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LAMU

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Vision: *Delivering Sustainable Communities; Settlements; and Places*
Mission: *Value Driven and Action Oriented service*

ENDORSEMENTS, CERTIFICATIONS & APPROVAL

I Certify that this Plan has been prepared and published as per the requirements of the County Governments Act, 2012; the Urban & Areas Cities Act, 2011; the Physical & Land Use Planning Act, No. 13 of 2019; and other Planning standards and guidelines.

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Recommended

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County Executive Committee Member (C.E.C.M.), Department of Lands, Physical Planning, Urban Development, Energy, Water and Natural Resources, Infrastructure, and Public Works, County Government of Lamu

Approved

..... Date .....

OMAR AHMED LAMU COUNTY CLERK OF THE COUNTY ASSEMBLY

The County Assembly
County Government of Lamu

Hansard No.

.....

FOREWORD

As rural areas continue to transform into towns and cities, resulting conditions prove the need for proper urban planning and management. Human and Traffic congestion, increase in informal settlements, informal businesses, urban poverty and environmental pollution are among the adverse conditions resulting from inadequate planning. Integrated planning become necessary to solve the current issues and prevent possible occurrences of the same in the future.

It is for the aforementioned purposes that this Local Physical & Land Use Development Plan has been prepared for Lamu Island. The Plan aims to guide developments within the Island through the preparation of an integrated land use plan that provides a basis for promotion of accessibility and connectivity, secure public open spaces, diversify economic activities, improving waste and storm water management systems, provision of housing and other social amenities. The plan further provides a guide on balancing conservation, cultural heritage and urbanism in the Island.

With the great potential of the Island, preparation of the Plan as a development control tool becomes significant in providing a framework that addresses the major social, environmental, and economic issues of the Island. The Plan provides guidelines in achieving sustainable urban growth and development through land use planning.

I therefore urge all the stakeholders and development partners to support us in promoting effective implementation of the Plan.

Signature: .....

H.E. Hon. Issa Abdalla Timamy
The Governor, Lamu County.

PREFACE

County Governments have been mandated to prepare Plans aimed at regulating developments and promoting development control by the Constitution of Kenya, the County Governments Act of 2012, Urban Areas and Cities Act (Amendment) 2019, Physical and Land Use Planning Act, No 13 of 2019 among other legislative provisions. It is within this mandate that the County Government of Lamu through the management of Lamu Municipality initiated the Planning of Lamu Island to provide for a framework to address the land use challenges in the area through optimization and utilization of the available resources and opportunities.

The preparation of this Local Physical & Land Use Development Plan for the island forms a basis for public and private investments, coordination of sector programmes and projects including land development and management. The Plan seeks to reduce proliferation of informal settlements, improve shelter and water supply, manage poor sanitation and waste disposal as well as improve connectivity of various settlement areas. The process has ensured adequate citizen participation, establishment of adequate governance structures in the urban areas and promoted financing of infrastructure and service provision to improve the living standards of Lamu island residents.

In addition, this plan aims to provide basis for the management of the changing dynamics of land use and ensure that the island's growth and development takes place in a sustainable manner. The Plan has provided a land use mix that strikes a balance between the conservation of cultural and historic developments and modern urban developments. In this way, the plan will help the island smoothly balance the duality of the past and the future. I wish to call upon the people of Lamu to support the Implementation of this Plan that will significantly assist in achieving our desired Vision.

Signature: .....

Hon. Tashrifa Bakari Mohamed, County Executive Committee Member (CECM),
Lands, Physical Planning, Urban Development, Energy, Water and Natural Resources,
Infrastructure and Public Works,
County Government of Lamu.

ACKNOWLEDGEMENT

The Local Physical & Land Use Development Plan for Lamu Island has been realized through the collaborative effort of various stakeholders who have worked diligently to develop a plan that shall guide land use developments in Lamu Island. I therefore wish to express my appreciation to the stakeholders involved; ranging from the actors in the County Government of Lamu, representation from various National government agencies and institutions including the NLC, Ministry of Interior, NEMA among others, the residents of Lamu Island, NGOs & CSOs operating within the island, religious leaders, the business community, women & youth representation, PLWDs, and the lead consultant tasked with developing the Plan.

Specifically, I would like to appreciate the great leadership and stewardship offered by H.E. the Governor Hon. Issa Abdalla Timamy throughout the Planning process, the invaluable guidance and input of Hon. Tashrifa Bakari Mohamed, the CECm Lands, Physical Planning, Urban Development, Energy, Water and Natural Resources, Infrastructure and Public Works in the County Government of Lamu, the Chief Officer, Lamu Municipality, Mr. Ahmed Mohamed Ali, the entire Municipal Board of Lamu led by the Municipality Manager, Mr. Abduswamadu Abdalla Ali, the Chairlady, Dr. Farida Hassan, the Board's Vice Chair Mr. Abdallah Fadhil, board members M/s Umulkher Bakari, Dr Abubakar Baasba, M/s Martha Wairimu, M/s Khodya Shekuwe, on behalf of the entire Municipality board. In addition, I would like to appreciate the spirited coordination and technical expertise offered by the Municipality team led by the Municipality Administrator Mr. Ahmed Kombo, Municipality Planners Mr. Lewis Mwandiki, Mr. Masafu Kolna, Environmentalist Mr. Gabriel Ngige, and QS Paul Kamau in reviewing the outputs and maintaining correspondence with the consultants.

I wish to further appreciate resource persons from the National Land Commission – County Coordinator Mr. Kenneth Mwaita, the representation of the National Environment Management Authority, Plan. Vincent Osewe – former Lamu County Physical Planner and other government entities both in the National and County Government. Special gratitude to the Ministry of Interior and notably Mr. Phillip Oloo, the Assistant County

Commissioner, and all the Chiefs and Assistant Chiefs from all the villages within the island for their able mobilization and moderation of the citizen engagement forums. In addition, I would like to thank the National Museums of Kenya and especially the Lamu Curator, Mr. Mohammed Mwenje whose input, knowledge and recommendations on heritage aspects of the Lamu old town shaped the outputs proposed in this development Plan.

My sincere appreciation extends to the consulting team at KREIS Spatial Planning and Consulting Associates ltd who worked tirelessly with all acknowledged stakeholders throughout the preparation of this Plan until its delivery. In particular, I would like to acknowledge the Lead Consultant Plan. Samuel Mburu, and his team who included Plan. Dr. Kefa Omoti, Plan.Dr. Elizabeth Wamuchiru, Plan. Kelvin Ritho, GIS & Mapping experts Mr. Solomon Karani, Moses Kemboi, and Arch. John Nduru.

Finally, I wish to thank the people of Lamu Island for sharing their dreams, ideas, and proposals during the numerous stakeholders' workshops and key informant interviews undertaken in the planning process. Your vibrant and invaluable contribution informed the outputs envisaged in this Plan.

COUNTY G... MUN... MUNICIPAL MANAGER LAMU

Signature: .....

Mr. Abduswamadu Abdalla Ali,
Municipal Manager, Lamu Municipality.

EXECUTIVE SUMMARY

The Fourth Schedule of the Kenya Constitution, 2010 confers the role of County planning to the County Governments (Part 2(8)). Additionally, the County Governments Act of 2012 and the Urban Areas and Cities Act read together with the Physical Planning & Land Use Planning Act No. 13 of 2019 require County Governments to prepare GIS-based Urban Development Plans for the urban areas in their entire areas of jurisdiction. It is in fulfilment of this mandate, therefore, that the County Government of Lamu through the Lamu Municipality initiated the preparation of the Local Physical & Land Use Development Plan for Lamu Island. Over and above the legal provisions guiding the plan preparation, the formulation of this plan took note and adopted the proposals made in previous plans prepared within Lamu including the Lamu County Spatial Plan (2016-2026), the County Integrated Development Plan (2018-2022) and various Heritage Impact Assessment reports.

Therefore, this plan provides a framework for organizing and distributing local populations and activities in a manner that achieves both National and County development objectives. The Plan also aims to help coordinate implementation of sectoral projects and programs towards reducing wastage of scarce resources and to avoid duplication of efforts. In summary, the Planning assignment endeavors to incorporate and synergize different government efforts to realize the programmes and projects envisaged in the Lamu Island LPLUDP. Budgetary support for plan implementation and compliance to the plan by a wide spectrum of actors in spatial planning are among the identified synergies that will promote effective implementation of the plan.

Lamu Island Local Physical & Land Use Development Plan covers the entire Lamu Island measuring approximately 100km^2 with special focus on Amu old (heritage) town and immediate environs of Wiyoni, Langoni, Kashmiri, Kandahari, Bombay, Matondoni, Kipungani, Shella, Mararani and their immediate surroundings. The plan assesses both the development constraints and potentials of the island from an integrated point of view and provides a spatial framework for its future development and growth. It addresses a few identified challenges within the Island including;

- General lack of spatial order and environmental degradation
- Proliferation of informal settlements and urban sprawl
- Poor connectivity and accessibility
- Urban decay
- Poor waste management system, drainage and storm water management system
- Inadequate housing and provision of other social amenities – recreation, Cemetries, schools etc
- Poor revenue generation mechanisms and a lean revenue pool
- Poor land information system and Development control
- Urban poverty and unemployment

The plan preparation process began with the basemap formulation where data was obtained and overlaid in form of layers in a GIS System. The data obtained included;

- Cadastral Data
- Land Use Data and previous settlement Plans
- Satellite Imagery
- Roads Infrastructure Data
- Environmental Data and other form of data

This was then followed by scoping and profiling of the existing situation covering the following areas: natural environment, demography & demographic characteristics, land and human settlements, economic analysis, infrastructure and Institutional Structure for Governing Urban Municipalities. The plan proposals, strategies and recommendations were based on the planning analysis and findings established through the situational analysis.

In summary, Lamu Island has noticeable sand dunes covering about 19km^2. These habour important aquifers that hold water used in the Island and therefore, the area has been gazetted as an important water conservation area. The Sand Dunes have a great potential to attract related touristic activities including natural trails that could be used for walking and jogging, beach related camping carnivals, beautiful and natural scenic views for videography & cinematography etc. This Plan advocates for selfless conservation of the

dunes and all other ecologically fragile ecosystems within the island including the large tracts of mangrove forests, the natural wetlands and swamps found on the southern side of the Island towards Kipungani areas in a bid to ensure sustainability of the resources associated with the ecosystems.

The Indian Ocean surrounding the Island is also identified as a significant resource within the Island as it provides a source for fish and marine life that are utilized economically by the locals. Other elements such as the harbor, building sand and mangrove forest life are resources that provide growth opportunities for the Island. However, these resources are being exploited destructively and through unsustainable methods. The beaches and oceans experience pollution due to lack of solid and liquid management systems and practices such as dumping of wastes cause destruction of the marine life.

The population of Lamu Island was at 28,864 as in the 2019 Kenya National Census Report. This is expected to grow to 44,584 by the year 2035. The increased population will lead to increased demand for housing, social-economic and physical infrastructure services. Formulation and enforcement of planning policies therefore become necessary to reduce possible impacts. The cadastral layout indicates a regular plot layout fronting the ocean while the rest of the plots layout is irregularly patterned towards the interior of the Island. With this, there are accessibility challenges and difficulties in upgrading of infrastructure facilities such as water reticulation system, sewer lines, storm water drainage system, power and telecommunication lines among others.

Nevertheless, Lamu Island is a famous world tourism destination center with notable tourist attraction features comprising of the gazetted world heritage site- Lamu Old Town. Shella, Matondoni and Kipungani are major components of the Lamu Archipelago that equally attract local and foreign tourists. Although there has been creation of employment opportunities for hotel and beach staff, conservationists, tour guides and business people, the industry has recently been constrained by various acts of terrorism in the larger Lamu region. Findings also indicate that sport fishing is a major tourism activity that is carried out as part of deep-sea fishing in the Island. This industry faces challenges through the value chain such as lack of fishing landing sites and associated facilities, lack of designated fish

market as well as poor linkage with market access for fish products and others. Other economic activities of Lamu island residents include the practice of mixed farming where crops such as cassava, coconut, and other fruits are grown while poultry, sheep, goats and cows are reared. The farmers are able to trade their farm produce majorly in the existing and operational Lamu market.

The island is connected to the mainland by both road, air, and water which has enabled exchange of goods and services over a long time. However, Lamu Island has no classified road network. Road connectivity within the Island is limited and where access roads and streets are available, they are narrow and congested. The existing sandy cutlines which connect Lamu Old Town to Matondoni and Kipungani make walking quite a challenge thus reducing the volume of trade and social interaction between the various settlements as they are often sandy. In addition, Lamu Island is set to benefit from the anticipated Lamu Port under LAPSSET Authority in various industrial scales. Once fully operational, the various port related activities will require human labour and specialized professional skills to function, thereby emphasizing the need to have a well laid out interconnection as the island will serve as an immediate dormitory area for the port workers.

The Island has 7 nursery schools, 7 public primary schools and 5 public secondary schools. Some of them include Matondoni, Kipungani, Amu, Stone Town and Shella Primary Schools. The secondary schools within the Island include Lamu boys' secondary schools, Lamu girls' high school, Bright Girls Shella secondary school, and Wiyoni secondary school among others. The educational facilities are concentrated in the various island settlements and are easily accessed. From the findings of the study and going by laid out standards, the Island will have a deficit of 14 nursery schools 7 primary schools and 3 secondary schools by the year 2035 and these have to be catered for before then.

All the settlement areas have access to a health facility. However, due to poor transportation infrastructure, both road and water, accessing the main referral hospital from settlements such as Matondoni and Kipungani is a huge challenge and sometimes results to casualties due to the time delay. Lamu County King Fah'd Hospital is the largest health facility receiving referrals from all over the County. The other health facilities are:

Kipungani dispensary; Matondoni dispensary; Pablo Horstmann pediatric health centre and Shella dispensary.

The Island has several recreational areas including the beaches and established play grounds though still reported by the residents as a major challenge in terms of their availability and access convenience. It was however recommended that *'nyangwas'* local name for ocean land at its lowest tide to be utilized for this purpose around the settlements with very minimal intervention from the County Government, specifically, erection of sea walls to reclaim sea land for active use as recreational areas. Other facilities generally used as recreational areas/public spaces include social facilities such as mosques, churches, government offices, court, post office, police stations, and cemeteries.

In light of the summarized analysis highlighted above, the proposed Island Plan was conceptualized and developed as detailed below.

The physical organization of human settlements within the Lamu Island was conceptualized and assessed around the spatial models of polycentrism and monocentric urban models. The two models were considered because they come close to how development within the Lamu settlements is currently shaped and manifested on the ground. The monocentric Urban Settlement Model assumes that the central area (CBD) - Lamu Old Town - is connected by a network of radial transport channels to facilitate commuting. However, the findings established that commute between settlements within the island is very expensive and unreliable considering that its heavily reliant on water transport, which is overly dependent on prevailing atmospheric and marine conditions.

In that case therefore, the overreliance on Lamu old town for provision of primary services did not present itself as the most ideal scenario for the growth of Lamu island. Therefore, polycentric growth model which presupposes a network of urban nodes and their rural hinterland interlinked by corridors presented itself as an ideal spatial growth model for the Island. Ideally, the corridor could be an urban function, hydrological network, culture, transport network, green belt, flow of information or ICT infrastructure among others. These corridors are channels that promote interrelationship between the urban nodes and their hinterland areas. Through this, the model achieves an integrated development of the

island and its countryside as a functional, spatial entity with diverse relationships and interdependences by acknowledging that small and medium-sized towns and settlements form important hubs and links in achieving a balanced development. This follows the conceptualization that Lamu Island is seen as a system of functionally linked poly centers namely Lamu Old Town, Shella, Kipungani, Matondoni, Kashmir and adjoining areas as the sub-centers.

The Plan therefore provides for Sectoral Strategic Interventions to boost the vitality and competitiveness of different urban sectors. They are also to enable each sector to contribute to the economic growth and social development of all settlements within the Lamu Island. Broadly, the strategic interventions aim to improve the existing urban infrastructure systems, enhance economic growth of each center and support protection of the local heritage and natural environment. The residential and human settlement sector for instance aims at creating a livable environment for sustainable human settlement through ways such as preservation, conservation and rehabilitation of existing residential areas from incompatible land uses and activities, enhancing compact and nucleated settlement patterns in each settlement, proposing design guidelines for existing and proposed new residential areas among others.

The Industrial Development Sector aims to promote value addition to locally & regionally produced resources through development of a fish value chain by allocating spaces for fish landing sites and cold storage facilities, fish markets, manufacturing and processing industrial zones, development of agro-processing industries to add value to agricultural produce, establishment of solid waste recycling plants among others. Additionally, the Plan makes recommendations to improve the economic sector further through additional markets within the various centres and introduction of new commercial and mixed-use zones where 24-hour business activities can be supported and operated.

Strategies on the Education Sector aims to enhance the literacy knowledge and skills of the local & regional labour force through expanding/ upgrading existing primary and secondary schools, developing tertiary level institutions such as village polytechnics and vocational centers as well as developing and equipping new community libraries and

resource centres. The Recreation/ Conservation Sector aims to protect environmentally fragile areas and improve the quality of life in Lamu Island through strategies such as gazettement and issuance of titles to existing and recovered public land, protection of critically fragile ecosystems, enacting a county heritage by-law and building code, establishing a world heritage site management committee, establish a world heritage site community awareness program among others.

The Public Purpose Sector seeks to bring service delivery closer to the people of Lamu Island through; concentrating national and county administration offices at various central locations in respective settlements, developing community facilities such as libraries, public halls and community centres in the various settlements, equipping and expanding health facilities within each settlement. Further, provision of adequate public utilities and services to support the current and future population of Lamu Island have been provided. Integrated solid waste management sites have been provided in the Plan to ensure supported infrastructure is established to support local recycling and reuse of produced waste. Provision of other utilities such as fire stations within the settlements will be provided within designated sites where county administration sites are proposed.

To support economic growth and movement of people, goods and services, the plan has made ambitious plans to open up the island through various proposals of interlinked road network aimed at facilitating business and also offer convenient and affordable options of travel for the island residents. The Plan has provided for proposals on land use regulations and development standards for the growth of Lamu Island through the various settlement Plans. The Lamu Island Local Physical & Land Use Development Plan is expected to be implemented for a period of 10 to 20 years and beyond with the flexibility of periodic reviews every 3 to 5 years. It is envisioned that the Plan will achieve the goals and objectives as desired by the people of Lamu.

Signature: ……

Mr. Ahmed Mohamed Ali, Chief Officer – Lands, Physical Planning, Urban Development, Energy, Water and Natural Resources, Infrastructure and Public Works
County Government of Lamu.

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LIST OF ACRONYMS

CBO	Community Based Organization
CGL	County Government of Lamu
CGL-LM	County Government of Lamu – Lamu Municipality
CIDP	County Integrated Development Plan
FBO	Faith Based Organization
GDP	Gross Domestic Product
GIS	Geo-Information System
ICT	Information Communication & Technology
IDeP	Integrated Development Plan
KeRRA	Kenya Rural Roads Authority
KFS	Kenya Forest Service
KIPI	Kenya Industrial Property Institute
KNBS	Kenya National Bureau of Statistics
KNLS	Kenya National Library Services
KREIS	Kreis Spatial Planning & Consulting Associates Ltd
KURA	Kenya Urban Roads Authority
LAPSSET	Lamu Port and Southern Sudan Ethiopia Transport Corridor
LAWASCO	Lamu Water & Sewerage Company
LM	Lamu Municipality
LPLUDP	Local Physical & Land Use Development Plan
MoTIHUD	Ministry of Transport, Infrastructure, Housing and Urban Development
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NLC	National Land Commission
NMK	National Museums of Kenya
NMT	Non-Motorized Transport
NUDP	National Urban Development Policy
RAP	Resettlement Action Plan
SoK	Survey of Kenya
UACA	Urban Areas & Cities Act
UNESCO	United Nations Educational, Scientific, & Cultural Organization
WHS	World Heritage Site
WRA	Water Resources Authority
WRA	Water Resources Authority

1 INTRODUCTION

1.1 Background

The Kenya Vision 2030 acknowledges the lamentable state of urban planning and management in our urban areas. The National Urban Development Policy (NUDP) Sessional paper No.6 of 2016 suggests that within a generation or so, Kenya's Urban population will be more than that of rural population. The NUDP further states that over 70% of our GDP is generated in our cities and towns. The Urban Areas and Cities Act 2011 gives effect to Article 184 of the Constitution which provides for classification, governance and management of urban areas and cities through municipal and city boards, criteria of establishing urban areas and the principle of governance and participation of residents.

Most urban areas are associated with a myriad of challenges including proliferation of slums and informal settlements, inadequate shelter and water supply, poor sanitation and waste disposal, lack of connectivity and citizen participation on matters related to Urban planning and development. The aforementioned context recognizes the need for preparation of urban plans, establishment of adequate governance structures in our urban areas and financing of infrastructure and service provision to improve the living standards of the residents.

The Urban Areas and Cities (Amendment)Act 2017 Section 36(3) states that a County government shall initiate an urban planning process for every settlement with a population of at least two thousand residents. In that context, the preparation of the Lamu Island Local Physical & Land Use Development Plan is hereby envisaged.

1.2 Statement of the problem & justification of the consultancy

The architecture and urban structure of Lamu island graphically demonstrate the cultural influences that have come together over several hundred years from Europe, Arabia and India utilizing traditional Swahili techniques to produce a distinct culture and urban morphology. In the recent past, the island has experienced unplanned growth that has had adverse impact to its general development.

The outputs of the Plan should address the following challenges that have already been identified within the island:

a) General lack of spatial order and environmental degradation
b) Proliferation of informal settlements and urban sprawl
c) Poor connectivity and accessibility
d) Urban decay
e) Poor waste management system, drainage and storm water management system
f) Inadequate housing and provision of other social amenities – recreation, schools
g) Poor revenue generation mechanisms and a lean revenue pool
h) Poor land information system and Development control
i) Urban poverty and unemployment

In view of the above, there is an urgent need to prepare a Local Physical & Land Use Development Plan for Lamu Island to cater for the changing dynamics of land use and ensure that the island's growth and development takes place in a sustainable manner. The plan's focus is to integrate physical, economic, social, cultural, environmental as well as institutional aspects while tapping into the potentials of the Island. The Plan is expected to guide her growth and development in the next 10 to 20 years and beyond with the flexibility of periodic reviews every three to five years. Additionally, it will provide a basis for public and private investments, coordinate sector programmes and projects and land development management.

