorization from the supplier or manufacturer must be provided in addition to any documentation required of the supplier or manufacturer itself. All copies of the bid should be compared with the original and corrected accordingly, if necessary. Thereafter, the original should be kept in a safe location, and only copies should be used in evaluation.

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<sup>4</sup> See *Guidelines*, para. 2.6 for an explanation of two-stage bidding. If used, evaluation of the second-stage bidding follows the procedures in this *Annex I. Evaluation Guide*.

<sup>5</sup> On occasion, bidders approach the Bank with information. Bank policy is to acknowledge the correspondence and pass it on to the Borrower for its consideration (*Guidelines*, Appendix 4, paras. 11–14).

- (b) Eligibility: The bidder must be a national or a juridic entity from an eligible source country as defined in the *Guidelines*.<sup>6</sup> All partners to a joint venture shall be from an eligible source country, and the joint venture shall be registered in an eligible source country. All goods and services shall originate from eligible source countries. In the case of plant and equipment, this eligibility test is applied only to the finished product offered in the bid and to its major and clearly identifiable components. If prequalification has taken place, only bids from prequalified bidders can be considered.<sup>7</sup> The bidder (including all members of a joint venture and subcontractors) may be disqualified if affiliated with a firm that has provided related consulting services on the project, or if the bidder is a publicly owned enterprise from the Borrower's country, lacking legal and financial autonomy. (See the ITB for details.)
- (c) Bid Security: The bidding document may require submission of a bid security. If so, the bid security must conform to the requirements of the ITB, and it must accompany the bid. If the bid security is issued as a bank guarantee, it must be consistent with the wording of the bid security form provided in the bidding document. Submission of a copy of the security or submission of a counter guarantee naming the Borrower's bank instead of the Borrower is unacceptable. Furthermore, securities for an amount smaller or for a period shorter than the one specified in the ITB are not acceptable. The security for a bid submitted by a joint venture should be in the name of all of the partners of the joint venture.
- (d) Completeness of Bid: Unless the bidding documents have specifically allowed partial bids—permitting bidders to quote for only select

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<sup>6</sup> A list of eligible source countries and those subject to payment restrictions from the Bank loan are listed in Annex III.

<sup>7</sup> The juridic entities of the prequalified bidders may not be modified in the submission of bids.

items or for only partial quantities of a particular item—bids not offering all of the required items should ordinarily be considered nonresponsive. However, under works contracts, missing prices for occasional work items are considered to be included in prices for closely related items elsewhere. If any erasures, interlineations, additions, or other changes have been made, they should be initialed by the bidder. They may be acceptable if they are corrective, editorial, or explanatory. If they are not, they should be treated as deviations and should be analyzed as per para. 5(e) below. Missing pages in the original copy of the bid may be cause for rejection of the bid, as may contradictions in model numbers or other designations of critical supply items.

- (e) Substantial Responsiveness: Major deviations to the commercial requirements and technical specifications are a basis for the rejection of bids. As a general rule, major deviations are those that, if accepted, would not fulfill the purposes for which the bid is requested, or would prevent a fair comparison with bids that are properly compliant with the bidding documents. Examples of major deviations include:
- (i) Stipulating price adjustment when fixed price bids were called for
  - (ii) Failing to respond to specifications by offering instead a different design or product that does not offer substantial equivalence in critical performance parameters or in other requirements
  - (iii) Phasing of contract start-up, delivery, installation, or construction not conforming to required critical dates or progress markers
  - (iv) Subcontracting in a substantially different amount or manner than that permitted

- (v) Refusing to bear important responsibilities and liabilities allocated in the bidding documents, such as performance guarantees and insurance coverage
- (vi) Taking exception to critical provisions such as applicable law, taxes and duties, and dispute resolution procedures
- (vii) Those deviations that are specified in the ITB as requiring rejection of the bid (such as, in the case of works, participating in the submission of another's bid other than as a subcontractor).

Bids that offer deviations may be considered substantially responsive—at least as to the issue of fairness—if the deviations can be assigned a monetary value that would be added as a penalty during the detailed evaluation process and if such deviations would be acceptable in the eventual contract.

The results of preliminary examination should be presented in Table 5. If the bid fails preliminary acceptance, the reasons must be clearly explained in footnotes or in an attachment, as necessary. An example is shown in Annex IV. Borrowers may find it useful to include additional tables for itemization of responsiveness to a list of technical or commercial specifications. These should be attached to Table 5.

## **6. Detailed Examination of Bids**

Only those bids surviving preliminary examination need to be examined in this phase.

- (a) Corrections for Errors: The methodology for correction of computational errors is described in the ITB. The read-out bid prices and their corrections should be noted in Table 6, column *d*. The corrections are considered binding on the bidder. Unusual or large corrections that could

affect the comparative ranking of bids should be explained in footnotes.

- (b) Corrections for Provisional Sums: Bids may contain provisional sums set by the Borrower for contingencies or for nominated subcontractors, etc. As these sums are the same for all bids, they should be subtracted from the read-out prices in Table 6, column *e* to allow for a proper comparison of bids in subsequent steps. However, those provisional sums set aside for Daywork,<sup>8</sup> where priced competitively, should not be included in the deductions.
- (c) Modifications and Discounts: In accordance with the ITB, bidders are allowed to submit, prior to bid opening, modifications to their original bid. The impact of modifications should be fully reflected in the examination and evaluation of the bids. These modifications may include either increases or discounts to the bid amounts that reflect last-minute business decisions. Accordingly, the original bid prices should be modified at this point in the evaluation. Discounts offered in accordance with the ITB that are conditional on the simultaneous award of other contracts or lots of the contract package (cross-discounts) shall not be incorporated until the completion of all other evaluation steps. The effect of unconditional discounts (or alternatively, increases) should be shown as in Table 6 (columns *g* and *h*). Any discount expressed in percent must be applied to the appropriate base specified in the bid (i.e., check to see if it applies to any provisional sums).
- (d) Evaluation Currency: The remaining bids as corrected for computational errors and as adjusted for discounts should be converted to a common evaluation currency, as described in the ITB. The exchange rates to be used in the calculations are to be listed in Table 7. If multiple exchange rates exist for a particular currency (for commercial, government

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<sup>8</sup> Refers to unforeseen work. For details, see SBDLW, Section B, or SBDSW, Section 7.

transactions, etc.), indicate which applies, with reasons for the choice. Where exchange rates for a particular currency are not available from the specified authority or publication, identify the secondary source, as well as any necessary conversion calculations.

There are two different currency options for bidding/payment, each requiring a different conversion methodology:

- (i) The SBDG and Option B of SBDLW use the multiple currency option, in which the bid price is expressed in a number of currencies. For this procurement, use Table 8.
  - (ii) The SBDSW and Option A of SBDLW use the single currency option, in which the bid price is expressed entirely in a specific currency, usually in the Borrower's currency, with other foreign currency requirements stated as percentages of the bid price, together with the exchange rates used by the bidder to determine the percentages. For SBDLW single currency bids, sections of the Works may require payment in different currencies and proportions. In such instances, the impact of any corrections found will require a lengthier analysis for each bid, based on the submitted Appendix to Bid. Table 9 is to be used for these calculations.
- (e) Additions: Omissions to the bid should be compensated for by adding the estimated costs for remedying the deficiency. Where items missing in some bids are present in others, an average of quoted prices could be used to compare competitors' bids. Alternatively, external sources, such as published price lists, freight tariff schedules, etc., may be appropriate. The cost determined should be expressed in the evaluation currency and shown in Table 10, column c.
- (f) Adjustments: The ITB specifies which, if any, performance or service factors will be taken into

account in the bid evaluation (see, for example, para. 26 of SBDG). The methodology used in evaluation of these factors should be precisely described in the bid evaluation report and should be fully consistent with the ITB provisions. Bonuses or additional credits that reduce the evaluated bid price will not be given in the bid evaluation for features that exceed the requirements stated in the bidding documents, unless specifically provided for in the ITB.<sup>9</sup> The value of adjustments will be expressed in terms of cost, for all works and most goods contracts, and should be shown in Table 10, column *d* and expressed in the evaluation currency.<sup>10</sup>

- (g) Priced Deviations: As discussed under para. 5(e), bids with minor deviations may be considered substantially responsive if their further consideration assigns a monetary cost or penalty to the bid for the purpose of bid comparison:
- (i) Requests for deviations that are expressed by the bidder in vague terms, such as “we would like an increase in the amount of mobilization advance” or “we wish to discuss changes in the completion schedule” should ordinarily be ignored in bid evaluation. However, a categorical statement by the bidders taking exception to a requirement in the bidding documents should be treated as a deviation.
  - (ii) If a bid requires a faster payment stream than specified in the bidding documents, the penalty is based on the prospective benefit to the bidder. This situation assumes use of a discounted cash flow using the prevailing commercial interest rates for the currencies of the bid, unless the ITB foresees the eventuality and specifies a rate.

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<sup>9</sup> Similarly, a bid offering a choice of different product models is evaluated on the basis of the lowest price offered by the bidder from among the models meeting the requirements of the bidding document.

<sup>10</sup> The Bank on occasion may allow the use of the Merit Point System for the purchase of goods. If so, the adjustments will be expressed in points. Refer to ITB (para. 26.5) of the SBDG and to the Bank directly for details on bid evaluation using the point system.

- (iii) If a bid provides for a delivery or completion that is beyond the date specified in the bidding documents but that is nonetheless technically acceptable to the Borrower, the time advantage given should be assessed a penalty specified in the ITB or, if one is not provided, based on the rate of liquidated damages specified in the bidding documents.

The deviations should be priced in the evaluation currency in Table 10, column e.

**7. Determination of Award**

In the comparison of bids for works and for most goods, the corrected and discounted bid prices, together with adjustments for omissions, deviations, and specified evaluation factors, have been noted in Table 10. The bidder with the lowest total is the lowest evaluated cost bidder at this stage, subject to:

- Application of domestic preference, if any is allowed;
  - Application of any discounts, contingent on the simultaneous award of multiple contracts or lots; and
  - Post-qualification evaluation, or, if prequalification has occurred, confirmation of prequalification information.
- (a) Domestic Preference: If domestic preference is allowed in bid evaluation, the ITB will so state and provide detailed procedures to be used in determining the eligibility for preference and the amounts.
    - (i) With respect to goods contracts, verification of the prevailing import duties and the related import taxes to a nonexempt importer must be made. If these duties and taxes are less than 15 percent of the CIF or CIP

price,<sup>11</sup> they are to be used as to the amount of preference. Also, the eligibility of goods for domestic preference must be examined according to the criteria described in the ITB.<sup>12</sup>

The calculations for determining the lowest evaluated bidder are based on a two-step process. In the second step, if needed, the domestic preference is *added* (like a tariff) to the CIF or CIP bid prices of the goods offered from abroad.<sup>13</sup> Care should be taken to separate these prices from the overall bid prices, which may include the costs of internal transportation and related freight insurance, installation, training, and other costs incurred within the Borrower's country. Such costs are not to be adjusted for the preference. The CIF or CIP bid prices used will reflect corrections for errors and discounts and will be adjusted for omissions pertaining to the CIF or CIP prices (such as insufficient spare parts). They will *not* reflect adjustments for deviations or specified evaluation factors. The preference tariff calculated will then be added to the corrected, discounted, and adjusted total prices tabulated in Table 11.

All calculations involved in assessing domestic preference should be clearly shown in Table 11, together with accompanying explanations as necessary. The lowest evaluated bidder would be the bidder with the lowest price total in column *i*, unless note 2 of Table 11 applies.

- (ii) Any domestic preference eligibility allowed under works contracts is dependent on

<sup>11</sup> CIF is cost, insurance and freight for maritime transportation. CIP is cost, carriage and insurance in the case of multimodal transportation. For further definitions, refer to *INCOTERMS 1990*, International Chamber of Commerce, 38 Cours Albert 1<sup>er</sup>, 75008 Paris, France.

<sup>12</sup> In the case of single responsibility supply and installation of plant and equipment, the domestic preference applies to individual components of the bid. Procedures in such cases are described in the *Guidelines*, Appendix 2, para. 6, and if applicable to the procurement under review, would be embodied in the ITB.

<sup>13</sup> This occurs if the apparent low bidder from the first step is importing the goods.

ownership criteria and on the share of work to be undertaken. The domestic preference is provided by adding 7.5 percent to the corrected and discounted bid prices of bidders not eligible for domestic preference. The ITB excludes domestic preference application to any provisional sums, as well as to adjustments or priced deviations. The lowest evaluated bidder is the bidder with the lowest total in column *g* of Table 12.

- (b) Cross-Discounts: These are conditional discounts offered in the event that more than one contract or lot will be awarded to the same bidder. Bid evaluation in such cases can be quite complicated, particularly for goods contracts where domestic preference may apply. The sizes of cross-discounts offered by each bidder may vary with the potential number of contracts awarded. The ITB may also limit the number or total value of awards to a bidder on the basis of its financial and technical capacity.<sup>14</sup> Thus, a bidder offering the lowest evaluated bid on a particular contract may be denied award because of such a restriction. The Borrower shall select the optimum combination of awards on the basis of least overall cost of the total contract package, consistent with the qualification criteria. (Refer to *Guidelines*, para. 2.4.) Presentations of the calculations should be made on an attachment to the report, which should include the bid evaluation(s) for the other contracts, if they have been evaluated separately.
- (c) Qualification: If prequalification was conducted, the bidder whose bid is the lowest evaluated should receive the award, unless the bidder's qualifications have since materially deteriorated or the bidder has since received additional work that overstresses its capacity. The Borrower should satisfy itself fully on both accounts.

Where prequalification has not occurred, the prospective awardee should be subjected to post-

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<sup>14</sup> This restriction may originate with prequalification.

qualification, the procedures for which are described in the ITB.<sup>15</sup>

If the lowest evaluated bidder fails post-qualification, its bid should be rejected, and the next ranked bidder should then be subject to post-qualification examination. If successful, this bidder should receive the award. If not, the process continues. (Refer to *Guidelines*, para. 2.57.)

The rejection of a bid for reasons of qualification requires substantial justification, which should be clearly documented in attachments to the report. A history of poor performance may be considered a substantial justification.

- (d) Alternative Bids: The ITB may request or allow the Borrower to accept alternative bids under the stipulation that only the alternative submitted by the lowest evaluated bidder and conforming to the bidding documents will be considered.
- (i) For works, the ITBs may allow alternative technical solutions and/or alternative times for completion.
  - (ii) For goods, the ITB may allow for submission of an alternative payment schedule. The same ITB (paras. 11.2(b)(ii) or (iii)) may also require bidders to submit, in addition to any CIF or CIP bids, similar bids less transport or insurance, such as FCA or CFR.<sup>16</sup> The Borrower, if it is willing to accept the alternative bid offered by the lowest evaluated bidder, should provide justification for doing so.<sup>17</sup>

Calculations for the evaluation of alternatives should be provided in an attachment to the

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<sup>15</sup> The Annex in the Bank's Standard Prequalification Document is useful for postqualification evaluations.

<sup>16</sup> *INCOTERMS 1990*.

<sup>17</sup> If the contract is signed without insurance coverage, the Borrower must provide the Bank with evidence of alternative insurance payable in a freely usable currency to replace or repair such goods (*Guidelines*, para. 2.27, and General Conditions of the Loan or Credit Agreement).

report.

- (e) Proposed Award: The amount of the proposed award shall be the bid price as submitted by the winning bidder and adjusted as described in the ITB for corrections, any discounts (including cross-discounts), and acceptance by the Borrower of alternative offers from the lowest evaluated bidder. Adjustments to the final price and scope of the contract to correct for acceptable omissions and quantity variations in the bid may be negotiated with the lowest evaluated bidder.<sup>18</sup> Prior concurrence of the Bank with the proposed award is required before such negotiations may be entered into (*Guidelines*, para. 2.62). Table 13 should be filled out to establish the actual amount of the contract award.

If (a) none of the bids are found to be responsive, (b) bids are unreasonably high in price compared with earlier estimates, or (c) none of the bidders are qualified, the Borrower may consider rejection of all bids (prior Bank concurrence is required) (*Guidelines*, paras. 2.59–2.62).

(f) Report Submission

- (i) *Prior Review*: In accordance with the loan agreement, the Borrower must submit the completed bid evaluation report containing the required summary to the Bank as soon as possible after bid opening, preferably no later than three (3) weeks prior to the expiration of the bid validity period. The report should include the appropriate items listed in Annex V.

Borrowers are encouraged to request assistance as needed from the Bank in explaining the evaluation procedures. However, the Bank will not participate in the evaluation itself.

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<sup>18</sup> Note that SBDG—ITB para. 31 allows the Purchaser (Borrower) the right to unilaterally vary quantities within set limits at the time of award.

- (ii) *Post Review*: For contracts not subject to prior review, the Borrower may award the contract upon completion of bid evaluation (*Guidelines*, Appendix 1, para. 4). As stated therein, subsequent submission of the bid evaluation report to the Bank is required prior to delivery of a withdrawal application, or if a Special Account is used, prior to its first replenishment application. These provisions do not apply if Statements of Expenditures are used, whereby the evaluation and other documents are kept by the Borrower, subject to future review by the Bank.
- (g) Review by the Bank: Upon receipt by the Bank, all contracts subject to prior review will be reviewed. Borrowers may be requested to provide additional information and justification for the recommendations. The Bank will not contact bidders. However, it may request the Borrower to do so for necessary clarifications. When the Bank is satisfied with the evaluation of bids and recommendations of award, a “no-objection” written communication will be issued by the Bank official designated for such correspondence.

For contracts subject to post review, any doubts about the justification for award should be raised with the Bank prior to award signing. Borrowers should ensure that all correspondence received from bidders concerning evaluation has been taken into account. The Bank does not finance contracts that have not been procured in accordance with the loan agreement.<sup>19</sup>

- (h) Award of Contract: Bid securities of unsuccessful bidders should be returned promptly after award has been made. However, if contract effectiveness is contingent on the receipt of a performance security or other condition, the Borrower may consider seeking an appropriate extension of time for the bid validity and the

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<sup>19</sup> If funds from the loan have already been disbursed, the Bank may seek reimbursement. Refer to *Guidelines* para. 1.13 and Appendix 4, para. 3.

accompanying bid security of the next two lowest bidders.

As mentioned in the Preface, upon confirmation by the Borrower that the award has been made, the Bank is authorized to publish a description of the contract, the name and nationality of the contract awardee, and the contract price. Any further information on the bids or on their evaluation, including the bid evaluation report, is held in confidence by the Bank. Unsuccessful bidders are allowed under the *Guidelines* (Appendix 4, para. 15) to seek a debriefing with the Borrower, and, additionally, with the Bank. In anticipation of this and/or any post reviews by the Bank, the Borrower should ensure that bidding documents and evaluations are securely stored.

**Annex II. Bid Opening Checklist**  
(To be filled out for each bid as it is read out)

Contract Reference: **KCSAP/BSA/CHAN/1/2018 - 2019**

Bid Opening Date: **2<sup>ND</sup> July, 2019**

Time: **1000 hours**

Name of Bidder: **BERODI COMPANY LTD**

- (a) Is outer envelope of bid sealed? **YES**
- (b) Is bid form completed and signed? **YES**
- (c) Expiration date of bid: **7<sup>th</sup> November 2019**
- (d) Is documentary authority for signing enclosed? **NO**
- (e) Amount of bid security (if required): **398,604.06**
- (f) Describe any "Substitution," "Withdrawal," or "Modification" submitted
- (g) Describe any alternative bid made: **N/A**
- (h) Describe any discounts or modifications offered: **N/A**
- (i) Additional comments: **N/A**
- (j) Name of bidder or representative present: **NONE**
- (k) Total bid price: **KES. 19,930,203**

Signature of responsible official: \_\_\_\_\_ Date: \_\_\_\_\_

**Annex II. Bid Opening Checklist**  
(To be filled out for each bid as it is read out)

Contract Reference: **KCSAP/BSA/CHAN/1/2018 - 2019**

Bid Opening Date: **2<sup>nd</sup> July, 2019**

Time: **1000 hours**

Name of Bidder: **WARONO BUILDERS LIMITED**

- (a) Is outer envelope of bid sealed? **YES**
- (b) Is bid form completed and signed? **NO**
- (c) Expiration date of bid: **7<sup>th</sup> November, 2019**
- (d) Is documentary authority for signing enclosed? **NO**
- (e) Amount of bid security (if required): **398,604.04**
- (f) Describe any "Substitution," "Withdrawal," or "Modification" submitted
- (g) Describe any alternative bid made: **NO**
- (h) Describe any discounts or modifications offered: **NO**
- (i) Additional comments: **N/A**
- (j) Name of bidder or representative present: **N/A**
- (k) Total bid price: **KES : 20,309,430**

Signature of responsible official: \_\_\_\_\_ Date: \_\_\_\_\_

**Annex II. Bid Opening Checklist**  
(To be filled out for each bid as it is read out)

Contract Reference **KCSAP/BSA/CHAN/1/2018 - 2019**

Bid Opening Date: **2<sup>nd</sup> July, 2019**

Time: **1000 hours**

Name of Bidder: **KARUOK GENERAL SERVICES LTD**

- (a) Is outer envelope of bid sealed? **YES**
- (b) Is bid form completed and signed? **NO**
- (c) Expiration date of bid: **7<sup>TH</sup> November, 2019**
- (d) Is documentary authority for signing enclosed? **NO**
- (e) Amount of bid security (if required): **398,604.04**
- (f) Describe any "Substitution," "Withdrawal," or "Modification" submitted
- (g) Describe any alternative bid made: **NO**
- (h) Describe any discounts or modifications offered: **NO**
- (i) Additional comments: **N/A**
- (j) Name of bidder or representative present: **NONE**
- (k) Total bid price: **KES: 20,972,890**

Signature of responsible official: \_\_\_\_\_ Date: \_\_\_\_\_

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### **Annex III. Eligibility for the Provision of Goods, Works, and Services in Bank-Financed Procurement**

As of January 1998

For the information of borrowers and bidders, and with reference to paragraph 1.6, footnote 9, of the *Guidelines: Procurement under IBRD Loans and IDA Credits*, dated January 1995, revised January and August 1996, and September 1997, set forth below is a list of countries from which bidders, goods, and services are not eligible to participate in procurement financed by the bank or IDA.<sup>1</sup>

- Andorra
- Cuba
- Democratic People's Republic of Korea (North Korea)
- Liechtenstein
- Monaco
- Nauru
- San Marino
- Tuvalu

In addition, bidders, goods, and services from other countries or territories may be declared ineligible by a provision in bidding documents if the borrower's country has excluded them by a law, official regulation, or act of compliance meeting the requirements of paragraph 1.8(a) of the *Guidelines: Procurement under IBRD Loans and IDA Credits*.

The Loan Agreement also prohibits a withdrawal from the Loan for the purpose of any payment to persons or entities, or for any import of goods, if such payment or import, to the knowledge of the Bank, is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. At the present time, this prohibition applies to:

- Iraq
- Libya

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<sup>1</sup> Any questions regarding this list should be addressed to the Senior Manager, Procurement Policy and Services Group, Operational Core Services Network.

### Annex IV. Preliminary Examination

Bidder	Verification	Eligibility	Bid Security	Completeness of Bid	Substantial Responsiveness	Acceptance for Detailed Examination
Bidder A	Yes	Yes <sup>1</sup>	Yes	Yes	Yes	Yes
Bidder B	No <sup>2</sup>	Yes	Yes	Yes	Yes <sup>3</sup>	No
Bidder C	Yes <sup>4</sup>	Yes	Yes	Yes	Yes	Yes

<sup>1</sup> Bidder is partly owned (25 percent) by government (of Borrower). It operates under commercial law and is financially and managerially independent of government.

<sup>2</sup> Joint venture agreement missing.

<sup>3</sup> Requires 25 percent mobilization advance; bid document states maximum of 15 percent. Deviation is minor and can be quantified.

<sup>4</sup> Bidder prequalified as local agent; bid is joint obligation with parent company. Bid deemed acceptable because increase in financial backing results.

<sup>5</sup> Bid security not in freely convertible currency.

<sup>6</sup> Does not include cost for required disposal of hazardous wastes found at the site.

<sup>7</sup> Source of plant from non-eligible country.

<sup>8</sup> Required validity period of security not met (8 weeks instead of 12 weeks).

<sup>9</sup> Contains several initialed changes substituting ISO standards in the specifications with DIN standards. This is acceptable to the Engineer-in-Charge.

**EXPANSION AND INSTALLATION OF IRRIGATION SYSTEM ON CHANGARA WATER PAN**  
**THE AGGREGATED SCORES FROM THE 5 EVALUATORS**

EVALUATORS	1	2	3	4	5	TOTAL SCORES	AVERAGE SCORE	RANK	EVALAUTED PRICE
BERODI COMPANY LTD	73	75	74	71	77	370	74	1	19,930,203
WARONO BUILDERS LIMITED	46	47	48	49	47	237	47.4	3	20,309,430
KARUOK GENERAL SERVICES	49	54	48	51	46	248	49.6	2	20,972,890


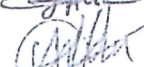
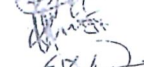



**N/B:**  
 BERODI COMPANY LIMITED is recommended for the Award being the lowest evaluated responsive bidder at a total cost of **Ksh. 19, 930,203**

**Annex V. Bid Evaluation Summary Checklist**

1. Attach bid opening record, if not previously submitted (refer to footnote 1, Annex I).
2. Explain any inconsistencies between prices and modifications to prices read out at bid opening (and written into the record) and presented in Table 4.
3. Provide details on eliminating any bids during preliminary examination (Table 5). Copy select pages from bids, as desirable, to show examples of objectionable features.
4. If provisional sums in Table 6 vary among bidders, explain. Explain any substantial corrections for computational errors that may affect the ranking of bidders.
5. Provide a copy of the rates requested for Table 7 and used in Tables 8 or 9.
6. The additions, adjustments, and priced deviations in Table 10 require detailed explanations where they may affect the ranking of bidders.
7. Eligibility for domestic preference as indicated in Tables 11 or 12 must be verified if the ranking of bids is affected. Provide details in an attachment. Exclusions to the calculations for preference should be explained if similarly significant.
8. Explain any cross-discount (para. 7(b)) not read out and recorded at bid opening. In addition, attach copies of any evaluation reports for the other related contracts awarded to the same bidder.
9. Provide detailed reasons for refusing to award a contract to a party other than the lowest evaluated bidder (para. 7(c)).
10. If an alternative bid is accepted, provide a detailed explanation of the reasons for its acceptance, addressing issues of timeliness, performance, and cost implications (para. 7(d)).
11. An attachment to Table 13 should explain adjustments to the price provided on line 10. Explain any changes to scope of bid and contract conditions.
12. Provide evidence of alternative insurance (see footnote 17, Annex I).

