PREFEASIBILITY STUDY FOR PROPOSED PARKING AND DRAINAGE IMPROVEMENT AT OL'KALOU TOWN

FOR THE:

COUNTY GOVERNMENT OF NYANDARUA

(OL'KALOU MUNICIPALITY)

REPORT PREPARED BY:

MUNICIPAL PROJECT TEAM

19TH NOVEMBER, 2025

FOREWORD

I am honored to present the Annual Investment Plan for Ol Kalou Municipality, a document that reflects our ambition to shape a thriving, orderly, and economically robust urban center that responds effectively to the needs and aspirations of our people. This Plan represents our collective commitment to purposeful growth and sustainable development.

Ol Kalou, as the administrative heart of Nyandarua County, occupies a unique and strategic position. Its role as a center of governance and commerce,
combined with a productive agricultural base, emerging businesses, and a
determined community, provides a strong foundation for accelerated development. This Investment Plan outlines practical and achievable strategies to harness these strengths and translate them into broad-based prosperity.

The Plan prioritizes balanced and sustainable urban advancement. It focuses on enhancing institutional effectiveness, upgrading infrastructure and essential services, stimulating enterprise development and employment opportunities, strengthening social services, and promoting environmental stewardship alongside climate resilience. Through these targeted interventions, we seek to raise living standards and position Ol Kalou as a modern, competitive, and appealing municipality.

The successful execution of this Plan depends on the active involvement of all stakeholders— residents, entrepreneurs, development partners, and civic leaders alike. Its implementation calls for unity of purpose, transparency, and collective responsibility.

I extend my heartfelt gratitude to the professionals and stakeholders whose expertise, dedication, and deep understanding of local dynamics shaped this comprehensive Plan. Their contributions have ensured that the strategies proposed are both realistic and impactful.

As we move into the new financial year, this Annual Investment Plan will guide our priorities, investments, and policy decisions. With shared determination and collaboration, we will foster a municipality that is prosperous, sustainable, and resilient—creating lasting opportunities and an improved quality of life for present and future generations.

PRISCILLAH MWIRIGI
CHAIRPERSON- OLKALOU MINICIPAL BOARD

ACKNOWLEDGEMENT

The preparation of this Annual Investment Plan has been made possible through the collective effort, commitment, and invaluable contributions of many individuals and institutions.

As the Municipality Manager of Ol Kalou Municipality, I wish to sincerely acknowledge the County Government of Nyandarua for its policy direction, guidance, and continued support throughout the planning process. I extend special appreciation to the Municipal Board for its leadership, oversight, and strategic input that ensured this Plan aligns with our long-term development objectives.

I am deeply grateful to the technical team whose professionalism, dedication, and expertise were instrumental in drafting and refining this document. Their thorough analysis, stakeholder engagement, and attention to detail have resulted in a comprehensive and practical Investment Plan.

I also acknowledge our residents, members of the business community, development partners, and other stakeholders who generously shared their views, priorities, and recommendations during the consultative forums. Your active participation has enriched this Plan and ensured it reflects the real needs and aspirations of the people of Ol Kalou.

Finally, I appreciate all departments and officers who contributed data, insights, and technical support during the preparation of this report. Your cooperation and teamwork demonstrate our shared commitment to building a prosperous, sustainable, and resilient Ol Kalou Municipality.

ERIC IGOGO
MANAGER - OL KALOU MUNICIPALITY

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List of Acronyms

KUSP -Kenya Urban Support Program

NEMA- National Environment Management Authority

KURA- Kenya Urban Roads Authority

CPCT- County Program Coordinating Team MPT-

Municipal Project Team

INTRODUCTION

1.1 Executive summary

Ol'kalou Town, situated in Nyandarua County, has emerged as a vital commercial and administrative node within Kenya's central highlands. However, the town's rapid urbanization has outpaced its infrastructure development, particularly in the areas of parking and stormwater management. Congested streets, unstructured parking zones, and recurrent flooding during rainy seasons have significantly hampered mobility, public health, and the overall quality of urban life. These challenges have underscored the urgent need for a comprehensive intervention that enhances both functionality and resilience.