1.3 Scope of the consultancy

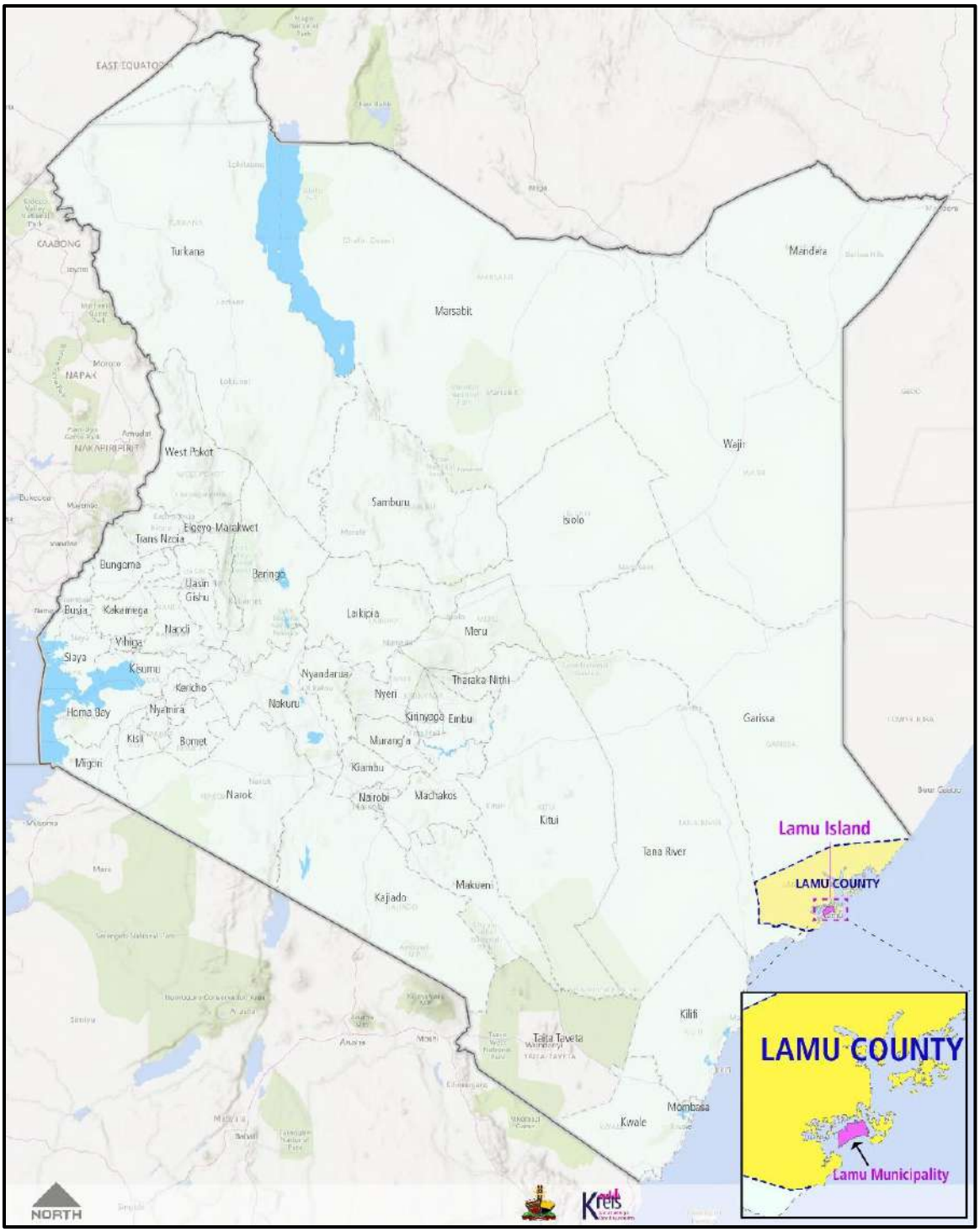
The plan covers the entire Lamu island measuring approximately 100km^2 with special focus on Amu heritage town, Matondoni, Kipungani, Shella and the environs. The plan will assess both the development constraints and potentials of the island from an integrated point of view and provide a spatial framework for its future development and growth.

1.4 Location and context of Lamu Island

Lamu island is one of the islands that form the archipelago within Lamu County and hosts one of the oldest Swahili towns in East Africa. The island is home to four historic settlements i.e. Lamu Old Town, Matondoni village, Kipungani village and Shela. Lamu Old town was

inscribed on the UNESCO World Heritage List in 2011. The location context is shown below:

Map 1-1: Shows the National location context of Lamu County



Source: KREIS, July 2020

Map 1-2: Shows the local location context of Lamu Island within Lamu Municipality

Source: KREIS, July 2020

1.5 Objective of the Project Assignment

The preparation of this Plan has been conceptualized within the vision of the approved Lamu County Spatial Plan and the respective visions of the Wards within Lamu island. The **specific objectives** of the assignment will entail the following key activities:

a) To provide a forum for stakeholder participation in plan preparation and implementation
b) Prepare a GIS based Local Physical & Land Use Development Plan
c) To prepare short, medium-term plans to guide urban development, including action area plans, strategic subject plans, advisory or zonings plans and regulations

d) To prepare urban development plans, showing current and proposed land use and infrastructure (such as transport, water, drainage, power, etc), housing settlements and environmental assets
e) Identify programs and projects for the development of the island
f) To provide hands-on training to key staff of the planning department in the County together with the Lamu Municipality Board on the plan preparation and implementation
g) To prepare a monitoring and evaluation strategy to assist the planning department in reviewing and updating the plan in line with the ever-changing growth trends of the island
h) To provide both strategic and action area-based guidance in respect of the location and nature of development having zoning and land use regulations
i) Explore the possibility of a variety of land use mix reflecting heritage and modernity as a continuum of land use configuration
j) Indicate how the local economy of Lamu Island can be enhanced and diversified using local resources.

1.6 LEGAL & POLICY FRAMEWORK

1.6.1 Planning Framework in Kenya

In Kenya, planning by both state and non-state actors, takes place within a formal constitutional, national broad and sectoral policy and legal regime system. The above guides all development action towards attainment of national development goals and objectives of the Country in accordance to national values and principles. Planning system comprises a network of structured actors at various levels, specifying responsibilities/functions, relationships, guided by policies and regulations, plans and implementation instruments.

This overall organization has been put in place by the supreme law of the Country. In addition, there are also international policy guidelines and agreements which the Country subscribes to and aspires to achieve them as part of a global community. International policy guidelines with respect to planning and urban development are sustainable

development Goals, the Habitat Agenda and climate change protocols. Institutions at the national level through which implementation of public policy takes place are the national executive consisting of 14-22 Cabinet Secretaries, the President and his deputy and the Attorney General.

Planning and development challenges are experienced in the Country at different scale national, regional (resource use), inter county (minimum economic size of county), County, metropolitan, city, municipal, inter municipal, town, and around international boundaries, are part of the planning conundrum. In the Constitution, these areas have been reflected as part of the rights of the people which the government is obligated to respond to.

The organization of planning therefore in the whole country goes into levels, responsibilities, rules and regulations of conduct, policies and rules guiding action, standards and norms of services, financing, implementation, enforcement and development management is a system that coordinates every actor from the national to the lower level. Expressly this Planning function of the state is expressly mandated under the Constitution of Kenya in article 66 dealing with regulation of land use and property. This is supported by national values and principles contained in the bill of rights.

National level has the overall national economic policy framework comprising key macro-economic variables and respective targets put by the Treasury and Central Bank of Kenya to guide economic transformation. Some of the notable ones are the growth rate in Gross Domestic Product (GDP), Central Bank Rate, level of money supply in the economy, exchange rates, level of prices in the economy, taxation, terms of trade and balance of payment position of a country, domestic revenue growth, besides the public debt. The health of the above have an important bearing on all the actors within a nation. In the recent past, there has been indeed a challenge for the economy to increase its capital formation commensurate with the rising population, increase productivity, sustain a rising GDP, thereby creating demand and employment opportunities.

Kenya's long-term development strategy of *Vision 2030, the Big 4 Agenda*, as broad government policy goals for development have been formulated within a given macroeconomic policy outlook. This can influence or be influenced by the long-term vision of development of the Country. Vision 2030 is anchored on three pillars whose overall goal is "towards a globally competitive and prosperous nation with a high quality of life by 2030" *(The Presidency, 2019).* Stepping down a little lower, there are other broad government policy documents such as the Land Policy 2009, National Spatial Plan 2016, National Land Use Policy, Regional Development Policy 2007, and National Urban Policy. Various sectors of development have sectoral policies which guide development and from which plans being prepared draw their targets and development direction. The Plans are means of implementing the broad and sectoral policies of the government and can also cause revision of government policy. Some of the policy documents are discussed below:

1.6.1.1 National Urban Development Policy

National Urban Development Policy of Kenya was aimed at managing rapid urbanization and unlock the economic potential of cities. In Kenya entities referred to as urban have a resident population of 10,000 and above. In addition, urban policy is necessary given the Country's poor performance in urban planning and management. The policy focuses therefore on the following:

- Physical infrastructure and urban services
- Response to informal settlements and associated forms of informality
- Urban economy
- Urban governance and management
- Social infrastructure and services
- National and county urban planning

The importance attached to urban policy, on planning, implementation, and governance of urban areas and substantive issues of economy, services both in physical and social dimensions are useful for the preparation of the Lamu Island LPLUDP.

1.6.1.2 National Spatial Plan

The Lamu Island LPLUDP will be prepared within the goal and objective of the National Spatial Plan (2015-2045). The National Spatial Plan facilitates the achievement of the land policy principles of efficiency, equity, sustainability and productivity. It is imperative that, like the National Spatial Plan, the County Government, through Lamu Municipality seek to achieve the promises Kenyans gave unto themselves under the current constitution through the formulation of this Plan. These are; social economic rights, the need for balanced development in various jurisdictions to facilitate equitable access to government services, the right to a clean and a healthy environment, and the right to property among others.

Within Kenya, and at all spatial jurisdictions; National, Regional, County, City, Municipal and Town/Centre, the emphasis has been on economic planning and revenue extraction with no regard for spatial planning. Moreover, the economic planning and emphasis on extraction has been based on project basis devoid of cross sector coordination, unresponsive to the actual development challenges of the citizens. Therefore, this has led to uncoordinated, unguided development that is ineffective due to scarcity of synergies. **Selected cases where there has been spatial planning, it has suffered from lack of budgetary support for plan implementation and compliance to the plan by a wide spectrum of actors. This therefore means that the planning exercise will endeavor to incorporate and synergize different government efforts to realize the programmes and projects envisaged in the Lamu Island LPLUDP.** This will provide a substantive broad-based system within which the LPLUDP will be articulated.

1.7 Regulatory Framework

This section describes the Regulatory framework and institutions that are assigned responsibility to ensure national goals and objectives are adhered by all actors while undertaking their social economic activities. The laws and regulations play an important role of aiding the implementation of government policies stipulated above carried out by central government, state corporations, county governments, cities and municipalities in addition to non-state actors. The laws cover resource areas and various sectors such as

land, water, forest, agriculture, environment, education, health, energy, transportation, and finance.

Besides resource and specific sector coverage, the laws and regulations provide mandates or functions, and institutions. They also provide standards and rules that guide resource and service use, fair conduct of individuals, procedures to be adhered to in utilization of services and facilities, fair and equitable use of resources for the benefit of all, protection of the resources from degradation and depletion and protection of both private and public property. The underlying principle here is utilization of resources in the interests of the greatest good for both current and future needs. Detailed interpretation will be done in the plan document and integrating it into actions of implementing plan projects. The application of the laws and regulations in implementation of public policy is intended to help coordination of actions amongst actors vertically and horizontally.

1.7.1 Planning Laws and Regulations

This comprises the actual and quasi planning authorities at the lower levels which have responsibilities of planning. The established planning entities are County Government, Cities, Municipalities and Towns. There are other state agencies whose functions are intertwined with planning thereby performing quasi planning functions. Planning legislation in the Country stipulates that user rights of land are nationalized but planning has a permissive function. Current legal statute establishes a planning unit and makes planning mandatory in articles 105 and 104 (1) respectively. The latter states a County Government shall plan for the county and no public funds shall be appropriated outside a planning framework developed by the County executive committee and approved by the County assembly.

The County Government Act has put forth principles and objectives of planning at the County Level. Governance and management of urban areas (Cities, Municipalities, Towns and Market centres has been put under the urban areas and cities act and in effect, causing the formation of Municipality/City boards. Through the legislative mandate given to the County Governments and in effect Lamu Municipality through the board to Plan and implement Plans, the impetus for the preparation of this Lamu Island LPLUDP was thus

derived. In addition, the objectives and terms of reference of the consultancy were directly drawn from the expression of the Urban Areas and Cities Act on what integrated development plans should address.

Under the principles of planning and development facilitation in the Act, it is stipulated that the prepared Plans should serve as a basis for engagement between county government and the citizenry, other stakeholders and interest groups. In doing so, the Act requires the County Government to ensure meaningful engagement of citizens in the Planning process. And while ensuring this is achieved, the UACA defines the level of participation as that which contributes to decision making processes of the County Government.

In this regard, private citizens (read Lamu Island residents and concerned agencies) can participate in the preparation of a Plan whether through a Planning process that is initiated by government effort or through a citizen driven initiative. In the specific case, Lamu Municipality has the responsibility to initiate a planning process and prepare a Plan within their jurisdiction which adds value to the people's needs and aspirations.

2PREVIOUS PLANNING APPROACHES

2.1 Introduction

This chapter is meant to interrogate previous planning frameworks that have been done within the Island. The assessment is being done with a keen interest in establishing:

- the level of implementation most of the projects are at;
- the practicality of most of the projects as far as implementation is concerned with a view of reviewing or re-aligning the projects to current needs;
- integrating the projects to the island's LPLUDP.

In particular, the preparation of this Plan has taken keen interest in reviewing of:

- The island action plan that was proposed in the Lamu County Spatial Plan (2015/16 – 2026);
- All heritage documentation, reports and recommendations under the NMK;
- The current CIDP (2017/18 – 2022) for purposes of harmonizing sector programmes and projects;
- The LAPSSET corridor project and associated development plans among others. They are detailed under the following sections.

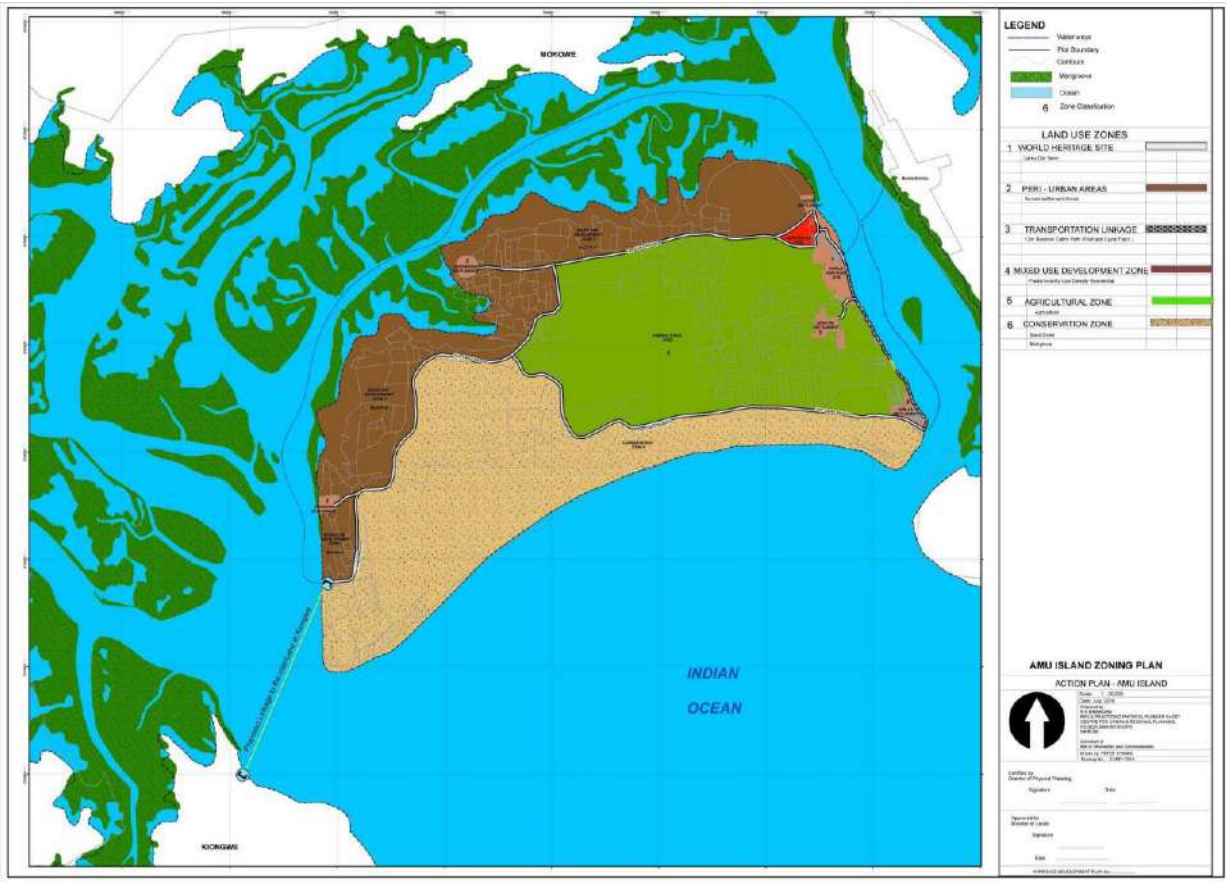
2.2 The Lamu County Spatial Plan (2016 -2026)

2.2.1 Proposed Lamu Island Action Plan Zoning and Planning Guidelines

The Lamu Island Action Plan was formulated as a way of controlling development within the island mostly focusing on:

- The conservation of the environmentally fragile ecosystem;
- Controlling development around the heritage site and the hinterland (agricultural area) to promote sustainable growth of the peripheral areas as the heritage viability of the Old Town was maintained;
- Infrastructural linkage of all island settlements; and
- The diversification of economic livelihoods for the island residents by having major service commercial facilities within the island like supermarkets; hypermarkets; and shopping malls.

To attain this, the following Plan was proposed:

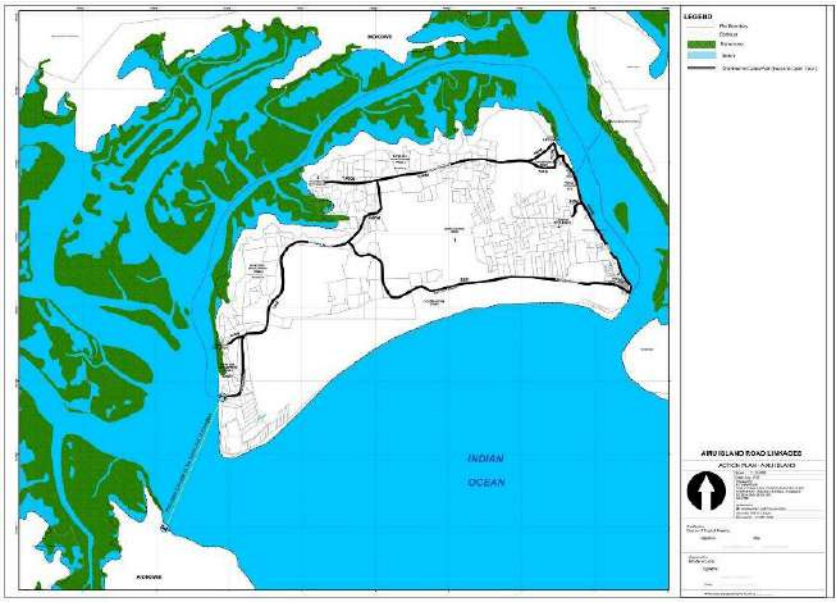


In this Plan, five broad zones were proposed as follows:

- The heritage zone; mostly comprised of the gazette heritage site (Lamu old town) – permissible development guidelines mostly drawn from the heritage guidelines were proposed for the zone most of which are still applicable and will be adopted and integrated in the Plan.
- The peri urban areas; these were taken to be all the human settlement villages within the island, unique development guidelines were proposed for each settlement, some are still viable and will be incorporated in the final plan.

  What lacked in this zone and similar to the heritage zone are deliberate efforts to zoom into the specific settlements to provide individual settlement plans and this will be addressed in this Plan.

- The Mixed-Use development zone; this is the zone parallel to the magrove frontage. Development along this zone was proposed to take place after a 50 meters buffer zone from the lowest point of the mangrove growth. The buffer zone was to accommodate certain users such as cycle tracks or foot paths which were not to exceed 20 meters from the edge of the buffer bordering the proposed developments.
- Agricultural zone; this is the island's hinterland zone mostly utilized for Agricultural purposes. The viability of this zone in the current development trends will be assessed in the formulation of the LPLUDP.
- A conservation zone; this was mostly intended as a zone to ensure conservation of the sand dune ecosystem while also the other efforts to conserve the mangrove forest incorporated as part of this zone. The idea to conserve the dune ecosystem with a road system to act as a buffer is still viable.
- A transportation corridor; this was proposed as a cabrol foot and cycling street to serve as a link between Lamu Town; Matondoni and Kipungani setttlements. The path was envisaged to be about 12meters in width and was to double up as a public space and a connection link between the settlements. The corridor however lacked a corridor management plan and this plan seeks to address it. The path was proposed as follows:



Currently the corridor has been acquired but only as 6 meters in width. Construction of the path is underway but needs better designs and a corridor management plan which this plan intends to fulfill.

2.3 The Lamu County Integrated Development Plan (2018 -2022)

The CIDP (2018-2022) of Lamu County have proposed various sectoral programmes and projects across the County, some with direct net impact to the development scenario in the island. Most of the sectoral programmes and projects were interrogated and aligned to the proposed development framework (Plan) of the island.

2.4 The LAPSSET Corridor Development Project & Associated Development Plans

The Lamu Port project is expected to revitalize and have a booming net effect in the development of Lamu County. As it is, no associated project under the LAPSSET project is set to be implemented in Lamu Island. However, it is expected that the island will be directly affected from the influx of population needs expected in the mainland areas once the port is operational. Some of the direct impacts to be considered in the Plan formulation as a result of the LAPSSET project include but not limited to the following:

- The viability of public transportation on water as a project undertaken by the Port Authority aimed at improving and providing cheaper water transport options.
- The impact the port activities will have on the fishing communities in the island and how it will be mitigated.
- The completion and operationalization of the Port will attract more people into Lamu who will require essential basic goods and services to support their life. Such include good hospitals, schools, recreational areas, commercial district and serviced housing. As it is, most of these investments will be undertaken in Hindi area, Mokowe and Lamu Island. This Plan will offer options for the growth of the island in readiness of tapping such opportunities as a preferred place to live and work.
- The Lamu port will spur development of housing and commercial activities that if not early mitigated may result into informal housing and spillover of informal economic activities. The likely outcome is unattractive environment for business investors and this has to be addressed in the Plan.The current water, electricity and sanitation infrastructure systems will be overwhelmed by the anticipated new development and influx of people in the Island and viable solutions for this will have to be explored in the Plan formulation.