13. Attach copies of any correspondence from bidders that raise objections to the bidding and evaluation process, together with detailed responses.
14. Attach copies of any letters to bidders requesting clarifications. Provide copies of responses.
15. Submit bid evaluation with separate evaluation report from consultant, if one was commissioned.
16. Ensure that the bid evaluation report is double-checked, paginated, and complete, and includes a Letter of Transmittal. The Bank will only review reports that are sent to it by the proper authorities.
17. Send by courier or by other swift means.

### EVALUATION COMMITTEE MEMBERS

NAME	POSITION	DATE	SIGN
1. SAMSON KHACHINA	CHAIRPERSON	24/6/2019 —	
2. DR. ALLAN OGENDO	MEMBER	24/6/2019 —	
3. ELIUD ETYANG'	MEMBER	24/6/2019 —	
4. ALFRED MAKOKHA	MEMBER	24/6/2019 —	
5. HENRY ODHIAMBO	MEMBER	24/6/2019 —	
6. EVERLYNE AYOROH	SECRETARY	24/6/2019 —	



KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

COUNTY PROJECT COORDINATION UNIT  
BUSIA COUNTY

P.O. BOX 281 - 40100 BUSIA  
Email: kcsapbusia@gmail.com



Kenya Climate Smart  
Agriculture Project

ACTIVITY: MEETING TO DISCUSS THE PROGRESS OF THE PROJECT AND TO PLAN FOR THE NEXT PHASE OF WORK  
 VENUE: MEETING ROOM, KCSAP BUSIA DATE: 31/10/2019

**ATTENDANCE LIST**

No	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
1	EMMANUEL DIBUKANI	20190032261	074792591	MAREF	ANGWARI EAST WARD	M	emmanueldibukani@gmail.com	<i>[Signature]</i>
2	Abd. Chumbe	20190032095	0723550350	MAREF	ANGWARI EAST	M	abdchumbe@gmail.com	<i>[Signature]</i>
3	ERIC MUGIERO	2019106387	072221705	MAREF	ANGWARI EAST	M	ericmugiero@gmail.com	<i>[Signature]</i>
4	WIKATT DICKSON	27070120	0769761082	OFFICE OF ENVIRONMENT	ANGWARI EAST	M	wikatt@gmail.com	<i>[Signature]</i>
5	WILLIAM KAGULU		0727991457	OPINION LEADER	ANGWARI EAST	M	WKA	<i>[Signature]</i>
6	JOSEPH BARASA	7158698	0103476525	Liguru	Angwari East	M	joelbarasa@gmail.com	<i>[Signature]</i>
7	Geoffrey Umugira	4735335	0715021092	Liguru	Angwari East	M	Mhokisi	<i>[Signature]</i>
8	Richard Nyete	2527074	072355900	RSDTR	Angwari East	M	7.Mhokisi	<i>[Signature]</i>
9	JAMES OTHMAN		0714478198	RSD	Angwari East	M	Amo@gmail.com	<i>[Signature]</i>
10	STEPHEN DIBUKANI	7135741	0711232925	PARAGRAPH	Angwari East	M	Amo	<i>[Signature]</i>
11	WICKI W. STOK	3431001	011965854	CLD/Dev	Angwari East	M	Stok@gmail.com	
12	STEPHEN OTHMAN	0532005	074921036	VERMIND	Angwari East	M	161.Mhokisi	
13	WILLIAM OTHMAN	0711005	072221705	ST. JOHN	Angwari East	M	19.Mhokisi	

No.	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
14	Moses Fungo	4303525	790140879			M		
15	MALICE <sup>okoo</sup> <del>okoo</del>	4309013	0716799301	Liguru		M		
16	To BINA CHESTO	25707512	0701053876	PAC	Angurai	Male	to binachest@gmail.com	
17	COLINER EBU	2506110	0706813302	PAC	ANGURAI	MALE		
18	STEPHEN JAKIT	10163529	0704566731	CBSO CHANARA	ANGURAI	MALE		
19	Wycliffe Wanyingi	12437604	0715193955		ANGURAI	MALE		
20	MUNDA SDET	13049877	0728227825		ANGURAI	F		
21	JOSEPH WERESH	298295	073912234		ANGURAI	MALE		
22	LEONARD EYANCA	26050768	0705142971		ANGURAI	MALE		
23	WILSON BARASH	7593305	0711161030		ANGURAI	MALE		
24	KENNEDY ENTRATA	24858493	0716353433		ANGURAI	MALE		
25	MERIBCK MUKAMBE	21142235	0702424544		ANGURAI	MALE	meribckmukambe@gmail.com	
26	JOHN NTEREMCHI	36217357	070276580		ANGURAI	F		
27	RAU TSEMENKI	25495153	0720163715		))	M		
28	Allan S. Lyate	31333313	0705033890		))	M	allanlyate@gmail.com	
29	CHARLES OSEBA	21087563	-		))	M		
30	JOHN BOMI	2032421	0794210683	Liguru	Angurai	M		
31	Datos Barasa	02 67990	0718070905		))	M		
32	FRANCIS ELASIRIMAT	4307229	0799273919	Liguru	ANGURAI	MALE		
33	Wycliffe Okoko	7955552	0779551174	Liguru	ANGURAI	M		
34	Esther Omon	0837557	070204039	Angurait	BUSA	M		

Total:.....Males:.....Females



No.	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								

Total:.....Males:.....Females

**CHANGARA WATER PAN & INSTALLATION OF IRRIGATION SYSTEM****PROJECT MANAGEMENT COMMITTEE MEMBERS:**

No	Name	ID	TEL	SUB COMMITTEE	POSITION	S/LOCATION
1	Bildad Masake	24412371	0713203872	Executive	Chair person	Changara
2	Livingstone Otwane	2314056	0727782773	Executive	Secretary	Akobwait
3	Phauzia Issa	7908179	0723124548	Executive	Treasurer	Aterait
4	Cornell Ebu	2806110	0706813806	SAIC	Chair Person	Aterait
5	Thomas Ipalei	27211635	0703902803	SAIC	Secretary	Changara
6	Carol Ikate Otwane	37476327	0798381669	SAIC	Treasurer	Changara
7	Tobias Cheseto	28707512	0701053876	Procurement	Chair Person	Akobwait
8	Douglas Omande	2975290	0703806495	Procurement	Secretary	Aterait
9	Gladys Nakhungu	21607355	0724406682	Procurement	Treasurer	Akobwait
10	Bonface Emuruon Okwamong	27114580	0757667625	-	Member	Akobwait
11	Jim Osirom				Ex Officio	Chief
12	George O. Ikwara	10706244	0713414680		Ex Officio	Ward Admin
13	Emmanuel Otwani	29482368	0714798591		Ex Officio	Ward Agric. Officer



**KENYA CLIMATE SMART AGRICULTURE PROJECT  
BUSIA COUNTY SUB PROJECT PROPOSAL**

**CHANGARA WATER PAN EXPANSION AND  
INSTALLATION OF IRRIGATION SYSTEM TO CONTROL  
FLOODING BY EL NINO RAINS - TESO NORTH SUB  
COUNTY  
(RAPID RESULTS INITIATIVE -100 DAYS)**

**SUBMITTED TO  
KCSAP NATIONAL PROJECT COORDINATION UNIT, CAPITOL HILL  
TOWERS NAIROBI.**

**PREPARED BY**

**DATE: 30<sup>TH</sup> APRIL 2019**

2-7

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## **Executive Summary**

The project is located in Akobwait Sub – location, Changara Location, Angura Division, Teso North District of Western Province. The project work consist water pan construction and irrigation system installation. The water pan capacity if 56,000m<sup>3</sup> and will benefit 6,000 people directly, including livestock.

## Chapter 1.

# 1. DESCRIPTION OF PROJECT AREA:

## 1.1 Location

The project is located in Akobwait Sub – location, Changara Location, Angura Division, Teso North District of Western Province. It is located at 36N 657562 m E, 81994 m N UTM. It is 22 (Twenty two) kilometers from the Amagoro District headquarters through Angurai market.

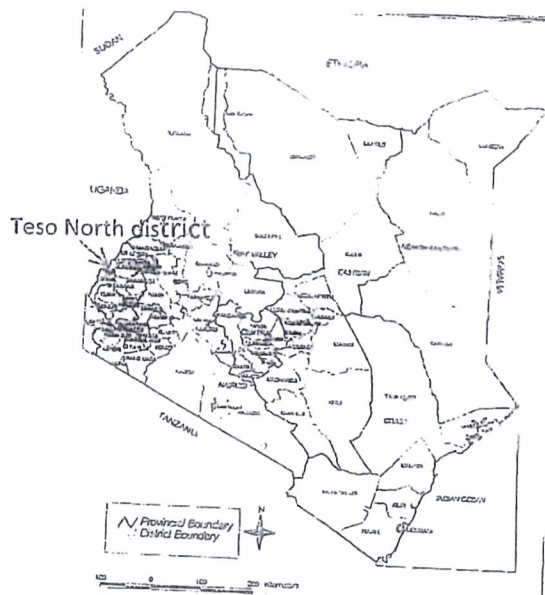
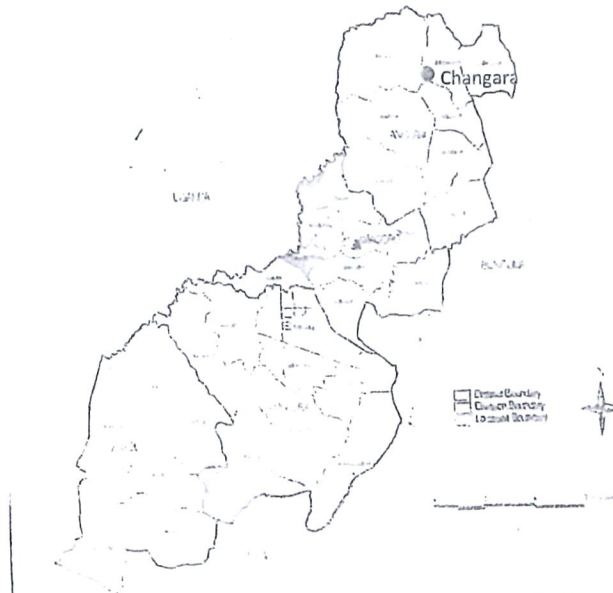


Figure 1.1 Location of Teso North district

## 1.2 History of the Area.

Though small scale farming of food crops has been going on for a long time, cotton growing as a cash crop was introduced in the vicinity of the project area as early as 1960. However, in the 1970's cotton growing was abandoned due to the collapse of the existing Nambale Malakisi ginneries. Further, the cotton board became irregular in payment which sometimes was not even paid.



In the early 1960s the colonial government set aside 15 acres of land at Changara market for construction of water pans for livestock and domestic use. One water pan was constructed and although has been serving the people very well, it can no longer satisfy the needs because of population increase.

Farmers grow food crops in the long rains and some cotton and tobacco in the short rains season.

### ***1.3 Need for water pan development***

There has been a shift in the rainfall regime in the county towards uncertainty and erratic and sometimes heavy downpours within a short period and prolonged draughts.

There has been a rapid growth in human and livestock population that require a corresponding increase in resources such water.

Some farmers are pumping water from the existing pan for irrigation purposes.

The advent of devolved governments brought with unprecedented development of infrastructure networks. This implies that there is a lot of runoff from the roads and roofs that carry with it sediments to the river systems.

The current level of use the water from the pan for irrigation is low but where the farmers have started, there are encouraging results. The farmers have requested for technical and financial assistance for the design and implementation of a water pan and complete irrigation The

expected spin-off benefits include increases in level of income, employment opportunities and food self sufficiency.

## Chapter 2

### 2. BASIC DATA

#### 2.1 Topography

The project area is located at Changara market which is a confluence or runoff from two hilly areas. Downstream of the proposed water pan is a valley with side slopes of 2-10% on average.

#### 2.2 Soil Type

According to the Farm Management Handbook of Kenya (Western Province) the soils at Changara are described as well drained, deep, dark yellowish brown to dark brown, friable sandy clay to loam ; in places gravelly in deeper subsoil: Ferralo-orthic ACRISOLS (UmG2). The soil is considerably fertile as some farmers who have been cultivating this soil from time immemorial and have had consistently good yields in fields with appropriate use of commercial fertilizers and farm yard manure.

The area lies in Agro-Ecological Zone Lower Midland zone 3 (LM3) or Lower Midland Cotton Zone with a medium cropping season followed by a (weak) short or short to very short one. It has good yield potential 1st rainy season, start normally begin of March: Medium maturity maize like H 511, 513 or 515, early maturing Sorghum like Serena early maturing millets; medium maturing beans, green grams, cowpeas, groundnuts (in light soils); simsim; sweet potatoes are grown

2nd rainy season, start normally early of August where Simsim, green grams, tomatoes are grown.

Pasture and forage

0.7-1.0 ha/LU on mixed savanna with star grass (*Cynodon dactylon*); down to about 0.18 ha/ LU feeding Napier grass, Bana; *Desmodium* or *Stylosanthes* for fodder resp. soil improvement, *Leucaena* additionally. The soils in the water pan area have low infiltration rate (<5mm/hr) and

## 4. DESIGN OF THE OF THE WATER PAN

### 4.1 Estimation of runoff

The sources of water to fill and replenish the water pan are:-

- 1) Discharge from the surface area of the catchment,
- 2) Discharge runoff from the road side.

The Rational formula (eq. 4.3) was used to compute peak runoff:

$$\text{Peak runoff } Q_p = \frac{CIA}{360} \dots\dots\dots 4.3$$

Where

$Q_p$  = peak discharge ( $m^3/s$ )

$C$  = dimensionless Runoff coefficient

$I$  = rainfall intensity (mm/hr)

$A$  = catchment area (ha)

A concerted effort by the technical staff, social workers and the farmers is required in creating a strong and sustainable organization. The major problems that need to be overcome include;

1. High cost of implementation (amount of excavation and cost of structures);
2. Getting the farmers to contribute equally and in good time (some of the farmers are currently occupied elsewhere and their commitment to the development of the poorly drained areas may be low) and
3. Ensuring that once the poorly drained area is drained other production constraints are alleviated so that the farmer can start benefiting from drainage intervention.

A series of trainings shall be conducted to ensure participation and ownership of the project.

The current drainage policy aims at providing the farmers with technical assistance in the form of planning and designing the drainage project and supervision of the construction.

**Table 3:5: Impacts and mitigation measures**

Impact	Proposed mitigation measures
Soil degradation: Localized erosion particularly around steep slopes, existing gully area and drainage outlet	Provide drop structures; Undertake gully control measures and provide adequate erosion control at the outlets
Hydrology: decreased peak flow of streams and reduced dry season water availability	Provide water through pipelines to homesteads
Water pollution: Intensified crop production is expected to increase agricultural load (particularly Nitrogen, Phosphorous and biocides)	Promote proper application of agricultural chemicals and integrated pest management
Flora and fauna: habitat fragmentation and reduced fauna diversity	Preserve pan embankments and construct farm ponds.

### ***3.7 Promoting Community Participation***

#### **Expected Participation**

The farmers have requested for technical and financial assistance in developing drainage for their poorly drained area. During the initial years the level of crop production is expected to be low and their level of contribution may also be low. Currently most of the owners of the poorly drained areas are farming other lands and there may not be a sufficient incentive for them to come and excavate the drains and to make financial contribution towards the construction of the drainage structures.

A major incentive will be installation of road crossing to improve transport in the area.

#### **Strengthening and sustaining a strong organization**

**Table 3:4: potential negative impacts**

Impact		
Category	Effect	Significance
Soil degradation	Local erosion along steep slopes	Significant
Hydrology	Increased peak flow in Ong`aroi river Reduced dry season water availability	Significant
Health	Increased exposure to disease vector habitats	Not significant
Water quality	Pollution of Ong`aroi river	Significant
Flora and fauna	Habitat fragmentation Reduce in flora species composition Reduce in fauna species composition	Significant Non-existent Not significant



Application Reference No. **PR/692**  
 Registration No. ....

**nema**  
 mazingira yetu | uhai wetu | wajibu wetu

For Official Use



**NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)**  
**THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT**  
**ENVIRONMENT IMPACT ASSESSMENT LICENSE**

This is to certify that the Environmental Impact Assessment Project Report received from  
**COUNTY GOVERNMENT OF BUSIA**  
 individual/firm) of **P.O. BOX PRIVATE BAG BUSIA** (Name of  
 (Address)  
 submitted to the National Environment Management Authority (NEMA) in accordance with the Environment  
 Act Assessment and Audit Regulations 2003 regarding.....

**PROPOSED CONSTRUCTION OF WATER PAN AND INSTALLATION OF AN  
 IRRIGATION SYSTEM**..... (title of project) whose objective is to carry on

**PROVISION OF WATER FOR THE COMMUNITY AND IRRIGATION PURPOSES**

..... (briefly describe purpose) located at  
**AKOBWAIT SUBLOCATION, CHANGARA LOCATION, ANG'URAI DIVISION**  
**TESO NORTH SUBCOUNTY, BUSIA COUNTY**

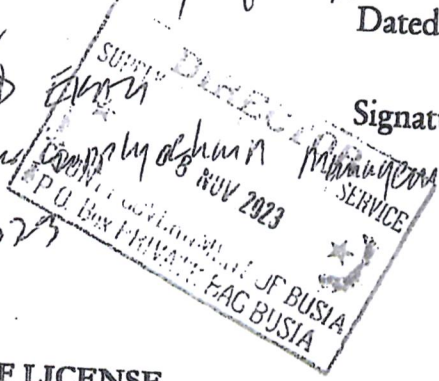
..... (locality and County) has been  
 viewed and a license is hereby issued for implementation of the project, subject to attached conditions

*certified true copy of original*  
*Checked*  
*LEONARD*  
*Director*  
*8/11/2023*

Dated this **28TH** Day of **FEB. 2020**

Signature *[Handwritten Signature]*

SEAL

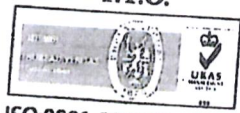


**Director General**  
**The National Environment Management Authority**

**CONDITIONS OF LICENSE**

- 1.- This license is valid for a period of 24 months (time within which the project should commence) from the date hereof.
- 2.- The Director-General shall be notified of any transfer/variation, surrender of this license.

P.T.O.



ISO:9001-2008 Certified



199

# NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

NEMA Headquarters  
P.O Box 67839 00200  
Nairobi, Kenya  
Fax: 254-020-608997  
Mobile: 0724 253 398, 0733 600 035  
E-mail: dgnema@nema.go.ke  
Website: www.nema.go.ke

County Director of Environment Office  
Busia County  
P.O Box 111-50400  
Busia-Kenya  
Mobile: 0711503963  
Email: busia@nema.go.ke

NEMA/PR/BSA/5/2/692

25<sup>TH</sup> JULY, 2019

COUNTY GOVERNMENT OF BUSIA  
(DEPT.AGRICULTURE AND ANIMAL RESOURCES)  
PO BOX PRIVATE BAG  
BUSIA.

**RE: ACKNOWLEDGEMENT OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF A WATER PAN AND INSTALLATION OF IRRIGATION SYSTEM AT CHANGARA,ANG'URAI EAST WARD, TESO NORTH SUB COUNTY, BUSIA COUNTY.**

The National Environment Management Authority (NEMA) acknowledges receipt of 6 copies of Environmental Impact Assessment project report prepared by **DR.KERE M. PATRICK ( REG NO: 2199)** EIA/Audit /firm of experts).

The reference number for the EIA Study report is **NEMA/PR/BSA/5/2/692** for any future correspondence.

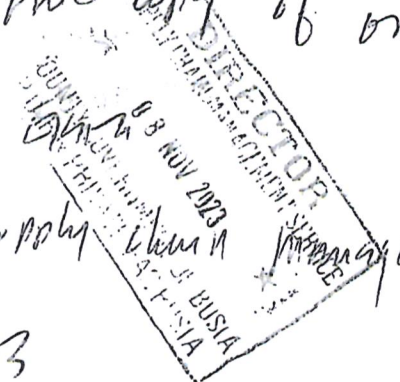
Copies of the report have been forwarded to the relevant lead agencies for comments within 14 days with effect from the date of this letter.

In the interim, please do not commence or proceed with any development of the proposed project until you receive communication from NEMA on the same. The report is being reviewed and NEMA will communicate its assessment/findings to you in due course.

**EDWARD MENZA**

**COUNTY DIRECTOR OF ENVIRONMENT  
BUSIA.**

*certified true copy of original*  
*Edward Menza*  
*Director*  
*Services*  
*8/11/2023*





## KENYA CLIMATE SMART AGRICULTURE PROJECT

### BUSIA CPCU

### ESIA SCREENING FOR SUB PROJECTS REPORT

**SUB PROJECT:** Expansion of Changara Water Pan and Installation of irrigation system

**VENUE:** Changara Water Pan Site

**Date:** 29/04/2019

**Ward:** Angurai East Ward

**S/County:** Teso North

#### Team Members:

1. Mr. Edward Menza-County Director NEMA
2. Mr. Alfred Makokha-M&E/ESSO
3. Mr. Maurice Okisegere.

#### Driver

4. Mr. Godfrey Otieno- NEMA

#### Objective:

Screening of the Environmental Social Impacts of the proposed site for the expansion of water pan and installation of irrigation system by the County Director Nema.

#### Community Members Present:

Name

Name	ID	TEL	WARD
Benson Barasa	5134448	07247972218	Nambuku/Namboboto
Roda N Barasa	51344593	0716803605	Nambuku/Namboboto
Dismas Omondi	1886510	0713546854	Nambuku/Namboboto
Douglas Okoch	26058933	0708331109	Nambuku/Namboboto
Walter Odanya	0459518	0727157909	Nambuku/Namboboto

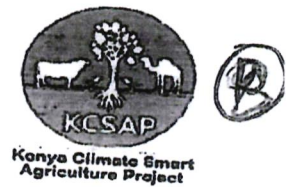
#### Output:

The community members participated in a focused group discussion of the EIA screening checklist. The FDG was moderated by County Director of Nema and assisted by CPCU ESSO.

#### Section A: Background information



R/E L/M



## KENYA CLIMATE SMART AGRICULTURE PROJECT

### BUSIA CPCU

### SUB PROJECT SITE FIELD VISIT REPORT

**Project Title:** Expansion of Changara Water Pan and installation of Irrigation system.

**VENUE:** Changara Water Pan Site

**Date:** 18/01/2019

**Team Members:**

1. Mr. Okisegere Maurice-CPC
2. Mr. Alfred Makokha-M&E/ESSO
3. Mr. William Keino-Irrigation officer

**Driver**

4. Mr. John Odongo

**Objective:**

Familiarization of the sub projects site by the County Project Coordinator.

**Officers Met**

1. Mr. Jim Osiromo-Chief.
2. Mr. Levi K Enoit-Assistant Chief.
3. Mr. William Kaguru-Village elder.

**Field Findings**

Water pan is found in Angurai East Ward which has a population of 22,002 persons (2009 Census).  
The water pan was constructed in 1958 by colonial government to address water shortage.

It is on public land with title deed that was donated by the community.

Land size 15.5 acres.

Rehabilitated in 1997 at a cost of Ksh. 2,000,000.

Management Committee in place however it's inactive.

The water pan serves about 10,000 people from Changara & Chemasir locations.



Kenya Climate Smart  
Agriculture Project



KENYA CLIMATE SMART AGRICULTURE PROJECT  
BUSIA COUNTY SUB PROJECTS

CHANGARA WATER PAN EXPANSION AND IRRIGATION PROJECT

COST ESTIMATES FOR FENCING

SUBMITTED TO  
KCSAP NATIONAL PROJECT COORDINATION UNIT, CAPITOL HILL TOWERS  
NAIROBI.