The proposed parking and drainage improvement project is a strategic response to these infrastructural gaps. With a total investment of approximately KES 21 million, the initiative will involve the installation of cabro paving blocks across key urban corridors and the construction of a modern drainage system designed to manage surface runoff efficiently. The project is financed under the Kenyan Government's Kenya Urban Support Program (KUSP), in collaboration with the World Bank, reflecting a strong commitment to sustainable urban development and international best practices. This partnership ensures not only financial backing but also technical oversight, environmental safeguards, and inclusive stakeholder engagement.

Beyond its physical scope, the project is expected to deliver wide-ranging benefits. Improved drainage will reduce the prevalence of waterborne diseases and protect property from flood damage, while organized parking will ease traffic congestion and support local commerce. The initiative also integrates environmental and social safeguards, ensuring that its implementation is sensitive to community needs, ecological sustainability, and public health priorities. Through coordinated efforts between county authorities, technical experts, and local stakeholders, the project aims to transform Ol'kalou Town into a cleaner, safer, and more accessible urban environment—setting a precedent for integrated infrastructure planning across Nyandarua County.

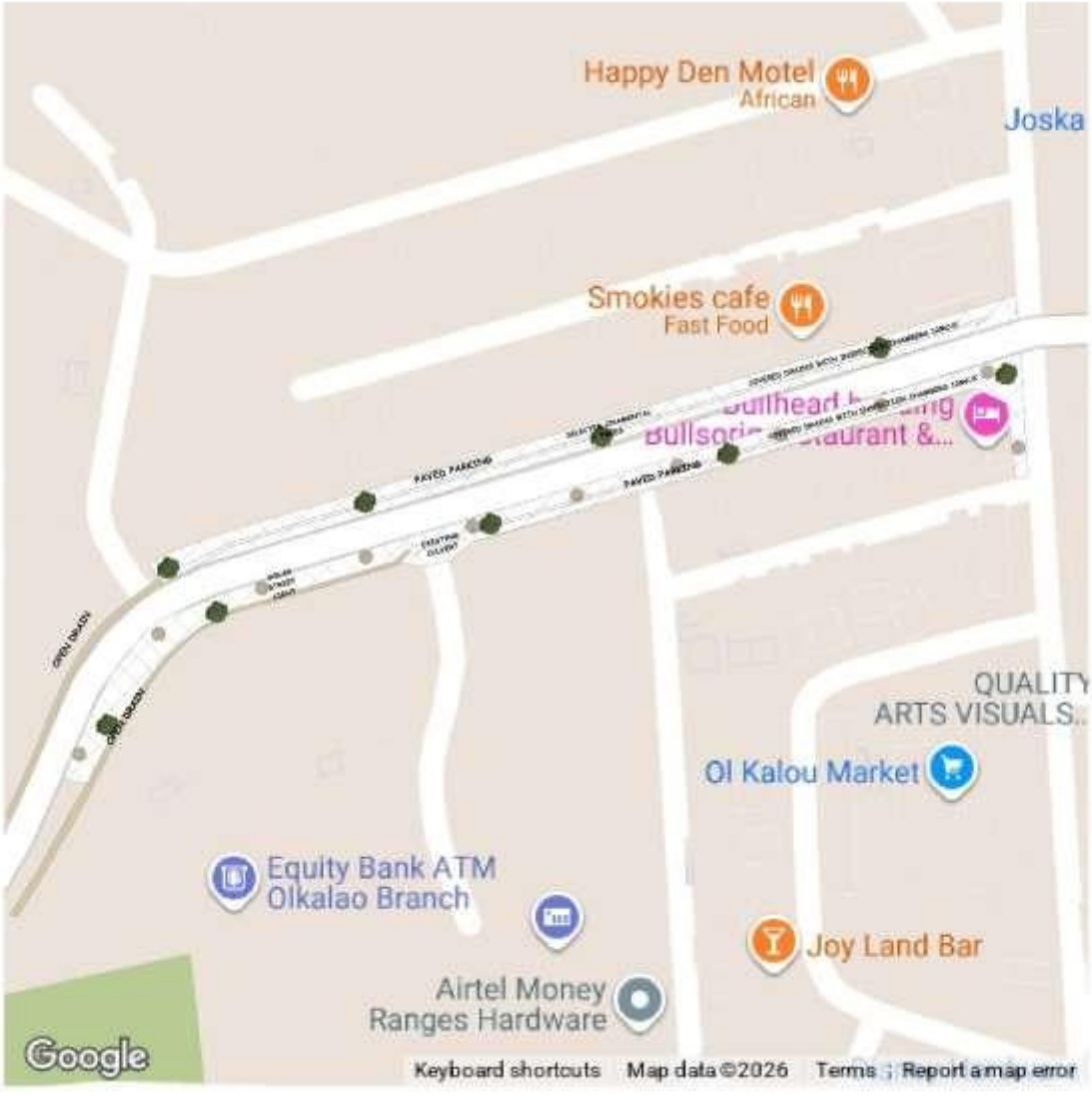
1.2 Site Description

The proposed project site is located within the central business district of Ol'kalou Town, Nyandarua County—a rapidly growing urban center characterized by mixed-use development, including commercial shops, government offices, educational institutions, and residential dwellings. The town is the county's administrative hub. The area serves as a key transit and administrative hub for the county, with high pedestrian and vehicular traffic volumes, particularly

during market days and peak commuting hours. The proposed project site stretches between Bullhead butchery to Olkalou slaughterhouse. (Coordinates 207789.49 m E, 9969945.23 m S to 207517.74 m E, 9969823.43 m S)

Figure 1. Location Map (From Google Earth)

Figure 2. Sketch Map



1.2.1 Topography

Ol'Kalou Town lies on gently undulating terrain with moderate slopes that influence surface runoff patterns. However, the existing drainage infrastructure is largely inadequate, consisting of shallow open channels and poorly maintained culverts that frequently overflow during heavy rains. This has led to localized flooding, erosion, and deterioration of road surfaces, especially in low-lying sections near the market and bus terminus.