Other neighboring areas that have a great impact on the planning area include:

- **Ras Kitau**- This is located to the South Eastern side of the planning area. Ras Kitau is a rapidly growing hub that hosts high end holiday villas and has the potential to evolve to a major tourism hotspot. Ras Kitau also has minerals such as building stones that are extracted and used in Lamu Island, thus plays an important economic role. The area has previously been scantily unoccupied due to insecurity and lack of infrastructural services such as water. However, with the recent water supply to in the area from Shella, the area has started to experience growth. This center should be prioritized for planning to ensure it has guided growth as well as ensure it complements activities in Lamu Island.
- Manda- Manda Island is located to the East of the planning area. It hosts several village settlements as well as the Manda Airport. The airport is an important gateway to Lamu. The proposed upgrading of the airport to accommodate larger aircrafts is welcome as it will promote accessibility of the planning area by visitors. Heritage Impact Assessment and associated reports including past recommendations

In the recent past, the heritage value of the Lamu Old Town has been threatened and calls to degazette it ongoing though not conclusive. This has been documented and reported to be caused by the following:

- Rapid, extensive and uncontrolled urban development (housing, hotels and associated infrastructure, informal settlements);
- The LAPSSET project and associated projects net negative impacts on the heritage value of the island;
- Poor solid waste management, water sanitation and waste disposal;
- Deterioration of dwellings; and inadequate financial and human resources to ensure proper management;
- Lack of a coordinated and formalized institutional mechanism for the management of the site;
- Unclear and inadequate buffer zone.

In order to address these issues, the World Heritage Committee has adopted various decisions with recommendations requesting the State Party for specific actions. These recommendations include:

- Development of a Management Plan, with an action plan extending the current limits of the World Heritage property to cover the whole of Lamu Town and the town of Shela and its sand dunes, as well as taking into consideration such natural values as the mangroves;
- Extension of the property and buffer zones to ensure that the whole island and the archipelago including, in particular, the Shela Sand Dunes and the mangroves on Manda Island and all historical buildings are included within the World Heritage zone in order to address expected impacts on the property resulting from large-scale uncontrolled and illegal development;
- Production of a map for the property clearly demarcating and labelling its boundaries;
- To conduct a study of Lamu Island's solid and liquid waste management, with particular concern given to the sewerage situation, and to adapt the most viable way of disposal it;
- Documentation and inventorying of all historical buildings and mapping of archaeological assets;
- Gazetting the entire water catchment area (i.e. Shela Sand Dunes) and registering it as special bio-diversity (SOB) in order to protect the fragile water source;
- Reinforcement of existing laws related to fire prevention;
- Enactment of a new Heritage Bill
- Establishment of a coordinated formalized mechanism in the form of a committee/task force for the management of the property;
- Establishing a community education awareness programme;
- Elaboration of a Disaster Management Plan;
- Development of an integrated marketing strategy for Lamu;

- Halting all work on the LAPSSET corridor and the new Lamu Port and Metropolis Development Project until the HIA has been carried out and its results discussed by the World Heritage Committee.
- The need for continual updating of action plans related to the management of change, and the possibility of exchanging management experiences with the Zanzibar Stone Town Authority.

In this regard, a few pointers for integration in the Plan are picked as follows:

2.4.1.1 Tenable Projects; and Conditions to safeguard the Heritage Value of the Old Town

- The National Museums of Kenya (NMK); and UNESCO in consultation with the County Government of Lamu (CGL), Lamu Municipality should adopt general policies to give the heritage a function in the life of the community
- The CGL-LM should oversee that all comprehensive Planning programmes integrate heritage protection into their proposals; or recommendations by adopting the Planning Zoning Guidelines and Regulations for the Heritage site to be drafted in this Plan.
- The NMK; UNESCO; and the CGL-LM should foster the establishment or development of National or Regional Centres for training in the protection, conservation and presentation of the heritage and encourage scientific research in these fields
- The NMK; and UNESCO in consultation with the CGL-LM should develop scientific and technical studies to identify actions that would counteract the dangers that threaten the heritage significance of the Old Town. This can be achieved by proposing appropriate legal, scientific, technical, administrative and financial measures to protect the heritage
- The NMK; and the CGL-LM should organize public sensitization programmes on the value of the World Heritage Site to the community to strengthen their view of the value of heritage in a bid to also create empowerment and employment as tourist guides

In light of the discussions above, it can be appreciated that there has been tremendous effort towards the realization of harmonized growth trends in Lamu island and this Plan will be keen to add value and integrate what has been done and achieved in the past.

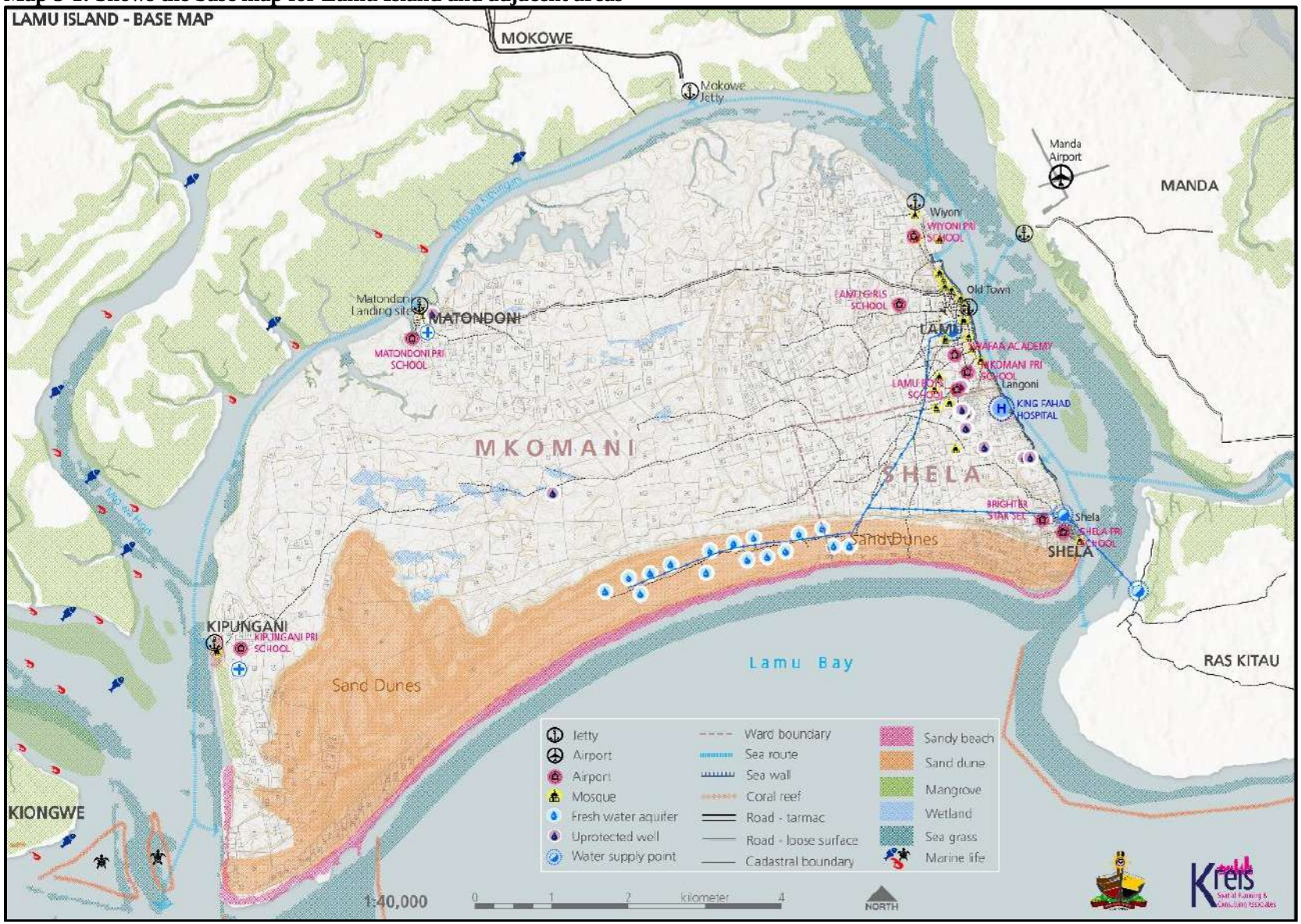
3SITUATIONAL ANALYSIS

3.1 BASEMAP FORMULATION

The base map formulation was the first consideration to ensure that the current physical structure of Lamu Island was picked and depicted. To ensure this was achieved, data was obtained and overlaid in form of layers in a GIS system to form the base map presented below. The data included but not limited to:

- Cadastral data
- Land use data & settlement plans (where applicable)
- Satellite imagery
- Roads infrastructure date
- Environmental data
- Among other forms of data

Map 3-1: Shows the base map for Lamu Island and adjacent areas



Source: KREIS, 2020

3.2 NATURAL ENVIRONMENT

3.2.1 Physiographic Characteristics

All development activities take place in space, as such, the proper understanding and analysis of the environmental character of the surrounding is important in the planning process. The physical environment provides both challenges and opportunities that requires to be taken into consideration to ensure sustainable development of Lamu Island.

3.2.1.1 Topography and Drainage

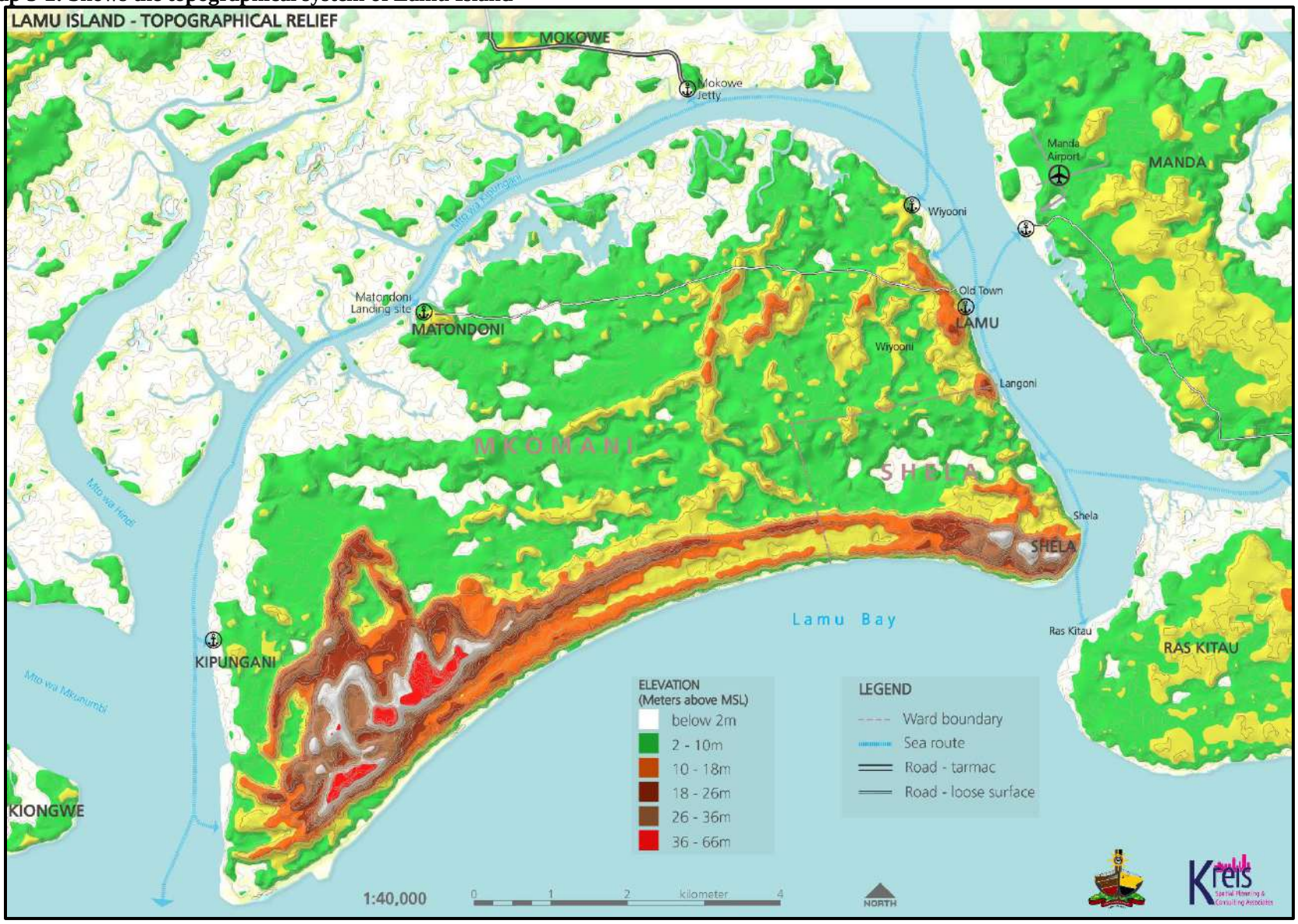
Due to its location in the Indian Ocean, Lamu Island is generally flat with an altitude of zero to about 60m above sea level on the sand dunes along the Southern side of Shella area. The highest point is to the South West area of the Island near Kipungani. The Island has noticeable sand dunes as seen in Plate: 3.1 to the Southern and Western sides covering about 19 km^2 and these form a major structuring element within the island. These sand dunes habour important aquifers that hold water used in the Island and therefore, the area has been gazette as an important water conservation area.

The base of the sand dunes forms an extensive shoreline with a white sandy beach right from Shella to area around Kizingoni and Kipungani. These beaches are very pristine and their potential to attract related touristic activities cannot be understated. They are shown below:

Plate: 3.1: Sand Dunes in Shella

Source: KREIS, July 2020

Map 3-2: Shows the topographical system of Lamu Island



Source: KREIS, July 2020

Due to the topographical nature of the island, it has no rivers flowing through it but drainage is not a major issue since the sandy soil allow most of the surface runoff to easily percolate into the ground. However, in the built-up areas, storm water drains directly into the ocean from open drains. This poses a threat to the environment as the untreated waste is discharged into the ocean.

3.2.1.2 Geology and Soils

Lamu County is characterized by Quaternary to recent sediments mainly of, limestone and coral reef stone while Lamu Island is characterized by Sandy soils, Luvisoils and Fluvisoils. This is in addition to the sand dunes that are important in protecting the island from wave action of abrasion, as such their conservation is highly recommended. As highlighted above, the sand dunes also have underground water aquifers that provide potable water for use in the Island and are a scenic attraction for tourists. They form part of the soil and geological structure of Lamu Island presented as follows:

Map 3-3: Soil & geological structure of Lamu Island

Source: KREIS, July 2020

3.2.1.3 Vegetation

Lamu Island is surrounded by heavy vegetation of mangrove forests to its North, West and North-East while the sand dunes surround the Island from the southern side. The hinterland of the island are the farmlands which are used for subsistence agriculture with patches of naturally occurring vegetation and shrublands extending across the entire island especially on the base of the sand dunes within the hinterlands. In summary, heavily vegetated areas including the mangrove forests comprise of about 19.7km² (33%); the shrublands about 33.6km² (56%); and the built-up areas representing just about 11km² (6.8%). This is shown in the vegetation cover map below:

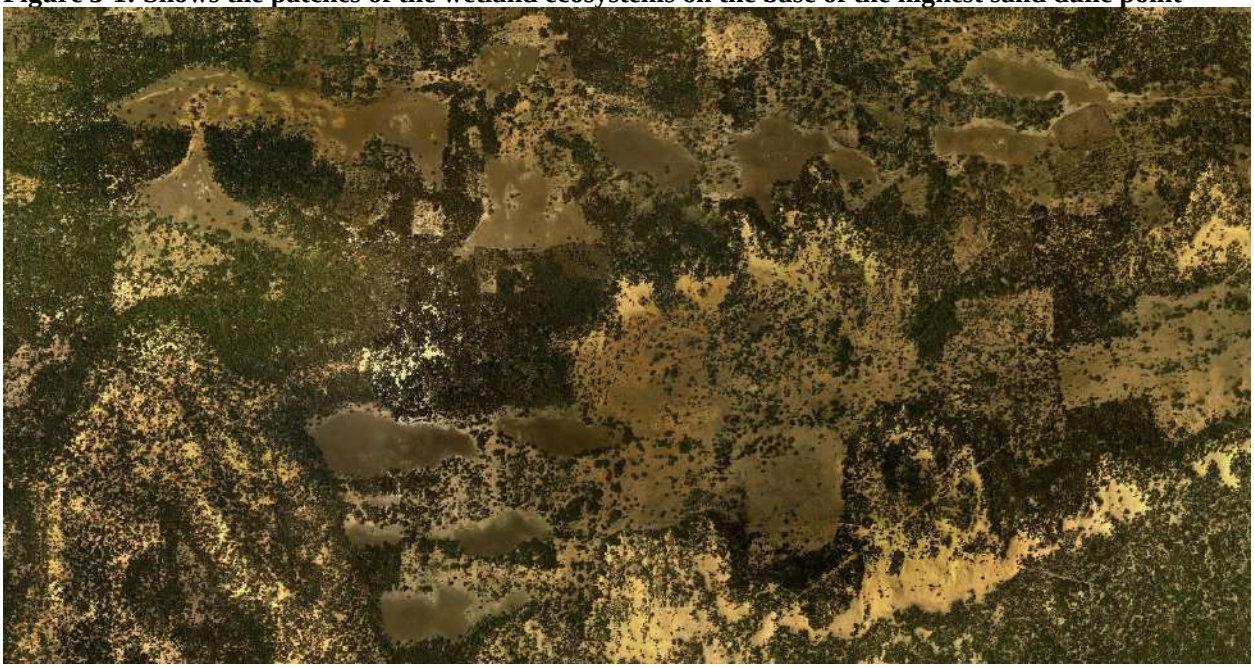
Map 3-4: Shows the vegetation cover map within the island

Source: KREIS, July 2020

3.2.1.4 Swamps

Lamus Island surface water consists of rainfall run offs that accumulates on the Limestone Karst terrain as natural wetlands or swamps. The patches of the wetland ecosystems are spread on the southern side of the Island near the sand dunes as you approach the Kipungani end of the dune. These ecosystems are very important for ground water recharge and this plan advocates for their selfless conservation in a bid to ensure sustainable water supply to the respective settlements. They are shown below as captured from the satellite imagery:

Figure 3-1: Shows the patches of the wetland ecosystems on the base of the highest sand dune point



Source: google satellite image, 2020

3.2.2 Climate

4.2.3.1 Rainfall

The Climate of Lamu Island is conditioned by biannual movement of the inter-tropical convergence zone and two monsoons, namely North Eastern ("*Kaskazi*") and the South-Eastern ("*Kusi*"). The Island lies within the 600 to 2300mm isohytes annually and is characterized by a bimodal rainfall distribution and a mean temperature of 28°C. The long rains falling between late March and early June with May being the wettest month. Light showers fall in July and decreasing from August. The short rains come in November and

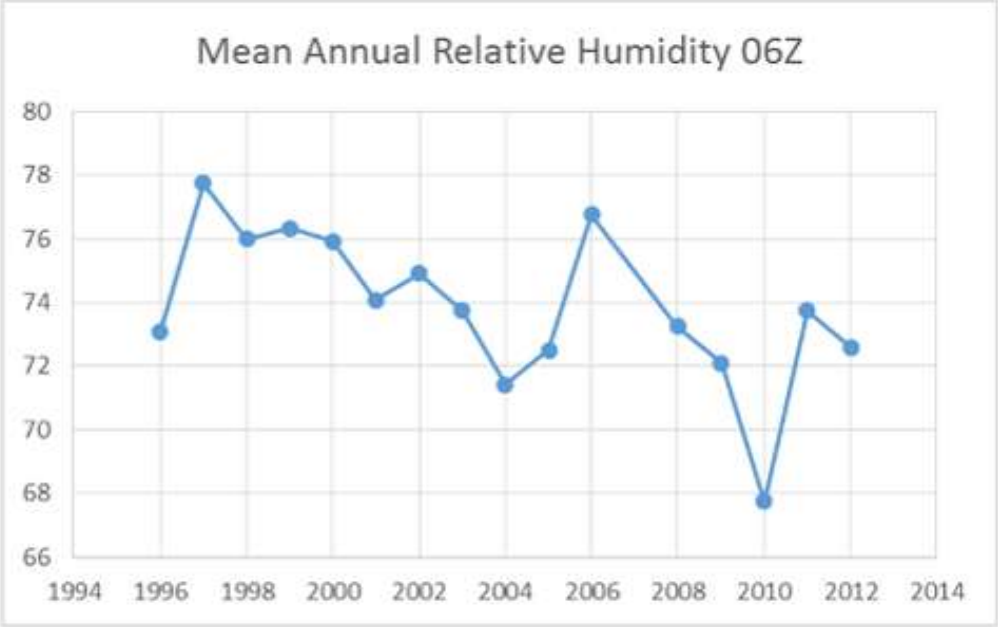
December decreasing rapidly to a minimum in January and February (WWF, 2014). January to March are usually dry months. The degree of reliability of the short rains decreases from South to North.

4.2.3.2 Relative Humidity

The mean relative humidity in the County is 75%. The total amount of evapo-transpiration is 2,230m per annum, with the highest values occurring in March and September and the lowest in May. The high relative humidity levels in Lamu discourage certain development land use aspects as the proposed coal Plant under LAPSSET as the resultant emissions will be absorbed in the evaporation processes resulting to destructive rains as opposed to productive rains.