PREPARED BY  
ENG. WASWA BARASA.  
COUNTY DIRECTOR OF IRRIGATION  
DEPARTMENT OF WATER, IRRIGATION & ENVIRONMENT  
P.O BOX 392  
BUSIA (K)

*Prepared by  
Waswa Barasa  
June 2014*

**CHANGARA WATER PAN EXPANSION AND IRRIGATION PROJECT**  
**PRICED BILL OF QUANTITIES FOR ERECTION OF FENCE**

ITEM	DESCRIPTION	UNIT	QTY	RATE (Sh.)	AMOUNT	
					(Sh.)	(Cts)
	<b>Concrete posts</b>					
4.1	Supply and fix Reinforced concrete posts 3M length, spaced at 2.5m centre to centre	No	200	3200	640,000	00
4.2	Excavation of holes to anchor posts ( 450mm * 450mm * 600mm)	No	200	200	40,000	00
4.3	Concrete class 1:3:6 for anchoring the posts	CM	20	8,500	170,000	00
4.4	Supply and fix barbed wire gauge 14 at 500mm	M	3,000	50	150,000	00
4.5	Supply and fix chain link gauge 14 at 3.0M height	SM	1500	1200	1,800,000	00
4.6	Provide a provisional sum for construction of a gate to the reservoir compound to be expended as directed by the Engineer	No	1	50,000	50,000	00
<b>SUB TOTAL</b>						
Add 16% VAT						
<b>GRAND TOTAL</b>						
					2,850,000	00
					456,000	00
					<b>3,306,000</b>	<b>00</b>

*Procurement  
 Prepare requisition  
 J. J. J.*



**COUNTY GOVERNMENT OF BUSIA**



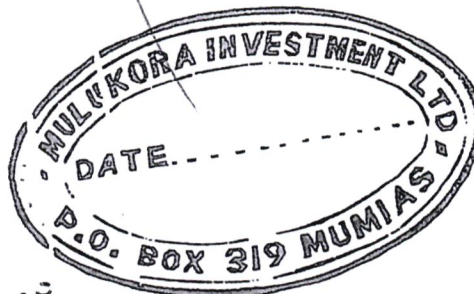
Kenya Climate Smart Agriculture Project (KCSAP)  
Project Coordinating Unit - Busia  
P.O. Box 261-50400, Busia (K)

**PIPING OF BLOCK TWO CHANGARA WATER PAN, TESO  
NORTH SUB-COUNTY - CHANGARA SUB-PROJECT**

**TENDER NO  
DAAR/BCG/KCSAP/CPCU/RFQ/009/2020-2021**

**Project: Kenya Climate Smart Agriculture Project**  
**Employer: County Project Coordination Unit - Busia County**  
**Country: Kenya**  
**Issued on: 31<sup>st</sup> October, 2020**

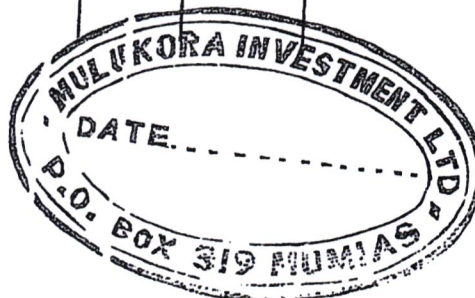
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## Schedules

## BILL OF QUANTITIES

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT	(Cts)
				(Sh.)	(Sh.)	
7.1	Site clearance					
7.1.1	Clear site of all trees (less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material from site	m <sup>2</sup>	100	25	2500	
7.1.2	Clear site of all trees (less than 500 mm diameter), bushes, shrubs etc to a depth of not more than 150 mm from ground surface. This should include grubbing up roots and removal of all deleterious material	m <sup>2</sup>	100	100	10,000	
7.1.3	Trees of more than 500 mm diameter (provisional)	No	10	480	4800	
7.2	Excavation and Backfilling					
	Rates for excavation and backfilling in trench shall include for trimming trench bottom and for providing selected bedding and surround materials from the excavations in accordance with the specifications					
7	Excavation and Backfilling in normal soil for Dia 160 mm to a depth n.e 1.5 m	m <sup>3</sup>	300	280	84,000	
7.2.2	Ditto for dia 125 mm	m <sup>3</sup>	500	280	140,000	
7.2.3	Ditto for dia 63 mm.	m <sup>3</sup>	800	280	224,000	
7.2.4	Ditto for dia 25 mm.	m <sup>3</sup>	300	280	84,000	
7.3	uPVC Pipework					
	Provide, lay, joint and test the following flexible spigot and socket pipe and fittings with rubber ring joints. Rates to					

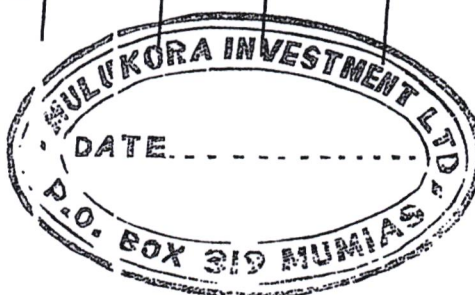


include for all jointly materials, cutting wastage.

Note: The following have been used on the drawings to specify pipe diameters/types/classes. Pipe dimensions/working pressures shall conform to KS-06-149 Part 2:2000.  
 Class Working Pressure (m)

D 12.5

7.3.1	160 mm dia	M	320	1800	576,000
7.3.2	125 mm dia	M	500	1000	500,000
7.3.3	63 mm dia	M	1,000	740	740,000
7.4	25mm dia Fittings	M	200	105	21,000
Provide, lay, joint and test Fittings					
Reducers for main					
7.4.1	160 x 125 mm	No.	1	4900	4900
7.4.2	125 x 63 mm	No.	1	4000	4000
7.5	Washouts				
7.5.1	Excavate for, provide all materials and construct complete washout chambers. Internal dimensions 1000 x 750 x 1200 mm. Rates to include for all thrust blocks, pipe supports, inspection covers, etc as detailed in the drawings.	No.	3	19500	58,500
Provide, handle, install and test the following steel and uPVC pipes and fittings, valves and specials. Rates shall include for completion and pipe protection at all pipe joints as specified in specifications and drawings					



3	63/2; mm dia uPVC / GI adaptor	No.	50	405	20,250	
6	Saddle clamp fittings (and other uPVC fittings) for distribution into the infield system as % of the pipeline costs	%	10		25,805	
	TOTAL				2,769,855	
	Add 16% VAT				387,779	70
	TOTAL CARRIED TO TENDER				3,157,634	70

s)  
ld



*Handwritten signatures and dates:*  
 13/11/2020  
 12/11/2020  
 13/11/2020  
 13/11/2020



Kenya Climate Smart  
Agriculture Project



KENYA CLIMATE SMART AGRICULTURE PROJECT  
BUSIA COUNTY SUB PROJECTS

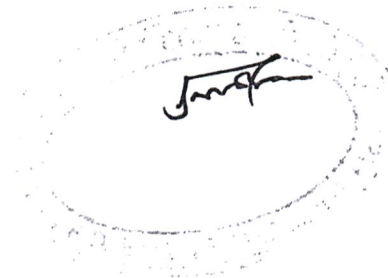
CHANGARA WATER PAN EXPANSION AND IRRIGATION PROJECT

COST ESTIMATES FOR TOILETS/BATHROOMS

SUBMITTED TO  
KCSAP NATIONAL PROJECT COORDINATION UNIT, CAPITOL HILL TOWERS  
NAIROBI.

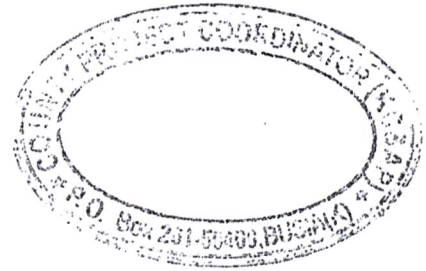
PREPARED BY  
ENG. WASWA BARASA.  
COUNTY DIRECTOR OF IRRIGATION  
DEPARTMENT OF WATER, IRRIGATION & ENVIRONMENT  
P.O BOX 392  
BUSIA (K)

*Prepared and  
Prepare requirements*

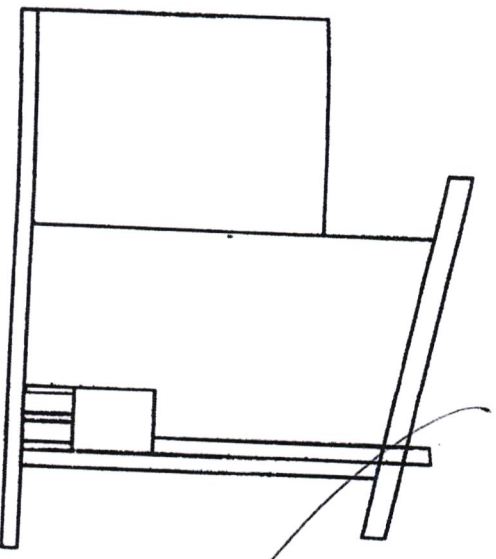


**Construction of auxiliary structures**

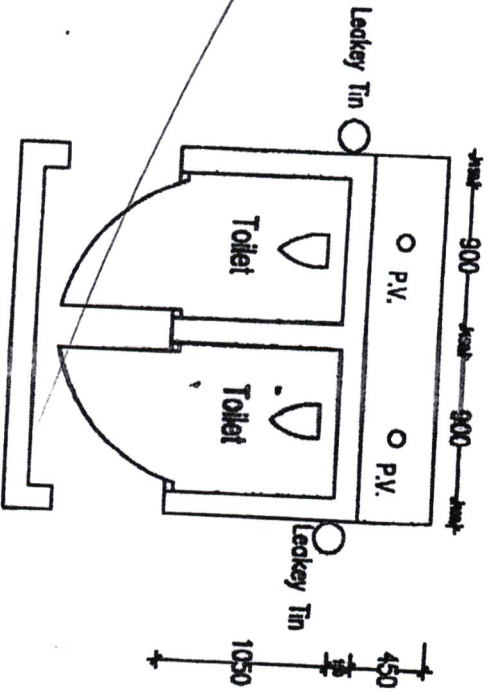
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	CTS
				SH	SH	
8.1 8.1.1	<b>2 Doors Toilet and Bathroom</b> Construct a standard VIP toilet , pit dimensions 600mm * 2000mm not less than 5 deep and line it with dressed stones where applicable, including walls, doors, corrugated iron sheet roof and slab surround of 1000mm	Lump sum	1.00	350,000	350,000	00
<b>Total carried to Tender</b>					<b>350,000</b>	<b>00</b>



SIDE ELEVATION

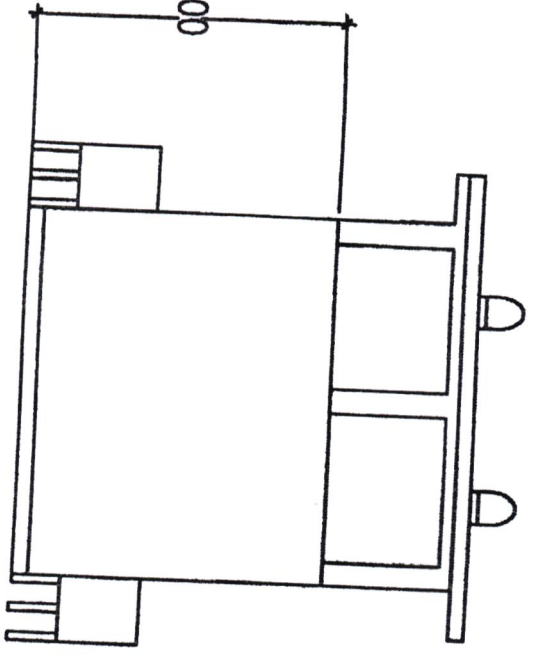


PLAN



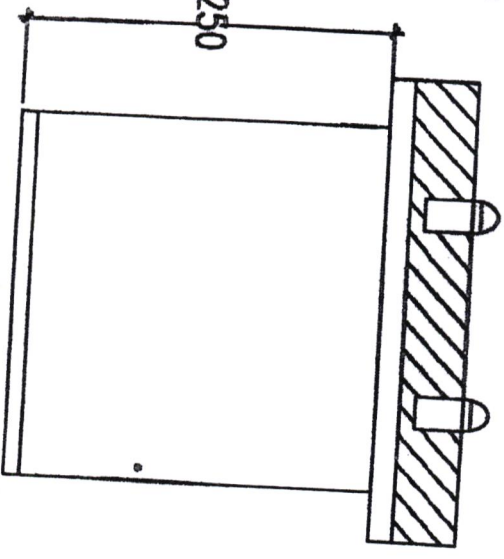
1900

FRONT ELEVATION



2250

REAR ELEVATION



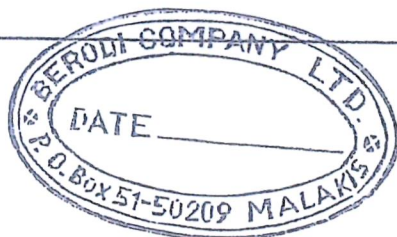
Schedules

BILL OF QUANTITIES

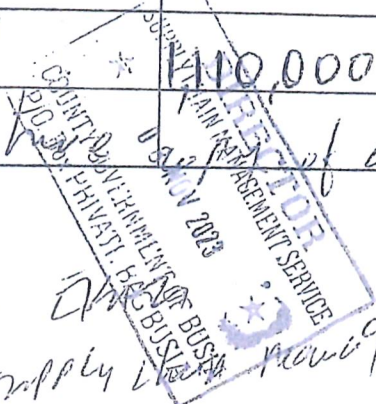
FOR CHANGARA WATER PAN EXPANSION AND INSTALLATION OF IRRIGATION SYSTEM TO CONTROL FLOODING BY ENHANCED RAINS  
TESO NORTH SUB COUNTY  
DRAWN AND SUPERVISED BY AMS BUMULA

BILL NO.1 PRELIMINARY AND GENERAL

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
	<b>Contractual Requirements</b>				
1	Allow for mobilize and demobilize of plants and equipment, personnel to the site and camp setting up	Lump sum	1.00	400,000	400,000/=
2	Provide provisional sum for supervision to be expended as directed by the Project Engineer	Lump sum	1.00	360,000	360,000/=
3	Allow a provisional sum of Kenyan Shillings one hundred thousand for design review	Lump sum	1.00	100,000	100,000/=
4	Allow a provisional sum for access road to site as directed by the Project Engineer	Lump sum	1.00	250,000	250,000/=
5	Allow for provisional bid security	Lump sum	1.00		
<b>TOTAL BILL NO.1 CARRIED OVER TO GRAND SUMMARY</b>					<b>1110,000/=</b>



*Certified true and correct copy of original*  
 Approved  
 Director supply and management services  
 21/11/2022



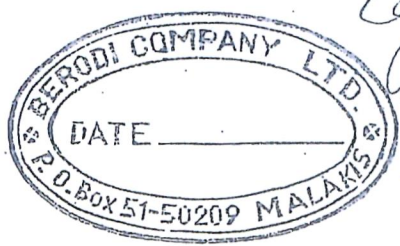
**BILL NO.2. BUSH CLEARING AND SUB REMOVAL**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE(KES)	AMOUNT(KES)
	Bush Clearing				
	Clear site of all trees (less than 500mm diameter), bushes, shrubs including stubs removal, girth and carting away	SM	14,000.00	50	700,000/-

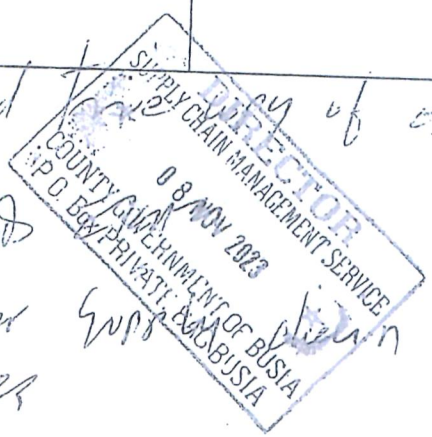
**TOTAL BILL NO.1 CARRIED OVER TO GRAND SUMMARY**

**BILL NO.3 EARTH WORKS**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE(KES)	AMOUNT(KES)
	Reservoir Excavation				
1	Excavate over site average 300mm deep to remove vegetable soil, load, wheel and cart away, but stock pile selected vegetable soil for reuse on the downstream dam embankment	M <sup>3</sup>	4,000.00	280	1,120,000/-
2	Excavate for dam core trench not exceeding 1.5m deep commencing from stripped level and stock pile excavated materials for embankment construction	M <sup>3</sup>	432	250	108,000/-
3	Excavate for draw off/scour pipe trench not exceeding 1.0m deep from stripped level and stock pile excavated materials for embankment construction	M <sup>3</sup>	50	500	25,000/-



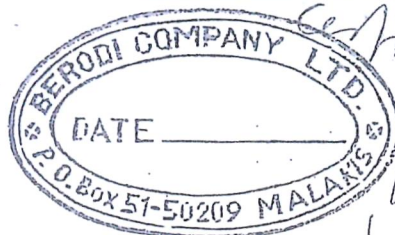
*Certified true copy of original*  
*Amulw Leonard*  
*Director General Services*



*Management*

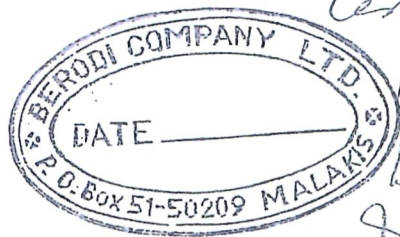
Excavate for embankment materials from stripped area not exceeding 3.0m deep from stripped level while maintaining a berm of 5-10m away from the upstream embankment toe line and stock pile excavated material for embankment construction.	M <sup>3</sup>	22,000.00	305	6,710,000/-
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<b>Embankment Construction</b>				
Spread, water and compact to 95% MDD selected suitable embankment material in three layers to attain the height indicated in the drawing and a crest of 4m wide. Trim the embankment slopes to 1:2.5 on the upstream and 1:2.5 on the downstream.	M <sup>3</sup>	20,000.00	104	2,080,000/-
<b>Spillway Earth Works</b>				
Clear site of all sizeable bushes, trees & vegetable cover and cart away	M <sup>3</sup>	500	100	50,000/-
Excavate over site average 300mm deep to remove vegetable soil, load, wheel and cart away, but stock pile selected vegetable soil for reuse on the downstream dam embankment	M <sup>3</sup>	700	200	140,000/-



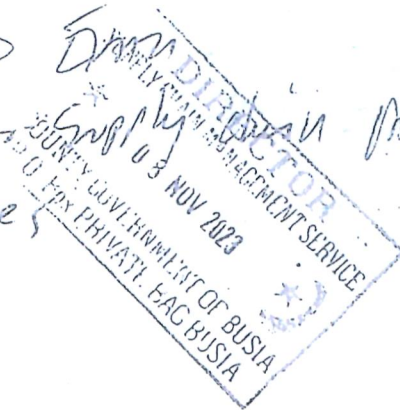
*certified true copy*  
*Director*  
*Director of Supply Chain Management*  
 SUPPLY CHAIN MANAGEMENT SERVICE  
 08 NOV 2023  
 GOVERNMENT OF BUNIA  
 BOX PRIVATE SAC BUNIA

Excavate for spillway channel not exceeding 1.5m from the stripped level with side slopes of 1:1, channel backward slope of 0.25% and dispose/stock pile as instructed by Engineer	M <sup>3</sup>	475	200	95,000/-
Provide for a concrete class 15/20 spillway sill 300mm thick (insitu cast) across the channel not exceeding 1.0m depth	M <sup>3</sup>	15	15,000	225,000/-
Provide for rip rap protection to spillway and outflow channel with hardcore stone materials as shall be directed by Engineer	M <sup>3</sup>	50	2000	100,000/-
Allow for excavation of a silt trap as shown in the working drawing	M <sup>3</sup>	600	250	150,000/-
Allow for excavation of inlet channels as shown in the working drawing/instructed by the Engineer for directing water into the reservoir	M <sup>3</sup>	30	400	12,000/-
TOTAL BILL NO 3 CARRIED OVER TO GRAND SUMMARY				1,081,500/-



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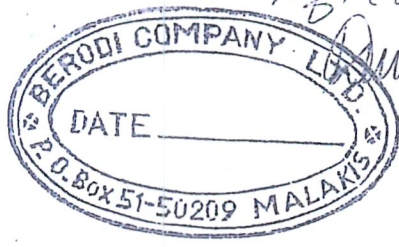
*LEONARD ERM*  
*Director Supply Management Services*



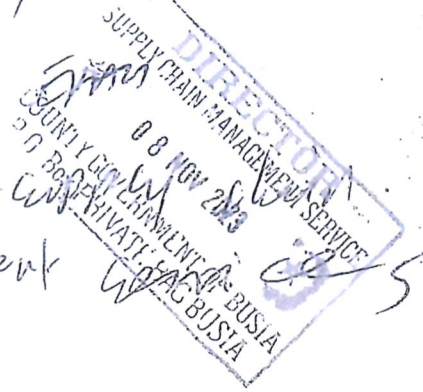
**No.4. DRAW OFF SYSTEM AND PIPELINE FOR BLOCK 1**

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
	Drawoff System				0
	Provide for a standard intake of tower using perforated 4" GI pipes with wire mesh screens 3m high using concrete mix of ratio 1:2:4 (cement, sand, and ballast). Provide a dead storage of 0.5m on the pipe as described in the working drawing	Lump sum	1.00	65000	65000/-
	Provide, lay and connect to intake tower, using UPVC class B pipes of 75mm draw of system to the community water point and cattle troughs as detailed in the working drawings and reduce to levels for water drawing	No	30.00	500	15000/-
	Valve Chamber				
	Allow for excavation, provide for materials and construct lockable masonry chambers with internal dimensions of 1000mm * 1000mm * 1000mm as indicated in the working drawing and as directed by the Engineer (rates to include formwork)	No	1.00	20,000	20,000/-
	Community Watering				

*certified true copy of original*



*Director*  
*Mumayyaz*



Provide all materials and construct complete masonry community water point complete with two water taps mounted on risers of 1.0m above the concrete base of 1.5m * 0.03m	Lump sum	1.00	20,000	20,000/-
<b>Cattle Trough</b>				
Construct a standard 2 No cattle troughs of size 0.8m internal width by 0.5m internal depth by 5.0m long and of 300mm thickness of class 20/20 concrete wall with smooth finish Excavation works	No	2		
Excavation works	M <sup>3</sup>	5.00	1000	5000/-
Concrete class 20/20	M <sup>3</sup>	11.00	15000	165000/-
Provide for water regulation chamber with self-regulatory water valves	No	2.00	20,000	40,000/-
Provide for rip protection to the water troughs of 2.0m around the troughs	M <sup>2</sup>	10.00	20000	200,000/-

TOTAL BILL NO 4 CARRIED OVER TO GRAND SUMMARY

408,000/-

**PIPELINE FOR BLOCK 1**

**Site clearance**

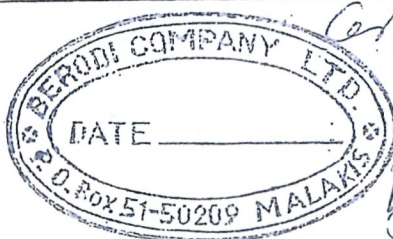
Clear site of all trees (less than 500mm diameter), bushes, shrubs etc to a depth of not more than 150mm from ground surface. This should include grubbing up roots and removal of all deteriorious material from site

M<sup>2</sup>

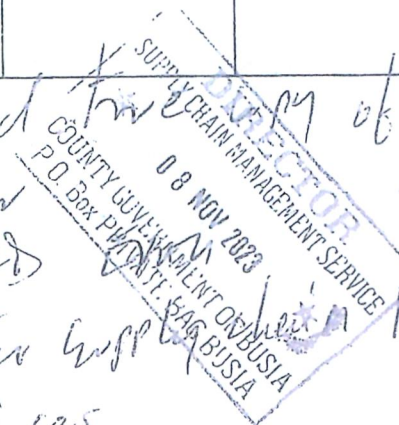
1672

30

50,160/-

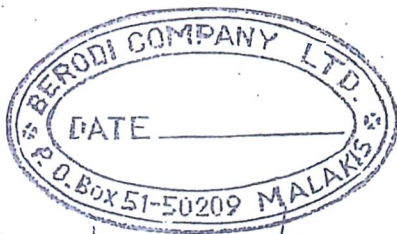


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*Amulur*  
*Director*  
*Services*



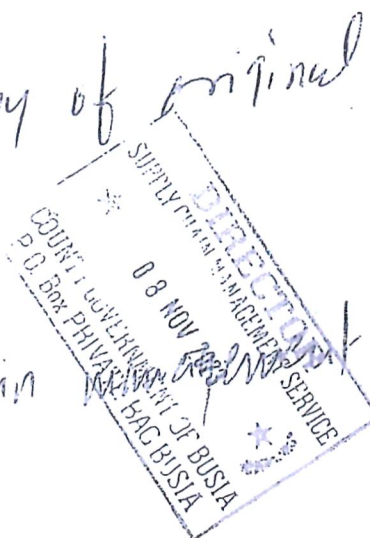
*Management*

Clear site of all trees (less than 500mm diameter), bushes, shrubs etc to a depth of not more than 150mm from ground surface. This should include grubbing up roots and removal of all deteious material from site	M <sup>2</sup>	1000	124	124,000/-
Trees of more than 500mm diameter (provisional)	No	10	250	2,500/-
<b>Excavation and Backfilling</b>				
Rates for excavation and backfilling in trench bottom and for providing selected bedding and surround materials from the excavations in accordance with the specifications				
Excavation and Backfilling in normal soil for Dia 250mm to a depth n.e 1.5m	M <sup>3</sup>	500	120	60,000/-
Ditto for dia 160mm from chain age	M <sup>3</sup>	400	525	210,000/-
Ditto for dia 50mm	M <sup>3</sup>	1,000	600	600,000/-
PVC Pipe work				



*Certified true copy of original*

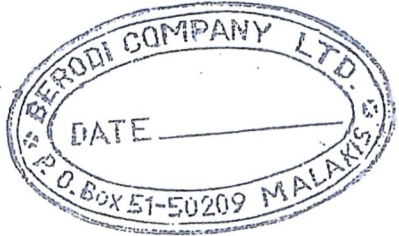
*Amudhar  
Leonard Ekan  
Director supply chain  
8/11/2023*



*Services*

<p>Provide, lay, joint and test the following flexible spigot and socket pipe fittings with rubber ring joints. Rates to include for all jointly materials, cutting wastage.</p>	<p><i>certified true copy of original</i> <i>Amudun</i> <i>WAPDA</i> <i>Director</i> <i>Supply Chain Management</i></p>	<p><i>Supply Chain Management</i></p>	<p><i>08/11/20</i></p>	
<p>Note: The following have been used on the drawings to specify pipe diameters/types/classes.</p>				
<p>Pipe dimensions/working pressures shall conform to KS-06-149 Part 2:2000</p>				
<p>Class Working Pressure (m) B 60 C 100 D 125 E 160 Class B</p>				
<p>250m dia</p>				
<p>150mm dia</p>	<p>M</p>	<p>500.00</p>	<p>1500</p>	<p>750,000/-</p>
<p>75mm dia</p>	<p>M</p>	<p>1,000</p>	<p>250</p>	<p>250,000/-</p>
<p>Fittings Provide, lay, joint and test Fittings</p>				
<p>250 x 160 for Block 1</p>	<p>No</p>	<p>1</p>	<p>5000</p>	<p>5000/-</p>
<p>150 x 50 for block 1</p>	<p>No</p>	<p>1</p>	<p>4000</p>	<p>4000/-</p>
<p><b>AIR VALVES</b></p>			<p><del>20000</del></p>	
<p>Excavate for, provide all materials and construct complete air valve chambers. Internal dimensions 1200 x 1200 x 1200mm. Rates to include for all thrust blocks, pipe supports, inspection covers, etc as detailed in the drawings.</p>	<p>No</p>	<p>2</p>	<p>20,000</p>	<p>40,000</p>