1.2.2 Soil Profile

The soil profile in the area is predominantly red loam with patches of clay, offering moderate bearing capacity but requiring proper sub-base preparation for pavement works. Vegetation is sparse within the urban core, though some roadside trees and informal landscaping exist. The site

is accessible off Ol'Kalou-Nakuru road and several feeder roads, which are often congested due to unregulated parking and poor surface conditions.

1.2 Project Objectives

The primary objectives of the project are:

- To improve vehicular and pedestrian mobility through structured parking
- To enhance stormwater management and reduce flooding
- To promote public health by eliminating stagnant water and improving sanitation • To beautify urban spaces using durable and low-maintenance cabro paving
- To support local economic activity by improving access and reducing disruptions

1.3 . Scope of Work

The proposed works include:

- Installation of cabro paving blocks
- Construction of surface and subsurface drainage channels
- Grading, compaction, and sub-base preparation
- Installation of kerbs, bollards, and traffic signage
- Landscaping and pedestrian access improvements

TECHNICAL PREFEASIBILITY

The technical prefeasibility of the proposed parking and drainage improvement project in Ol'kalou Town has been assessed based on site conditions, design requirements, material availability, construction methodology, and regulatory compliance. The findings confirm that the project is viable and can be implemented within the allocated budget of approximately KES 21 million, provided that appropriate engineering standards and supervision protocols are followed.

2.1 Site Assessment

Ol'kalou Town's central business district presents a moderately sloping terrain with a mix of red loam and clay soils. Preliminary geotechnical investigations indicate that the subgrade has sufficient bearing capacity for light to medium vehicular loads, provided that proper compaction and stabilization measures are undertaken. The area is characterized by high pedestrian and

vehicular traffic, especially near the market, bus terminus, and county offices, necessitating durable and low-maintenance surfacing solutions.

Hydrological observations reveal poor surface runoff management, with frequent pooling in low-lying zones due to undersized or blocked drainage channels. The existing drainage infrastructure is fragmented and largely ineffective, contributing to erosion, pavement degradation, and public health risks. The site is accessible off Ol'kalou-Nakuru road exit at Bullhead butchery and several feeder roads, allowing for efficient mobilization of materials and equipment.