The graph below shows the relative humidity intensity as recorded in the meteorological station in the County:

Figure 3-2: Lamu County Mean Annual Relative Humidity



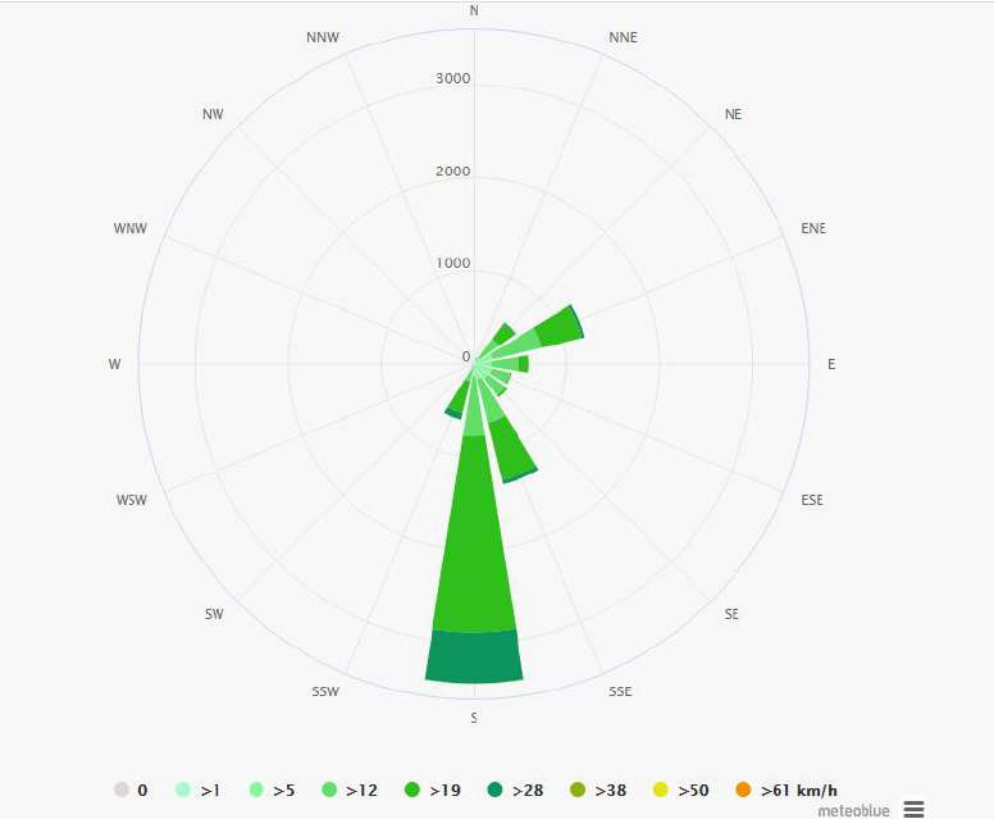
Source: Lamu Meteorological Station, 9240001

3.2.2.1 Wind Speed and Direction

The wind pattern in Lamu varies heavily within the year. The windier part of the year lasts from May to October, with average wind speeds of more than 13.4 miles per hour and

maximum of about 17.5 mph in July. The wind is most often from the South from April to November. The wind is most often from the East from November to April. Since water transport using wind driven sails is still practiced in Lamu, the direction and speeds of the weed are important for the sailors in planning for their trips. The figure below shows the predominant wind directions in Lamu:

Figure 3-3: Predominant wind directions in Lamu



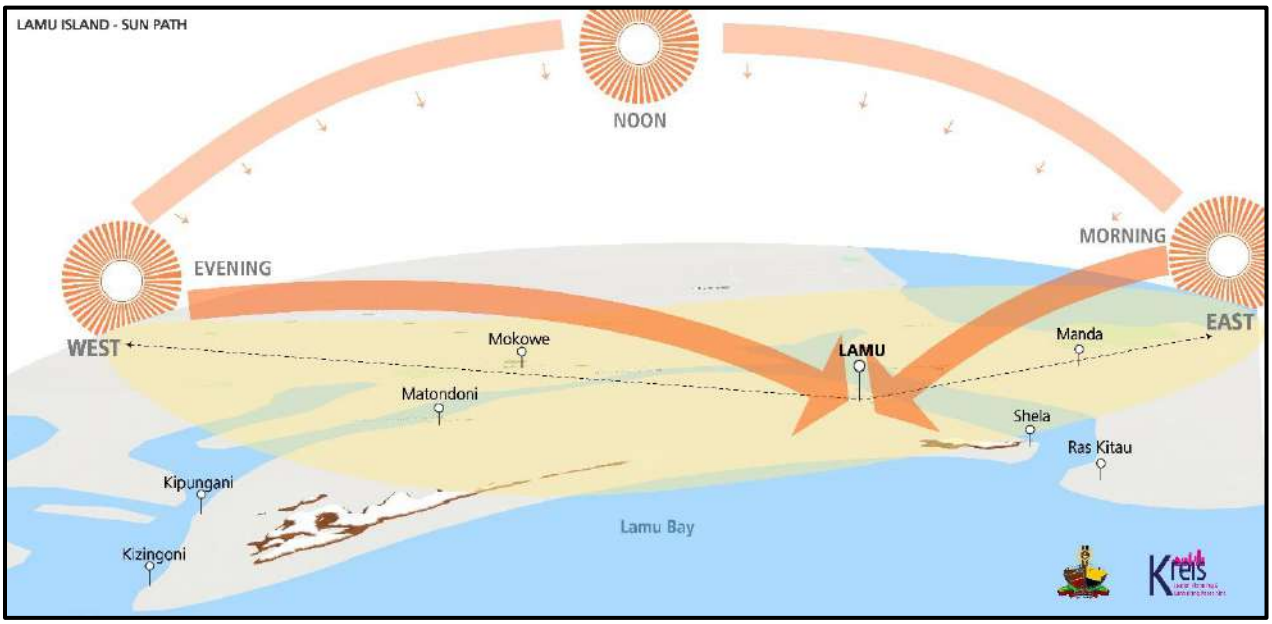
Source: https://weatherspark.com/y/101535/Average-Weather-in-Lamu-Kenya-Year-Round

3.2.2.2 Sun Path

The sun in Lamu on average rises around 5:50 to 6:30 and sets at about 18:05 to 18:35 hrs. The reflections of the sun on the ocean makes Lamu popular for sunrise and sunset watchers. The plan proposals will endeavor to capitalize on this resource to enhance tourism. The Sun path is generally from the West in Matondoni area to the East in Manda

Island as viewed from Amu. The map below shows the general sun path viewed from Amu.

Map 3-5: Shows the sun orientation path



Source: KREIS, July 2020

3.2.3 Agro Ecological Zone

Lamu Island falls under agro ecological zone L3 which is highly influenced by the rainfall variability patterns. Table 3-1 shows the characteristics of this zone.

Table 3-1: Agro Ecological Characteristic in Lamu Island

Zone	Description	Suitable Crop
L3 – Coconut Cassava	Intermediate rains (Starting end of March – July) and short one (From Mid-October), loam soils, prone to water logging	Maize, millet, ground nuts, soya beans, sim sim, green grams, cow peas, cotton, tomatoes, kales, Chinese cabbage, chillies, sweet pepper, pumpkins, onions, melons, cucumber, garlic, cashew nuts, bixa, paw paws, cassava, guavas, bananas, lemons, oranges, pineapples, mangoes, grapefruits, coconuts

Source: *Lamu County Spatial Plan (2016 – 2026)*

3.2.4 Natural Capital Assessment

This section analyses the natural capital found in the Island. Lamu Island has a rich natural base both in marine and terrestrial resources.

3.2.4.1 Ocean

The Ocean is the greatest natural resource in Lamu. Being an Island, Lamu is surrounded by the Indian Ocean which presents numerous resources upon which the culture and economy of the Island rely. The ocean provides resources such as fish and marine life that the locals utilize for economic gain. Further, the ocean is used for transport and recreational activities. As such the protection of the ocean and ocean resources will be at the core of this plan. Public access to the ocean and its shores will be advocated for to ensure that all residents are able to enjoy the resource.

3.2.4.2 Beach

Lamu Island has extensive beaches along the coastline that provide attraction for tourists, nesting grounds for birds and fish. The beach is located to the southern of the Island defined by the expansive base of the sand dunes especially around Shella, Kipungani and Kizingoni areas. The protection of the beach is an important element that the plan will seek to achieve so as to ensure sustainable development of the environment. Waste management in the Island should be enhanced to reduce pollution along the beaches and make them attractive to the residents and tourists.

3.2.4.3 Harbor

Lamu has as existing naturally'; protected harbor along the eastern shore of the Island. The harbor is understood to be the original place around which the town has grown. The harbor is therefore an important natural asset for not only facilitating transportation and access to the Island but also as a heritage area.

3.2.4.4 Fresh Water

Lamu Island has existing aquifers located below the sand dunes that have continued to provide potable water for use in the Island. The sweet fresh water from these aquifers is an important resource to serve the growing population in the Island. The water resources

have been utilized including for bottling and sale. The protection of the water resources will therefore form part of the strategies in this plan.

3.2.4.5 Building Sand

The Island has vast volumes of sand deposits. The sand is located both on the shores and within the Island. Harvesting of sand is carried out in Matondoni area to the North of the Island. The harvested sand is transported by boats and donkeys and is used for building construction. The viability and sustainability of this as an economic activity will be explored through the plan formulation. The plan will further provide guidelines on the proper utilization of this resource.

3.2.4.6 Coral Reefs

Lamu Island has patches of coral reefs which provides a natural defense of the shoreline from wave-erosion and is a source of white sand that replenishes the beaches. The coral reefs, sea grass and associated lagoons harbour rich and diverse species of flora and fauna, which support artisanal fishery and tourism. While only small patches of coral are at the Island's waters, larger patches are located in the nearby Ras Kitao area. Figure 3-4 shows the coral and seaweed resources in Lamu.

Figure 3-4: Coral Reefs in Lamu

Source: *https://allencoralatlas.org/atlas*

3.2.4.7 Mangrove Forest

Lamu Island has a network of mangrove forests. Mangroves are important in that they are able to protect communities from floods and contribute to marine biodiversity. Further, the mangroves are a rich carbon sink. In Lamu, the mangroves as shown in Plate 3-1: Harvested Mangrove trees at Lamu town are exploited for economic purposes and used for building material and fuel wood. The vast mangrove forests therefore need to be protected from degradation and unsustainable harvesting.

Plate 3-1: Harvested Mangrove trees at Lamu town; and on the right, mangrove products used for roofing; and other furniture related needs like seats and doors

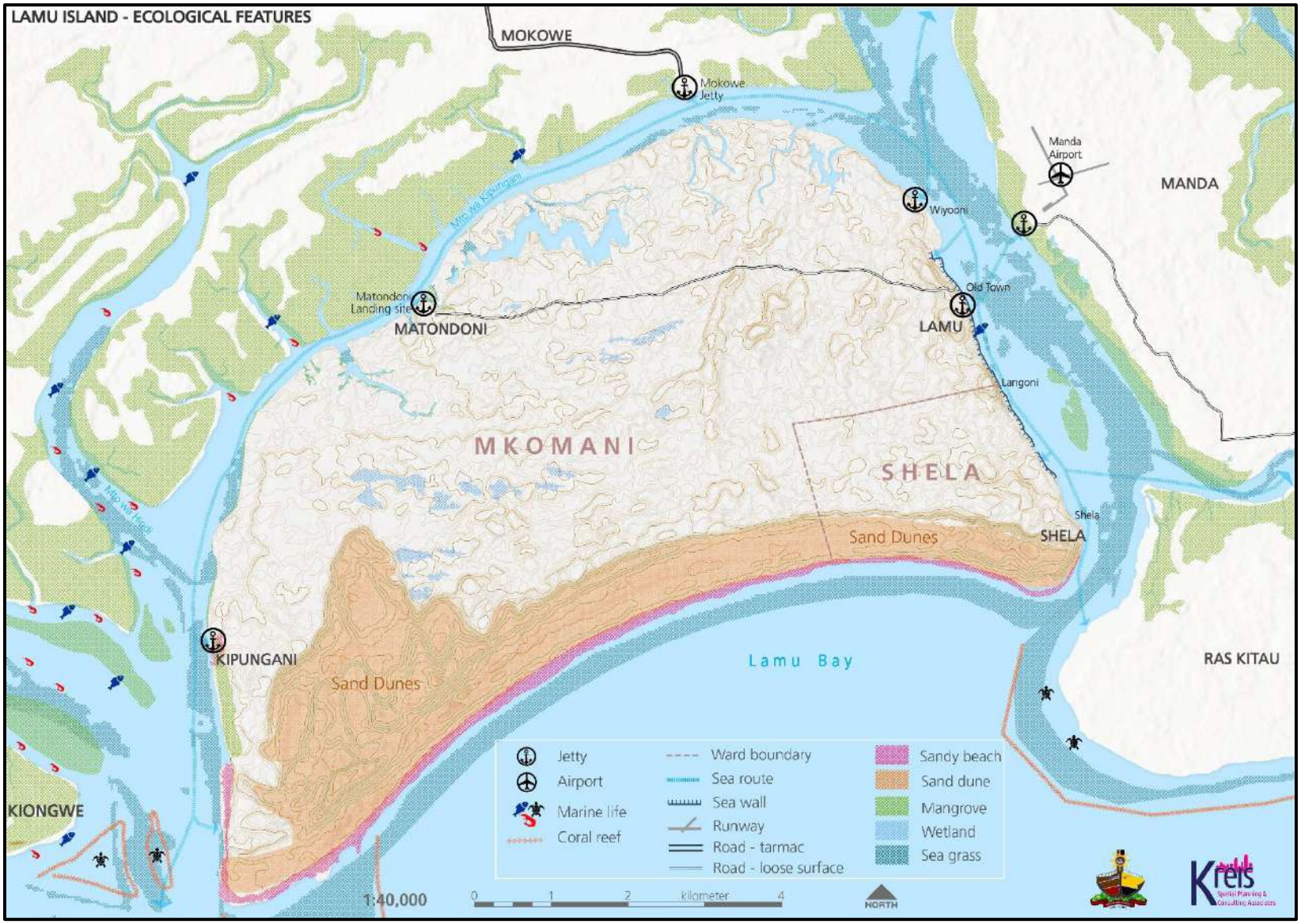
Source: KREIS, July 2020

3.2.4.8 Fish and Marine life

Due to the location of the Island within the Indian Ocean, the waters near Lamu Island are a rich ground for fish and other marine life such as prawns, sea turtle, and other types of fish and marine resources, both flora and fauna. However, the lack of designated fish processing areas has resulted in wastage and pollution. The plan should therefore provide for appropriate infrastructure and market linkages to support the sustainable marine resources utilization.

Overall, Lamu island is well endowed by diverse natural terrestrial and marine resources on top of favourable climatic and physiographic conditions as discussed and depicted above. This can be summarized in the map below:

Map 3-6: shows the natural terrestrial and marine resources map



Source: KREIS, July 2020

3.2.5 Emerging Issues

- The coastal and marine resources in the archipelago are increasingly under threat from over-harvesting of resources (corals, pelagic fish, marine turtles, invertebrates) and the use of destructive and unsustainable methods for resource exploitation such as beach seining, drift nets and coral mining.
- The Island beaches and ocean has been polluted mostly attributed from the lack of proper solid and liquid waste management systems. The release of untreated sewer and storm water into the ocean have polluted the ocean. Dumping of solid waste on the shores has resulted to loss of aesthetics and endangering of marine life. There is thus an urgent need for proper development of waste management systems within the Island.
- Due to rampant use of pit latrines, the porous soils have resulted to pollution of underground water sources. The pollution of ground water resources poses a health threat to the residents of the Island.
- The community in Lamu have been strongly involved in the management and conservation of their environment. Community groups such as in Shella are involved in cleaning up the environment within their areas. Other associations such as the Lamu Marine Conservation Trust have been vocal in advocating for marine protection. The strong community will to be involved in the management and conservation of their environment is an opportunity that can be tapped in the conservation efforts.
- The ongoing LAPSSET project having major infrastructure near the Island has the potential to affect the environment and developments in the Island. The project operation is likely to result to increased population in the Island with it the increase in demand for infrastructure and services.

3.3 DEMOGRAPHIC PROFILE OF LAMU ISLAND

3.3.1 Population size

According to the 2019 Kenya National Census Report, the population size of Lamu Island stood at 28, 864people. This population size is derived by totaling population figures from Shella, Matondoni, Langoni and Mkomani Sub-locations. This is as shown in table 3.2 below.

Table 3-2: Population size of Lamu Island

No.	Sub-location	Male	Female	Total
1.	Matondoni	1,326	1,215	2,541
2.	Shella	2,083	1,621	3,704
3.	Langoni	6,617	6,769	13,386
4.	Mkomani	4,406	3,994	8,401
	Total	**14, 432**	**13,599**	**28,032**

Source: KNBS, 2019

3.3.2 Population projections

The current population of the Island as shown in table 3-2 above stands at 28,032(KNBS, 2019). The annual average County population growth rate is estimated at 2.9%. With these details, the population size is projected to be **44, 584** by the year 2035 as shown in table 3-3 below. The population projection is based on the formula $Nt = Pe^{rt}$. In the equation, Nt is the expected population at a future date (time); P is the base year population (**28,032**); e is a natural logarithm base of 2.71828; r is the rate of increase (2.9) divided by 100 and t represents the time period (5-year interval).

Table 3-3: Population projection for Lamu Island (2020-2035)

	CENSUS DATA	PROJECTIONS		
SUB-LOCATION	2019	2025	2030	2035
Matondoni	2,541	3,024	3,496	4,042
Shella	3,704	4,408	5,096	5,891
Langoni	13,386	15,930	18,416	21,290
Mkomani	8,401	9,998	11,558	13,361
Total	**28,032**	**33,360**	**38,566**	**44,584**

Source: KNBS, 2019

From the population projection, it can be approximated that by the end of the planning period, the population of Lamu Island will have risen to **44, 584**. This means increased demand for housing, social-economic and physical infrastructure services. The increased population may also pose environmental threats such as settling along sensitive ecosystems and poor waste disposal if not accompanied by enforcement of planning policies. The economic sector in terms of job opportunities is likely to be flooded by the bulging population, which may result to joblessness and rising cases of insecurities. More livelihood strategies will thus be needed to sustain the expected population increase to ensure economic vitality of Lamu Island.

3.3.3 Population distribution

The population distribution varies spatially across the island. Lamu old town has the largest proportion of the population that spatially manifests as a nucleated settlement. This is because of the availability of public utilities and basic infrastructure besides it being the main urban node. The town is also a centre for tourism, administrative functions, recognized world heritage site, financial services, economic opportunities and accommodation. The land coverage of the old town is also bigger as compared to the rest. Kipungani has the lowest population size which is partly due to its small spatial extent and minimal development of essential services. The distribution of people is also as a result of opportunities presented by agricultural activities such as livestock keeping, crop farming and fishing.

3.3.4 Population density

Population density is the number of people per unit area. The population density across the Island stands at 282 persons per sq.km although there is variation across the Island (refer to maps 3-7,8,9,10) below. For instance, Mkomani has the highest population density of 2,388 persons per sq.km followed by Langoni at 1,167 persons per sq.km. Matondoni is the third most densely populated with 80 persons per sq. km followed by Shella with 70 persons per sq.km (KNBS, 2019). The population density is as shown in table 3-4 below. This variation of human concentration can be attributed to the level of

development of basic infrastructure that supports urban life as well as economic opportunities presented by the commercial nodes/villages within the island.

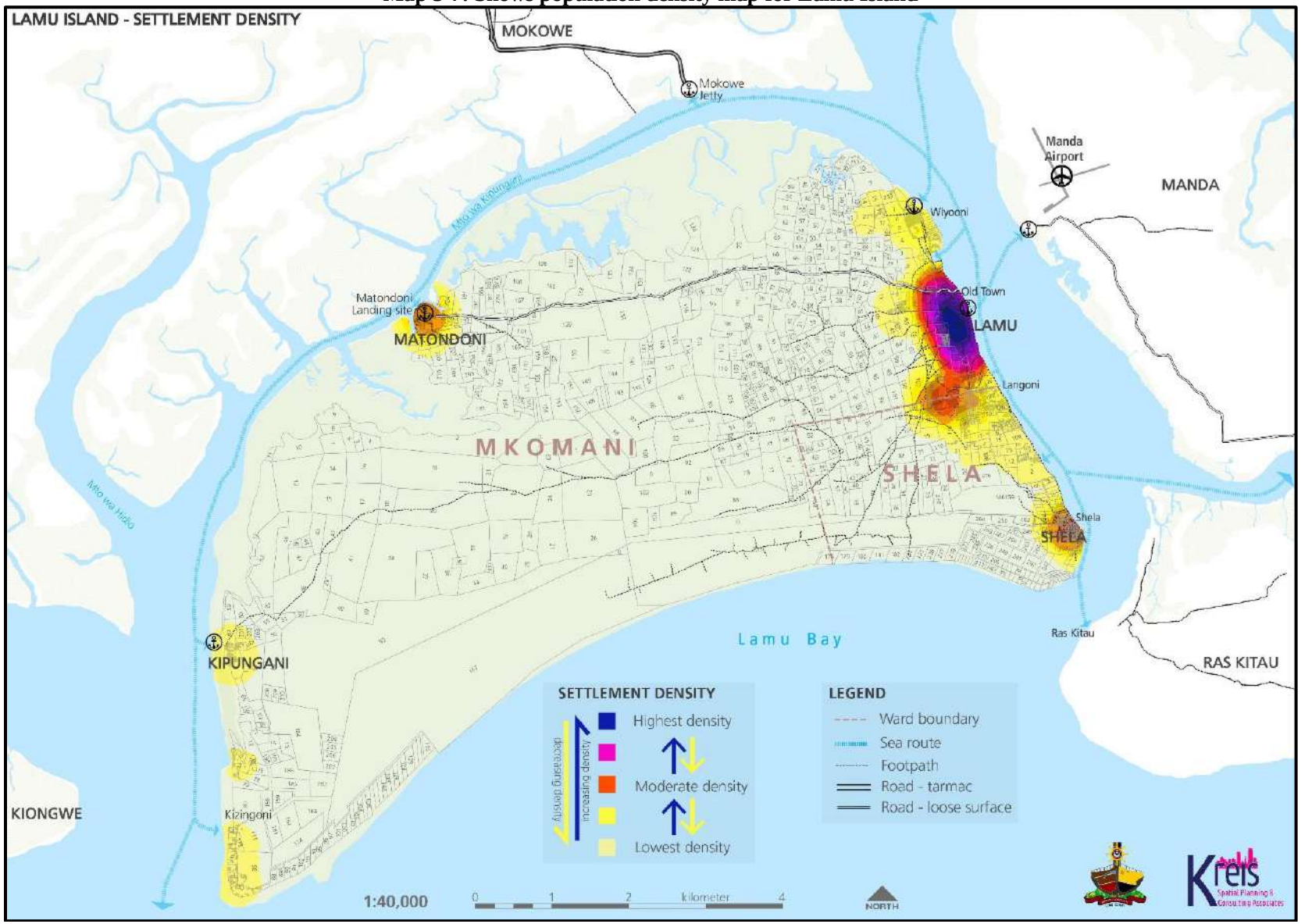
Table 3-4: Population Density in Lamu Island

NO.	SUB-LOCATION	LAND AREA (sq.km)	DENSITY (per sq. km)
1.	Matondoni	31.6	80 persons
2.	Shella	52.9	70 persons
3.	Langoni	11.5	1,167 persons
4.	Mkomani	3.5	2,388 persons
	Lamu Island	99.5	282 persons

Source: KNBS (2019)