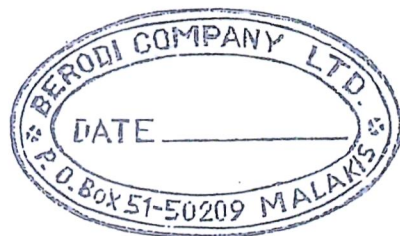
**DIRECTOR**  
SUPPLY CHAIN MANAGEMENT SERVICE  
08 NOV 2023  
COUNTY GOVERNMENT OF BUSIA  
P.O. Box PH/MS/ST. HAG BUSIA



	as detailed in the drawings.				
5.2	50mm flanged gate valve	No	15	7000	105,000/-
5.3	Saddle clamps				
5.1	50 x 25mm dia	No	30	300	9000/-
5.2	50/25mm dia GI/Upvc adaptor	No	2	400	800/-
5.7	SECTION VALVE CHAMBERS				
5.1	Excavate for, provide all materials and construct complete inspection valve chambers of internal dimensions 1200 x 1200 x 1200mm at the pipe junctions. Rates to including thrust blocks, pipe supports as shown in the drawings.	No	1	20,000	20,000/-
5.8	Road Crossing - Block 1				
5.9	Provide for 1 No. road crossing of 6m width, for 160mm dia pipelines at the chainage as per drawing and in accordance with specifications. Rates to include for excavation and backfilling, culvert, concrete surround and all jointing materials and other fittings in accordance with specifications	No	1	50,000	50,000/-

**DIRECTOR**  
 SUPPLY CHAIN MANAGEMENT SERVICE  
 08 NEB/2023  
 COUNTY GOVERNMENT OF BUSIA  
 P.O. BOX 10000  
 KISumu, KENYA

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 [Signature]



68

5.8.2	Saddle clamp fittings ( and other uPVC fittings ) for distribution into the infield system as %of the pipeline costs.	%	20		
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**TOTAL CARRIED OVER TO TENDER** 37,80,460/-

**No.6.CULVERTS**

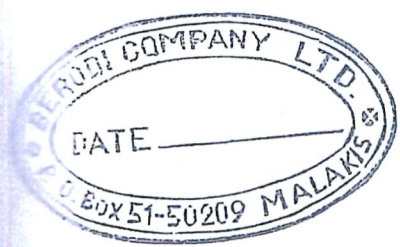
Item description	Unit	Quantity	Rate(Ksh)	Cost (Ksh)
<b>Excavations</b>				
On channel bed	M <sup>3</sup>	7	200	1400/-
Concrete culverts 1000mm on	No	18	15,000	270,000/-
Cement	bags	54	1000	54,000/-
Sand	M <sup>3</sup>	9	1000	9000/-
Ballast	M <sup>3</sup>	20	1100	22000/-
<b>Form work</b>				
Sawn timber 160mm x 25mmm	M <sup>2</sup>	12	50	600/-
props (750mm x 50mm)	Lm	20	80	1600/-
Round wire nails: 2" 3"	Kg	5	150	750/-
30% labor				
				<b>364,750/-</b>

DIRECTOR  
 COUNTY CHAIN MANAGEMENT SERVICE  
 COUNTY GOVERNMENT  
 P.O. Box PRIVATE, H.A.  
 28 NOV 2023

Confirmed true copy  
 Mumbwa  
 Director  
 County Chain Management Service

**COLLECTION SHEET**

Description	Amount (KES)
Preliminary and general	1,110,000/-
Bush clearing	700,000/-
Earth works	10,815,000/-
Draw off systems	4,408,000/-
Pipeline for block 1	37,80,460/-
Culverts	364,750/-
Total	17,181,210/-
Add 16% VAT	2,748,993/-
<b>TOTAL</b>	<b>19,930,203/-</b>

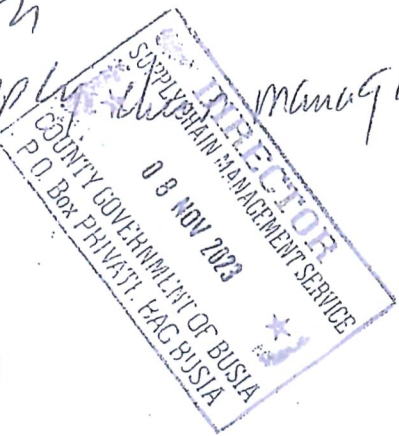
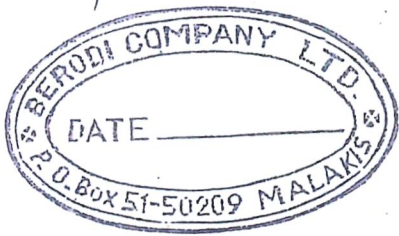


2/7/2019  
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AND TOTAL

19,930,203/=

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Leopard Brand  
Director supply Management Service  
8/11/2023





**COUNTY GOVERNMENT OF BUSIA**



Kenya Climate Smart Agriculture Project (KCSAP)  
Project Coordinating Unit – Busia  
P.O. Box 261-50400, Busia (K)

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**PROPOSED EXPANSION AND INSTALLATION OF IRRIGATION  
SYSTEM ON CHANGARA WATER PAN SUB PROJECT, TESO  
NORTH SUB COUNTY, ANGURAI EAST WARD.**

**TENDER NO  
KCSAP/BSA/CHAN/1/2018-2019**

**21<sup>ST</sup> JUNE 2019**

**PRE – SITE VISIT MEETING FOR EXPANSION AND INSTALLATION OF IRRIGATION  
SYSTEM ON CHANGARA WATER PAN SUB PROJECT, TESO NORTH SUB COUNTY**

## **AGENDA**

**MIN: 1/5/6/2019- Opening prayer**

**MIN : 2/5/6/2019- Chairman's remarks**

**MIN: 3/5/6/2019- Members remarks**

**MIN: 4/5/6/2019- Pre-site activity**

**MIN: 5/5/6/2019- AOB**

## **MEMBERS PRESENT**

1. Maurice Okisegere
2. Eng Waswa Manuel
3. Samson Khachina
4. Alfred Makokha
5. Everlyne Akoth

### **PMC Members present**

1. Bildad Masake
2. Livingstone Otwane
3. Phauzia Issa
4. Cornell Ebu
5. Thomas Ipalei
6. Carol Ikate Otwane
7. Tobias Cheseto
8. Douglas Omande
9. Gladys Nakhungu
10. Boniface Emuruon
11. Jim Osirom
12. George Ikwara
13. Emmanuel Otwane

## **MIN 1/05/6/2019- PRAYER**

The chair requested a member to open with a word of prayer and Everlyne Akoth volunteered to pray

## **MIN: 2/5/6/2019 – CHAIRMAN'S REMARKS**

The chairman welcomed all members for the pre-site meeting and urged members to introduce themselves.

He started by informing the members about the Changara water pan that is to be expanded in Angurai East Ward Teso North Sub County

He told the bidders that the pre-site visit is undertaken for the bidders to know whatever is expected of them on the ground. He advised the winner of tender to consider employing casual laborers from the locality and added that the workmanship has to be perfect as the World Bank standards

**MIN 3/5/6/2019 – MEMBER’S REMARKS**

The Coordinator advised the bidders that whoever will win should ensure that the environmental standards are met. He said a project management committee shall be trained on their roles that will help monitor and manage on the components from the pan. HIV and Aids awareness was also to be created and factored on the bill boards.

Engineer Waswa said that construction works has many challenges and advised the representatives to ask many questions in connection to the pan while on site so that there are no variations.

**MIN: 4/5/6/2019- PRE-SITE ACTIVITY**

The secretary thanked the chair for his remarks and requested all the representatives of bidders who were to visit the site to submit all the requirements before proceeding to the site that is the copies of ID, Introductory letters from the various companies and the certificates.

The team went round the site and tried figuring out where the structures will be erected as per the plan. The members of the community were also around and expressed gratitude to the KCSAP for the development project they were about to bring to them for their own benefit.


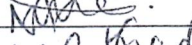
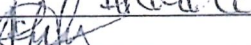
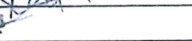

The bidders who received the tender documents and attended the pre-site visit were:

**THE BIDDERS REPRESENTATIVE PRESENT WERE**

1. Berodi Company Ltd
2. Warono Builders Limited
3. Karauok General Services Ltd

**MIN: 6/5/6/2019/5/6/2019- AOB**

There being no any other business, the meeting was adjourned at 12.55 pm with a word of prayer from Alphine Adoyo

	NAME	DESIGNATION	POSITION	SIGNATURE
1	Maurice Okisegere	CPC	Chairperson	
2	Eng. Manuel Waswa	County Director Irrigation	Member	
3	Samson Khachina	CDA	Member	
4	Alfred Makokha	M&E (KCSAP)	Member	
5	Everlyne Akoth A	CPRA	Secretary	



REPUBLIC OF KENYA  
COUNTY GOVERNMENT OF BUSIA  
DEPARTMENT OF AGRICULTURE AND ANIMAL  
RESOURCES



Email: cdabusia@gmail.com

COUNTY DIRECTOR OF AGRICULTURE  
BUSIA COUNTY  
P.O. BOX 28 - 50400  
BUSIA (K)

Ref: DAAR/CDA/BSA/AMS/1/VOL.1/26

Date: 14<sup>th</sup> June, 2019

The Manager

Agricultural Mechanization Services (AMS)

**RE: LIST OF CONTRACTORS CAPABLE OF CONSTRUCTING A DAM IN BUSIA COUNTY**

In light of you not having machinery to execute the construction of dams, give us a list of those capable of doing this in your database.

Samson Khachina

County Director of Agriculture

**BUSIA COUNTY**

**RE: PROFESSIONAL OPINION ON PREQUALIFICATION FOR CONSTRUCTION AND REHABILITATION OF BOREHOLES, DAMS, WATER PANS AND WATER PURIFICATION PLANTS: BSA/CG/PO/04/2019/2020**

**Recommendation**

Based on the above, I recommend the following listed firms to be prequalified for the above mentioned works for FY2019/2020;

Bidder Name	Incorporation No	Tax Compliance No	KRA Pin No	Postal Address	Name of Director (s)
Fugee Investment Ltd	CPR/2012/168578	KRANON2548132018	P051658657A	26383-00100	FatumaGedi
Zaliquep Contractors & Gen Supplies Ltd	PVT-AJUPAA5	KRABGM1916582018	P051712407W	1586-50200	Lillian FransiscaAkinyi&Zadock Braddock Nalianya
Nawa Ventures Ltd	CPR/2015/58456	KRAWON3238962018	P051373498P	866-50400	Thomas Makio 7 Newton Gabriel Omanga
Barasho K Ltd	PVT-3QUDQ2B	KRABGM1138999719	P051668366Z	1-50603	Joy BosswonyJebiwott, Nicholas AmbaniAsoyong&Abdirizak Salah
Rudelwhite Ent Ltd	PVT-MKU9Q27			1114-50400	Walter Atito Onyango 7 Donald OchiengBonyo
Dine Logistics Ltd	CPR/2011/55672	KRABGM4206442018	P051375598W	209-50408	Innocent Emase& Deborah Emaase
Rock Africa Ventures Ltd	PVT-AAABNS2	KRANON1140048619	P051631100H	39-50403	Geoffrey AmenemoitEtyang
Bizrate Ent Ltd	CPR/2013/104189	KRANKU1144655519	P051426105U	16069-20100	Kelvin Wahome, Allan KibakiMuriuki& Pauline NyawiraWahome
Harry Solomon Contractors Ltd	PVT-EYUBAXZ		P051659240N	1024-50200	WangubaOulula Samuel
Ricnovet Gen Construction Co Ltd	CPR/2015/192996	KRABGM2933602018	P051554286P	119-50400	Violet NyabolaNanjira& Richard OkeloMudibo
Makokha Busia Gen Works Ltd	CPR/2011/51825	KRABGM1135978119	P051397870T	390-50400	Margaret Nyongesa Mumbo, Christine Were & Francis MakokhaBusera

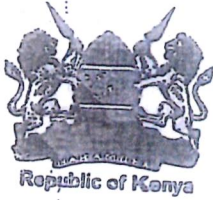
Nasewa Building Contractors Ltd.	CPR/2012/75005	KRAKAK113698961	P051390605Q	103-50400	Fredrick Omayo Opondo & Justus Wamburu Arusi
Adumnet Co Ltd	PVT-XYUR963	KRABGM1138363419	P051773405C	30-50244	Richard Karani Imukat
Synotech Co Ltd	PVT/2016/007872	KRANON0688962018	P051588719R	55962	Joseph Oduor Odongo
Mojas Contractors Ltd	PVT-AAACED6	KRABGM2624262018	P051172679F	154-50409	John Opuwa, Pamphil Oundo & Patrick Matsekhe
Pam Construction Ltd	CPR/2010/31752	KRABGM1136914819	P0513387620	663-50400	Pascal Barasa Sande & Barasa Pius Wilberforce
Estam Eservices Ltd	PVT-XYUQ6JL	KRABGM1142641419	P051800174D	817-50400	Esther Anyango Mutune & Mary Donnah Akinyi
Rusky Ent	BN/2016/430792	KRAMSS1145552919	A001714797J	42090-80100	Ruth Nyakoa Shisoka
Jafan Kenya Ltd	CPR/2015/198274	KRAELD1136311619	P051550702Q	1093-50400	Florence Anyango Obila & James Anyango Odiwuor
TMO Construction Co Ltd	CPR/2009/7099	KRAWON3015722018	P051307244A	6625-00200	Donald Omoro Basweti & Thomas Moracha Ontweka
My Engineer Construction Ltd	PVT-8LURZXL	KRANON2300602018	P051718812I	15924-00100	Rose Nanjala Wafula
Midland Construction Co Ltd	C.166228	KRAMTO2830332018	P051243899P	4-50100	Divyesh Kotecha Ramesh, Ramesh Prabhudas Kotecha & Satpal Singh Sira
Transwide Gen Services	PVT-9PUBRXX	KRAWON1174164919	P051121172H	58857-00200	Samuel Otieno Mbogo
Karuok Gen Services Ltd	CPR/2013/121986	KRAELD0429582019	P051444692M	6-50403	James Odiwuor Anyango & Eunice Anyango Okeyo
Bimstar Co Ltd	CPR/2015/207306	KRABGM1136934019	P051597812K	60-50400	Annah Julia Atyeng & Julius Nganga Njoroge
Maginot Projects Ltd	PVT-DLUP3XY	KRAEON2875042018	P051668698K	27070-00100	Andrew Wangaki Okova

Fopa Construction Co Ltd	CPR/2009/13147	KRABGM1136901619	P051347906F	172-30200	Antonina EkisaAmoo& Fredrick Okademi Papa
Babel Contractors Ltd	PVT-EYUMDB5	KRAWON1140670019	P051786654Y	45611-00100	Anton Joel AjowiOpar
Jemitashni Kenya Ltd	PVT-ZQU3RRX	KRABGM1136998319	P051762554L	138-50400	Angeline AdhiamboAchieng, MilliamMuthoniGitonga& Nicholas WanjalaWandera
Boda Point Developers Ltd	CPR/2015/184779	KRABGM1142971919	P051536140C	222-50400	Godfrey MakokhaBwire, Keneth Humphrey &Cuunningham Noel Bwibo
Metsy Ent Ltd	PVT-V7UAZJE			59321-40100	Gabriel Sam OdiwuorAmolo& Mercy Achieng
Triwest Kenya Ltd	CPR/2011/45568	KRANON3106142018	P051357561L	889-50400	Bernard Vincent Nyende
Mokoem Agencies & Gen Supplies Ltd	PVT-GYULGAY	KRANON1135804719	P051755506I	22-50408	Joseph AthonyEseme
Fredopen Gen Engineering Works Ltd	CPR/2009/2775	KRABGM3235712018	P051383493L	81-50400	Margaret Mukadi Luka & Fredrick OpelleOlwande
Bud-Ken Building Construction Ltd	C.99317	KRA201900222476	P051146350W	3036-40300	Josiah OnkundiMaangi& Nelly AtienoDibogo
Jacod Ltd	CPR/2013/104246	KRABGM1137720119	P051423880G	397-50400	Isaac IloOtieno&JactonOumaOdunga
Western Construction & Drilling Co Ltd	CPR/2015/197836	KRANON3388382018	P051550639C	799-00100	Douglas Otwane& Leonard Emurait
Danmoonlight Co Ltd	CPR/2014/169027	KRABGM0582472019	P051550252X		
Lancy International Ltd	CPR/2015/200665	KRAKSM3060582018	P051586198B	437-50400	Lucy Mutibo, Anne NekesaOuma& Patrick Wambayi
Bren	CPR/2014/169027	KRABGM0582472019	P051550252X	105-50408	Bethwel Fredrick Enaga& Edwin Ikaal King

Enterprises Ltd					Enaga
Jenco Contractors Ltd	CPR/2009/9051	KRABGM2696902018	P051354024R	590-50400	Jenifer Wairimu Ong'enga & Cornel Bwire Ong'enga
Berodi Co Ltd	CPR/2015/206857	KRAEID58950762018	P051562195M	51-50209	Beverly Anyokorit Gte, Diana Akisa Ote & Rose Esirom
Magero Supplies & Gen Contractors Ltd	CPR/2015/194326	KRANON2531482018	P051547057P	523-00100	Roseline Auma Asike & Milton Oundo Magero
Kingfishers Gen Works Ltd	CPR/2014/154159	KRAEID2966572018	P051502005L	119-50409	Milcent Agneta Wabuti & Chrispinus Ouma Wandera
Mulbel Investment Ltd	PVT-3QUBRX8	KRANON1141510919	P051792285S	62142-00200	Trizabel Mulan
Mesese Gen Merchants Ltd	PVT-AAAFX4	KRAEON6684262018	P051641382G	421168-00100	Everlyne Adhiambo Otieno & Meshack Owino Keya
Safcom Technologies Ltd	CPR/2015/187040	KRAWON2675982018	P051541317Z	46945-00100	Samuel Musomi
Mayasom Construction & Engineering Co Ltd	CPR/2012/66445	KRABGM2907492018	P051434373F	361-50408	Maryan Noor Ahmed & Yasin Adhan Ali
Ema Westlink Ltd	CPR/2011/57337	KRABGM1136518819	P051370709T	41-50408	Scovia Omoit, Gabriel Omoding & Michael Ichila
Hideout Properties Ltd	CPR/2009/5009	KRABGM1547772018	P051303916Q	209-50408	Deborah Emaase & Innocent Emaase
Murmo Co Ltd	CPR/2009/7670	KRAWON2416322018	P051319667S	307-50400	Elvis Biketi
Naliskam Co Ltd	PVT-AJULA6Z	KRABGM1139409119	P051774867Y	3-50400	George William Adungo & Gorret Aseere Adungo
Lumtech Services Ltd	CPR/2014/169027	KRABGM0582472019	P051550252X		
Hanal Investment Ltd	CPR/2010/25469	KRABGM1135665219	P051334063Y	1933-50200	Hassanali Babu Shabram & Yasmin Hassanali

Finotech Agencies Ltd	CPR/2014/149009	KRAKSM2241532019	P051505780N	306-50406	Eidah Wangari Irungu, Ephraim Bernard Awuori & Fredrick Ernest Onjejo
Jalinsnado Ent Ltd	CPR/2013/106828	KRAKAK1138853219	P051426119X	547-50100	Peter Okeyo Amadi & Caroline Achieng Ogombe
Giant Sahara Construction Ltd	CPR/2015/216588	KRABGM1137507219	P051575268T	15-50400	Victorine Ingiroto Okemer & Michael Taabu Muruga
Freco Business Systems ltd					
Dancy Construction Co Ltd	CPR/2014/169027	KRABGM0582472019	P051550252X		
Tajicom Ltd	CPR/2014/153923	KRAELD1137628019	P051501969H	36-50403	Fred Ikamar Omoding & Judith Taaka
Mehitabel K Ltd	PVT-JZUZMPD	KRANON1144411919	P051813188Q	65200-00200	Trizabel Mulan Nafuna Junita & Julian Yolan Akisa
Gibraltar Property Developers Ltd	CPR/2013/120190	KRAWON2519172018	P051440657B	310-00100	Bonventure Wesonga Oruma & Kennedy Lorege Agufa
Josden Africa Ltd	CPR/2016/221148	KRABGM1144046419	P051579393D	120-50400	Dennis Roobbins Okhala & Josephine Sanyaohalla
Abyssinia Gen Contractors & Supplies Ltd	CPR/2010/25478	KRABGM2621512018	P051330892D	143-50244	Fiby Chepteek Sindani & Daniel Ochaka Joshua
BMC Construction Ltd	PVT-GYUXM6K	KRANON2742802018	P051729346T	126-00300	Nicholas Opubas
Padmore Ventures Ltd	PVT/2016/001239	KRAWON1140771419	P051584228G	38-50403	Salome Apalat Ochukut & Collins Otucho
Nice Sus Metro Suppliers Ltd	CPR/2014/157988		P051519839U	255-90400	Eunice Lewa Kimondiu & Justus Koka Kimondiu
Niverocs Co Ltd	PVT-7LUP2GE	KRAKSM1139438719	P051777583D	920-50400	Lydia Canver Ejakait
Mulala Holdings Ltd	PVT-Y2U6L25	KRABGM114266619	P051705032A	215-50406	Stephen Ojiambo Buluma

Enterprises Ltd					Enaga
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Lumtech Services Ltd	CPR/2014/169027	KRABGM0582472019	P051550252X		
Hanal Investment Ltd	CPR/2010/25469	KRABGM1135665219	P051334063Y	1933-50200	HassanaliBabuShabram& Yasmin Hassanali



KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

90

COUNTY PROJECT COORDINATION UNIT  
BUSIA COUNTY  
P.O. BOX 261-50400  
BUSIA (K)



Ref: KCSAP/BSA/PROC. 5/VOL.1/22

14/6/2019

Hendrick Owori  
Alphine Adoyo  
Everlyne Ayoroh ✓

APPOINTMENT OF TENDER OPENING COMMITTEE FOR  
TENDER NO. KCSAP/BSA/CHAN/1/2018-2019

Pursuant to Section 78 of the Public Procurement and Assets Disposal Act 2015, you are hereby appointed to the tender opening committee for the request of quotation No KCSAP/BSA/CHAN/1/2018-2019 slated for 24<sup>th</sup> June, 2019 at 10.00am East African time in the CPCU office at the Directorate of Fisheries office Block.

You are expected to adhere to the provisions therein with respect to the terms of reference listed below:-

1. Immediately after the deadline for submitting tenders, the committee shall open all tenders received before that deadline
2. The tender opening committee shall assign an identification number to each tender and record the number of pages received
3. The tender opening committee to ensure that each tender opened, the following shall be read out and recorded in a document to be called tender opening register:
  - The name of the person submitting the tender
  - The total price, where applicable including any modifications or discounts received before deadline for submitting tenders except as may be prescribed
  - If applicable, what has been given as tender security
4. Each member of the tender opening committee shall; Sign each tender on one or more pages as determined by the tender opening committee, and initial, in each tender against the quotation of the price and any modifications or discounts where applicable
5. The committee shall prepare tender opening minutes and they will acknowledge that the minutes are true reflection of the proceedings held by each member of the tender opening committee initializing each page of the minutes, append his or her signature as well as initial to the final page of the minutes indicating their full name and designation

*[Handwritten signature]*

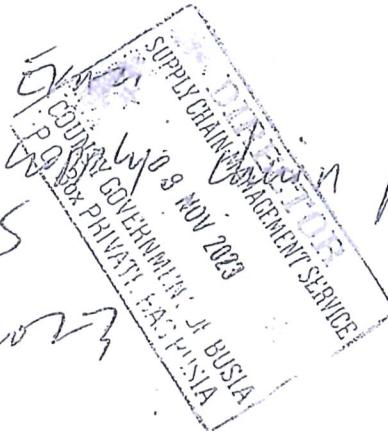
Eng. Richard Achiambo  
Chief Officer  
Agriculture and Animal Resources  
Busia County

*certified true copy of original*

*Director*

*services*

*8/10/2019*



*Management*



Republic of Kenya

## COUNTY GOVERNMENT OF BUSIA



Kenya Climate Smart  
Agriculture Project  
Agriculture Project

Kenya Climate Smart Agriculture Project (KCSAP)  
Project Coordinating Unit – Busia  
P.O. Box 261-50400, Busia (K)

17<sup>th</sup> June, 2019

**REF: KCSAP/BSA/PROC.5/VOL.1/4**

Maurice Okisegere – Chair person  
Eng. Manuel Waswa – Member  
Samson Khachina - Member  
Alfred Makokha – Member  
Everlyne Ayoroh - Secretary

**APPOINTMENT FOR PRE-SITE VISIT FOR THE PROPOSED EXPANSION AND  
INSTALLATION OF IRRIGATION SYSTEM AT CHANGARA WATER PAN, TESO  
NORTH SUB-COUNTY**

Pursuant to ITB 7.4 under World Bank Procurement Guidelines, you are appointed to be in the pre-site committee for the above mentioned works which is scheduled to be at 10.00am on 21<sup>st</sup>, June, 2019 at the works site.

The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage by the bidders and the Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

Chief Officer  
Department of Agriculture and Animal Resources  
**Busia County**

F. 07

Month	Rainfall (mm)	Total Runoff (m <sup>3</sup> )	Cumulative runoff (m <sup>3</sup> )	Human and livestock demand (m <sup>3</sup> )	Irrigation demand (m <sup>3</sup> )	ET <sub>o</sub> (m <sup>3</sup> )	Deficit (m <sup>3</sup> )	Cumulative deficit (m <sup>3</sup> )
January	89	14240	14240	35400		2160	23320	21160
February	83	13280	27520	35400		1956	24076	45236
March	152	24320	51840	35400		2148	13228	58464
April	260	41600	93440	35400		1884		
May	268	42880	136320	35400		1788		
June	110	17600	153920	35400		1548	19348	19348
July	101	16160	170080	35400	2566	1608	20848	40196
August	135	21600	191680	35400	4120	1776	15576	55772
September	171	27360	219040	35400	6120	1824	9864	65636
October	222	35520	254560	35400	8272	1992	1872	67508
November	170	27200	281760	35400	4400	1860	10060	77568
December	92	14720	296480	35400		2040	22720	100288
Total		296480			25478	22584		

A reservoir of capacity 100,288m<sup>3</sup> is required to satisfy the all the needs of the people of Changara. For a depth of 3.5m the required area is 169m \* 169m. From the topographic survey undertaken a pan area of 12,000m<sup>2</sup> is available to store 56,000m<sup>3</sup> of water. This means that a second water pan has to be constructed adjacent to the above to store the remaining 44,288m<sup>3</sup> of water. There is an existing pan that is being used now but its capacity not known. Nevertheless, this existing pan may be used a silt for the new pan.