2.2 Design Considerations

The proposed design integrates both surface and subsurface drainage systems with cabro paving to enhance functionality and aesthetics. Key design elements include:

- Pavement Structure:
- Subgrade preparation with mechanical compaction
- Crushed stone sub-base (150–200 mm)
- Sand bedding layer (30–50 mm)
- Interlocking cabro blocks (60–80 mm thick)
- Edge restraints using precast concrete kerbs
- Drainage System:
- Surface channels with trapezoidal or rectangular profiles
- Subsurface PVC or precast concrete pipes (150–300 mm diameter)
- Catch basins and manholes at strategic intervals
- Outfall connections to existing stormwater systems or natural watercourses
- Traffic and Pedestrian Management:
- Clearly marked parking bays and pedestrian walkways
- Bollards and signage for safety and access control
- Provision for universal access (ramps, tactile paving)

The design will comply with relevant Kenyan standards, including those from the Kenya Urban Roads Authority (KURA), and National Construction Authority (NCA). Drainage calculations will be based on peak rainfall intensities and runoff coefficients derived from local hydrological data.

2.3 Materials and Technology

The project will utilize locally available materials to reduce costs and support the regional economy. These include:

- Cabro Blocks:
- High-strength concrete blocks manufactured to KS 02-107 standards
- Available in various colors and patterns for aesthetic flexibility
- Drainage Components:
- Precast concrete channels and culverts
- PVC pipes for subsurface drainage
- Reinforced concrete for manholes and junction boxes
- Construction Equipment:
- Vibratory compactors, concrete mixers, and block cutters
- Water bowsers and hand tools for site preparation and finishing

Modern construction techniques such as laser-guided grading and modular installation of cabro will be employed to ensure precision and speed. Quality control protocols will include compaction testing, concrete strength verification, and slope alignment checks.

2.3 Utility Coordination

Existing utilities—water lines, electrical cables, and telecom ducts will be mapped and protected during construction. Where necessary, minor relocations will be coordinated with service providers to avoid disruptions. Utility chambers and access points will be integrated into the pavement design to allow future maintenance.

2.4 Construction Phasing and Logistics

The project will be executed in phases to minimize disruption to daily activities:

1. Site Clearance and Demarcation
2. Drainage Works (Subsurface and Surface Channels)
3. Subgrade Preparation and Cabro Installation
4. Finishing Works (Kerbs, Signage, Landscaping)

Traffic management plans will be implemented during construction, including temporary diversions, signage, and safety barriers. Work will be scheduled during off-peak hours where possible to reduce impact on businesses and commuters.

ENVIRONMENTAL IMPACT ASSESSMENT

The proposed parking and drainage improvement project in Ol'Kalou Town presents both opportunities and risks from an environmental perspective. While the intervention is expected to mitigate flooding, improve sanitation, and enhance urban aesthetics, it also involves construction activities that may temporarily affect soil stability, water quality, and local ecosystems. This Environmental Impact Assessment outlines the potential environmental effects of the project and proposes mitigation strategies to ensure compliance with national regulations and World Bank safeguards.

3.1 Positive Environmental Impacts

- Improved Stormwater Management: The installation of structured drainage systems will reduce surface runoff, prevent erosion, and minimize flooding, particularly in low-lying zones near the market and bus terminus.
- Reduction in Waterborne Diseases: By eliminating stagnant water pools, the project will reduce breeding grounds for mosquitoes and other disease vectors, contributing to improved public health. • Urban Greening and Beautification: Landscaping and tree planting along pedestrian corridors will enhance air quality, reduce heat absorption, and contribute to the town's visual appeal.
- Wastewater Control: Proper channeling of stormwater will prevent contamination of nearby water bodies and reduce the risk of sewage overflow during heavy rains.

3.2 Potential Negative Impacts

- Soil Erosion and Sedimentation: Excavation and grading activities may disturb topsoil, leading to erosion and sedimentation in nearby drainage paths or watercourses.
- Construction Waste Generation: Debris from cabro installation, drainage works, and site clearance may accumulate if not properly managed, posing risks to soil and water quality.
- Air and Noise Pollution: Use of heavy machinery and transportation of materials may generate dust and noise, affecting nearby residents and businesses.
- Disruption of Natural Drainage Patterns: Poorly designed or improperly installed drainage systems could alter natural flow paths, leading to unintended flooding or ecological disruption. • Vegetation Loss: Removal of roadside vegetation and informal landscaping may reduce biodiversity and increase surface runoff if not replaced.