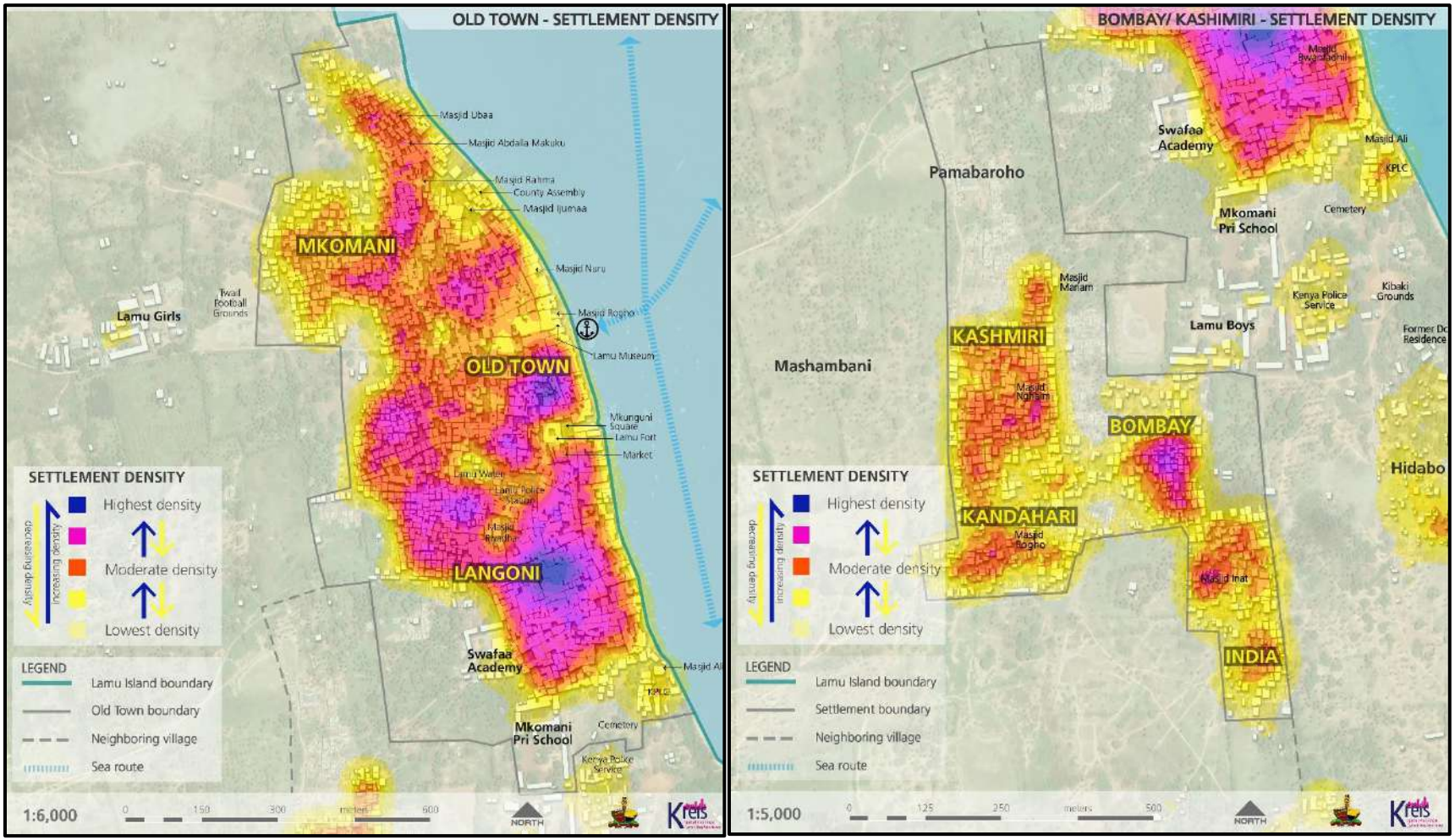
From the information above, a series of density and distribution maps are derived as follows:

Map 3-7: Shows population density map for Lamu Island



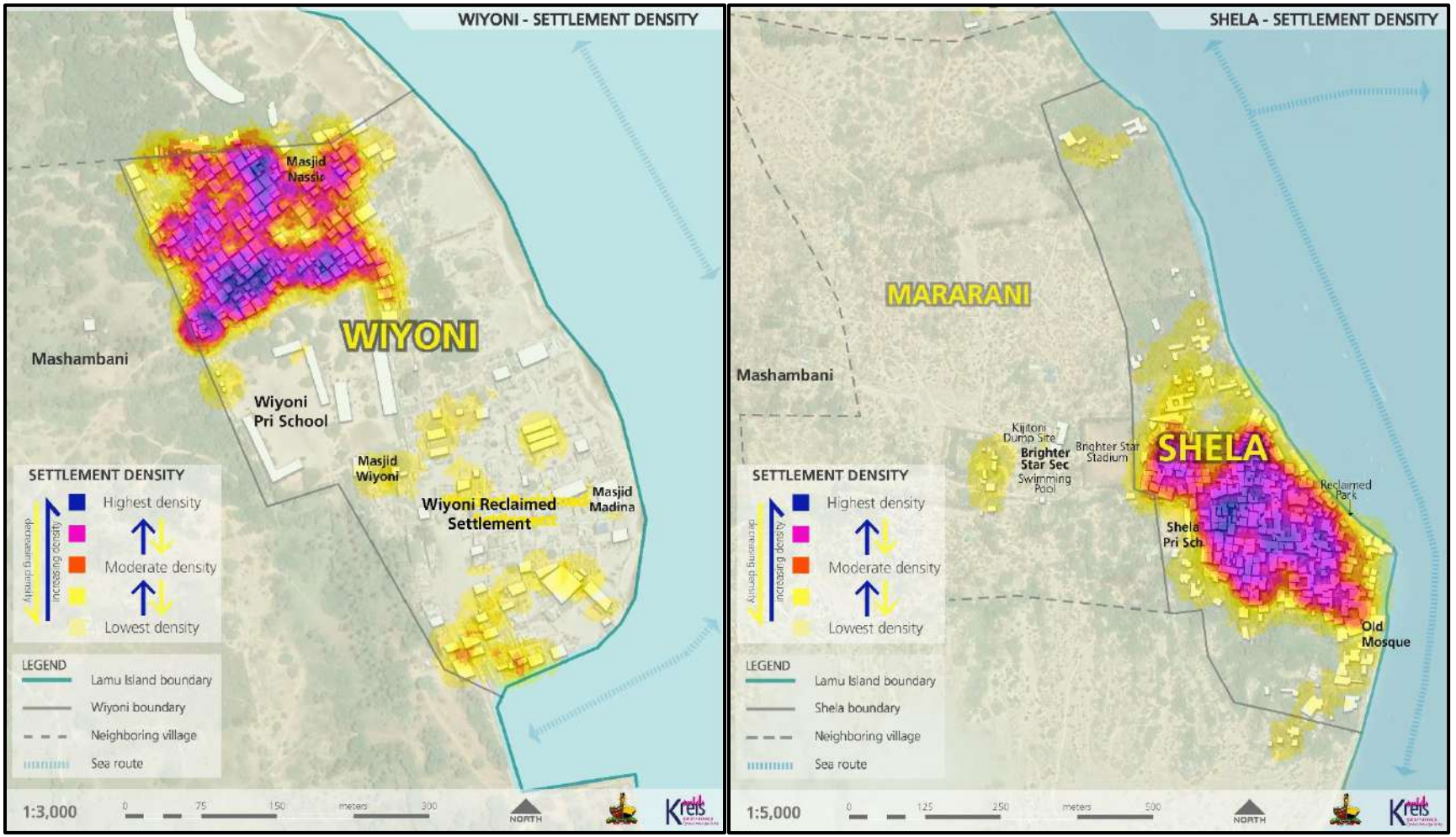
Source: KREIS, July 2020 – derived from population data of the National Housing Census, 2019

Map 3-8: Shows population density map for Lamu Old Town on the left; and Kashmiri, Kandahari, Bombay settlements on the right



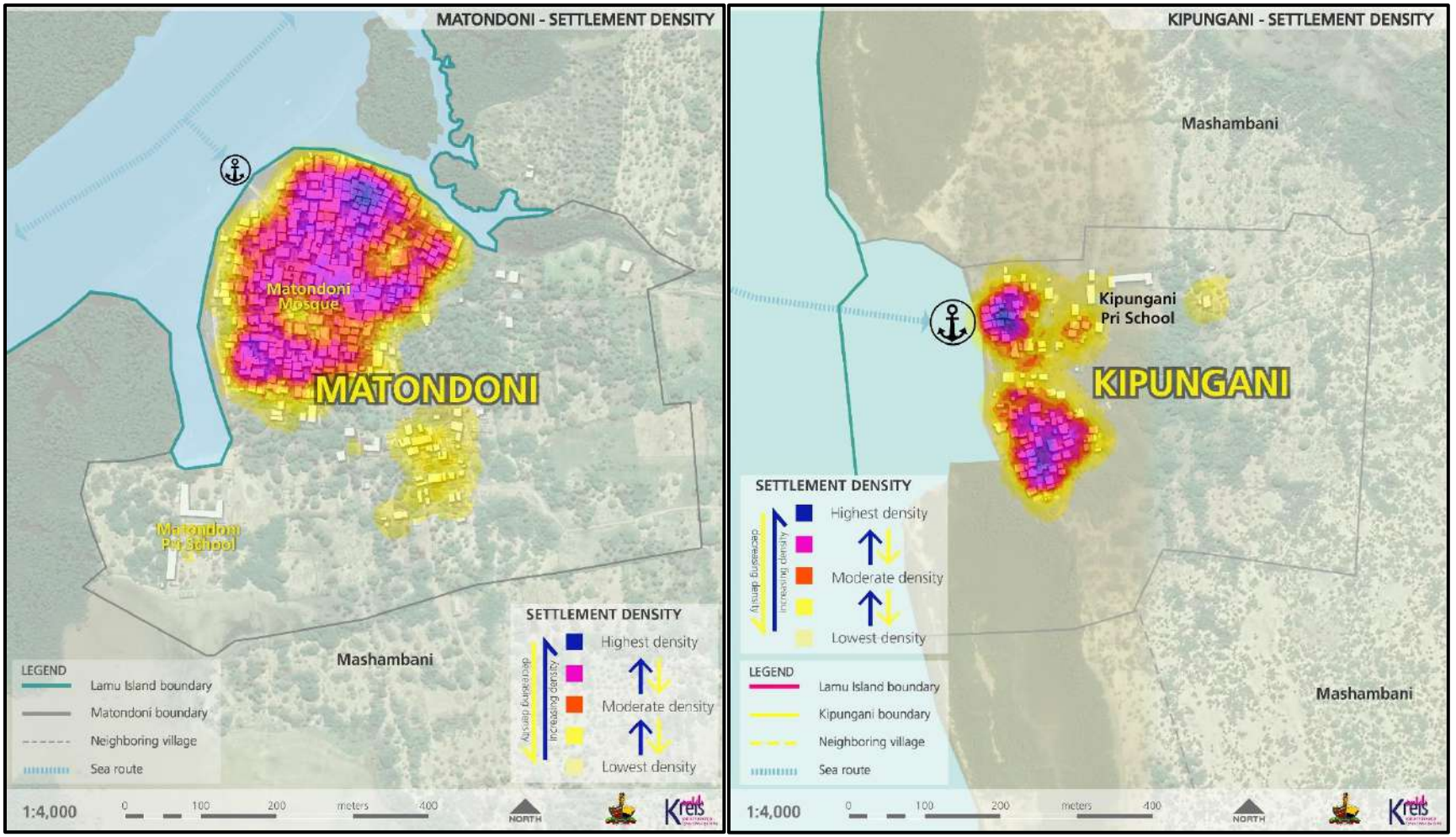
Source: KREIS, July 2020

Map 3-9: Shows population density map for Wiyoni settlement on the left; and Shella settlement on the right



Source: KREIS, July 2020

Map 3-10: Shows population density map for Lamu Old Town on the left; and Kashmiri, Kandahari, Bombay settlements on the right

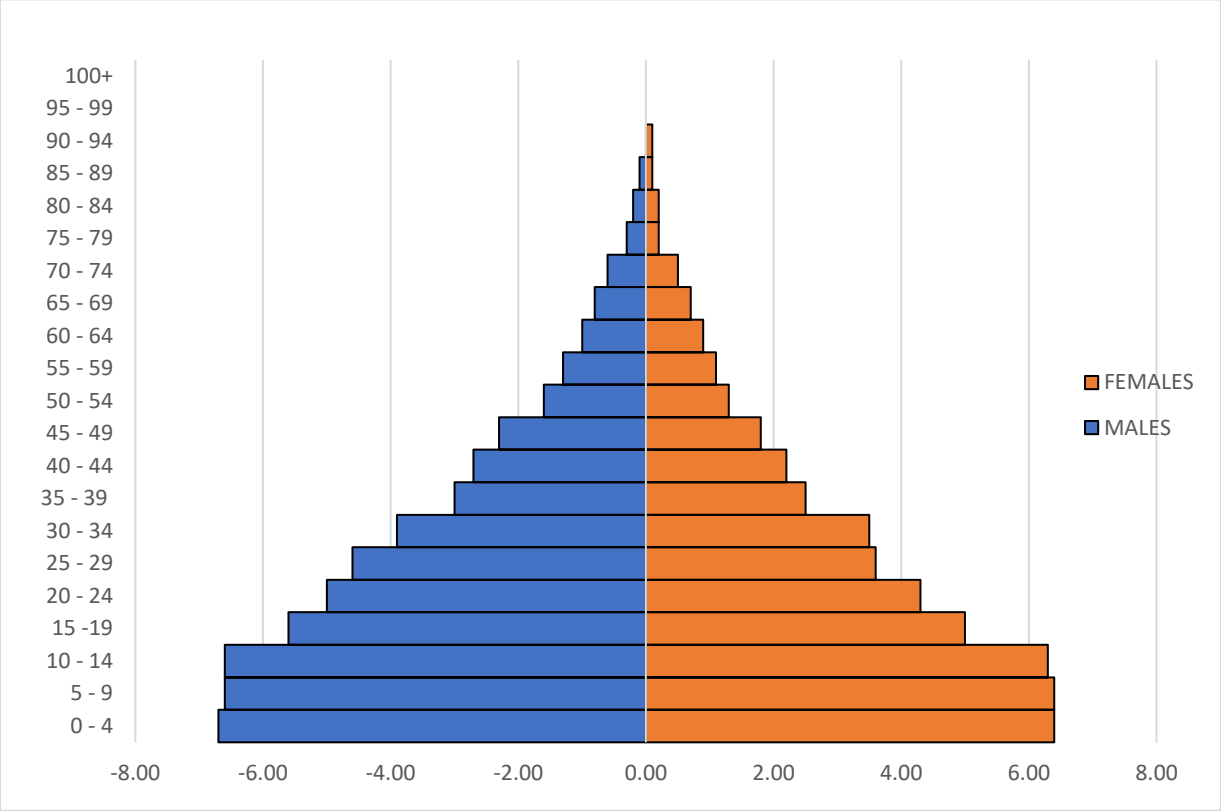


Source: KREIS, July 2020

3.3.5 Population structure

The population by age group can be referred with the data at the Sub-County level since the disaggregated data at sub-location level is not available in published reports. According to the Lamu West population census data of 2019, those aged 0-1 form the largest composition with a total of 15,949 persons while the least composition is evident from senior age groups (75 above) recording 1,366 persons (KNBS, 2019). The population structure thus has a broad base in the early years with subsequent age-groups in a decreasing order as shown in figure 3-5 below.

Figure 3-5: Shows the population structure within Lamu West sub-county



Source: KNBS 2019

The dominating young population demands basic socio-economic services including education, play grounds and health care facilities. The capacities of existing facilities will thus need to be matched with the growing numbers in different age brackets as demonstrated in figure 3-1. Future employment opportunities for the younger population will also need to be factored in planning of Lamu Island.

3.3.6 Migration patterns

The anticipated population growth is attributed to the recent influx of external investors who are implementing major infrastructure projects ranging from the Lamu port, airport and hospitality industry. These investments have attracted local, regional and international population to work and provide services in the new projects. Consequently, complementary businesses come up, attracting more middle men and entrepreneurs. This has resulted to more economic opportunities, making the Island an attractive site to migrate to. In addition, natural population growth and in-migration from adjacent areas add to the population increase and trends of population growth observed within the island.

3.3.7 Mortality & Morbidity rates

Overall, Lamu County has been experiencing a decline in mortality rate. By 2012, Lamu recorded an infant mortality rate of 76 deaths per 1000 live births. The decline was attributed to enhanced immunization programme and overall improvement in the health sector across the country. The under-five mortality rate however was higher with 106 deaths per 1000 live births. The under-five is a vulnerable age-group and much of their survival is influenced by the standard of the living environment, whereby basic services like clean water, adequate sanitation and health facilities play leading role in enhancing lives.

The top common causes of morbidity amongst children under five years of age are upper respiratory tract infections at 30 %; diarrhea at 11.9 %; pneumonia at 4.7 %; fever at 2.6 % and ear infections at 2%. For those older than five years, the top causes include upper respiratory tract infections (19.2%), skin diseases (8.9%), other respiratory diseases (6.5%), diarrhea (5.5%), hypertension (3.5%), joint pains (2.5%) (CIDP 2018-2022). Previously, malaria used to be the leading cause of morbidity and mortality. However, there is reported significant decline attributed to use of treated mosquito nets among residents. The leading cause of Mortality is HIV/AIDS related at 24.6% followed by upper respiratory tract infections at 19.2%, skin diseases at 8.9%, other respiratory diseases at 6.5%, diarrhea at 5.5%, hypertension at 3.5% and joint pains at 2.5% (Ibid.).

3.3.8 Fertility trends

The fertility rate can be referenced from the county average of 4.3 (CIDP 2018). Consequently, 47% of the women deliver with assistance from skilled birth attendants whereas access to antenatal care is rated at 96% for Lamu. These statistics show that the utilization of antenatal clinics has largely contributed to the decreasing infant mortality rate. A more equipped and accessible health care system thus is important in improving the health of residents.

3.3.9 Literacy levels

19.6% of the school-going population in Lamu West have never been to school or any learning institution. Of this proportion, females constitute 22.7% while the males constitute 16.8% (KNBS, 2019). Overall, the literacy level in the sub-county is high at 79.8% given the large number of school attendees at various educational levels. Lamu Island being the biggest contributor, its people are enabled with reading and writing skills that puts their literacy level above average.

3.3.10 Labour force

The labour force dynamics can be grouped under those working, seeking or no work and persons outside labour. The total labour force in Lamu West is 73, 893, whereby the male are 39,975 while the female are 33,919 (KNBS, 2019). Out of the total, 39,683 people are working, 2,939 are either seeking work or no work while 31, 247 persons are outside the labour force. A huge percentage of the working labour force is concentrated within the Island.

3.3.11 Poverty index

The poverty level in Lamu region stood at 19.9 in 2016. There is no updated published data information on this statistic. Assuming the rate has not significantly changed since 2016, the poverty level can be termed as high. The poverty levels and poor socio-economic development can be attributed to landlessness and precarious land tenure situation which has marginalized Lamu residents from partaking long-term investments. Other reasons may include drug use and alcoholism.

3.3.12 Income disparity

Inequality is characterized by the existence of unequal opportunities or life chances and unequal conditions such as incomes, goods and services. Inequality results into an unfair or unjust gap between individuals, groups or households relative to others within a population. The ratio of expenditure by the wealthiest to the poorest is 20 to one and above in Lamu (KNBS 2013). This implies that the disparity is manifested in terms of low access to essential services compared to others across the following nine variables i.e. poverty, mean household expenditure, education, work for pay, water, sanitation, cooking fuel, access to electricity and improved housing (ibid.).

3.3.13 Heritage & Culture

The culture and heritage of Lamu Island is rare and unique. This has attracted tourists, researchers and scholars from the world over to study the Islamic and Swahili cultural heritage, which has remained partly unchanged for over 700 years. Lamu Island is an interchange of human values with unique fusion of Arabic, Indian, Persians, European and the Swahili culture and styles manifested in architecture, religion, cuisine and language. Lamu retained the dominant Swahili culture and technology making it the best-preserved Swahili town in the Eastern Africa dating to 12th century. To date, Amu remains to offer significant role as a religious Islamic and education centre for the whole of East Africa. The island is renowned for its culturally rich annual festival known as 'Maulidi' that attracts people from far and wide and most recently, Lamu cultural festival.

3.3.14 Emerging issues

- There is expected rise in urban population within Lamu Island due to demand for essential services, housing and infrastructure, as well as job opportunities arising from the recent physical infrastructure projects such as LAPSSET.
- The increased population will put pressure on the available housing and basic infrastructure calling for a redress by way of investing in adequate housing facilities and complementary services.
- The increasing population will create demand for agricultural and industrial products, which may catalyze their development.

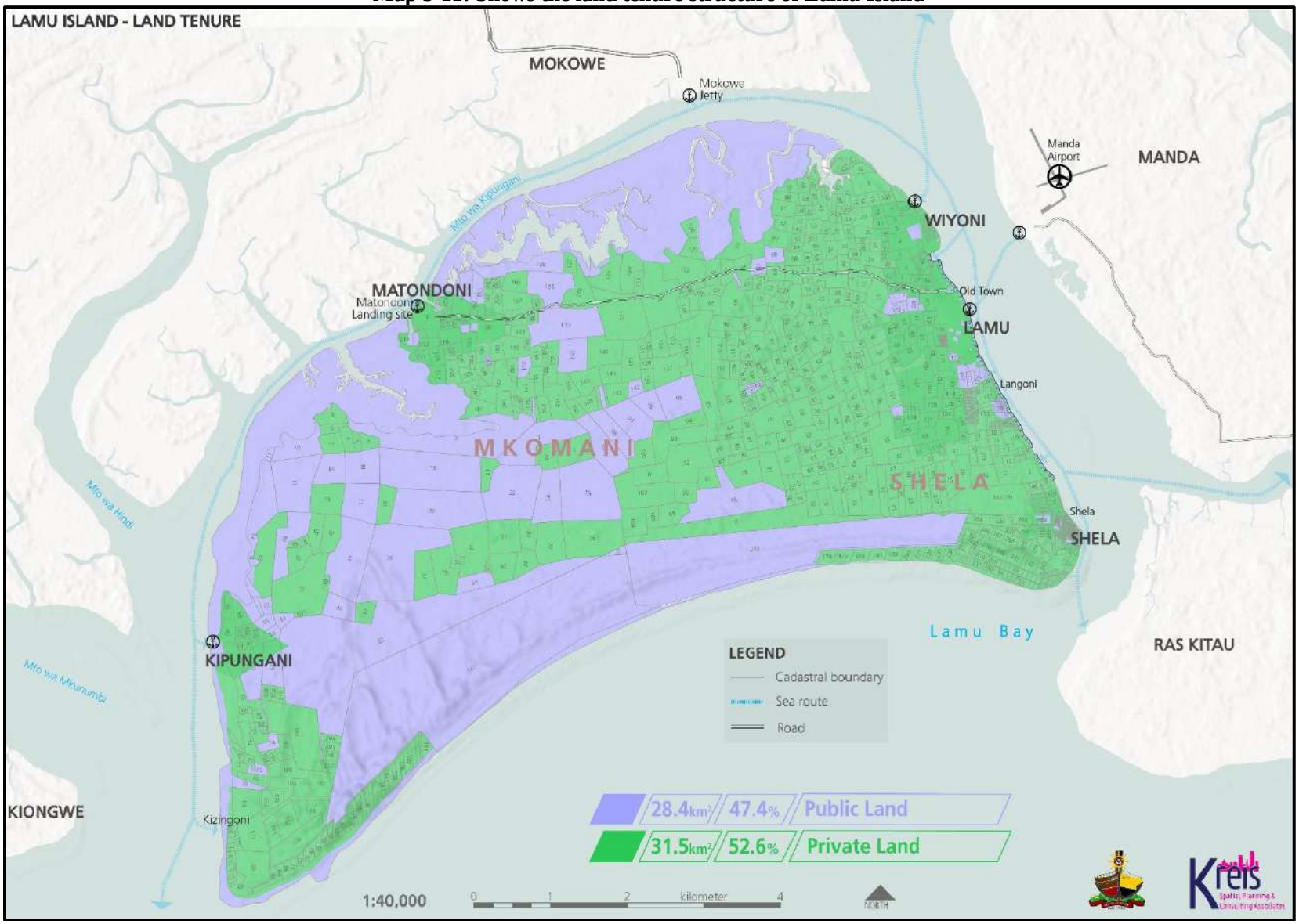
- With increasing urban population, there is expected pressure on the existing job opportunities leading to increase in non- working labour force. The burgeoning of the non-working population in turn poses risk of insecurity that will need to be addressed.
- The rich culture and heritage of the people of Lamu gives the island a unique global identity, which can be explored to enhance tourism.
- The external population may infiltrate the rich Lamu culture and tradition calling for strict cultural preservation and heritage efforts in the wake of urbanization.