#### 4.6. Pan design

##### Pan axis

From the map of the area, we can able to see the highest and the lowest points of the site. The contours show the constriction where the embankment wall would require the least fill material.

##### Embankment

From the dam axis, it can be depicted that the pan will be on the lower point of the area, hence the embankment is in the straight line. This shows the location of the pan axis which was selected in a way to minimize the fill material. The best location is shown on the map.

##### Embankment height

The height was obtained from the elevation difference of the area.

Highest point=1376m

Lowest point=1372m

Height (Z) =4m (<5m, Ok.)

##### Crest width

Crest width was calculated from the embankment height as shown below.

$$W = (Z/5) + 3$$

$$= (4/5) + 3$$

= 3.8m

4m used because machinery is used in the construction of the pan.

### Crest length

The alignment was selected basing on the contour layout to give the shortest crest length and allow for the economical location of the spillway route. The crest length taken to be 180m from the dimension of the pan.

### Pan freeboard

It was determined by calculating the following parameters; wind set up, significant wave height and wave run up.

Assuming a maximum wind speed of 130km/day for Changara

Wind set up

The fetch and depth found from the pan size, shown above thus wind set up calculated using the formula:

$$Z_s = (V_w^2 * F) / (63,200 * d) \text{ meters}$$

$$\text{Pan fetch (F)} = 180\text{m}$$

$$\text{Mean wind speed (V}_w) = 130\text{km/day} = 5.41\text{km/hr}$$

$$\text{Reservoir depth (d)} = 4\text{m}$$

$$Z_s = (4.752 * 180) / (63,200 * 4)$$
$$= 0.0033\text{m}$$

Significant wave height

Using the wind speed and the fetch, significant wave height ( $Z_w$ ) can be found as;

$$Z_w = 0.005 V_w^{1.06} * F^{0.47} \text{ (m)}$$
$$= 0.005 * 5.41^{1.06} * 180^{0.47}$$
$$= 0.34\text{m}$$

Wave run up

To calculate the wave run up, wave period calculated as;

$$t_w = 0.32 V_w^{0.44} * F^{0.28} \text{ (min)}$$
$$= 0.32 * 5.41^{0.44} * 180^{0.28}$$
$$= 2.88\text{min}$$

Using wave period, wavelength calculated as shown;

$$\lambda = 1.56 t_w^2$$
$$= 1.56 * 2.88^2$$
$$= 9.59\text{min}$$

The ratio of significant wave height to wavelength ( $Z_w/\lambda$ ) should not exceed 0.7, hence wave run up is finally calculated as;

$$Z_r = 0.7 * (Z_w/\lambda)$$
$$= 0.7 * (0.34/9.59)$$
$$= 0.025 \text{ m/min}$$

Required minimum pan freeboard

Freeboard calculated by summing up wind set up, significant wave height and wave run up

$$\text{Freeboard} = Z_s + Z_w + Z_r$$
$$= 0.0033 + 0.34 + 0.025$$
$$= 0.37\text{m}$$

Note- A freeboard of 1m allowed. The value of the freeboard calculated above shows that, the wave action on the pan has negligible effects.

Embankment slope

From the soil map, the soil has granular distribution. Given embankment height being equal to 4m, hence slope selected from the table below;

stream slope= 2.5, Downstream slope= 2

**Embankment slopes**

Embankment height	Fill material	Slope	
		Upstream	Downstream
≤5m	Good granular distribution/clay	1/2.5	1/2
5m to 10m	Good granular distribution	1/2.5	1/2
	Clay	1/2.5	1/2.5

Source: guidelines for the design, construction and rehabilitation of small dams and pans in Kenya (Kenya- Belgium water development programme Nairobi, June 1992)

**Embankment protection**

To protect the embankment against wave action and erosion, grassing of both downstream and upstream slope is required. Fencing also of the pan helps to prevent the animals getting in to the pan, this is accomplished by building water troughs outside the pan and fed using delivery pipes of 5cm in diameter. Also protected by planting stabilizers.

Again for the protection of a pan latrines and bathrooms built around the place so that as people bring their livestock, they can take a bath also.

**Spillway design**

For the case of design, its proposed to have a pan height of 4m. It is a medium risk pan. For this reason, a return period of 10 years was adopted. A cut spillway with a general trapezoidal section was designed. The spillway is located on the entrance of the pan, two spillways on opposite sides are designed.

Design procedure

- i) Time of concentration was calculated as 42.79 and 59.31 from the two catchments.
- ii) Peak flow was found to be 3.735m<sup>3</sup>/s

$$P = b + 2h\sqrt{1 + m^2} \dots\dots\dots 4.7$$

$$R = \frac{A}{P} = \frac{(b + md)d}{b + 2m\sqrt{1 + m^2}} \dots\dots\dots 4.8$$

Where

S = ground slope if resulting velocity is less than maximum otherwise reduce slope

Q = Distance in m<sup>3</sup>

A = Cross sectional area in m<sup>2</sup>

P = Wetted perimeter in m

R = Hydraulic radius

S = Friction slope

d = water depth in m

b = Bottom width in m

m = Horizontal value of side slope

$K_m$  = Coefficient of roughness = 20

For cut-off drains

$$Q_p = 3.735 \text{ m}^3/\text{s}$$

$$m = 2$$

$$S = 0.001 \text{ to } 0.005$$

Let  $b/d = 2$

$$B = 2d$$

$$P = 2d + 2d\sqrt{1+2^2} \dots\dots\dots 4.9$$

$$P = 6.472d$$

$$A = (b + md)d$$

$$A = (2d + 2d)d = 4d^2$$

$$R = \frac{A}{P} = \frac{4d^2}{6.472d} = 0.618d$$

$$AR^{2/3} = \frac{Q}{K_m S^{1/2}}$$

$$4d^2(0.618d)^{2/3} = \frac{1.206}{20 \times 0.001^{1/2}}$$

$$4d^2(0.618d)^{2/3} = \frac{3.735}{20 \times 0.001^{1/2}}$$

$$2.9021d^{8/3} = 5.9055$$

$$d = 1.3053$$

$$b = 2.611$$

**Earthwork volume**

The volume of earth to be excavated and compacted was calculated from the drawings attached.

Excavation Volume = 26,000m<sup>3</sup>.

Storage capacity of the pan = 56,000m<sup>3</sup>.

## 4.7 IRRIGATION SYSTEM DESIGN

### Delivery Pipe Diameter

#### Irrigation Water Requirement (IWR)

Using the Bukura ATC rain gauge peak monthly value of open surface evaporation ( $E_o$ ) occurs in the month of January and is 236 mm/month

$$ET_o = E_o \times f_c$$

$$ET_c = ET_o \times K_c$$

Where

- $ET_o$  is reference crop Evapotranspiration
- $E_o$  open water surface evaporation
- $f_c$  is a conversion factor. For Kenya  $f_c$  is 0.75 for altitude above 1100m and 0.80 for altitude below 1100m)
- $ET_c$  is actual crop Evapotranspiration
- $K_c$  is crop factor. From section 2.9 an average crop factor of 0.9 is used here

(Source: Ministry of water and irrigation practice manual, 2005)  
From ET equations above and given altitude is about 1390m above sea level (see section 2.4),

$$ET_c = 158.33 \text{ mm/month} \times 0.75 \times 0.9$$

$$= 106.9 \text{ mm/month}$$

$$= 3.56 \text{ mm/day (say 4.0 mm/day)}$$

An  $ET_c$  of 5.0mm/day shall be used in the design.

$$NIR = ET_c - P_e - G_e - S_s$$

Where,

- NIR is Net Irrigation Requirement mm/day
- $ET_c$  is actual crop Evapotranspiration, mm/day
- $P_e$  is Effective rainfall, mm/day
- $G_e$  is groundwater contribution, mm/day
- $S_s$  is Soil moisture storage, mm/day

For high value crops whose yields are severely affected by slight moisture shortages and where rainfall is fairly unreliable, the rainfall can be ignored (Effective rainfall assumed negligible). The ground water table during peak irrigation period is over 1.5m The average top clay layer is 0.85m and is underlain by sandy clays of varying depth. The contribution of groundwater table under such circumstances is assumed negligible. Lastly peak irrigation demand falls in the months of January and February when there is little or completely no rainfall in certain years. The soil moisture storage is hence assumed negligible.

From the above

$$NIR = ET_c = 5.0 \text{ mm/day}$$

$$GIR = NIR + LR + W_L$$

Where,

- GIR is Gross irrigation Requirement, mm/day
- NIR is Net Irrigation Requirement from above, mm/day
- LR is Leaching requirement, mm/day
- $W_L$  is Irrigation water losses, mm/day

The leaching component is required to wash away any excess salts in the root zone. This can be done during the irrigation or at the end of the irrigation period. It is noted that the area has adequate annual rainfall which automatically washes away any excess salts from the root zone.

Hence,

$$GIR = NIR + W_L$$

The losses are computed based on irrigation efficiencies. The following efficiencies have been assumed:

- Conveyance = 0.95 (main pipeline)
- Distribution = 0.80 (canals)
- Application = 0.70 ( Source: Water and Irrigation Practice Manual )

Choice of the above efficiencies was based on:

- Conveyance is through pipeline and canal on black cotton soils.
- Distribution will be essentially through pipelines.
- Application is on clay loam soils which have low deep percolation losses. Methods of irrigation will involve drip and furrow systems.
- Adequate training will be provided to farmers on scheme water management to improve water application efficiencies to the above level.

The overall efficiency (Project Efficiency) is thus  $0.95 \times 0.80 \times 0.70 = 0.532$  (approx. 0.53).

$$GIR = \frac{NIR}{Efficiency} = \frac{5.0}{0.53} = 9.4mm/day$$

#### 4.7.1 Scheme Flow (Design Flow)

Assume the following;

- 8hr irrigation period
- Irrigable farm area is 21 ha

For continuous flow, the required (8hr) flow per hectore

$$9.4mm \frac{mm}{day} \times \frac{m}{1000mm} \times \frac{day}{24hr} \times \frac{hr}{3600s} \times \frac{10,000}{ha} = 0.0011m^3/s$$

That comes to 1.1/s.

The total area is 60ha. About 6% of the area is assumed to be taken up by structures. Also since water is limited not the whole area can be irrigated. Each house hold can only irrigate 0.5ha. The net area available for actual irrigation is 40 ha.

The scheme flow is therefore,

$$1.10l/s/ha \times 19.8ha = 21.78l/s$$

$$1.1l/s \times 20ha = 22l/s$$

Normally the recommended irrigation duration for community managed schemes is 10 – 12 hr/day for 6 days per week (Source: Pump-fed Irrigation Systems for Individual Smallholder by IDB,

1990). However, it is proposed that a 8 hr irrigation day and 7 day week based on experience with group projects in this area. The required scheme flow is

$$\text{Scheme flow} = 22\text{l/s} \times \frac{24}{8} = 66\text{l/s}$$

#### 4.8 Water Availability

The proposed water source for the project is the water pan. The source has a capacity of 56,000m<sup>3</sup>.

##### Irrigation Interval

The following data applies;

- Soil type Clay
- Available Moisture 20 – 30 mm/10cm (IDB Pump-fed Manual)
- Readily Available Moisture 10 – 15 mm/10cm (IDB Pump-fed Manual)
- Design Average 12.5 mm/10cm
- **Crops to be grown include** assorted horticultural crops such as kales, tomatoes, onions, okra, chillies, cucumber, baby corn, French beans, etc).
- The limiting rooting depth is taken as 30 cm. (see section 2.9)

The available moisture over the root zone is thus given by

$$12.5\text{mm} \times \frac{30\text{cm}}{10\text{cm}} = 37.5\text{mm}$$

The soil moisture depletion rate is equal to the crop water requirement (ET<sub>c</sub>) which is 5.0 mm/day

Maximum irrigation Interval then becomes

$$\frac{37.5\text{mm/day}}{5.0\text{mm/day}} = 7.5\text{days}$$

For convenience 7 days is recommended. Note that for crops with deeper root zones a longer irrigation interval is theoretically applicable as show here below

Type of crop	Rooting depth (cm)	Irrigation Interval(days)
Onion	30	7.5
Kales	60	14
Tomatoes	120	28

Now design flow is 66 l/s

The economic delivery pipe diameter is given by

$$D = 0.965Q^{\frac{1}{2}}$$

Where

D = pipe diameter, m

Q= flow in pipe, m<sup>3</sup>/s

$$D = 0.965 \times 0.066^{0.5} = 0.248\text{m}$$

D= 250mm or D=250m (10")

Alternatively, IDB pump-fed manual recommends a maximum velocity of flow in pipes as 1.5 m/s. Restricting the flow velocity in the pipe to a maximum allowable value of 1.5 m/s and using circular pipes, the required pipe diameters is

$$D = \left( \frac{4Q}{\pi V} \right)^{0.5}$$

$$D = \left( \frac{4 \times 0.066}{\pi \times 1.5} \right)^{0.5} = 0.237m$$

= 0.237 m (say 250mm or 10"Ø pipe)

A pipe diameter of 10 inches (250mm) is recommended

### Total Dynamic Head

#### a). Friction Losses

##### i). Pipe Resistance to flow

Hazen-Williams Equation given below is used in the calculation of friction losses in pipes

$$h_f = 10.67L \frac{Q^{1.85}}{C^{1.85} \times D^{4.87}}$$

Where,

- $h_f$  = head loss due to friction, m of water
- $L$  = length of pipeline in m
- $Q$  = discharge in the pipe in  $m^3/s$
- $C$  = roughness coefficient for pipe material
- $D$  = internal diameter of pipe, m

Given discharge,  $Q = 0.055 m^3/s$ , the internal diameter of pipe,  $D = 0.25m$ , length of pipe,  $L = 750m$  and roughness coefficient for pvc pipes,  $C = 140$  the head loss in pipe is given by:

$$h_f = 10.67 \times 750 \times \frac{0.055^{1.85}}{140^{1.85} \times 0.25^{4.87}} = 3.42m$$

##### ii) Friction Losses in fittings:

Friction losses in the fittings are computed by the use of the equation below

$$h_f = \frac{KV^2}{2g}$$

Where,

- $h_f$  = head loss in the fitting, m
- $K$  = resistance coefficient for the fitting
- $V$  = velocity of flow in the pipe, m/s
- $g$  = acceleration due to gravity,  $9.81m/s^2$

Given discharge,  $Q = 0.055m^3/s$  and internal pipe diameter pipe,  $D = 0.250m$ , the velocity of flow in the pipe is given by;

$$V = \frac{4Q}{\pi D^2} = \frac{4 \times 0.055}{\pi \times 0.250^2} = 1.12m/s$$

### Summary of Computed Heads

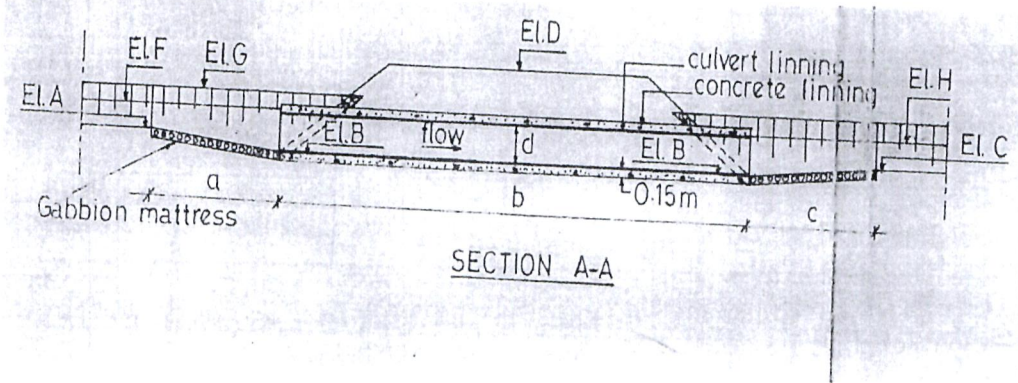
$$\begin{aligned}
 \text{TDH} &= \text{Delivery losses} + \text{friction losses} \\
 &= 3.42 + 1.12\text{m} \\
 &= 4.54\text{m}
 \end{aligned}$$

The elevation of the scheme head is 1370 while intake is 1372m. This is a gravity system.

#### 4.9. Design of Road crossings

Pipe and box culverts and bridges are the feasible options for road crossings. Pipe culverts are considered to be the most suitable from the construction requirements point of view.

Figure 4.7: Cross section of culvert



$$Q = \frac{VD^2}{4} \dots\dots\dots 4.13$$

Where:

Q= maximum water flow in the pipe culvert (m<sup>3</sup>/s)

V= velocity of flow (m<sup>2</sup>/s)

D= Diameter of pipe (m)

The diameter of culverts pipe was selected on the basis of the following criteria.

1. Maximum flow velocity of 1.5m/s
2. minimum diameter 0.45m
3. maximum diameter 1.0m (based on case of transport to site)
4. Only standard size culverts available in the market shall be considered.

$$Q = 3.735 \text{ m}^3/\text{s}$$

$$V = 1.5 \text{ m/s}$$

$$Q = AV$$

$$V = 1.5 \text{ m/s}$$

$$A = Q/V = Q/1.5$$

$$A = 3.735/1.5 = 2.49 \text{ m}^2$$

$$A = \pi D^2/4$$

$$D = 1.78 \text{ m}$$

Use three parallel culverts of diameter 1.0m

The flow through each culvert ring becomes

$$q' = 3.735/3 = 1.245 \text{ m}^3/\text{s}$$


$$a = 0.83 \text{ m}^2$$

$$v = q'/a = 1.259 \text{ m/s}$$

$$d = 1.03 \text{ m}, 1 \text{ m}$$

F 07

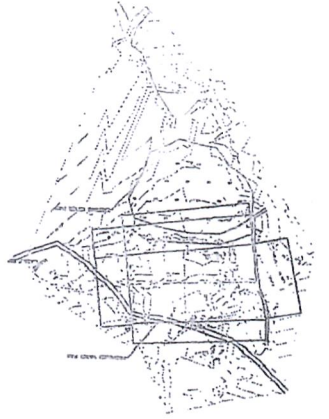
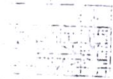
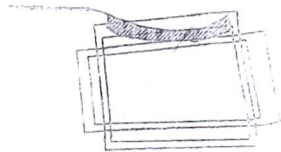
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AT 01/01/01

NO.	REVISION	DATE	BY

CITY NAME



FO 11

## **ANNEX 5: WORKING DRAWINGS**

The following drawings are prepared and used during implementation.

Drawing No. 1:- Topographic map of Changara water pan

Drawing No. 2:- General layout of Changara pan

Drawing No. 3:-Section profile

Drawing No. 4:- Draw off system

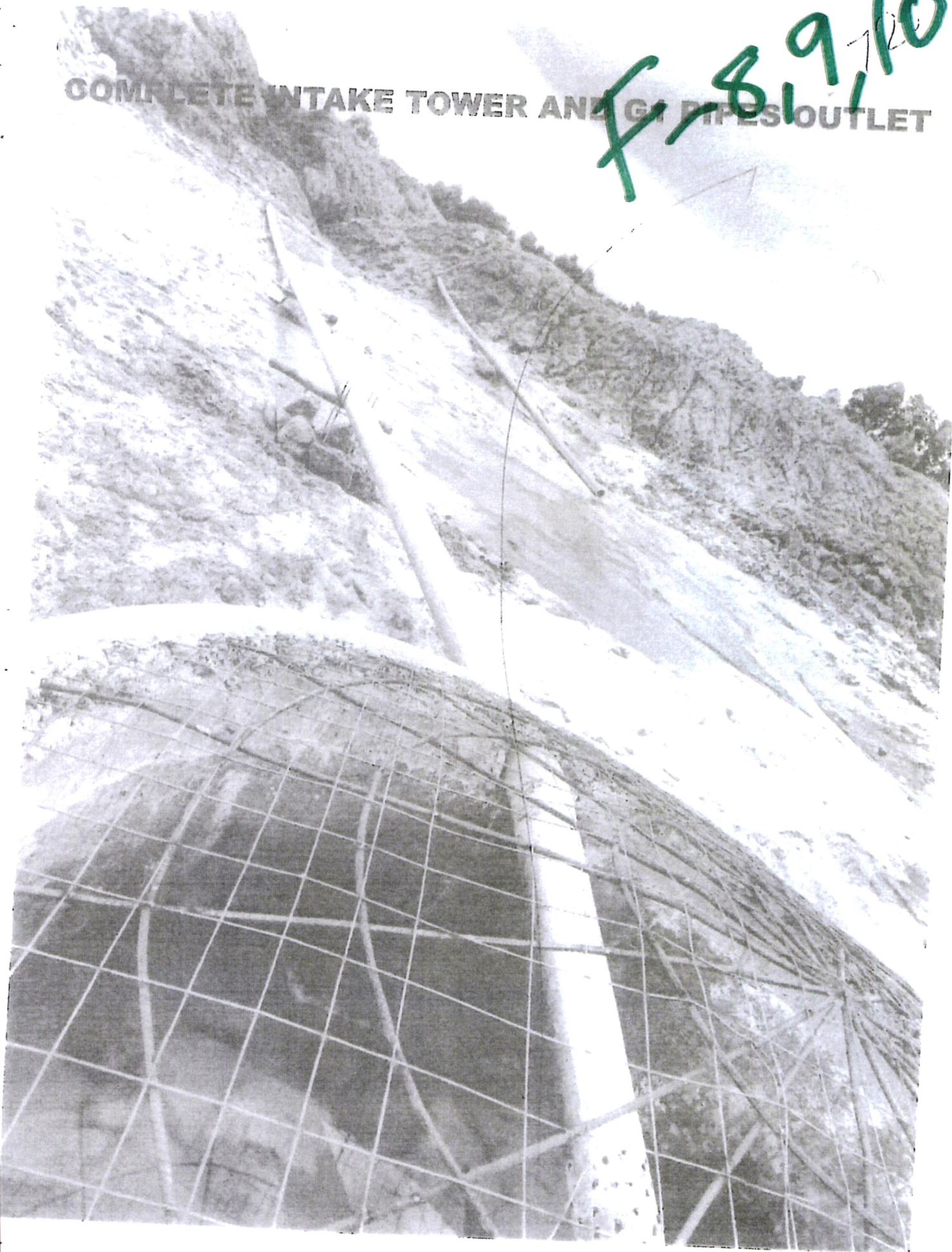
Drawing No. 5:- Culvert scheme



29

F-819/10

COMPLETE INTAKE TOWER AND GI PIPES OUTLET



21

74

# LAYING OF OUTLET G1 PIPES



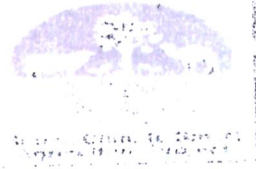
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8



**CASTING OF LAND PIPES**

Fall



**KENYA CLIMATE SMART AGRICULTURE PROJECT KCSAP**  
County Project Coordination Unit  
Busia County  
P.O. Box 261-50400 Busia (K)

**KCSAP NATIONAL TECHNICAL ADVISORY COMMITTEE FIELD VISIT AND PUBLIC PARTICIPATION ON PROPOSED BUSIA COUNTY SUB PROJECTS; CHANGARA WATER PAN AND BUKANI AQUACULTURE PARK PROJECTS SUMMARY REPORT**

**DATES: 21<sup>ST</sup> - 23<sup>RD</sup> NOVEMBER 2018**

**VENUES: Changara, Bukani and Wakhungu Sub project sites**

**INTRODUCTION.**

The Kenya Climate Smart Agriculture Project (KCSAP) is a Government of Kenya project jointly supported by the World Bank. KCSAP is being implemented over a five-year period (2017-2022) under the framework of the Agriculture Sector Development Strategy (ASDS) (2010-2020) and National Climate Change Response Strategy (NCCRS, 2010).

The development objective of KCSAP is to increase agricultural productivity and enhance resilience /copying mechanisms to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response.

The project will be implemented in 24 counties and through five components i.e:

1. Up-scaling climate smart agricultural practices.
2. Strengthening climate-smart agricultural research and seed systems.
3. Supporting agro-weather, market, and advisory services.
4. Project coordination and management.

5. Contingency emergency response.

The project will offer matching grants under two windows: (i) community-level investments to Common Interest Groups(CIGs), Vulnerable & Marginalised Groups (VMGs), and producer organizations (POs) to finance community microprojects, (ii) county-level investments to finance subprojects covering several wards and Window III: PPPs with Producers pilot the productive alliance model (PPPs with producers) by providing competitive matching grants to private firms (for-profit companies) and registered POs and their federations to support VC development and link CIGs and VMGs to markets. Beneficiary communities will be required to contribute at least 10 percent of the cost of their microprojects, while county governments will contribute at least 20 percent of the cost of their subprojects.

**OVERVIEW OF NTAC/ NPCU MISSION AND TASKS**

**Composition of the Team that conducted field visits**

NTAC/NPCU Team	Busia County Team
1.Dr. Edwin Ikitoo- KCSAP Component 2 Leader 2.Mrs. Priscilla Muiruri-KCSAP Component 3 Leader 3.Mr. Nguma Kani- NTAC member 4. Mrs. Esther Ngure- NEMA 5.Eng. Richard Ochieng-Nairobi County	1.Mr. Maurice Okisegere- CPC Busia 2.Mr. Alfred Makokha- M&E Busia 3.Mr. Keino -Irrigation Officer Busia 4.Mr. Gabriel Shiundu- Livestock Officer 5. Mr. Charles Ondu- Fisheries Officer Busia. 6. Mrs. Everlene Ayoro- Procurement CPCU 7. Mrs. Alphine Onyango- Administrative Assistant 8. Community members-Changara,Wakhungu & Bukani

**OBJECTIVES OF FIELD VISITS**

- To verify the proposed county sub projects.
- To visit the proposed sub projects sites and engage local community for the proposed sub projects in the county.