3.3 Mitigation Measures

To address the above risks, the following mitigation strategies will be implemented:

- Erosion Control:
- Use of silt fences, sediment traps, and temporary vegetation cover during construction
- Scheduling earthworks during dry seasons to minimize runoff
- Waste Management:
- Segregation of construction waste into reusable, recyclable, and disposable categories
- Designated waste collection points and regular disposal in licensed facilities
- Dust and Noise Suppression:
- Watering of exposed surfaces and use of dust screens
- Limiting noisy operations to daytime hours and using low-noise equipment where feasible
- Drainage Design Optimization:
- Hydrological modeling to ensure proper sizing and alignment of channels • Use of permeable surfaces and stormwater retention features where possible
- Vegetation Restoration:
- Replanting of native trees and shrubs post-construction
- Integration of green buffers and shaded pedestrian zones

3.4 Compliance and Monitoring

The project will comply with the environmental regulations set by the National Environment Management Authority (NEMA), including:

• Submission of an Environmental Screening Report

• Acquisition of necessary permits and licenses

• Regular site inspections and environmental audits during implementation

In addition, the World Bank's Environmental and Social Framework (ESF) will guide the project's safeguards, ensuring that construction activities do not adversely affect vulnerable populations or sensitive ecosystems.

An Environmental and Social Management Plan (ESMP) will be developed and integrated into the contractor's scope of work, detailing roles, responsibilities, and timelines for mitigation actions. Community feedback mechanisms will be established to report environmental concerns and ensure transparency throughout the project lifecycle.

Public Health Considerations

The proposed parking and drainage improvement project in Ol'kalou Town is expected to yield significant public health benefits by addressing long-standing environmental and infrastructural challenges that contribute to disease transmission, physical injury, and urban discomfort. The current state of unregulated parking and inadequate drainage has created conditions conducive to waterborne illnesses, vector proliferation, and unsafe pedestrian movement. This section outlines the health risks associated with the existing infrastructure and the anticipated improvements resulting from the intervention.

4.1 Reduction of Vector-Borne Diseases

Poor drainage and stagnant water pools in Ol'Kalou Town have historically served as breeding grounds for mosquitoes, increasing the risk of malaria and other vector-borne diseases. By installing a structured drainage system that efficiently channels stormwater away from pedestrian zones and commercial areas, the project will eliminate these breeding habitats and significantly reduce disease transmission.

4.2 Improved Sanitation and Wastewater Control

Flooding in the town often leads to the overflow of wastewater and contamination of public spaces, especially near market zones and informal food vendors. The proposed drainage works will prevent such overflows by separating stormwater from wastewater systems and ensuring proper outfall management. This will enhance environmental hygiene and reduce exposure to pathogens.

4.3 Enhanced Pedestrian Safety and Accessibility

The installation of cabro paving blocks and designated walkways will reduce the risk of slips, trips, and falls particularly for children, the elderly, and persons with disabilities. Currently, uneven surfaces and muddy paths during rainy seasons pose serious safety hazards. The new infrastructure will provide stable, non-slip surfaces and clear pedestrian routes, improving mobility and reducing injury rates.

4.4 Air Quality and Dust Suppression

Unpaved shoulders and eroded surfaces contribute to airborne dust, which can exacerbate respiratory conditions such as asthma and bronchitis. The cabro paving will seal exposed soil and

reduce particulate matter in the air, especially during dry seasons. Additionally, landscaping and tree planting will contribute to improved air quality and microclimate regulation.

4.5 Noise and Disruption Management During Construction

While construction activities may temporarily increase noise levels and disrupt daily routines, mitigation measures will be implemented to minimize health impacts. These include scheduling noisy operations during daylight hours, using low-noise equipment, and erecting safety barriers to protect pedestrians from construction zones.

4.6 Public Health Awareness and Community Engagement

The project will incorporate public health messaging through signage and community forums, educating residents on the importance of proper waste disposal, drainage maintenance, and personal hygiene. Collaboration with local health officers will ensure that health promotion is integrated into the project lifecycle.

SOCIAL SAFEGUARDS

The proposed parking and drainage improvement project in Ol'kalou Town is expected to have a transformative impact on the urban landscape, enhancing mobility, public health, and economic activity. However, as with any infrastructure intervention in a densely populated area, it is essential to anticipate and manage potential social risks to ensure that the project is inclusive, equitable, and respectful of community dynamics. This section outlines the key social safeguard measures that will be integrated into the project lifecycle.