3.4 LAND & HUMAN SETTLEMENTS PROFILE OF LAMU ISLAND

3.4.1 Land Tenure Structure

Land in Kenya is categorized as either public, private or community. Similarly, land is held either under leasehold or freehold tenure. These categories apply across Lamu Island as shown in map 3-11 below on land tenure structure. Public land dominates the ownership structure occupying 47.4 % followed by private land at 45.2 %. Community land occupies 7.4 % of the total land in Lamu Island. The land in Lamu Island is however wrought with cases involving grabbing of public land that has left majority of residents with limited power in protecting existing public land. The land tenure structure map is shown below:

Map 3-11: Shows the land tenure structure of Lamu Island



Source: KREIS, July 2020

Consequently, a good number of residents have settled on land without titles while idle land belonging to absentee owners dots the Island. The resultant effects have been inadequate land space for putting up public purpose facilities such as expansion of education facilities, provision of sport fields, cemeteries and solid waste management sites in the villages. The land tenure insecurities felt by the local inhabitants of Lamu Island also affects long-term investment due to the precarious nature of land holding across the Island.

3.4.2 Cadastral Layout

The structure of the cadastral as shown in map 3-12 below indicate regular plot layout fronting the ocean while the rest of the plot layout are irregularly patterned to the interior of the Island. This parcel organization poses accessibility challenges as well as difficulties in upgrading of infrastructure facilities such as water reticulation system, sewer line, storm water drainage system, and power and telecommunication lines among others. The irregular plot pattern is an outcome of uncontrolled sub-division that is not subjected to planning regulations and standards. Besides the irregular shapes, there is limited or no way leave provision for access roads and laying of infrastructure. Where these are provided, the space is narrow to accommodate future projected demand for transport and infrastructure needs. This is as shown in the maps 3-12 below.

Map 3-12: Shows the cadastral layout of Lamu Island

Source: KREIS, July 2020 – data captured from Survey of Kenya land records

3.4.3 Land Use Structure

The land use structure is the aggregate spatial pattern of land use-functional structure and change. The patterning of space and land use in Lamu Island can be argued to be culturally determined based on the day-to-day ways of life of the people. The public purpose land use is an expression of the rich cultural and social organization that have impacted its functional structure. It is for this reason that the entire old town is now a world-renowned heritage site with strict adherence to its urban form, architecture, character and function.

The dominant cultural centre has unique features such as the Lamu museum, Lamu fort, Swahili house and the German post. The donkey racing and organized cultural festivals add to its use as a cultural centre. Other public purpose land uses include the County administration offices, Chief offices, post office, religious facilities (majorly mosques) and various health institutions such as the Lamu County referral hospital and Kipungani dispensary.

Other notable land uses are discussed and summarized as follows:

- The residential land use is intertwined with the urban fabric. Precisely, the land occupied by residential use represents approximately 6% of the entire land mass. The residential function provides housing for Lamu residents and guests' shelter either on freehold or leasehold terms. Housing is represented by Swahili type of houses built using locally available materials like Mangrove poles, coral rocks, sand, and reeds which act as the dominant roofing material.
- Commercial land use is represented by the economic nodes where trading activities take place. The different settlements have their own commercial nodes. For instance, a lot of commercial activities take place along the sea shore, designated and undesignated markets, walkways and shops lined within the villages. In total, the commercial land use accounts for 1.3% of the total land area. Notably, the old town dominates as the commercial district for Lamu Island while Shella, Matondoni, Kipungani and Kizingoni serve as low intensity commercial nodes intertwined with residential use.
- Educational land use is represented by various schools consisting of ECDs, primary schools, secondary schools and tertiary institutions. The land occupied by educational

use measures approximately 0.3% of the total land mass. Map 3-31 shows the location and distribution of education facilities within the Island.

- Recreational land use occupies 3% of the total land area in Lamu Island. The functional areas are dominantly represented by the Shella and Manda beaches widely known for pristine sand dune lined beach stretching about 12kms and holiday homes. Recreational activities associated with the beaches, sea shores and the ocean within the Island include sport fishing, sun basking, boating, watching of sunset/sun rise, donkey rides and halal safaris. Also, there are pockets of play grounds within individual villages that support children and youth sports activities. However, some sports fields are faced with regular flooding challenges as in the case of Matondoni while others are in poor condition as in the case of Shella.
- Open space land use is inadequately provided for partly due to the compact nature of development in the main nodes. The land use is represented by inner courtyards within the residential quarters and spaces fronting mosques. There is a notable open square within the old town actively used by Lamu residents for social gatherings and meeting. This is the Lamu Square locally known as *Mkunguni*, located in front of the Lamu Fort as shown in plate 3-2 below. The square was originally a landing site for marine activities during the Swahili golden age but was reclaimed to be the present main meeting place. In addition, streets have for a long time served as public social spaces for the residents across the villages.

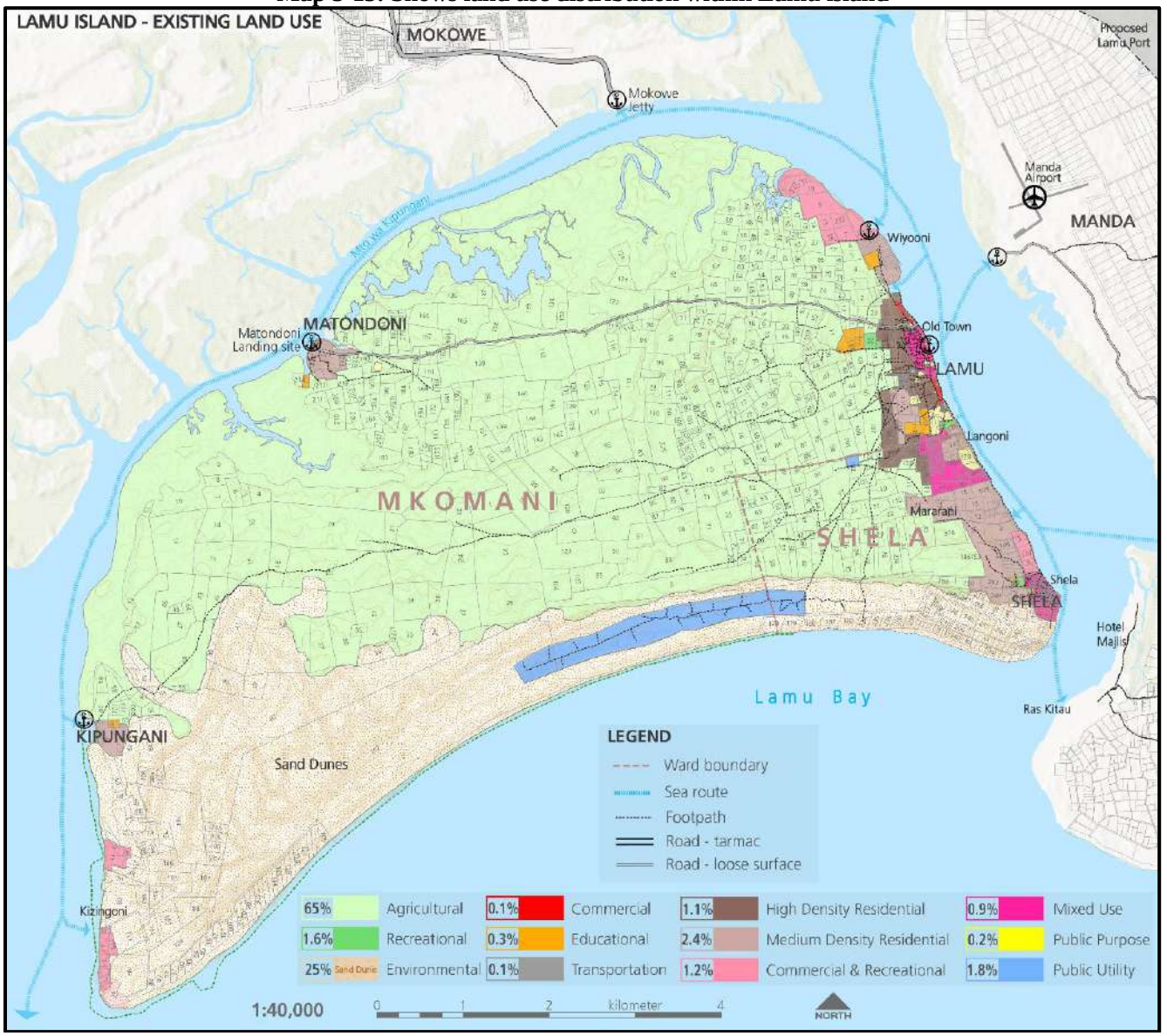
Plate 3-2: Shows the Mkunguni Square on the right and the space fronting Riyadha mosque on the right


Source: KREIS, July 2020

- Public utility land use is crucial in terms of relaying and channeling critical day to day essential services. This includes wayleaves for water, storm drainage, sewer lines, tele-communication and power lines. The land occupied by public utility related activities represents approximately 1.3% of the entire land mass.
- Transportation land use include all land occupied by different transportation systems. This accounts for approximately 0.1% of the total land in the Island. Lamu Island boasts of narrow winding streets for land transportation needs while water transport comprises of different sea routes traversed by boats, dhows and ships. A comprehensive transportation analysis is presented in section 3.5 of the report.
- Industrial land use within Lamu Island occupies a significant proportion of the land & water mass. This is land that is functioning as fuel filling station that is currently placed on land and the ocean; outdoor light industrial activities consisting of basketry, carpentry, artisanry, boat making and repair activities. It is however important to note that most of these uses are currently not properly designated on suitable sites to efficiently support local light manufacturing of various products. Matondoni and Kipungani, which are locally renowned for weaving and boat making would highly benefit from a designated site to promote the local talents in this sector as well as add value to locally made products and farm produce.
- Agricultural land use is presently demonstrated by minimal agriculture activities at subsistence level. This includes cattle rearing and crop farming in the hinterland surrounding each settlement. Agricultural land occupies about 65% of the total land mass making it the dominating land use within the island.

This is summarized in the map 3-13 below.

Map 3-13: Shows land use distribution within Lamu island



Source: KREIS, July 2020

3.4.4 Human settlements characteristics

As earlier mentioned, Lamu Island is comprised of historic settlements that include Lamu Old Town, Matondoni, Kipungani, Shella, Langoni, Kashmiri, Kandahari, Idabo and Wiyoni. The villages are representatives of small clusters of people with similar values and beliefs creating homogeneous and interactive clusters that is typical of the Swahili society. The villages have, however grown into urban areas with increased trading activities as well as agricultural produce exchange with regional and international links. This has brought about in-migration, intermarriage and merging of the local culture with those from other regions creating a heterogeneous society with the villages serving as urban nodes, spatially organized in compact forms. Lamu island has a total of 7,079 households of which 7,051 are conventional households while 28 are group quarters shown in table 3-5 below.

Table 3-5: Classification of households in Lamu Island

No.	Sub-location Name	No. of h/holds	Conventional	Group quarters
1.	Matondoni	576	576	-
2.	Shella	1,095	1,073	22
3.	Langoni	3,343	3,343	-
4.	Mkomani	2,065	2,059	6
Total		7,079	7,051	28

Source: KNBS 2019

The settlement pattern in Lamu Island is influenced by its social and environmental dynamics. Economic factors such as trade, fishing and agriculture as well as availability of essential infrastructure and services also influence the settlement pattern. Government resettlement programmes, major infrastructure projects and security of the larger Lamu region have equally shaped the settlement pattern.

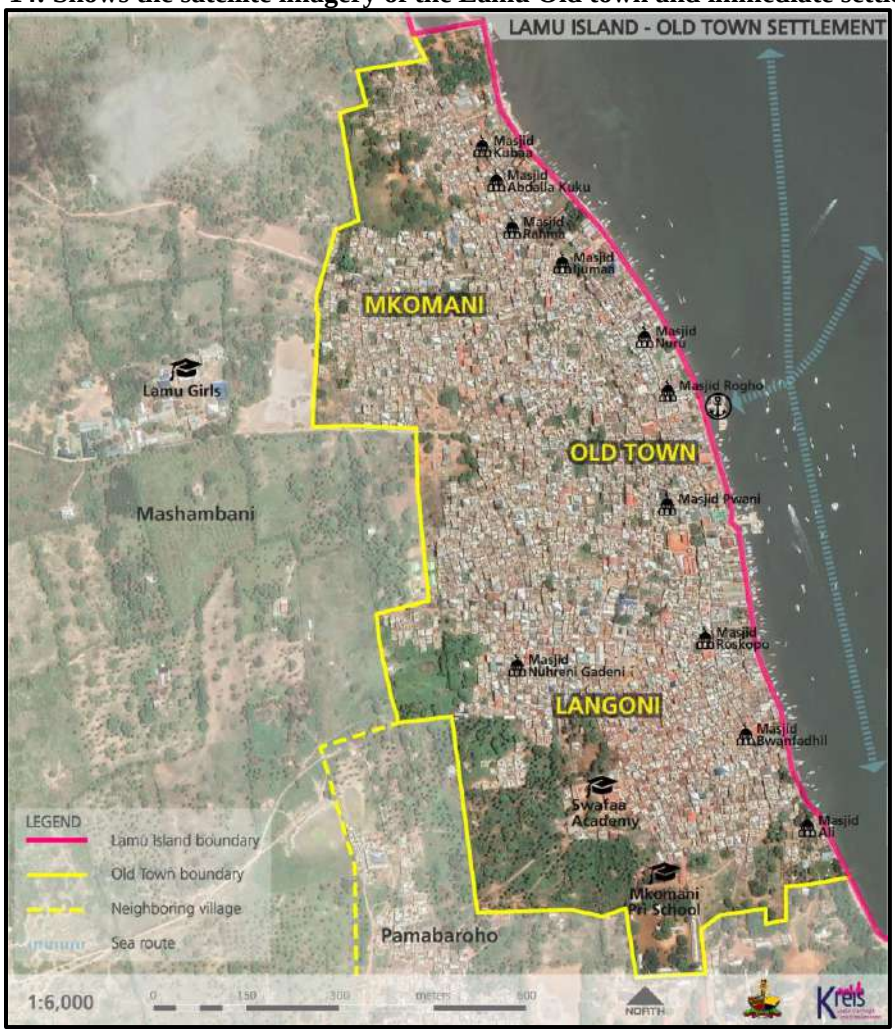
The current formations and land use set up of each village is discussed below:

i. Lamu Old Town

Concentration of settlements in the old town developed linearly with a north-south orientation according to the wind patterns. Consequently, main streets in Lamu run parallel to the sea front, acting as open channels for communication, movement and commercial

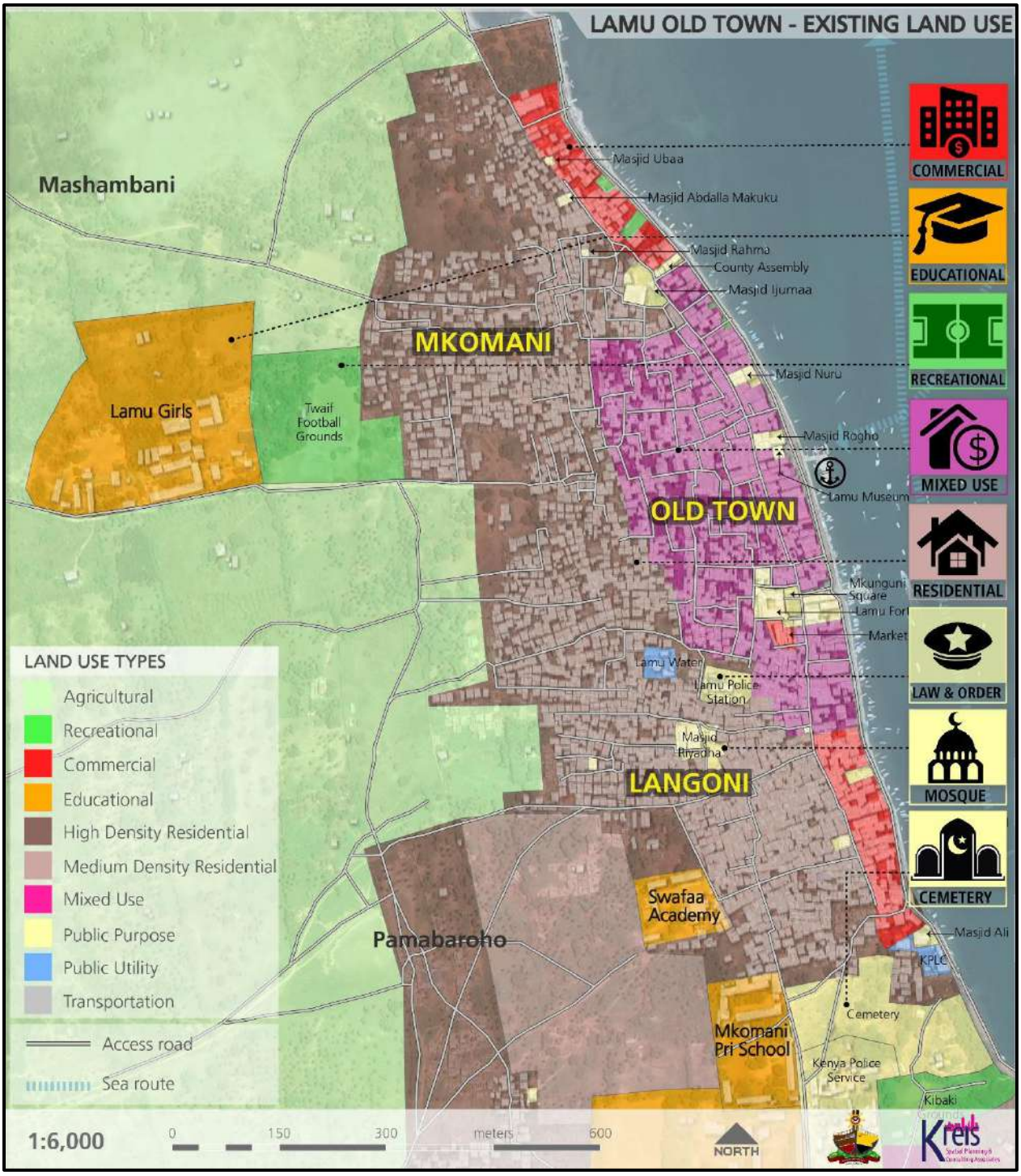
activities. The townscape is characterized by narrow streets that only allows pedestrianization and use of donkeys as the main modes of movement. The streets terminate into house entrances or into open spaces. Residential quarters line the streets although are less ordered to the interior of the town. Notably, there is mushrooming of informal settlements due to urban sprawl emanating from the old town to the adjacent areas. Other challenges facing the old town include: management of donkey poo; rise of the use of motorcycles at the sea front; congestion due to increase in population; poor liquid and solid waste management practices; risky jetties that are not universally accessible; lack of landing sites for various types of goods e.g household goods, construction material, fish, shop items, as well as passengers; and lack of recreational grounds. The maps below illustrate the settlement layout of the old town.

Map 3-14: Shows the satellite imagery of the Lamu Old town and immediate settlements



Source: KREIS, July 2020

Map 3-15: Shows the land use distribution of the Lamu old town and immediate surrounding settlements



Source: KREIS, July 2020

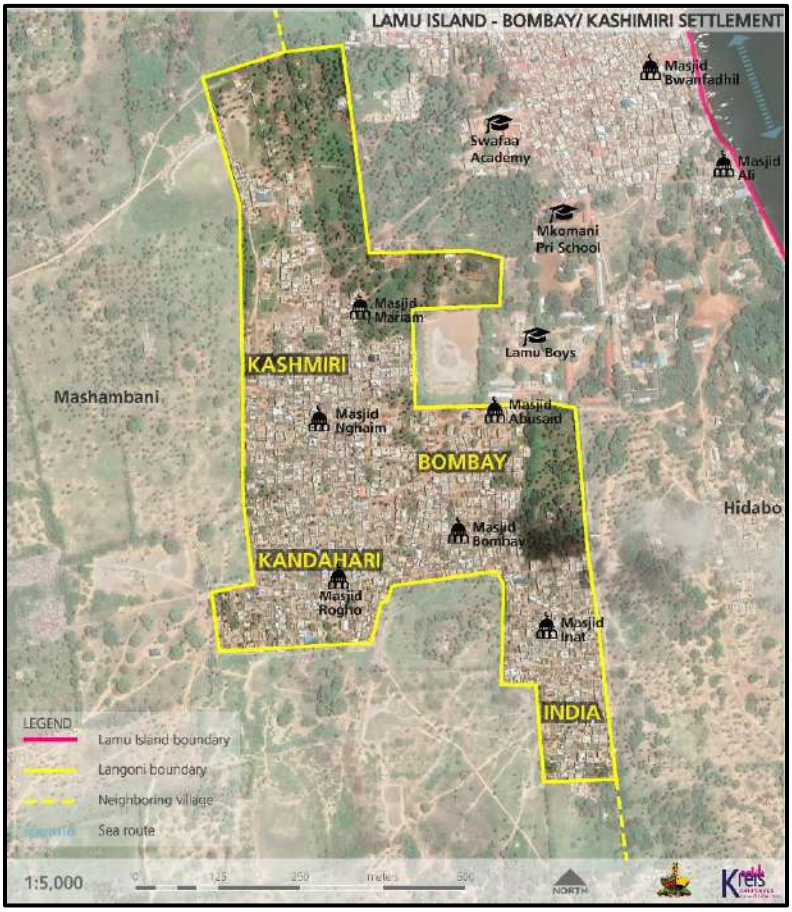
Langoni is a trading centre on the Southern border of Lamu old town. The settlement has various social and economic amenities such as schools, mosques, administrative offices

including the county fisheries offices and administration police. The county referral hospital is located within Langoni serving the entire county. The human settlement is concentrated on the North East along the ocean as shown in the maps above. The settlement is as a result of urban sprawl of the old town since its growth has not been guided by any spatial plan. As a result, the settlement is nucleated with irregular housing development that lacks clear access routes, faces drainage and solid waste management challenges.