**SELECTION OF THE FIELD VISIT SITES**

The team visited four proposed sub projects sites in three sub counties.

				<p>from Changara &amp; Chemasir Locations.</p> <p><b>Water use currently:</b></p> <ul style="list-style-type: none"> <li>-Washing &amp; bathing</li> <li>-Livestock use (only water available in the area)</li> <li>-Irrigation of tobacco nursery.</li> <li>-Construction work.</li> </ul> <p><b>Challenges:</b></p> <p>The area faces recurrent drought.</p> <p>Encroachment on the water pan land.</p> <p>The community cant access the water for irrigation.</p> <p>Water pan is not fenced hence it lacks controlled accessibility.</p> <p>Livestock drinks directly from the pan leading to water pollution.</p> <p>Children swims in the pan-4 cases of boys drowning were reported.</p> <p>Water source has been interfered by human activities.</p>	The proposed rehabilitation costs are on the lower side.
27/11/2018	Samia	<p>Wakhungu Fish Farm</p> <p>(Nangina ward)</p>	<p>Fisheries officer</p> <p>Ward administrator</p>	<p><b>Background Information:</b></p> <p>Started in 1971 by then area MP Julia Ojiambo as fish and goat production farm.</p> <p>In 1981 the GOK took over as Fish farm &amp; training centre.</p> <p>It's on public land.</p> <p>It has conference hall, dining and hostels.</p> <p>Has 8 fish ponds</p> <p>Core Mandate;</p> <p>Production of fingerling.</p>	<p>Modify proposal to include:</p> <ul style="list-style-type: none"> <li>-Fingerlings production (Revive the stalled fish hatchery)</li> <li>-Liaise with KEMFRI Sagana for improved fish breeds.</li> <li>-Construction of the dyke upstream.</li> </ul>

- Teso North Sub county -Changara Water pan
- Samia Sub county-Wakhungu fish farm and Training Centre.  
- Bukani
- Bunyala sub county-Bunyala North ward administrator's office  
- Igigo village

Before the field visit, the NTAC/NPCU delegation met with the Chief Officers, Directors and CPCU to share some progress, plans and shared sub project guidelines.

During the meeting, Chief officers department of agriculture and animal resources welcomed the team to Busia County.

The County Project Coordinator did a presentation on CPCU progress and the four proposed county sub projects activities, outputs, outcomes, impacts and the proposed sub project budgets.

### KEY OBSERVATIONS/FINDINGS AND RECOMMENDATIONS FROM THE FIELD VISITS

During field visits, the following were the observations/findings and suggested recommendations for improvement of the sub project proposals.

DATE	SUB COUNTY	PROJECT SITE & WARD	OFFICERS MET	OBSERVATIONS /FINDINGS	RECOMMENDATIONS/ SUGGESTIONS
26/11/2018	Teso North	Changara water  Angurai East Ward	Secretary CDF Chief 2 Assistant Chiefs 2 Village administrators. Rep MCA office. Chairman Changara Market Members of the Water Pan Mgt Committee Village elder Opinion leader	<b>Background Information:</b> -Water pan is found in Changara Location which has a population of 22,002 persons (2009 Census). -The water pan was constructed in 1958 by colonial government to address water shortage. -It is on public land with title deed that was donated by the community. -Land size 15.5 acres. -Rehabilitated in 1997 at a cost of Ksh. 2M. -Management Committee in place however its inactive. -The water pan serves about 10,000 people	Expand capacity (Desilting & expansion) Construction of drainage channels. Survey (Topal & geotechnical surveys) Fencing Reinforce access wall stability Design Raising spillway Conduct EIA Develop EMP Engage the community on the upstream on conservation of the source. Management Committee to be revived. Install solar pumping system for irrigation to cater for upstream households.

				<b>Challenge:</b> Flood waters form dam upstream washing a way of fish in the ponds.	
		Bukani (Nambobo to ward)	Fisheries officer Ward administrator Cluster members	<b>Background Information:</b> -Bukani fish cluster has 28 members with 28 fish ponds. -Formed under the Economic Stimulus Project for production of Tilapia and Catfish. -The land was donated by a group member however adjacent to the site there is 4 acres public land ( LR No. 227 Luanda/Mudoma Location) -Area is prone to drought. -Proposed water pan to harness water from Wakhungu Hills and sustain the fish ponds. -To increase the number of ponds from 28 to 50. The area is swampy.	Construct a proper spill way/Dyke. The proposal need to incorporate other components to qualify aquaculture park: -Staggered fish production -Post handling -Micro processing -Cold storage. -Fish auction centre -Integrate with -Feasibility study to establish viability. (Inp costs and expected incomes/pond)
27/11/2018	Bunyala	Budalangi  (Bunyala North ward)	4 Village administrators Ward Manager Chair Local Poultry Cooperative Farmer reps	<b>Background Information</b> -Bunyala North, Bunyala South and Bunyala Central wards are prone to frequent floods. Normally leads to deaths of over 100,000 birds. -Project plans to construct 150 portable housing units and carrier cages to be used during migration to camp sites during flooding. -Feeds supplementation.	<b>Farmers Problems during floods:</b> -Lack of market for poultry during floods. -Poultry diseases. -Lack of early warning system for floods. <b>Suggestions:</b> -Value addition for poultry and its product work existing farmer cooperative Society. -Establishment of slaughter house/slab. -Cold storage facilities (Sell later)

				<p>-Vaccination of 45000 birds.</p>	<p><b>Concerns raised about the proposal</b></p> <ul style="list-style-type: none"> <li>-Economic analysis was missing.</li> <li>-Need to build the farmer's resilient.</li> <li>-Design of cages</li> <li>-How do we maintain the cages?</li> <li>-How do we provide water and feeds for birds in the cages?</li> </ul> <p>Size of intervention too small-only 4500 birds against 100,000 dead.</p> <p>Space in the camps the cages.</p> <p>Incorporate youth and women.</p> <p>How many families will be affected?</p>
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**PHOTOS**



Area Chief, Mr. Levi Emoiti and Dr. Edwin Ikitoo (right) NTAC team leader during the public participation meeting at Changara Water pan rehabilitation and irrigation installation project site.

KENYA NATIONAL RICHART AGRICULTURE  
PROJECT



Republic of Kenya

Kenya National Richart Agriculture Project  
(KCSAP)  
COUNTY ENVIRONMENTAL COORDINATION UNIT  
BUSIA COUNTY



Kenya Climate Smart  
Agriculture Project

1400 BUSIA (K)

gija@gmail.com

**MINUTES OF KCSAP CPCU & CTAC PUBLIC PARTICIPATION AND ELECTION  
OF CHANGARA WATRE PAN SUB PROJECT MANAGEMENT COMMITTEE MEETING  
HELD ON 31<sup>ST</sup> OCTOBER 2019 AT CHANGARA CHIEF'S OFFICE GROUNDS.**

**Members present.**

NO.	NAME	DEPARTMENT
1.	Mr. Samson Khachina	CDA- CTAC Chair
2.	Dr. Allan Oendo	CDVS-CTAC member
3.	Mr. Maurice Okisegere	CPC
4.	Mr. Alfred Makokha	Monitoring & Evaluation Officer
5.	Mr. Samuel Omijo	County Environmental Social Safeguards Officer
6.	Mr. Jim Osiromo	Chief
7.	Mr. Levi K Emoit	Ass. Chief
8.	Mr. Linus Osangiri Jakar	Ass. Chief
9.	Mr. Chemuor K Abel	Village Admin
10.	Mr. Emmanuel Otwani	WAO
11.	Members of the Community-34 ( 32 Males & 2 Females)	List attached

**Absent with apology.**

1. Eng Richard Achiambo - Chief Officer, Department of Agriculture & Animal Resources.

**Agenda.**

1. Opening prayer and Introduction.
2. Remarks from the Project Coordinator and Chair of CTAC
3. Criteria for selection of Project Management Committee and their Roles.
4. Election of Chairperson and other Project Management Committee members.
5. A.O.B

**Min. 1/31/10/2019: Opening Prayer and Introduction**

The meeting was called to order by ward Agriculture Officer at 10.30am and a word of prayer from Mr. Kevin Adwera. This was followed by a self-introduction, starting with community members, ward officers and KCSAP team. The area Chief welcomed the visitors, farmers to the meeting and appreciated KCSAP project through department of Agriculture, Busia county for identifying and selecting Changara water pan for expansion.

### **Min. 2/31/10/2019: Remarks from the County Project Coordinator and County Director of Agriculture**

The County Project Coordinator apologized for coming late to the gathering of the road by members of public who were demonstrating along Busia –Malaba Road.

He appreciated them for being patient. He emphasized the importance of Changara Water pan once complete will serve the community with water for domestic use, watering livestock and irrigation (horticulture). He requested support and good will of the community to ensure that the project succeeds. Community participation was very key and a requirement for the project. He said the gathering that the objective of the meeting was for public participation and approval formation of the Project Management Committee who will work closely with KCSAP and the Technical Department in during and after project implantation on behalf of the community.

### **Remarks by County Director of Agriculture**

The director emphasized the use of water pan by all community members both upstream and lower stream to avoid conflicts in future. He told the gathering that the irrigation project was targeting setting up a water pan and 100 acres of land in two blocks for irrigation for vegetables production. This was targeting increasing agricultural productivity, improved household incomes, and food and nutrition security.

The community was told to elect the management committee to represent and take care of their interest in the project.

### **Remarks by Ward Administrator**

Told the community to avoid politics and complains, which delays project implementation. He informed the public that it was their choice to elect a new or re-elected members of the committee and the Project Management Committee (PMC) was to serve the people to their mutual interests.

### **Min. 3/31/10/2019: Election of Project Management Committee and Sub Committees and their Roles.**

The Monitoring and Evaluation officer made a presentation on the Criteria and their roles of the Project Management Committee in the implementation of the sub-project.

### **Criteria for selection of the PMC Members and their Roles**

- Election of members should be gender sensitive.
- High integrity (well-respected, honest and willing to accept their responsibilities).
- The sub-committees will be answerable to the PMC through their chairs.

The executive committee of the PMC (Chair, Secretary and Treasurer) will perform the role of finance sub-committee.

- (i) Executive/Finance committee.
- (ii) Social Audit and Integrity Committee (SAIC).
- (iii) Procurement Committee

Each sub-committee will be comprised of 3 members: chair person, secretary and treasurer

#### **Executive/ Finance Sub-Committee**

- i. Prepare all books of accounts including the cash book, community contribution book and budget control summaries.
- ii. Keep all financial records including payment vouchers, bank statement and reports.
- iii. Report all financial transactions to the PMC.
- iv. Prepare financial progress reports.
- v. Display all financial information on the display board.
- vi. Provide all accounts and records to the Social Audit and Integrity sub-committee for auditing.

#### **Social Accountability and Integrity Sub-Committee (SAIC)**

1. Responsible for social audit of activities in the project.
2. Ensure that the PMC and community sub-committees constantly follow the agreed upon guidelines, rules and procedures in their operation.
3. Verify PMC books of accounts.
4. Report any financial irregularities with suggestions for corrections to the PMC.
5. Conflict resolution between the members/Beneficiaries.
6. Maintaining complaints log register.
7. Collect more information about complaints, conflicts and other issues when called upon by the PMC or the KCSAP project.
8. Present their reports on the operations of the PMC and community sub-committees to the entire community.
9. Suggest ways of correcting the errors and deviations in the functioning of the community committees.
10. Participate in monitoring the progress of project interventions.

#### **Procurement Sub-Committee**

The Procurement sub-Committee will consist of 3 members.

Two thirds of the total membership will constitute a forum for business to be conducted.

Responsibility for the Procurement sub-Committee (PSC) will be as follows:

- (i) Assist the PMC in the procurement of materials, goods and services for micro- projects as per their procurement plan.
- (ii) Prepare plans so as to guide procurement activities within the context of the work- plan.
- iii) Carry out procurement in line with the principles of value for money, efficiency, equal opportunity, and transparency.

(iv) Ensure that all the procured goods, supplies and works will be handed over to the PMC for the Sub-project implementation.

(v) Keep all the procurement related records.

(vi) Follow up on the guarantees or complaints of the procured items.

(vii) Report the details of procurement to PMC.

(viii) Enter all the items procured in the stock register.

**Election of the PMC members:**

The Community agreed to carry out election of the 13 PMC members, three being ex-officio (GOK/COG) officers and 10 community members based on their three sub locations; Changara, Akobwait and Aterait Sub locations. Each s/location was allocated 3 slots apart from the Akobwait which is the host of the project was allocated 4 slots in the PMC.

The following were elected as members of the Changara water pan PMT and its sub committees as indicated below

**CHANGARA WATER PAN -PROJECT MANAGEMENT COMMITTEE MEMBERS:**

No	Name	ID	TEL	SUB COMMITTEE	POSITION	S/LOCATION
1	Bildad Masake	24412371	0713203872	Executive	Chair person	Changara
2	Livingstone Otwane	2314056	0727782773	Executive	Secretary	Akobwait
3	Phauzia Issa	7908179	0723124548	Executive	Treasurer	Aterait
4	Cornell Ebu	2806110	0706813806	SAIC	Chair Person	Aterait
5	Thomas Ipalei	27211635	0703902803	SAIC	Secretary	Changara
6	Carol Ikate Otwane	37476327	0798381669	SAIC	Treasurer	Changara
7	Tobias Cheseto	28707512	0701053876	Procurement	Chair Person	Akobwait
8	Douglas Omande	2975290	0703806495	Procurement	Secretary	Aterait
9	Gladys Nakhungu	21607355	0724406682	Procurement	Treasurer	Akobwait
10	Boniface Emuruon Okwamong	27114580	0757667625	-	Member	Akobwait
11	Jim Osirom		0799260136	-	Ex Officio	Chief
12	George O. Ikwara	10706244	0713414680	-	Ex Officio	Ward Admin
13	Emmanuel Otwane	29482368	0714798591	-	Ex Officio	Ward Agric. Officer

Min. 4/31/10/2019: A.O.B.

Being no other business, the meeting was closed with a word of prayer from Mrs. Everlyne Ayoroh at 4.30 pm.

Chairperson: *Samson Akachina* Date: *31/10/2019* Sign: *Akachina*

Secretary: *Alfred Makwani* Date: *31/10/2019* Sign: *[Signature]*



KENYA CLIMATE SMART AGRICULTURE PROJECT  
 (KCSAP)  
 COUNTY PROJECT COORDINATION UNIT  
 BUSIA COUNTY  
 P.O. BOX 281 - 40100 BUSIA  
 Email: kcsapbusia@gmail.com



ACTIVITY: Workshop on the use of GPS and GIS in the project implementation  
 VENUE: County Office, Busia DATE: 31/10/2019

ATTENDANCE LIST

No	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
1	EMMANUEL WANYALI	20190052261	0744792591	MzeeF	ANWRAFI EAST WARD	M	emmanuelwanya@gmail.com	
2	Abd. Chumbe	20190030495	0722550350	WAZIWAZI	ANWRAFI EAST	M	abdchumbe@gmail.com	
3	ERIC NIGERS	201910637	0722217705	MIDALE	TEGO NORTH WARD	M	ericnig@gmail.com	
4	BRATT DICKSON	27070120	0160761082	OFFICE OF ENV.	ANWRAFI EAST	M	bratt.dickson@gmail.com	
5	WILLIAM KAGULU		0727971457	OPINION LEADER	ANWRAFI EAST	M	WKA	
6	JOSEPH BAKASA	7158698	0103476525	Liguru	Anguria East	M	mbakasa7@gmail.com	
7	GEORGINA UNYU	4425235	0715021098	Liguru	ANWRAFI EAST	M	mbakasa7@gmail.com	
8	Richard Nyota	2507074	0723659008	RSTDTR.	ANWRAFI EAST	M	7malakosi@gmail.com	
9	JAMES OTIENO		0714475198	RDS	Anguria East	M	And@com	
10	STEPHEN DIBAK	7135741	0711232925	Farmer	Anguria East	M	And	
11	STEPHEN ETUK	3003041	01963454	CLDCA	ANWRAFI EAST	M	Steph@com	
12	STEPHEN GITHA	10361006	074021036	TECHNICAL	Anguria East	M	10361006@gmail.com	
13	STEPHEN ETUK	3003041	01963454	CLDCA	ANWRAFI EAST	M	Steph@com	

No.	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
14	Thomas Fungo	4303525	790140879			M		
15	Maureen <sup>Sharon</sup> Juma	43307013	0716799301	Liguru		M		
16	TOBIAS CHESHO	25707512	0701053876	PAC	Angurai	MALE	Tobias.chesho@gmail.com	
17	COLLEEN EBU	3506110	0706813804	PAC	Angurai	FEMALE		
18	STEPHEN TINKIT	10167529	0704566731	CBO CHANARA	ANGURAI	MALE		
19	Wycliffe Wanyingi	12437004	0715193955		ANGURAI	MALE		
20	ANNIE SDET	13049877	0728227025		ANGURAI	F		
21	JOSEPH WERESA	293295	073912234		ANGURAI	MALE		
22	LEONARD EYANCA	26050768	0705102971		ANGURAI	MALE		
23	WILSON BIRASHA	7593305	0711161030		ANGURAI	MALE		
24	KENNEDY ENTORATA	24255493	0716353433		ANGURAI	MALE		
25	MARCO MUKAMBE	31142235	0702024854		ANGURAI	MALE	Mukamba.marco@gmail.com	
26	JOHN NJERAMUHI	36217057	0710703000		ANGURAI	F		
27	RAJ TEEMEKI	25495153	0720103015		))	M		
28	Allan S. Lyate	31333373	0705033390		))	M	allanlyate@gmail.com	
29	CHARLES OREBO	21087563	-		))	M		
30	JOHN ANJINI	20324021	0794020603	Liguru	Angurai	M		
31	Doris Barasa	02.67990	0718070005		))	M		
32	FRANCIS ELIABUNAT	4307209	0799072919	Liguru	ANGURAI	MALE		
33	Wycliffe Obed	7955882	0729507174	Liguru	ANGURAI	M		
34	Esther Nyam	0000001	070204434	Anguraita	Bulia	M		

Total:.....Males:.....Females



No.	NAME	ID/ P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
14								
15								
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Total:.....Males:.....Females

F 12

REPUBLIC OF KENYA



MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES & AGRI-BUSINESS  
COUNTY ASSEMBLY OF BUSIA COUNTY



REF: KCSAP/BSA/DEV.2/Vol.1/40

Date 11/01/2021

The Changara Water Pan Stakeholders

**RE: INVITATION TO CHANGARA WATER PAN STAKEHOLDERS ENGAGEMENT MEETING ON 15/01/2021.**

You are hereby invited to participate in the Changara Water Pan Stakeholders Engagement meeting scheduled for 15/01/2021 at Changara water pan site beginning at 11.00 am.

Agenda:

1. Opening prayer
2. Introduction
3. Changara water pan progress report
4. Grievance Redress Mechanism (GRM)
5. Way forward
6. Closing prayer.

Yours faithfully,

  
Okisegere JM  
County Project Coordinator  
Kenya Climate Smart Agriculture Project  
Busia County.



CC

- CECM-Department of Agriculture, Livestock, Fisheries & Agribusiness, Busia County
- CO- Department of Agriculture, Livestock, Fisheries & Agribusiness, Busia County
- CDA- Department of Agriculture, Livestock, Fisheries & Agribusiness, Busia County
- MCA-Angurai East Ward, County Assembly of Busia County.



KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

COUNTY PROJECT COORDINATION UNIT BUSIA  
P.O. BOX 261 - 50400  
BUSIA (K)  
Email: kcsapbusia@gmail.com



ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMMITTEE (PMC) CHANGARA DAM

VENUE: BULA ALES

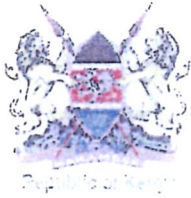
DATE: 17TH & 18TH JUNE 2014

ATTENDANCE LIST

S/N o.	NAME	ID/P/NUMBER	PHONE NO.	ORGANIZATION	SUBCOUNTY/ WARD	GENDER (M/F)	EMAIL ADDRESS	SIGNATURE
1	CORNEE IZU	2806110	0706912306	PMC	ANGURU, EAST	M	192 CHEPTAIS	[Signature]
2	BONFACE EMURU	27114300	0112322588	PMC	ANGURU, EAST	M		[Signature]
3	GLADYS NAKUUNGU	21607355	072440468	PMC	ANGURU, EAST	F		[Signature]
4	CARLO OTWANE	3747632	0793251008	PMC	ANGURU, EAST	F		[Signature]
5	RHEZINA O. ISSA	7908179	0725124548	PMC	ANGURU, EAST	F	7 CHEPTAIS	[Signature]
6	THOMAS I. RISPIN	27211635	0703403803	PMC	ANGURU, EAST	M		[Signature]
7	Bludo Kyang	189069963	0724761155	CAE/MCA	Busia	M	bludokyang@cae.or.ke	[Signature]
8	Jannet Onyo	20130152686	0738153281	KCSAP	Busia	M	jannetonyo@kcsap.or.ke	[Signature]
9	Florencia Kigunda	1993023378	0722492408	MCA	BUSIA	F	florencia.kigunda@mca.or.ke	[Signature]
10	S. K. Wachira	189096371	0720990143	Agric	Busia	M	edobusia@gmail.com	[Signature]
11	Maria Chango	2068086246	0725339350	MCA	BUSIA	F	gasc@cae.or.ke	[Signature]
12	GAD OSHOME	0607175	0719210066	PMC	ANGURU EAST	M		[Signature]
13	Lydia Epuni	27070130	27070130	PMC	Anguru East	F		[Signature]

5-13





Ministry of Planning and Economic Development

ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMPUTER (PMC) CHANARA DAC

VENUE: BWA A.S.C

DATE: 15<sup>TH</sup> JULY 2023

PAYMENT SCHEDULE

S/N o.	NAME	P/No./ ID No.	POSITION	J/G	STATION	RATE (KES)	DAYS	TOTAL	SIGN
1	CORNEL EBU	2506110	PMC member			4,200	2	8,400	[Signature]
2	PHOZIA C. ISSA	7908179	PMC member			4,200	2	8,400	[Signature]
3	THOMAS J. CRISPIN	27211635	PMC member			4,200	2	8,400	[Signature]
4	ISOBELLE ELWANIANG	27114580	PMC			4,200	2	8,400	[Signature]
5	GLADYS NAKHUMBU	21607355	PMC member			4,200	2	8,400	[Signature]
6	CAROL OTWANE	37476327	PMC member			4,200	2	8,400	[Signature]
7	Samuel Omyo	2045015286	CESSCO	K		7,000	2	14,000	[Signature]
8	Florence Mwigumbe	1993023068	D/DA P			7,000	2	14,000	[Signature]
9	Ellud Khyang	1999069462	Engineer	L		7,000	2	14,000	[Signature]
10	S. K. Wachira	1989096371	CPA	R		10,500	2	21,000	[Signature]
11	AMES GINGO	20050562A6	AGRICULTURAL TECHNICIAN	A		7,000	2	14,000	[Signature]
12	GAD OSHOME	0607175	PMC			4,200	2	8,400	[Signature]
13	Lydia Omondi	27070130	PMC			4,200	2	8,400	[Signature]





Republic of Kenya

KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)

COUNTY PROJECT COORDINATION UNIT BUSIA

P.O. BOX 261 - 50400

BUSIA (K)

Email: kcsapbusia@gmail.com



Kenya Climate Smart  
Agriculture Project

ACTIVITY: TRAINING OF PROJECT MANAGEMENT COMMITTEE (PMC) CHANGARA DAM

VENUE: BUSIA A.T.C

DATE: 15<sup>th</sup> - 17<sup>th</sup> 2016

FARE REFUND

S/ No.	NAME	P/No./ ID No.	POSITION	JOURNEY DESCRIPTION	ONE WAY	TOTAL	SIGN
1	Bonface Okumu	27114577	Pmc member	Changara - Busia	1000	2000	<i>[Signature]</i>
2	GLADYS NAKHUNGU	21607355	P/MC MEMBER	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
3	CARL TWANE	37476377	P/MC MEMBER	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
4	PHOLIA WISSA	7909179	P/MC	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
5	CORNEL ZBU	2506110	P/MC	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
6	THOMAS J. CRISPIN	27211635	P/mc	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
7	GAD OSTOME	0607175	P/MC	CHANGARA - BUSIA	1000	2000	<i>[Signature]</i>
8	Lydia Genu	27070130	P/mc	Changara - Busia	1000	2000	<i>[Signature]</i>
9	Abba Phandu	26830468	P/MC	Changara - Busia	1000	2000	<i>[Signature]</i>
10	Bonface Amundu	27114580	P/MC	Changara - Busia	1000	2000	<i>[Signature]</i>
11	Emily Speto	36629926	P/MC	Changara - Busia	1000	2000	<i>[Signature]</i>
12	Ben Nyakongo	18719466	P/mc	Changara - Busia	1000	2000	<i>[Signature]</i>
13	Remo Tanyi	2845097	P/mc	Changara - Busia	1000	2000	<i>[Signature]</i>



TRAINING REPORT OF PROJECT MANAGEMENT COMMITTEE, HELD ON  
19/7/2023, AT BUSIA AGRICULTURAL TRAINING CENTRE  
PRESENT

S/NO.	NAME	ID NO./P/NO.	GENDER	POSITION	STATION	PHONE
1	Cornel Ebu	28066110	M	PMC Member	Changara	0706813806
2	Bonface Emuruon	27114380	M	PMC Member	Changara	0112328583
3	Gladys Nakhungu	21607355	F	PMC Member	Changara	0724406682
4	Carro Otwane	37476327	F	PMC Member	Changara	0798281668
5	Phozia C. Issa	7908179	F	PMC Member	Changara	0723124548
6	Thomas I. Crispin	27211635	M	PMC Member	Changara	0703902880
7	Eliud Etyang	1989069463	M	Engineer	Busia	0724761155
8	Samuel Omijo	20150152686	M	CESCO	Busia	0733152281
9	Florence Kigunzu	1993023568	F	D/CDA	Busia	0721292403
10	Emmanuel Otwane	20190032261		WAO	Angurai East	0714798591
11	Agnes Oningo	2008086246	F	ASDSP CORDINATOR	BUSIA	0725313980
12	Samson Khachina	19890963371	M	CDA	BUSIA	0720990143
13	Lydia Oporu	27070130	F	PMC member	Changara	-
14	Gad Oshome	0607175	M	PMC Member	Changara	0719210066
15	Emily Opeto	36629926	F	PMC Member	Changara	0799627474
16	Atitwa Phaniel	26830468	M	PMC Member	Changara	0741394693
17	Bonface Emurudu	27114580	M	PMC Member	Changara	0700725509
18	Ben Nyokonyo	18749466	M	PMC Member	Changara	0700725509
19	Ronald Wamukoya	2845697	M	PMC Member	Changara	0715813249
20	Ben Nyakomo	13719466	M	PMC Member	Changara	0725693688
21	Sylvia Otero	30360695	F	PMC Member	Changara	0729722753
22	Rebecca Kiama	30925708	F	PMC Member	Changara	0741731875
23	Nelly Omalaba	23216043	F	PMC Member	Changara	07064227996
24	Violet Amai	24868263	F	PMC Member	Changara	0714799859

**TIMETABLE FOR TRAINING OF CHANGARA WATER PAN PROJECT  
MANGEMENT COMMITTEE.**

**TIME SCHEDULE**

**DAY 1**

<b>TIME</b>	<b>ACTIVITY/TOPIC</b>	<b>FACILITATOR</b>	<b>MODERATOR</b>
08:30 -09:00 AM	Registration	Eliud Etyang	Agnes Oningo
9.00 – 9.30 AM	Introduction	Emmanuel Otwane	Eliud Etyang
	Opening Remarks	Samson Khachina	Eliud Etyang
10:00 AM- 11:00 AM	Group Dynamics	Florence Kingunzu	Agnes Oningo
11:00AM- 11:30 AM	TEA	<b>BREAK</b>	Emmanuel Otwane
11:30 AM- 1:00 PM	Group Dynamics	Florence Kingunzu	Eliud Etyang
1.00 PM -2.00 PM	<b>LUNCH</b>	<b>BREAK</b>	Agnes Oningo
2.00 PM-4.00 PM	Team Building	Agnes Oningo	Florence Kigunzu
4.00 PM – 5.00 PM	Maintenance of Irrigation Structures	Eliud Etyang	Samuel Omijo
5.00 PM-5.30 PM	TEA	<b>BREAK</b>	Emmanuel Otwane
<b>DAY 2</b>			
8.00 AM – 8.30 AM	Recap	Samuel Omijo	Emmanuel Otwane
8.30 PM-10.00PM	Maintenance of Irrigation Equipment	Eliud Etyang	Agnes Oningo
10.00 AM-10.30 PM	TEA	<b>BREAK</b>	Eliud Etyang
10.30 AM-1.00 PM	Field/Practical on maintenance of irrigation structures and Equipments	Eliud Etyang	Samuel Omijo
1.00PM-2.00 PM	<b>LUNCH</b>	<b>BREAK</b>	Agnes Oningo
2.00 PM- 3.00PM	Sustainability Mechanisms	Samuel Omijo	Eliud Etyang
3.00 PM- 4.00 PM	Way forward	Agnes Oningo	Florence Kigunzu
4.00 PM- 4.30 PM	Closing Remarks	Florence Kigunzu	Samuel Omijo
4.30 PM– 5.00 PM	TEA	<b>BREAK</b>	Eliud Etyang

## HOUSE KEEPING RULES

1. All participants to keep time
2. All phones should be on silent mode
3. There should be no unnecessary movement
4. Respect each other's opinion/suggestions/point

## OPENING REMARKS.

The meeting was opened with a word of prayer by Carro Otwane, followed by self-introduction by all the members present.