5.1 Stakeholder Engagement and Participation

A participatory approach will be adopted to ensure that the voices of affected residents, traders, transport operators, and vulnerable groups are heard and reflected in the project design and implementation. Engagement activities will include:

- Community Barazas and Focus Group Discussions to gather feedback on parking layouts, drainage alignments, and construction phasing
- Stakeholder Mapping to identify key interest groups, including market vendors, matatu operators, youth groups, and persons with disabilities
- Information Dissemination through posters, local radio, and county communication channels to keep the public informed of project milestones and timelines

This inclusive process will foster ownership, reduce resistance, and ensure that the infrastructure responds to actual community needs.

5.2 Gender and Social Inclusion

The project will be designed to promote gender equity and social inclusion by:

- Ensuring safe and accessible pedestrian routes for women, children, and persons with disabilities • Providing employment opportunities for local youth and women during construction, including roles in site preparation, landscaping, and traffic management
- Designing public spaces that are well-lit, secure, and conducive to informal economic activity, particularly for female vendors

Special attention will be given to the needs of caregivers, schoolchildren, and elderly residents who rely on safe and predictable urban mobility.

5.3 Livelihood Protection and Vendor Relocation

While the project footprint primarily targets public spaces, temporary disruption to informal vendors operating along road shoulders and pedestrian paths may occur. To safeguard livelihoods:

- Relocation plans will be developed in consultation with affected vendors, identifying alternative trading zones during construction
- Compensation mechanisms (non-monetary) such as priority access to improved vending spaces post-construction will be considered
- Phased construction scheduling will minimize disruption and allow vendors to continue operating in unaffected zones

No permanent displacement is anticipated, and all interventions will be guided by principles of dignity, transparency, and fairness.

5.4 Conflict Sensitivity and Grievance Redress

To manage potential disputes and ensure accountability:

- A Grievance Redress Mechanism (GRM) will be established, allowing residents to report concerns related to construction impacts, access restrictions, or perceived exclusion
- The GRM will include a dedicated liaison officer, a toll-free number, and a feedback log monitored by the county project team
- Conflict resolution protocols will be aligned with county administrative structures and World Bank safeguard policies

This mechanism will promote trust, transparency, and timely resolution of issues. Economic and Financial Analysis

- Cost-benefit analysis shows long-term savings in flood damage, vehicle maintenance, and health costs
- Maintenance strategy includes county staff training and community-based upkeep
- Funding secured through KUSP and World Bank partnership

IMPLEMENTATION PLAN

The implementation of the parking and drainage improvement project in Ol'kalou Town will follow a phased, collaborative approach involving technical experts, county officials, donor representatives, and community stakeholders. The plan outlines the timeline, key activities, and institutional roles necessary to ensure timely, cost-effective, and socially responsive delivery of the project.

6.1 Project Duration and Phasing

The project is expected to span **2 to 3 months**, structured into the following phases:

Phase	Duration	Key Activities
Phase 1: Mobilization & Site Preparation	2 Weeks	Contractor onboarding, site demarcation, vendor relocation, utility mapping
Phase 2: Drainage Works	2week	Excavation, installation of surface and subsurface drainage channels
Phase 3: Subgrade Preparation	2 week	Grading, compaction, laying of sub-base and bedding layers
Phase 4: Cabro Installation	1 week	Placement of cabro blocks, kerbs, bollards, and pedestrian walkways
Phase 5: Finishing & Landscaping	2 weeks	Signage installation, tree planting, cleanup, and final inspection
Phase 6: Handover & Community Sensitization	1 week	Final walkthrough, stakeholder briefing, public health messaging, and maintenance training

6.2 Roles and Responsibilities

Stakeholder	Role
Municipal Civil Engineer	Technical oversight, design validation, site inspections, and approval of works at each milestone
Procurement Officer	Coordination of tendering process, contractor selection, and compliance with Public Procurement and Asset Disposal Act