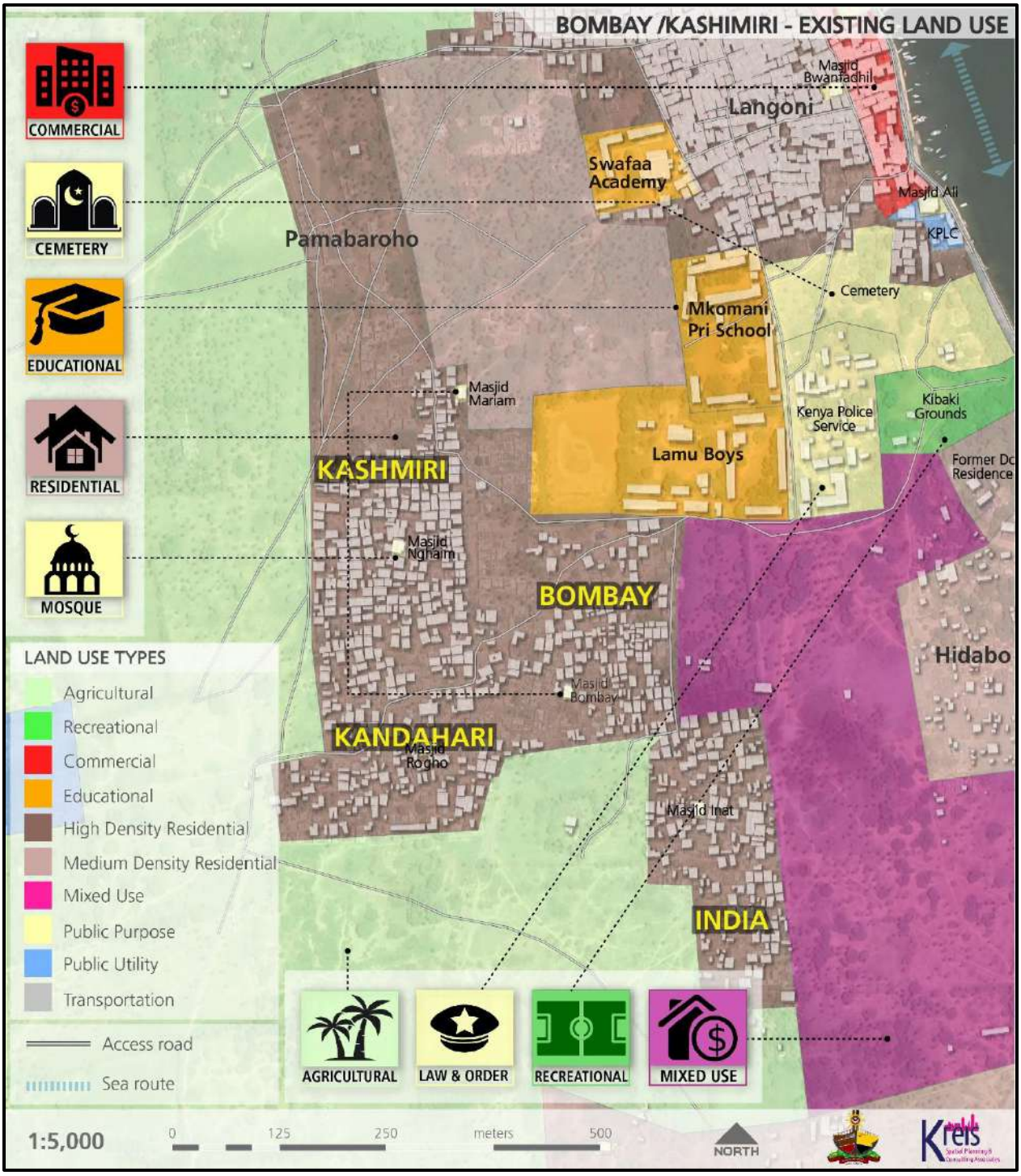
ii. Kashmiri; Kandahari; Pambaroho; and Bombay

These are informal settlements that are as a result of sprawl of urban development from the old town. The settlement is irregularly shaped with poor access routes to help with circulation and orientation. The settlement is nucleated with Swahili type residential houses. There are little trading activities as most of the commercial goods and services are accessed in the old town. The settlement is faced with drainage and solid waste management challenges that contributes to unhealthy living environment.

Map 3-16: Shows the satellite imagery of the settlements



Map 3-17: Shows the land use distribution of the settlements



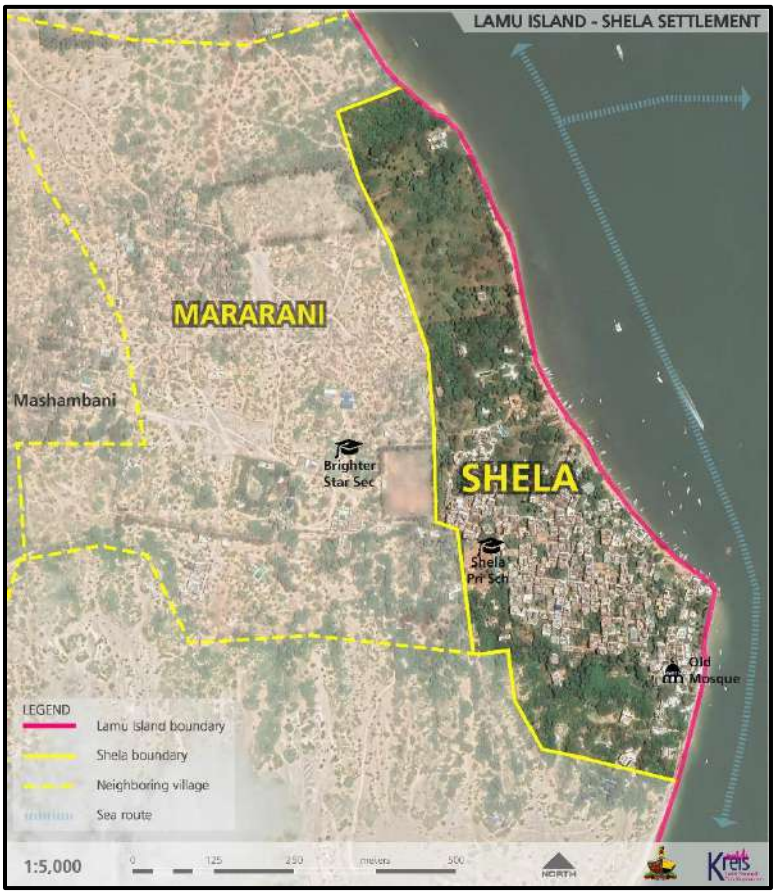
iii. Shella Urban settlement

Shella village is located on the south east of Lamu Island. The settlement originated as a religious node with five mosques constructed between 1829 and 1857. Previously known

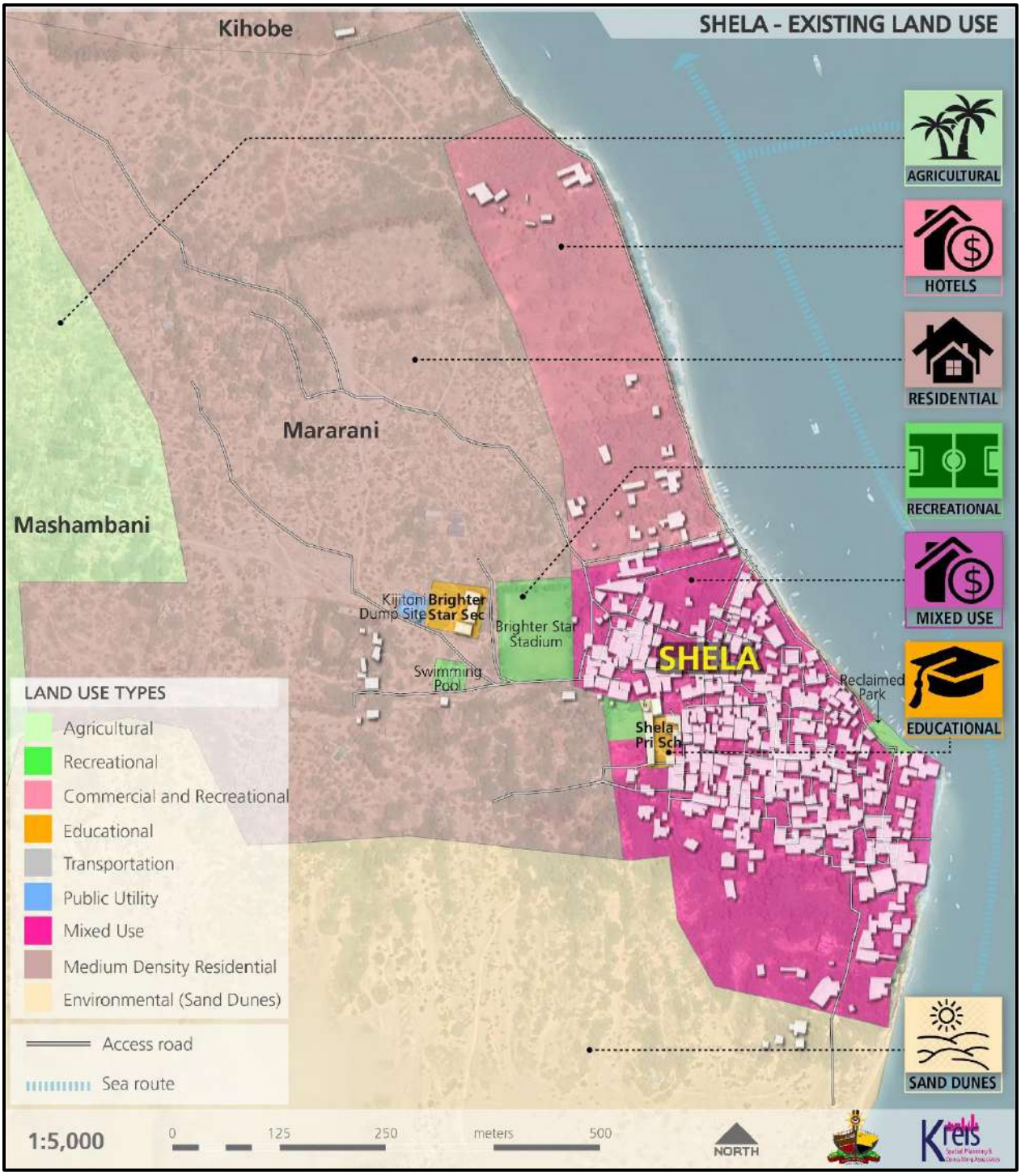
as a fishing village, Shela is now a centre for tourists' hotels and accommodation due to its pristine beach and sand dunes stretching over 12 KMs. The hotels and holiday homes maintain the Swahili architectural style although offer contemporary living spaces. Concentration of human settlement is on the South spreading along the beach towards the North.

The internal street layout lacks hierarchy as the buildings are irregularly placed. Although the Shella has a localized and customized effort in managing the collection of solid waste from its household as compared to other villages, there are spatial challenges facing the settlement. This includes: poor linkage with other villages due to slow construction of roads; land disputes particularly grabbing of public land by few powerful individuals; dilapidated play grounds; lack of essential facilities to support local livelihoods such as a fishing landing site and access to market; lack of a designated waste management site and lack of enforcement of development regulations in regulating the built environment.

Map 3-18: Shows the satellite imagery of Shella settlement



Map 3-19: Shows the land use distribution of Shella settlement



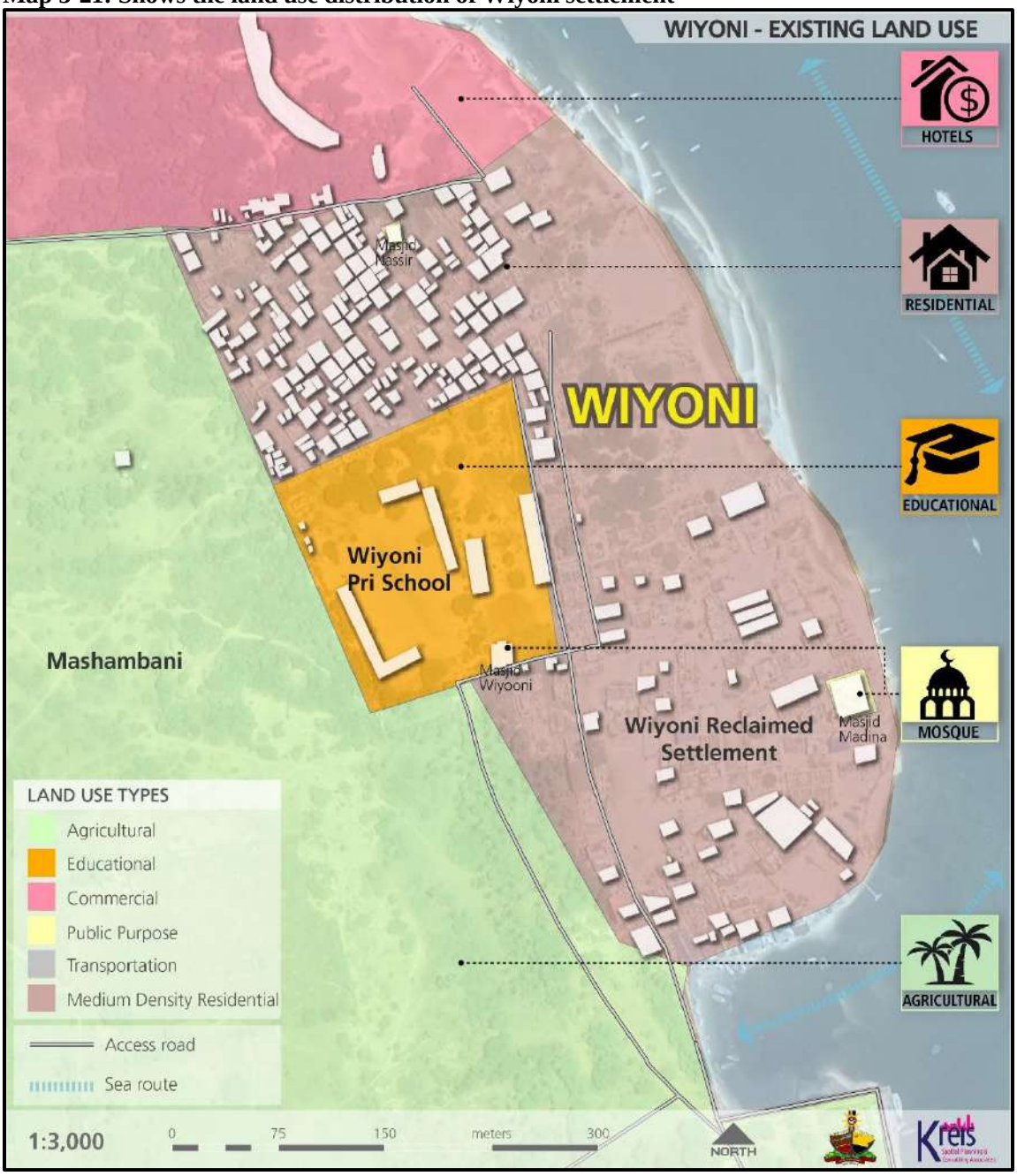
Source: KREIS, July 2020

iv. Wiyoni Settlement

Wiyoni is an irregular settlement located North of Lamu old town and borders the Indian Ocean to the East. The settlement pattern is nucleated with concentration of residential housing structures served with a few public amenities such as Wiyoni Primary school, Wiyoni Secondary school, mosque and hotel facilities. The settlement lacks proper circulation street networks although is linked to the adjacent villages through Kenyatta Road and water transport.

Map 3-20: Shows the satellite imagery of Wiyoni settlement

Map 3-21: Shows the land use distribution of Wiyoni settlement



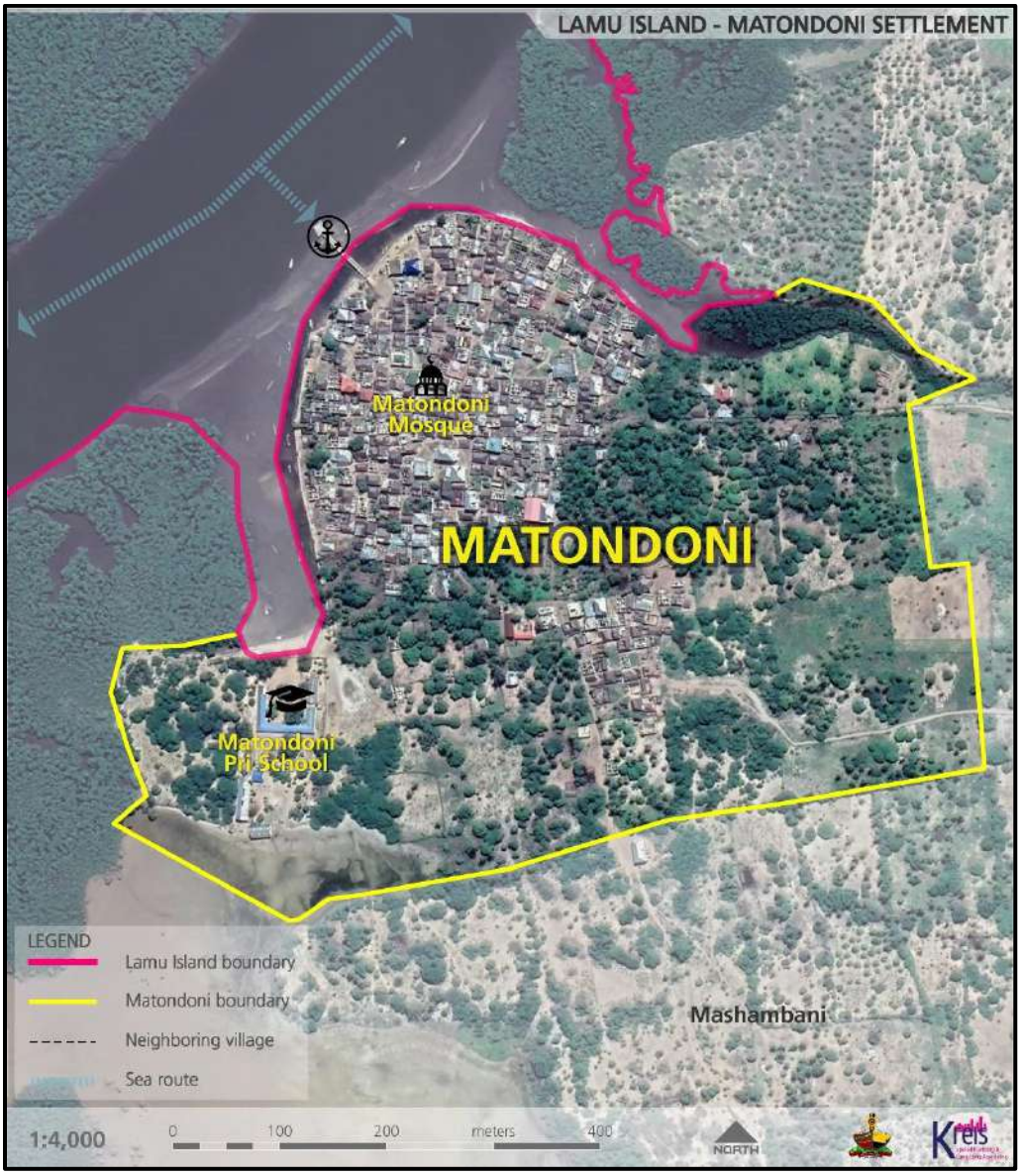
Source: KREIS, July 2020

v. Matondoni Village

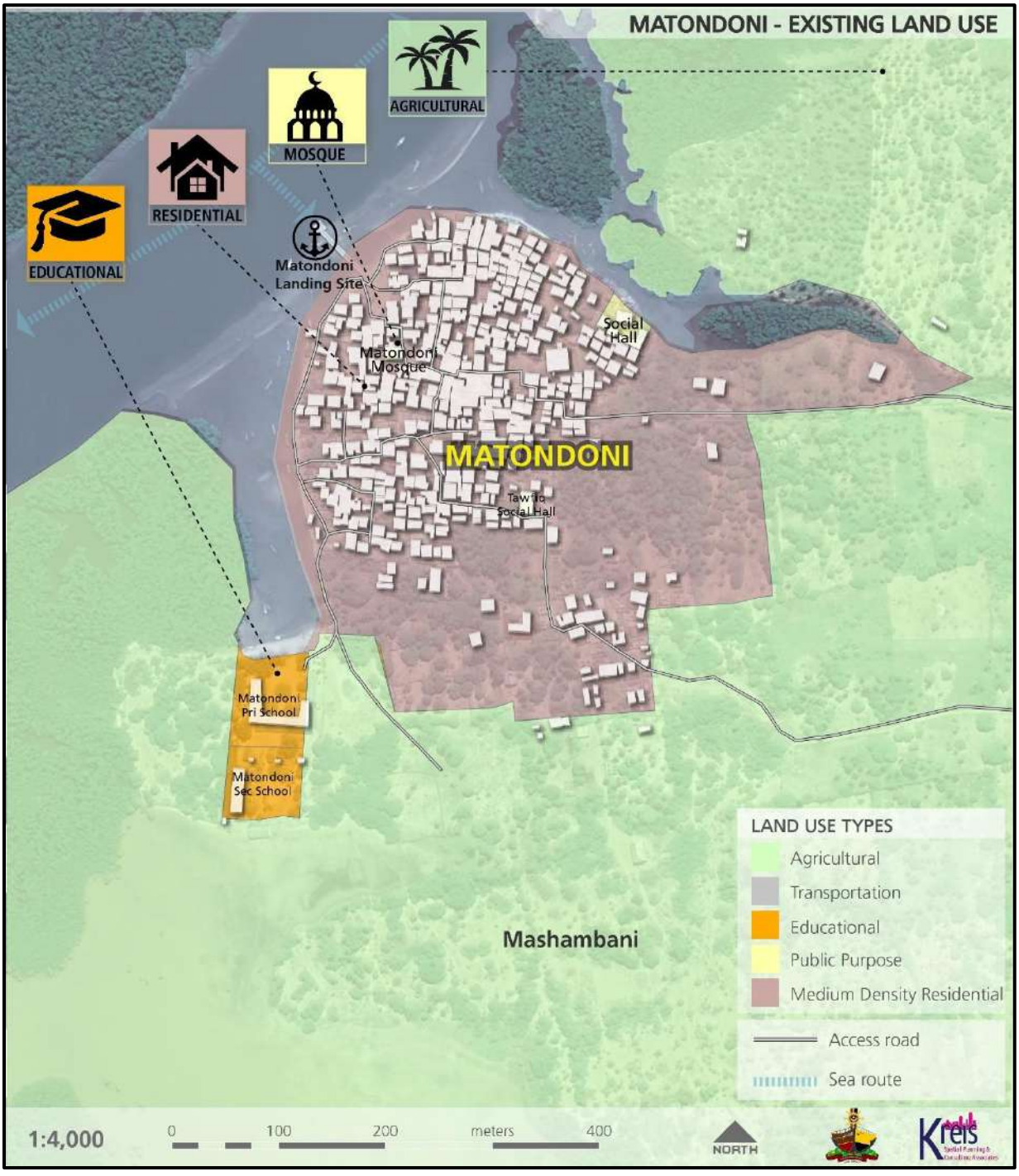
Matondoni is located on the northwest of Lamu old town. It is locally known for dhow making as well as a fishing village. The human settlement is concentrated along the Loop forming a commercial cum residential node while leaving the rest of its hinterland unoccupied. However, majority of the residents in Matondoni do not have land titles, a

challenge which poses tenure insecurities that limits personal development. The settlement equally lacks a spatial plan that guides its development. This is the root cause for the current problems facing the settlement including but not limited to: haphazard buildings, poor accessibility and circulation, limited or lack of public purpose and essential services such as a farmer's market area, landing site for fishermen, a craft centre, play grounds, cemetery, designated waste management site and poor drainage. Linkage to adjacent villages is possible through donkey trips, use of motorcycles and walking. However, the road systems linking to the village need to be improved.