The County Director for Agriculture, welcomed all the participants to the meeting and emphasized on the training as it will help the group realize development faster. He urged the committee to recruit more members and make sure that the area is more productive than before.

## GROUP DYNAMICS : BY FLORENCE KIGUNZU

### SUB TOPICS DISCUSSED

- ❖ What is a group?
- ❖ What is group dynamics?
- ❖ Why group dynamics is important?
- ❖ Why encourage group formation?
- ❖ Disadvantage of groups
- ❖ Principles of group formation
- ❖ Types of groups
- ❖ Governance for groups
- ❖ Process of group formation
- ❖ Identification of felt needs/problems
- ❖ Initial group membership recruitment
- ❖ Group size and participation
- ❖ Stages of group development
- ❖ Factors that help groups stick together
- ❖ Questions and Answers session

## TEAM BUILDING: BY AGNES ONINGO

- ❖ What is a team
- ❖ Characteristics of an effective team
- ❖ Types of team members
- ❖ What does it take to work as a team
- ❖ Questions and Answers session

**MAINTENANCE OF IRRIGATION STRUCTURES AND EQUIPMENTS- BY ELIUD ETYANG**

S/NO.	STRUCTURE	MAIN WORK	MAINTENANCE
1	Silt trap	To trap all the silt from entering the water pan	Desilt or scoop the silt from the trap regularly or after heavy down pour
2	Inlet	It channels the run off to the water pan	Clear all the grasses /vegetation from covering the water way Remove any objects that block the water from accessing the pan
3	Fence	Protects wild animals/livestock and Human beings from accessing the water pan	Fix fallen posts and broken wire Slash the fence perimeter for easy visibility
	Gate	Prevent unwarranted access to the water pan	Always the gate should be under key and lock to avoid Unwarranted entry and accidents
5	Water pan	To store/ reserve the water for irrigation and any other use	Desilting and cutting down of the grass around the pan
6	Spill way	To remove or drain the excess water	Remove the grass and other vegetation

**EQUIPMENTS**

S/NO.	EQUIPMENT	MAIN WORK	MAINTENANCE
1	Sprinklers	To irrigate the field	Drain all the water Grease the rotating parts Remove soils
2	Pipes	To convey the water to the fields	Repair the broken pipes immediately
3	Hydrants	To raise the water to the sprinkles	To remove soils Avoid livestock from tramping on them
4	Man holes	To maintain the flow of water	Cut the grass and repair broken parts

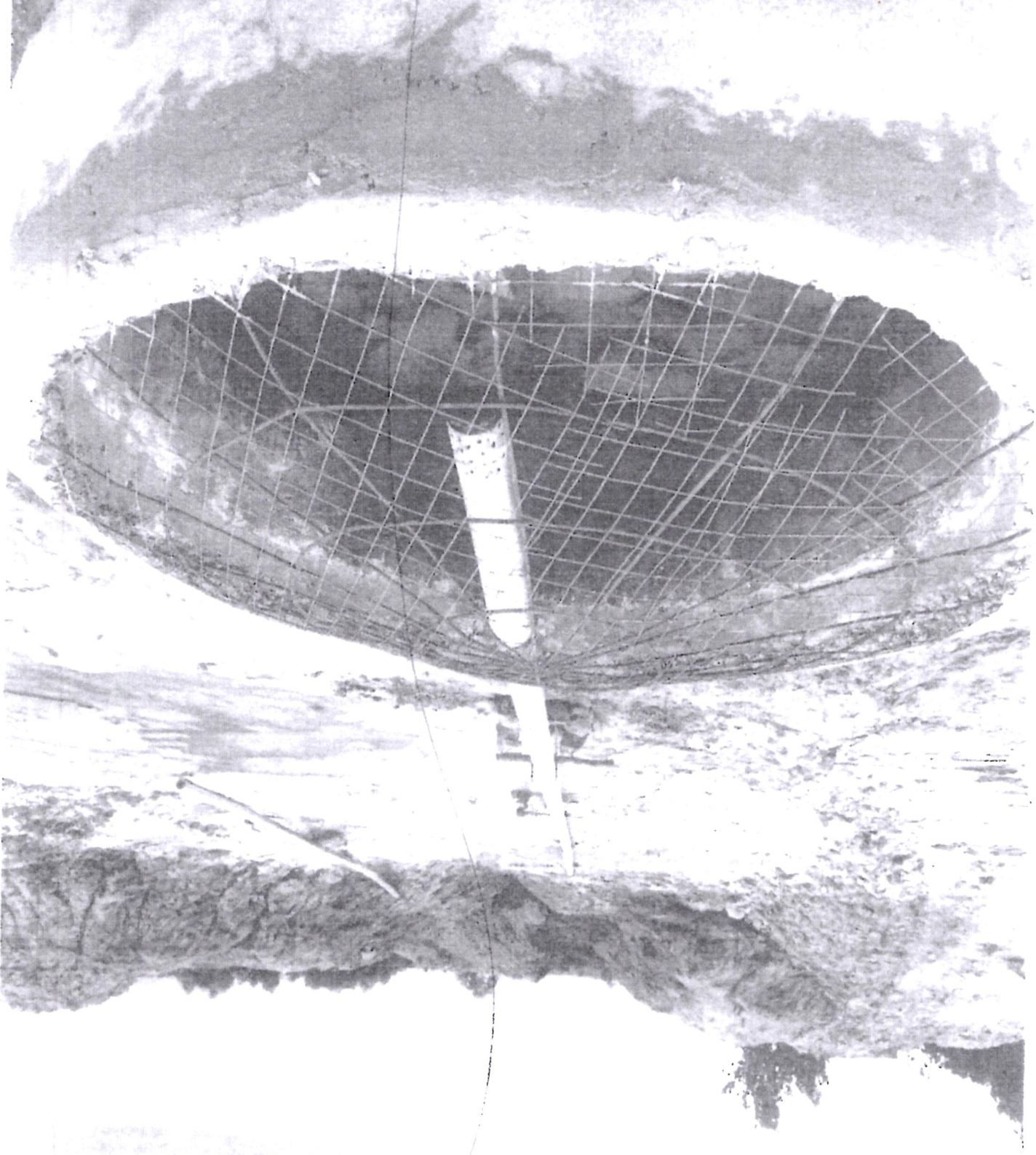
**WAY FORWARD**

- 1 To be involved in IGA like production of local vegetable
2. To establish a group tree nursery near the pan
- 3.To be involved in savings and Table Banking
4. To register the group as IWUA
5. To hand over the water pan to the community
6. To carry out Resource mobilization/ proposal writing

Written by: Eliud Etyang

Sign.....

COMPLETED INTAKE TOWER WITH OUTLET PIPES



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Republic of Kenya

## COUNTY GOVERNMENT OF BUSIA

Kenya Climate Smart Agriculture Project (KCSAP)  
Project Coordinating Unit – Busia  
P.O. Box 261-50400, Busia (K)



27<sup>th</sup> June, 2019

Ref: KCSAP/CPCU BSA./PROC.5/30

Eng. Manuel Waswa –(County Director Irrigation) Member


**APPOINTMENT FOR CONTRACT IMPLEMENTATION TEAM: TENDER NO.  
KCSAP/BSA/CHA/1/2018-2019**

**CONTRACT FOR EXPANSION AND INSTALLATION OF IRRIGATION SYSTEM AT  
CHANGARA WATER PAN SUB-PROJECT**

Pursuant to Section 151 (1) of the Public Procurement and Assets Disposal Act 2015, you are hereby appointed to the Contract Implementation Team for the above works.

For the purpose of managing complex and specialized procurement contracts, you shall be responsible for:

- Monitoring the performance of the contractor, to ensure that all delivery or performance obligations are met or appropriate action taken by the procuring entity in the event of obligations not being met.
- Ensure that the contractor submits all documentation as specified in the tendering documents, the contract and as required by Law
- Ensure that the procuring entity meets all its payment and other obligations on time and in accordance with the Law.
- Ensure that there is right quality and within the time frame where required.
- Manage handover or acceptance procedure as prescribed
- Ensure contract is complete, prior to closing the contract file including handover procedures, transfer of title if need be and that the final retention payment has been made
- Ensure that all contract administration records are complete, up to date, filed and archived
- Ensure that the contractor acts in accordance with the provisions of the contract
- Ensure discharge of performance guarantee where required.

  
Eng. Richard Achiambo  
Chief Officer  
Department of Agriculture and Animal Resources  
**Busia County**

CC  
DIRECTOR IRRIGATION  
DIRECTOR WATER  
DIRECTOR ENVIRONMENT  
PROJECT MANAGER  
COORDINATOR – KCSAP



Republic of Kenya

KENYA CLIMATE SMART AGRICULTURE PROJECT (KCSAP)

COUNTY PROJECT COORDINATION UNIT
BUSIA COUNTY
P.O.BOX 261-50400
BUSIA (K)

Kenya Climate Smart Agriculture Project

MEMO

TO : Chief Officer Agriculture and Animal Resources
FROM : County Project Coordinator
REF : KCSAP/BSA/DEV.1/VOL.1/28
Date : 27th June, 2019

NOMINATION OF CONTRACT IMPLEMENTATION TEAM

The Kenya Climate Smart Agriculture Project (KCSAP) is a World Bank funded project in the Ministry of Agriculture, Livestock, Fisheries and Irrigation under the State Department for Crops Development. The Project under the County Government of Busia floated quotations for the provision of Expansion and Installation of irrigation system upon obtaining necessary approvals from the World Bank and the Accounting officer:-

Contract for expansion and installation of irrigation system at Changara water pan sub-project

TENDER NO. KCSAP/BSA/CHA/1/2018-2019

I therefore recommend the following officers to form the Contract Implementation Team as listed below;

Table with 3 columns: NAME, DESIGNATION, POSITION. Rows include Eng. Musa Otieno (Chairman/POE), Dancun Angango (Member), Samson Khachina (Member), Samuel Omijo (Member), Alfred Makokha (Member), Everlyne Ayoroh (Secretary).

Signature of Okisegere Maurice

Okisegere Maurice
County Project Coordinator
Kenya Climate Smart Agriculture Project
Busia County

Handwritten notes: 'Certified true copy of original', 'Director supply services', and a stamp from the County Government of Busia dated 08 NOV 2023.

KENYA CLIMATE SMART AGRICULTURE PROJECT  
(KCSAP)



Republic of Kenya

COUNTY PROJECT COORDINATION UNIT  
BUSIA COUNTY  
P.O. BOX 261-50400  
BUSIA (K)



Kenya Climate Smart  
Agriculture Project

When replying please quote

KCSAP/BSA/DEV/2/VOL.1/7

BERODI COMPANY LTD  
P.O. BOX 051-50401, MALAKISI

24/06/2019

Dear Sir/ Madam

REF: INTRODUCTORY LETTER TO PROJECT MANAGER

The subject matters refers,

Following your successful acceptance of your bid for Tender No: KCSAP/BSA/CHAN/1/2018-2019 for EXPANSION AND INSTALLATION OF IRRIGATION SYSTEM ON CHANGARA WATER PAN SUB PROJECT, TESO NORTH SUB-COUNTY, the County Government of Busia on behalf of Agriculture and Animal Resources (KCSAP) is happy to introduce you to the Project Manager, The County Director of Irrigation, who will be the Team Leader and Technical person of the works, please liaise with the project manager immediately and thereafter-on matters relating to the contract.

We wish you both a successful cooperation.

J. M. Okisegere  
County Project Coordinator  
Busia County

CC  
Chief Officer  
Department of Agriculture and Animal Resources  
Busia County

CC  
County Director of Irrigation  
Department of Water, Irrigation, Environment & Natural Resources  
Busia County

*Confidential copy of original need*  
*Amurhu*  
*Leonard*  
*07/11/2019*

**DIRECTOR**  
SUPPLY CHAIN MANAGEMENT SERVICE  
NOV 8 2019  
COUNTY GOVERNMENT OF BUSIA  
P.O. BOX 261-50400, MALAKISI, BUSIA

UNIVERSITY OF EAST AFRICA

F-15

THIS IS TO CERTIFY THAT

*STEPHEN ADERO*

of

UNIVERSITY COLLEGE, NAIROBI

having satisfied the requirements for the

award of the

DEGREE OF

BACHELOR OF SCIENCE

IN

ENGINEERING

(PASS)

was admitted to the degree at a Congregation

held in NAIROBI on the

*twenty fifth* day of *September*

in the year *1969.*

PPRA/DG/2/11 VOL. II (36)

4<sup>th</sup> June, 2025

**J.M. Nyegenye, CBS**

Clerk of the Senate  
Clerk's Chambers  
Parliament Buildings

**NAIROBI**

**Email: [csenate@parliament.go.ke](mailto:csenate@parliament.go.ke)**

**PETITION TO SENATE REGARDING THE CHANGARA WATER PAN PROJECT  
- WORLD BANK FUNDED INITIATIVE IN BUSIA COUNTY**

Reference is made to your letter Ref: SEN/DSEC/DPEAC/LENR/2025 (3) (179) dated 16<sup>th</sup> May, 2025 inviting us for a meeting on 5<sup>th</sup> June, 2025 with the Senate Standing Committee on Land, Environment and Natural Resources on the above captioned matter.

The Authority engaged the County Government of Busia on 27<sup>th</sup> May, 2025 vide letter Ref: PPRA/DG/2/11 VOL. II (34) to submit certified copies of procurement documents of the subject contract through the Public Procurement Information Portal (PIIP) by 31<sup>st</sup> May, 2025 for our review. However, until today, the procuring entity has not submitted the same.

In view of this, we humbly request for rescheduling of the date for appearance before the Committee from 5<sup>th</sup> June, 2025 to **18<sup>th</sup> June, 2025** to enable us to pursue the procuring entity to submit the subject documents for our review/analysis, prepare and submit the report before the Committee.



**Thomas Otieno**

**For: DIRECTOR GENERAL**

**Encls.**

PPRA/DG/2/II VOL.III (34)

27<sup>th</sup> May, 2025

**The County Secretary**

County Government of Busia  
Office of the Governor, Busia County Hall  
P.O. Box Private Bag, 50400

**BUSIA**

Email: [info@busiacounty.go.ke](mailto:info@busiacounty.go.ke)

**COMPLAINT REGARDING THE CHANGARA WATER PAN PROJECT – WORLD BANK FUNDED INITIATIVE**

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22. Any other critical documents pertaining to the subject procurement.

Your response and submissions should reach the Authority by **30<sup>th</sup> May 2025**.

We draw your attention to the provisions of Section 44(1) of the Act which vests the entire responsibility of ensuring compliance to you as the accounting officer.

**Patrick K. Wanjuki**  
**DIRECTOR GENERAL**

Copy to:

**Governor**

County Government of Busia  
P.O. Box Private Bag, 50400

**BUSIA**

Email: [info@busiacounty.go.ke](mailto:info@busiacounty.go.ke)

**CEC-Finance and Planning**

County Government of Busia  
P.O. Box Private Bag, 50400

**BUSIA**

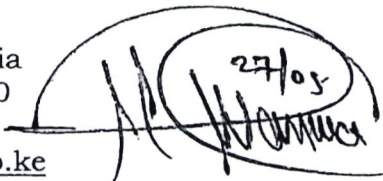
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**CEC-Agriculture**

County Government of Busia  
P.O. Box Private Bag, 50400

**BUSIA**

Email: [info@busiacounty.go.ke](mailto:info@busiacounty.go.ke)



A handwritten signature is written over a circular stamp. The stamp contains the date '27/05' and some illegible text below it.

PPRA/DG/2/II VOL. III (34)

27<sup>th</sup> May, 2025

**The County Secretary**

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Office of the Governor, Busia County Hall  
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**DIRECTOR GENERAL**

Copy to:

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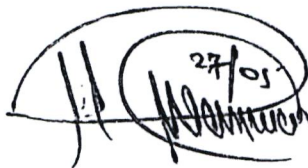
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**BUSIA**

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**CEC-Agriculture**

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P.O. Box Private Bag, 50400

**BUSIA**

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PPRA/DG/2/II VOL.III (34)

27<sup>th</sup> May, 2025

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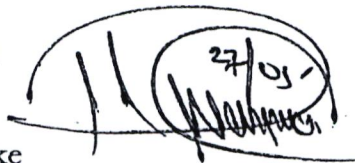
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**CEC-Finance and Planning**

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P.O. Box Private Bag, 50400

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PPRA/DG/2/II VOL.III (34)

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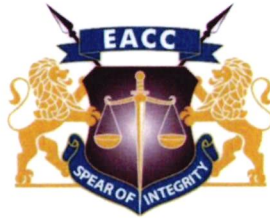
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## **ETHICS AND ANTI-CORRUPTION COMMISSION**

INTEGRITY CENTRE (Jakaya Kikwete/Valley Road Junction) P.O. Box 61130 – 00200, NAIROBI, Kenya

TEL.: 254 (020) 4997000, MOBILE: 0709 781000; 0730 997000

FAX: 254 (020) 2240954 EMAIL: [eacc@integrity.go.ke](mailto:eacc@integrity.go.ke) WEBSITE: [www.eacc.go.ke](http://www.eacc.go.ke)

When replying please quote:

**EACC.6/15/40 (68)**

**5<sup>th</sup> June, 2025**

**J. M. Nyegenye, CBS**

Clerk of the Senate

Parliament Buildings

P.O. Box 41842-00100

**NAIROBI.**

Dear Mr. Nyegenye,

**RE: PETITION TO THE SENATE REGARDING THE CHANGARA WATER PAN, A  
WORLD BANK FUNDED PROJECT IN BUSIA COUNTY**

---

This is to acknowledge receipt of your letter **Ref. SEN/DSE/DPEAC/LENR/2025 (3)  
(178)** dated **16<sup>th</sup> May 2025.**

The Ethics and Anti-Corruption Commission (EACC) recognizes the important role played by the Senate and its various Committees in supporting the Commission discharge its mandate.

In this regard, **Mr. Paschal Mweu, OGW**, Director Investigation, **Mr. George Ojowi, OGW**, Deputy Director Asset Tracing and **Mr. Michael Kasilon**, Deputy Manager, Western Regional Office will represent the Secretary/Chief Executive Officer who is away on official engagement.

We thank you for the continued support in the promotion of ethics and integrity in the Country.

Yours sincerely,

**Abdi A. Mohamud, MBS**

**Secretary/Chief Executive Officer**

**Encl.**



**SUBMISSION TO  
THE SENATE COMMITTEE ON LAND, ENVIRONMENT,  
AND NATURAL RESOURCES**

**ON**

**INVESTIGATION INTO ALLEGATIONS OF  
PROCUREMENT IRREGULARITIES IN THE AWARD OF  
TENDER NUMBER KCSAP/BSA/CHA/1/2018-2019 FOR  
PROPOSED EXPANSION AND INSTALLATION OF  
IRRIGATION SYSTEM ON CHANGARA WATER PAN  
PROJECT IN BUSIA COUNTY AT TENDER SUM OF KSHS.  
24.8 MILLION AWARDED TO BERODI COMPANY IN THE  
FINANCIAL YEAR 2018/2019**

## A. INTRODUCTION

The Ethics and Anti-Corruption Commission (EACC) is a Constitutional Commission established under section 3 of the Ethics and Anti-Corruption Commission Act, CAP 7H and Article 79 of the Constitution of Kenya.

The mandate of the Commission is to combat and prevent corruption, economic crime, and unethical conduct in Kenya through law enforcement, prevention, public education, and promotion of standards and practices of integrity, ethics, and anti-corruption.

The Commission also derives its statutory mandate from a number of other statutes namely, the Anti-Corruption and Economic Crimes Act, CAP 65 the Leadership and Integrity Act, CAP 185C, the Public Officer Ethics Act, CAP 185B and the Anti-Bribery Act, CAP 79B among others.

This report is submitted to the Senate Committee on Land, Environment and Natural Resources as requested vide a letter **Ref: SEN/DSEC/DPEAC/LENR/2025(3) (171)** dated **12<sup>th</sup> May 2025** from the Clerk of the Senate.

## B. BACKGROUND

The Kenya Climate Smart Agriculture Project (KCSAP) is a Government of Kenya project jointly supported by the World Bank. KCSAP was being implemented over a five-year period (2017-2022) under the framework of the Agriculture Sector Development Strategy (ASDS) (2010-2020) and National Climate Change Response Strategy (NCCRS, 2010).

The project's Development objective is to increase agricultural productivity and build resilience to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and in the event of an eligible crisis or emergency, to provide immediate and effective response.

The **Changara Water Pan**, located in Teso North Sub-County in Busia County, is one of the projects under this program.

## C. INVESTIGATIONS

On 4<sup>th</sup> May 2020, the Commission received a complaint alleging procurement irregularities in the award of **Tender Number KCSAP/BSA/CHA/1/2018-2019** for the Proposed Expansion and Installation of Irrigation System on Changara Water Pan Project, awarded to Berodi Company at a contract sum of **Kshs. 24.8 Million** in the Financial Year 2018/2019.

Investigations by the Commission have established that:

1. The project was procured through a Request for Quotation (RFQ), and three bidders were invited from the list of prequalified bidders. Their quotes were:

S/No.	Bidders	Amount Quoted
1.	Berodi Company Limited	Kshs. 19,930,203.00
2.	Warono Builders Limited	Kshs. 20,309,430.00
3.	Karuok General Services Ltd	Kshs. 20,903,890.00

2. The evaluation committee recommended the award to Berodi Company Limited being the lowest evaluated bidder at a tender sum of Kshs. 19,930,203.00.
3. On June 24, 2019, the Head of Procurement Management prepared a Professional Opinion recommending the award to Berodi Company.
4. Notification of award was sent to Berodi Company Limited on 24<sup>th</sup> June, 2019, and was accepted on the same day.
5. On 24<sup>th</sup> June, 2019, the County Government of Busia and Berodi Company Limited executed a contract.
6. The Project Supervisor issued instructions to Berodi Company Limited on 25<sup>th</sup> June, 2019, and an Implementation Committee was nominated on 27<sup>th</sup> June, 2019.
7. The tender was opened, evaluated, and the contract signed on the same day (24<sup>th</sup> June, 2019) contrary to Section 135 of the Public Procurement Disposal Act, CAP 412A, which stipulates that contracts should be signed after the lapse of 14 days after award of the tender.
8. There was no site handover certificate.
9. Request for Quotation method was used in undertaking this procurement involving Kshs. 24 Million; beyond Kshs. 2 Million prescribed in the Second Schedule (threshold matrix) to the Public Procurement Disposal Act Regulations, 2006.
10. Kshs. **17,741,581.25** was paid to Berodi Company Limited using four payment certificates on the following dates:
  - i. Kshs. 5,636,349.60.00.00 was paid on 9<sup>th</sup> January, 2020.
  - ii. Kshs. 6,702,750.35 was paid on 13<sup>th</sup> July, 2020.
  - iii. Kshs. 2,571,524.01 and was paid on 8<sup>th</sup> June, 2021.
  - iv. Kshs. 1,526,025.20 and was paid on 13<sup>th</sup> January, 2022.
  - v. Kshs. 1,304,932.00 (10% retention) was paid on 11<sup>th</sup> September, 2023.