Municipal Accountant	Financial tracking, disbursement scheduling, and budget compliance reporting to KSP and World Bank
Municipal Manager	Overall project coordination, stakeholder engagement, conflict resolution, and liaison with county leadership
Kenya Support Program (KSP)	Overall project coordination, stakeholder engagement, conflict resolution, and liaison with county leadership
World Bank	Technical advisory, environmental and social audit support, and performance evaluation
Community Representatives	Technical advisory, environmental and social audit support, and performance evaluation
Environmental & Health Officers	Monitoring of dust, noise, sanitation, and safety protocols during construction
Contractor	Lead contractor responsible for execution, quality control, and reporting

6.3 Procurement and Resource Mobilization

- **Tendering Process:** Managed by the Procurement Officer under county and donor guidelines
- **Material Sourcing:** Local suppliers for cabros, aggregates, and precast components
- **Equipment Mobilization:** Graders, compactors, mixers, and water bowsers to be deployed on-site
- **Labor Force:** Skilled and semi-skilled workers, with priority given to local youth and women

6.4 Monitoring and Evaluation (M&E)

A structured M&E framework will be implemented to ensure transparency, quality, and accountability:

- **Weekly Progress Reports** submitted by the contractor to the Municipal Civil Engineer and Municipal Manager
- **Monthly Site Inspections** led by the Municipal Civil Engineer and donor representatives
- **Financial Audits** conducted quarterly by the Municipal Accountant in coordination with KSP
- **Community Feedback Forums** facilitated by the Municipal Manager and local leaders Key performance indicators (KPIs) will include:
- % completion of drainage and paving works
- Reduction in flood-prone zones post-construction
- Number of local workers employed
- Stakeholder satisfaction ratings

CONCLUSION AND RECOMMENDATIONS

The prefeasibility assessment confirms that the proposed parking and drainage improvement project in Ol'kalou Town is technically sound, environmentally responsible, socially inclusive, and financially viable. The intervention directly addresses long-standing urban challenges—namely, unregulated parking, inadequate stormwater management, and deteriorating pedestrian infrastructure—that have hindered mobility, public health, and economic activity in the town's central business district.

The project's design integrates durable cabro paving, structured drainage systems, and inclusive pedestrian features, all aligned with national engineering standards and donor safeguard frameworks. Its implementation will significantly reduce flooding, improve sanitation, enhance urban aesthetics, and support local commerce. Moreover, the project benefits from strong institutional backing through the Kenya Support Program and World Bank collaboration, ensuring both financial stability and technical oversight.

Social safeguards—including stakeholder engagement, gender inclusion, and livelihood protection—have been thoughtfully incorporated to ensure that the project uplifts rather than disrupts the community. Environmental risks have been identified and mitigated through a comprehensive Environmental Management Plan, and public health considerations have been prioritized throughout the design and construction phases.

Given the strategic importance of Ol'kalou Town within Nyandarua County and the readiness of both technical and administrative structures, the following recommendations are made:

Recommendations;

1. Proceed to Detailed Design and Tendering:

Finalize engineering drawings, BoQs, and technical specifications to initiate procurement under county and donor guidelines.

2. Establish a Multi-Stakeholder Implementation Committee:

Include representatives from the county government, contractor, donor agencies, community leaders, and technical experts to oversee execution and resolve emerging issues.

3. Activate the Grievance Redress Mechanism (GRM):

Ensure that community concerns are addressed promptly through structured feedback channels and transparent communication.

4. Integrate Maintenance Planning Early:

Develop a post-construction maintenance strategy involving county staff and community-based custodians to ensure long-term sustainability.

5. Monitor Environmental and Social Safeguards Continuously:

Conduct regular audits and site inspections to ensure compliance with NEMA and World Bank standards throughout the project lifecycle.

6. Leverage Local Labor and Materials:

Prioritize local sourcing and employment to stimulate the regional economy and foster community ownership.

7. Identification of Project Affected Persons (PAPs):

The Municipal Project Team (MPT) will conduct a survey to identify all PAPs and come up with an Abbreviated Resettlement Action Plan (ARAP) as per the KUSP II POM and the World Bank Guidelines.

With these measures in place, the project is poised to deliver lasting impact—transforming Ol'kalou Town into a cleaner, safer, and more resilient urban center that reflects the aspirations of its residents and the strategic vision of Nyandarua County.