## **D. PROBABLE OFFENCES**

Preliminary investigations point to the following probable offences:

1. Failure to comply with the law/applicable procedures and guidelines relating to procurement contrary to Section 45(2) (b) as read with Section 48(1) (a) of the Anti-Corruption and Economic Crimes Act, CAP 65 as the amount involved is beyond the threshold of using RFQ procurement method.
2. Fraudulently making payments from public revenue contrary to Section 45(2) (a) as read with Section 48(1) (a) of the Anti-Corruption and Economic Crimes Act, CAP 65.
3. Fraudulent acquisition of public property contrary to Section 45(1) (a) as read with Section 48(1) of the Anti-Corruption and Economic Crimes Act, CAP 65.

## **E. CONCLUSION**

The investigation is currently at an advanced stage, and upon completion, the resultant inquiry file shall be forwarded to the Director of Public Prosecutions with the necessary recommendations.

**Dated this 5<sup>th</sup> day of June 2025.**



=====

**Abdi A. Mohamud, MBS**  
**Secretary/Chief Executive Officer**  
**Ethics and Anti-Corruption Commission**

# Annex III: Petitioners Submissions

Ministry of the Interior  
P.O. Box 1131, 00100

Ministry of the Interior  
P.O. Box 1131, 00100

Ministry of the Interior

P.O. Box 1131, 00100

NAIROBI

Email: [secretary@ministry.go.ke](mailto:secretary@ministry.go.ke)

RE: PETITION CONCERNING THE CHANGARA WATER PAN WORLD BANK-FUNDED PROJECT

I/We the undersigned,  
Citizens of the Republic of Kenya, and residents of Changara in Teso North sub  
County, Busia County

Draw the attention of the Senate to the following:

**I. Particulars of the project**

- I.1. THAT, the Changara Water Pan project was funded Ksh 24.8 Million in June 2019 by the World bank through the National Government
- I.2. THAT, the project is being implemented by the County Government of Busia through the Department of Agriculture and Fisheries Development
- I.3. THAT, the project was to benefit more than 5,000 families living in Changara through the clean piped water and irrigation
- I.4. THAT, despite the colossal amount allocated, the project which was to be completed by February, 2020 has not been completed.
- I.5. THAT, the project has stalled due to massive irregularities

4/MS B...

Please return  
the  
petition

A. M. M. M. M.  
20/10/2020

Ms. Macharia

Please write  
and  
12/10/20

(1) D. M. A.

10/10/20

S. J. J. J.

PETITION CONCERNING THE CHANGARA WATER PAN WORLD BANK-FUNDED PROJECT

2. Irregularities Observed

- 2.1. THAT, there was conflict of interest during awarding of the contract since the contractor was a relative of the then sitting Member of County Assembly (MCA) of Nambuku, Namboboto Ward, Samia Sub county, Busia County.
- 2.2. THAT, the Project Management Committee was denied oversight documents, Bill of Quantities Plan (BQs) and the Environmental Assessment report.
- 2.3. THAT, the size of the approved water pan is unknown to the public, but what was constructed covers a very small area and it is shallow making it unviable.
- 2.4. THAT, the pipes drawing water from the water pan to the beneficiaries' farms are all exposed since they were not laid to the recommended depth.
- 2.5. THAT, the project was conceived and implemented without public participation.
- 2.6. THAT, the Project Management Committee was ignored by the employees of the Busia County Department of Agriculture who were manipulating the project.
- 2.7. THAT, the pipes drawing water from the water pan to the beneficiaries' farms are all exposed since they were not laid to the recommended depth.

PETITION CONCERNING THE CHANGARA WATER PAN WORLD BANK-  
FUNDED PROJECT

- 2.8. THAT, most of the pipes are already leaking despite the project not having been completed.
  - 2.9. THAT, people downstream are and will be in considerable danger of being washed away if the embankment walls collapse since the walls were not properly compacted.
  - 2.10. THAT, the contractor did not have an independent site Engineer, instead relied on the Agriculture Departmental engineers who were reasonably termed compromised.
  - 2.11. THAT, the contractor did not have an independent site office making it impossible for any necessary intervention.
  - 2.12. THAT, the feeder roads passing through the project site were blocked causing unnecessary inconveniences and accidents to the residents.
3. That the issues have been raised before the County Government of Busia, the Public Procurement Regulatory Authority, EACC and the World Bank but no solution has been given.
  4. THAT, the issues raised above are not pending in any court of law or any other legal body.

PETITION CONCERNING THE CHANGARA WATER PAN WORLD BANK-FUNDED PROJECT

WHEREFORE, your humble petitioners pray that the Senate:

1. Looks into the manner in which the award of tender for the Changara Water Pan project was awarded to Berodi Company.
2. Investigates the misappropriation of the project's funds.
3. Ensures that those who violated the project's intended objectives face the full force of law.
4. Intervene to have the project completed because it is beneficial to the community.

Dated.....15<sup>th</sup>.....day of.....Sept.....2023

PETITION PRESENTED TO THE SENATE BY:

HON. ANDREW OMTATAH OKOITI, MP

(senator Busia County)

On this .....15<sup>th</sup>.....Day of.....Sept.....2023

Signature: 

**CHANGARA WATER PAN PICTORIALS**



Community members and technical officers during the meeting at Changara Chief's office



A member of the community asking a question during the meeting. Arrow pointing to the Complainant in attendance, Mr. Cleophas Okisai



Changara Water pan before project implementation



Changara Water pan excavation in progress



Changara Water pan sign post for enhanced visibility.



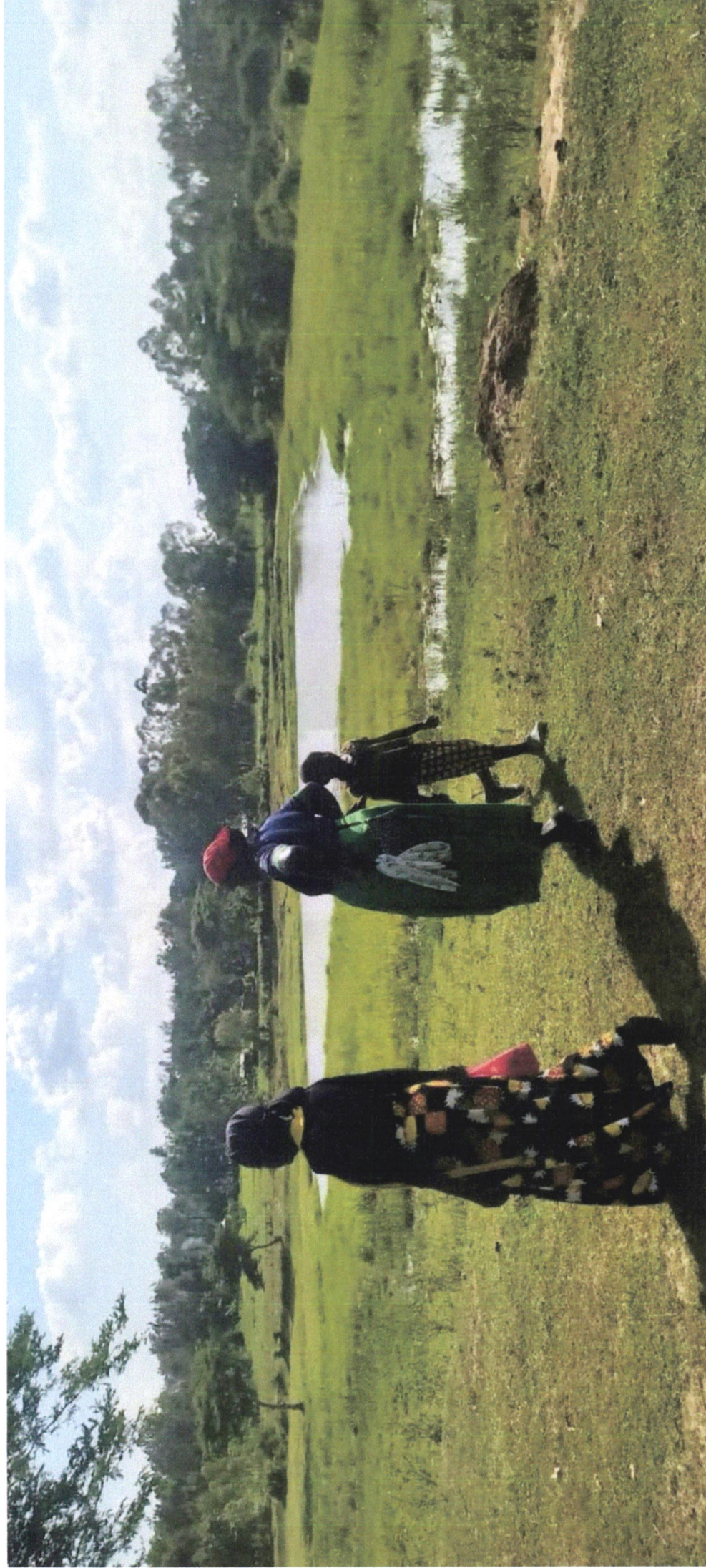
Changara Water Pan - Cabbages under Irrigation

**CHIEF OFFICER**  
 AGRICULTURE, LIVESTOCK, FISHERIES,  
 CLIMATE CHANGE, BLUE ECONOMY & AGRIBUSINESS  
 ★ 30 MAY 2025 ★  
 Sign.....  
 COUNTY GOVERNMENT OF BUSIA  
 P O BOX 291 - 50400 BUSIA (K)

○ RABKARA DARO



CHANGARA DAM



KABKABA DAM



SPILLWAY - KABKABA DAM



SPIC-WAY

KABKARA

AM



KARAKARA DAM



KABKARA DAM WAFER KIOSK



KABKARA DAM



KABKARA DAM





ABIKARA DAM

KARSKARA DAM



KABKARA SPIC WAY



LOWER S/O IRRIGATION PROJECT

Ka: 2.4B

VANDALISM



LOWER SIO IRRIGATION PROJECT - Ksh. 2.4B



10

VANDALISM OF LOWER SIO IRRIGATION PROJECT

2-4-12





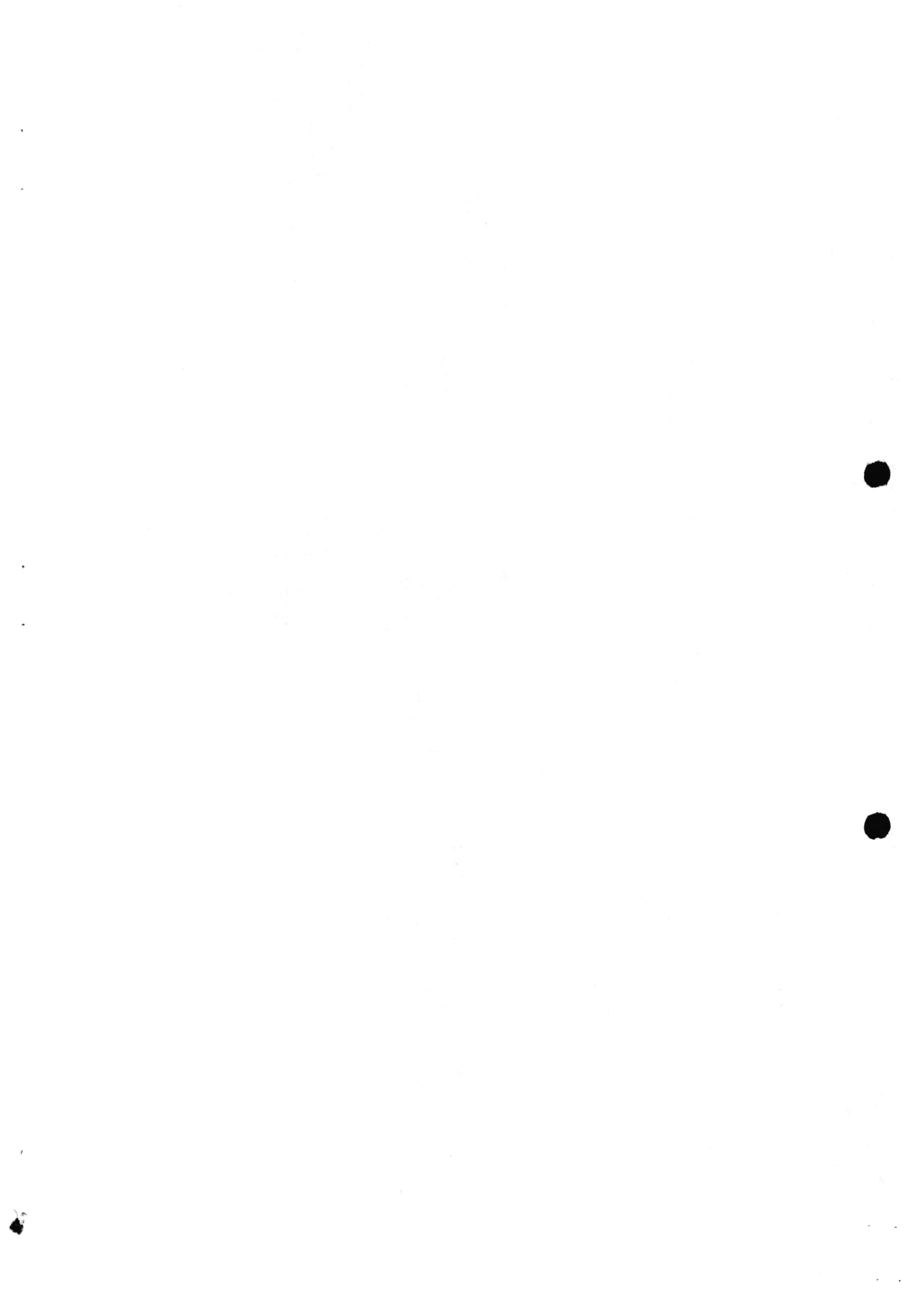
VARIOUSISED PROJECT





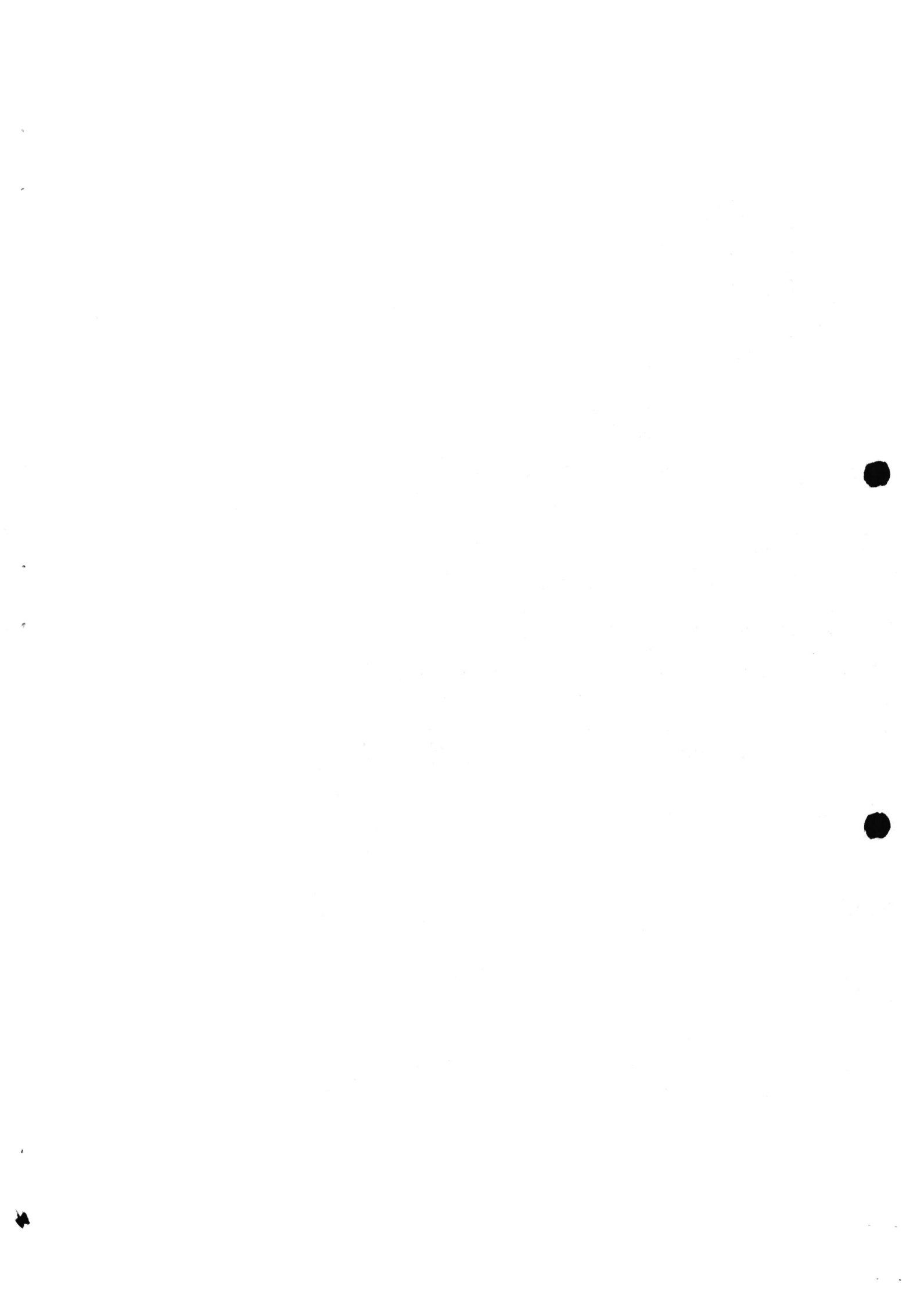
VANDALISED PIPES.





VANDALISM OF THE IRRIGATION PROJECT







DESTROYED PIPES







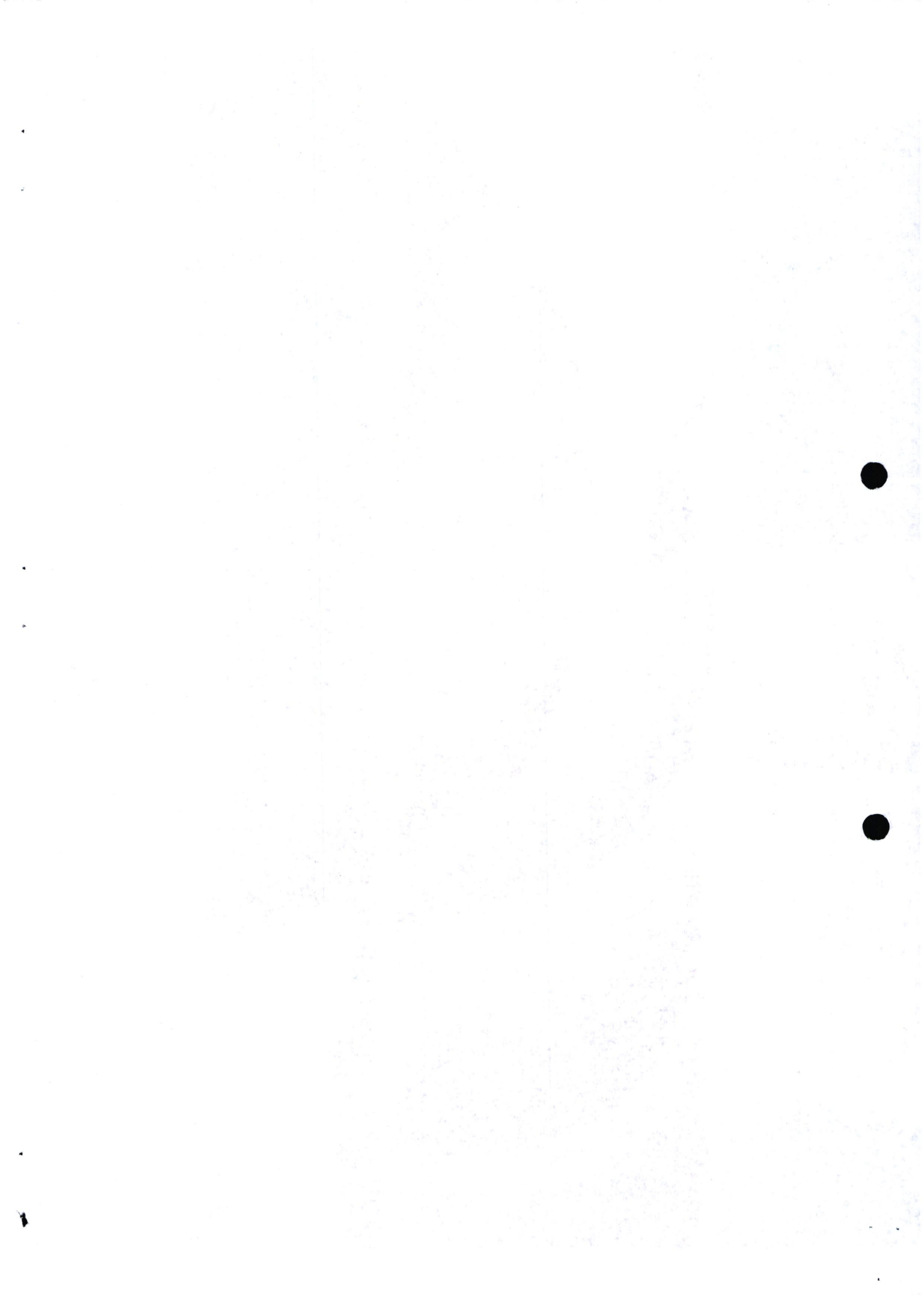


DESTROYED PIPES





DESTROYED PIPES

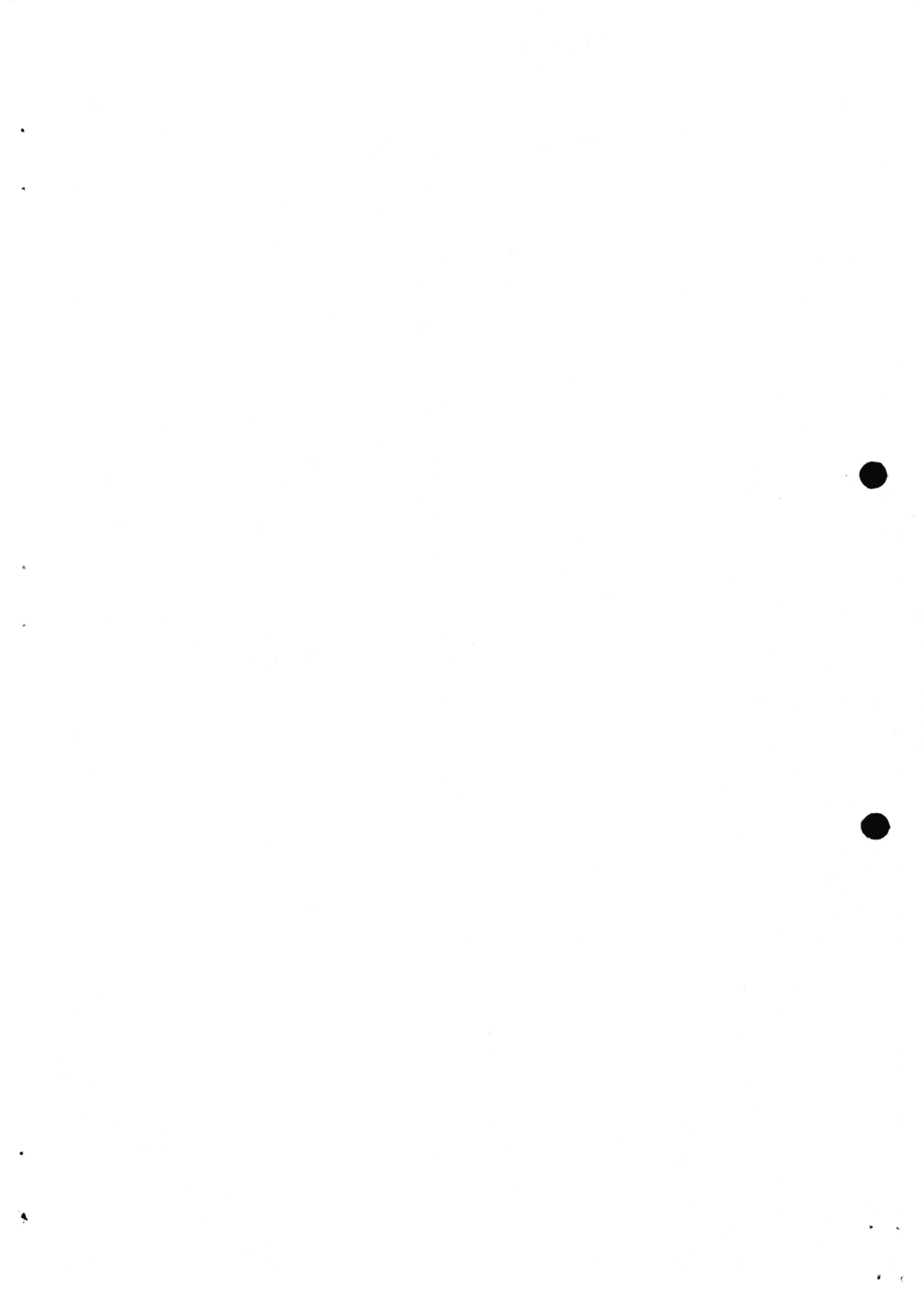








VANDALISED PIPES





VANDALISED P.PES.

- ① Mahom Chute
- ② Bath Syringa
- ③ Olupa Omlata
- ④ Senator Mung
- ⑤ Julia Nade Mooka Gues