Map 3-22: Shows the satellite imagery of Matondoni settlement



Map 3-23: Shows the land use distribution of Matondoni Settlement



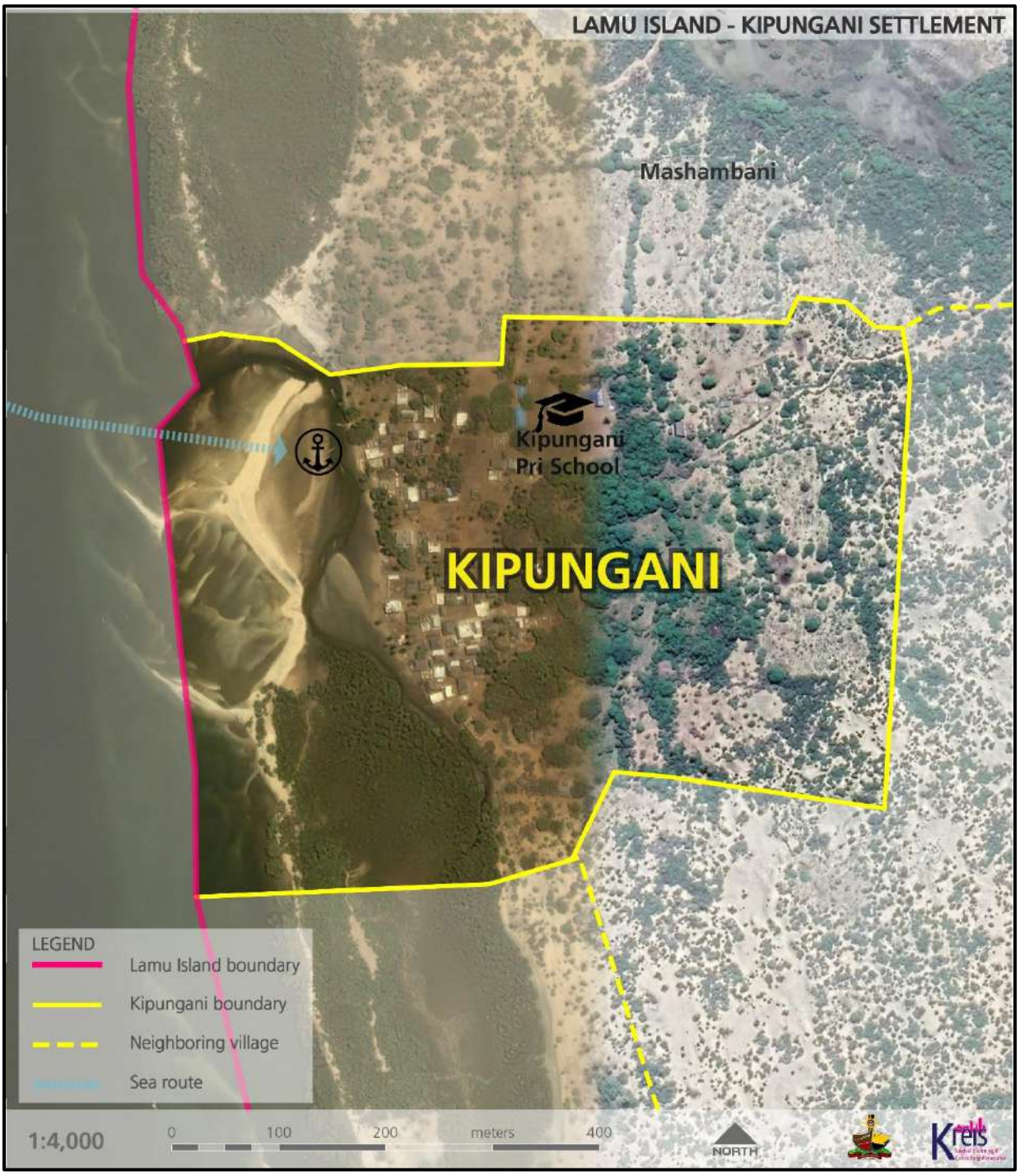
Source: KREIS, July 2020

vi. Kipungani Village

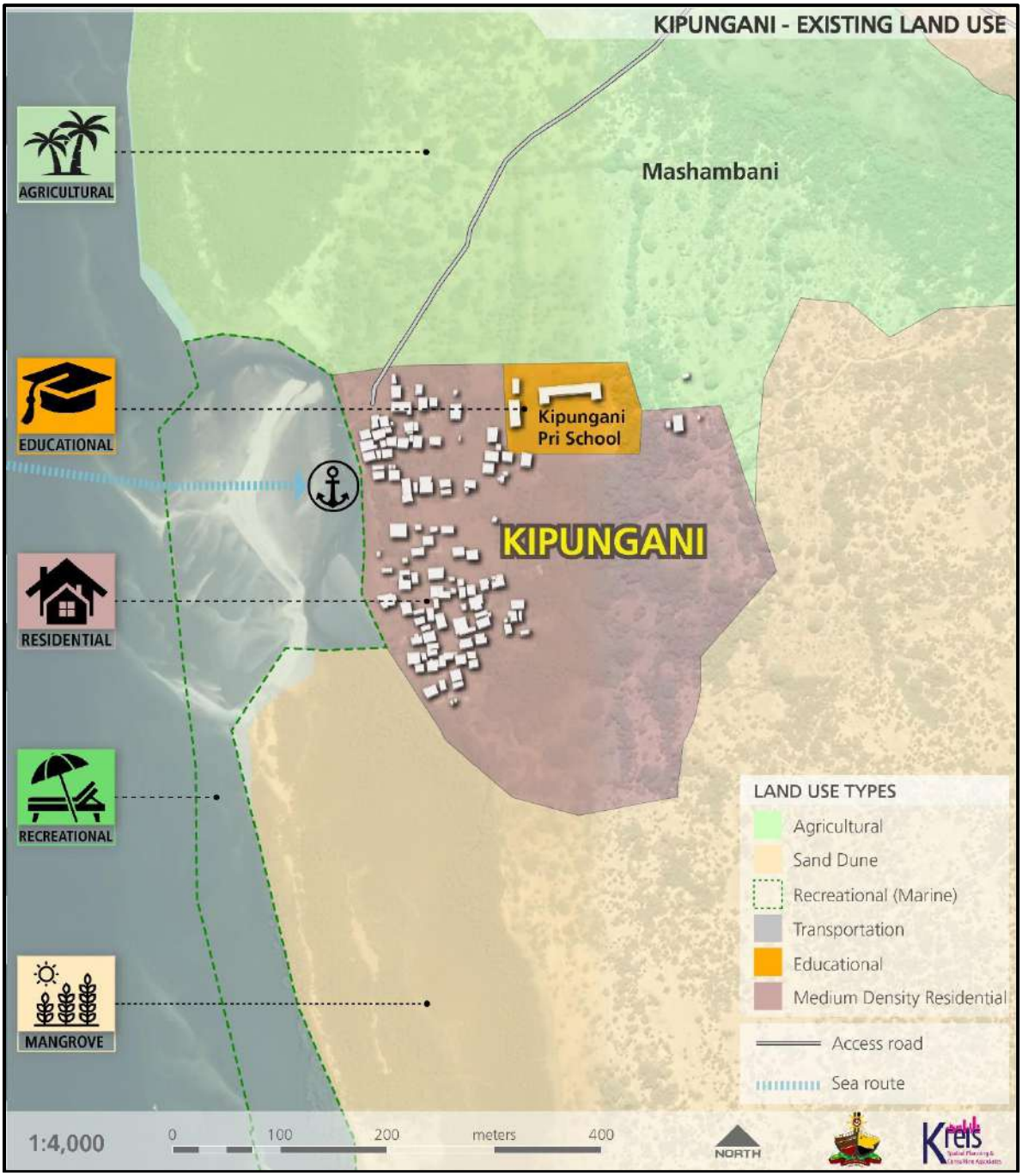
Kipungani is located on the south west of Lamu Island along the beach. It is a tourist centre suitable for kite surfing, dolphin and sport fishing. The settlement is sparsely inhabited with

residents engaging in sewing straw mats, baskets, hats and strainer, used for squeezing milk from coconuts. Similarly, Kipungani is not a planned settlement. A factor which has contributed to it having haphazard building, poor circulation routes, lack of essential facilities and services, poor waste management and low economic returns.

Map 3-24: Shows the satellite imagery of Kipungani settlement



Map 3-25: Shows the land use distribution of Kipungani settlement



Source: KREIS, July 2020

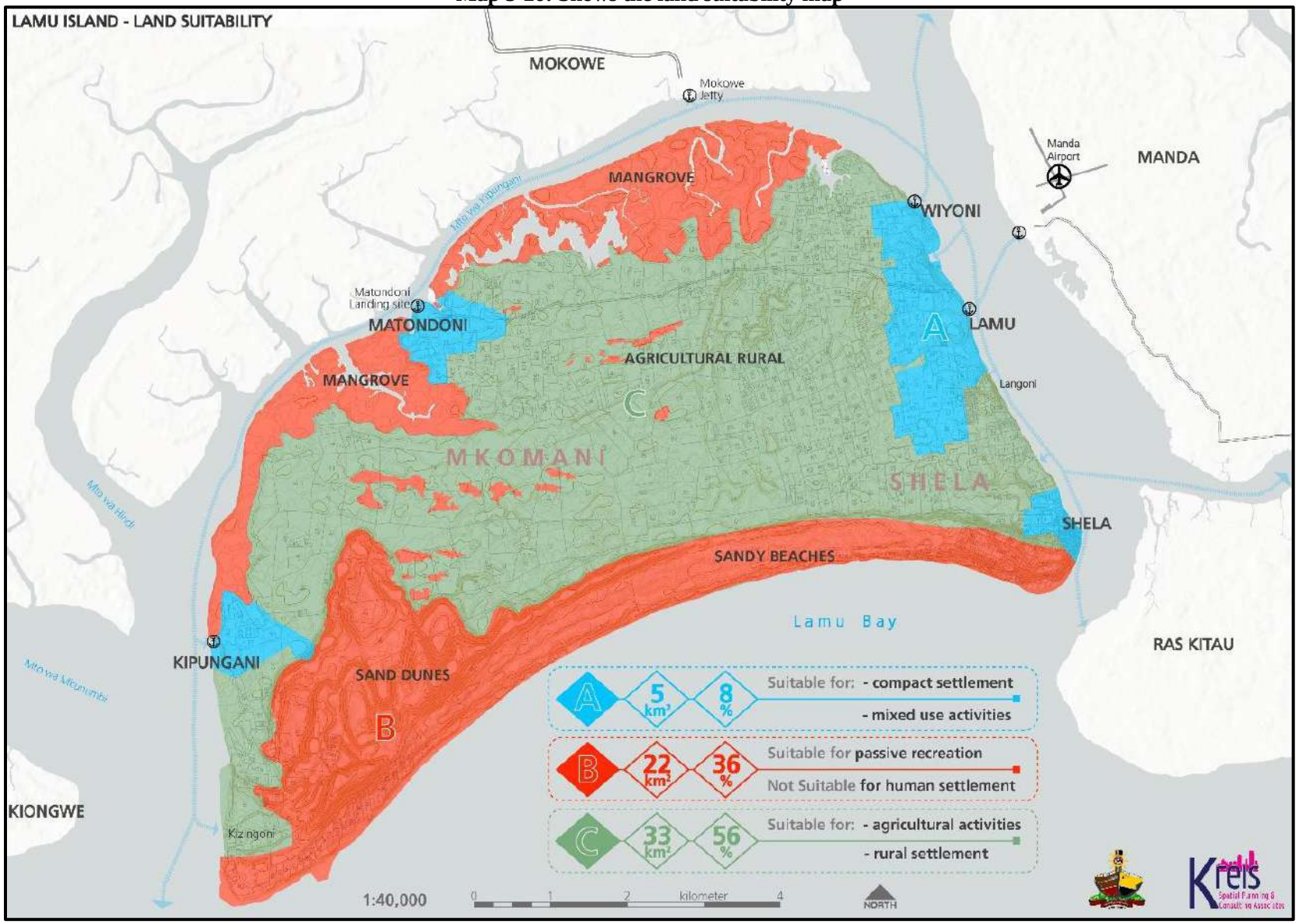
3.4.5 Land suitability analysis

The land in Lamu Island has diverse potential in economic, cultural, social and environmental utility. The suitability of Lamu Island as a port city cannot be overly emphasized. Additionally, the presence of the deep waters on the other hand makes Lamu

Island suitable for deep sea fishing and marine zones, which is widely known for high quantities and many varieties of fish species. Furthermore, the distinct architecture and structure of the old town, which prides itself as the most ancient Swahili settlement in the east African region having preserved its unique character is suitable as a cultural conservation and heritage centre. Notwithstanding its rich cultural background, Lamu Island is significant as a domestic and international tourist destination.

The compact villages of Shella, Matondoni, Kipungani and the old town are suitable as commercial districts where trade and commerce is intensified at all levels. These centres provide higher order goods and services to the hinterland population as well as providing the external regional linkages that sustains the island. Majorly, a good percentage of the island remains suitable for varied development capabilities including agricultural practices and commercial recreation activities as perceived in the land suitability below:

Map 3-26: Shows the land suitability map



Source: KREIS, July 2020

3.4.6 Emerging issues

- The settlements lack hierarchical order in their present state. This presents an opportunity for aligning different settlements in order of specialization of goods and services that each offers in a complementary manner.
- The settlements are inadequately linked spatially and socio-economically. A proper road system and communication networks need to be developed to achieve internal and external linkages with the Island.
- The compact nature of the four settlements that is Shella, Kipungani, Matondoni and the old town present growth centres, which can play as main commercial nodes with specialized services and facilities to serve the environs.
- The nucleated settlement pattern in the commercial nodes presents economical spatial layout for provision of capital projects for purposes of infrastructure improvement to reach a wider population concentration.
- Economic activities of tourism, fishing and trading are leading in attracting human settlement within Lamu Island. However, there lacks a spatial order and environmental management plan to sustainably address the urbanization of the island.
- There is limited available land for development of public facilities since much of the land within the concentrated human settlement villages is in developed state and under private ownership.
- With a relative exception of Lamu old town, the settlements in the other villages are not adequately served with basic infrastructure and services as well as housing.

3.1 ECONOMIC BASE OF LAMU ISLAND

3.4.7 Tourism & Heritage Industry

Lamu Island is a famous world tourism destination center with notable tourist attraction features comprising of the gazetted world heritage site- Lamu Old Town. Shella, Matondoni and Kipungani are major components of the Lamu Archipelago that equally attract local and foreign tourists. The historical aspects of the old town make its first tourist attraction feature. The old town boasts of narrow streets that allows the use of donkey

transport or walking. The town is characterized by the simplicity of structural forms enriched by such features as inner courtyards, verandas, and elaborately carved wooden doors. It is also uniquely Swahili in the way the town is spatially organized, and is littered with narrow winding streets. With this uniqueness, cultural and religious diversity, water sports and beaches give the Island a pristine ecosystem that is home to local and international tourists.

Tourism attractions and activities have continued to evolve since the inception of the old town and have the possibility to expand with the right funding, packaging and marketing. Conservation measures have been put into place to protect the heritage of the Island and its historical artefacts preserved in the Lamu museum. The island boasts of white sandy beaches such as the Manda and Shella Beach which is some 30-minute walk north of the old town. The fascinating rolling dunes and endless beaches with the tiny villages depicting the particular Lamu culture nestling among coconut and mango trees and dhows plying the ocean offers a panoramic view.

Additionally, sport fishing is a major tourism activity that is carried out as part of deep-sea fishing in the Island. To cater for surging tourists demand, the Island has witnessed growth of the hotel and beach industry and its associated services. This has become a major source of employment for hotel and beach staff, conservationists, tour guides and business people. Additionally, it's a source of foreign exchange and earns the Island considerable incomes directly and indirectly. However, the foreign tourism industry has recently been constrained by various acts of terrorism in the larger Lamu region coupled by poor accessibility by road. This is in addition to inadequate packaging and marketing hence, low tourist activities save for domestic tourists who have currently maintained the status of the island as a tourist destination.

3.4.8 Fishing industry

Fishing is a major economic activity in Lamu accounting for 75 percent of the county's local economy. Fishing earns the county an estimated 250 million Kenya Shillings. Fishing is mainly for food and a source of income generation for the residents. The industry is fanned by the warm waters of Indian Ocean that foster the fish varieties in large quantities.

The most common fish types within the municipality include crabs, saline fish, lobsters, shrimp, prawns, calamari, octopus and various types of sting rays. Other fish types caught within the Lamu marine ecosystem include mullet, groupers, rabbit fish, snapper, parrot fish, tuna, rock cod and cavalla jacks. Crawn fishing, crabbing and diving for sea cucumbers, lobsters, and other marine animals is a major economic activity within the island.

The fishing industry is a source of employment for the residents. Residents are employed in various activities related to the fishing industry. This includes making of fishing tools, dhows, speed boat manufacturing, fishing nets and hand fishing lines, preservation of fish, and in sport fishing. Reef and river-creek fishing and deep-sea fishing are the main fishing activities. Lamu's deep sea fishing is renown worldwide for its fish variety and high quantity of sport fish caught including Sailfish, Marlin (striped, black and blue), Dorado, Tuna, Wahoo, Kingfish, Barracuda, and Giant Trevally. Fishing of sharks is also common in the Island mainly for food and oil, which is used for wood preservation especially for the dhows. Fishing is best recommended in the months of October and November.

Plate 3-3: Shows a fisherman explaining some of the challenges they face in Matondoni; to the right, boat making site in Shella

Source: KREIS, July 2020

The fishing industry in Lamu is facing challenges arising from multiple sources including:

- Lack of fishing landing sites and associated facilities. This makes it futile to take stock of fish production and gather statistics that are useful for improving the fishing industry.
- Lack of a designated fish market as well as poor linkage with market access for fish products.
- Increased competition originating from foreigners with modern fishing equipment from as far as China, Tanzania, and Somalia. The foreigners have dominated deep sea fishing yet do not use sustainable fishing methods.
- Influx of foreign fish and other food sources in the Kenyan market is a detriment to fishermen from across the country where they are forced to sell at lower prices or risk loss of their livelihoods.
- Decreasing fish stocks is another major challenge to the sector. The LAPSSET corridor will open up the Island to international market, develop new fish landing sites, cooling facilities, acquisition of new deep-sea fishing boats and equipment and training opportunities for fishermen. On the flipside, the port project will impact negatively on fishing grounds by probably causing pollution from refuse disposal from ships, dredging works, coral reef and mangrove destruction to pave way for the project. These construction activities will hugely affect the sustainability of fishing since fish locations, breeding sites and habitations are likely to be affected.
- Other challenges include illegal deep-sea fishing that is costly to the county and country's economy, increased insecurity in recent times within the Lamu Archipelago hampering fishing activities, limited government support, overreliance on ordinary fishing equipment (absence of modern fishing gear/equipment) and overexploitation by middlemen owing to lack of a structured fish market.

3.4.9 Trade & Commerce

Commerce in the Island is facilitated by presence of financial institutions and trade organizations comprising of banking and insurance company. The Old town is home to at least five of Kenya's main stream banks including Kenya Commercial Bank (KCB), Equity Bank, ABC Bank, Gulf African Bank and Diamond Trust Bank (DTB), at least five micro-

finance institutions and a savings and credit cooperative society (Sacco) being Lamu Teachers Sacco.

Financial accessibility, inclusivity and credit availability provide a great opportunity for trade to thrive. Bank Automated Teller Machines (ATMs) and bank agents have made it possible for easy access of banking services in the other sections of the Island without bank branches. International trade is facilitated by the presence of currency exchange bureaus including and not limited to Bajuberi, Aalyshah Designs in Shella village, Gulf African Bank, KCB, Peponi Hotel and Equity Bank. The presence of these institutions within the island has enabled movement of goods and services both as a medium of trading exchange and also as enablers of trading power.

The Island is served by a main Municipal market in the old town and several other small markets within the villages. The municipal market was undergoing rehabilitation at the time of conducting field survey. Despite the Municipal efforts, the lack of designation of a market area in Matondoni and Kipungani has left residents with no place to trade their goods. Particularly, residents in these settlements decried the lack and need for a specialised farmers market with designated areas for specific farm and sea produce. A number of trading in form of kiosks and hawking take place along the sea shore and on available spaces along streets. The linkage to existing main market is not affordable in terms of frequent trips across the sea. Thus, inaccessibility to market hinders locals from participating actively in trading activities. As a result, majority operate small-scale trading activities within their premises or by displaying products by the walkways.

Plate 3-4: A commercial street (Kenyatta street) fronting the municipal market; and the sea front street


Source: KREIS, July 2020

3.4.10 Transport and related services

The island is well connected from the Lamu County mainland by both road, air, and water. These transportation options have enabled exchange of goods and services over a long time. However, these options are considered expensive making movement of people, goods, and services a challenge to reckon with. Lamu Old town is famous for its narrow winding streets that do not allow for motorised transport system. Transport is mainly by donkeys, motor bicycles, hand and animal pulled carts. These are major employment opportunities for the locals as they are core trade facilitation tools.

Further, speed boats are major transport components in Lamu Old Town and have their origin in local assembly becoming a major employment sector for the locals as manufacturers and sailors. Dhows making, boat making and repairs form a major source of employment as their services are regularly needed. While the transport services promise a sustainable livelihood base, the sector suffers from lack of regulations and policies to guide its operation. For instance, the use of donkey for transporting construction materials and goods along the sea front create a menace especially on the poo droppings which dirties the walkways. The rise use of motorcycles has come with its danger of over speeding, hooting and space contestation. The boat repairers on the other hand are not provided with designated sites to carry out their function. There will be need to address these issues in the proposed plan.

Plate 3-5: Docked boats waiting for passengers to various destinations; and on the right, unattended stray donkeys that cause space contestation along the seafront


Source: KREIS, July 2020

3.4.11 Lamu port and the LAPSSET as catalysts.

The Island is set to benefit from the anticipated Lamu Port under LAPSSET Authority in various industrial scales. Once the Port is operational, it will consist of general cargo Berths, Container Cargo berths, Bulk Cargo Berths, Port Management buildings, container stacking yard, Location of Fishing & Small Boats Repairs Facilities, the Port Work Vessels Repair Facilities and an Approach Channel through Manda Bay.

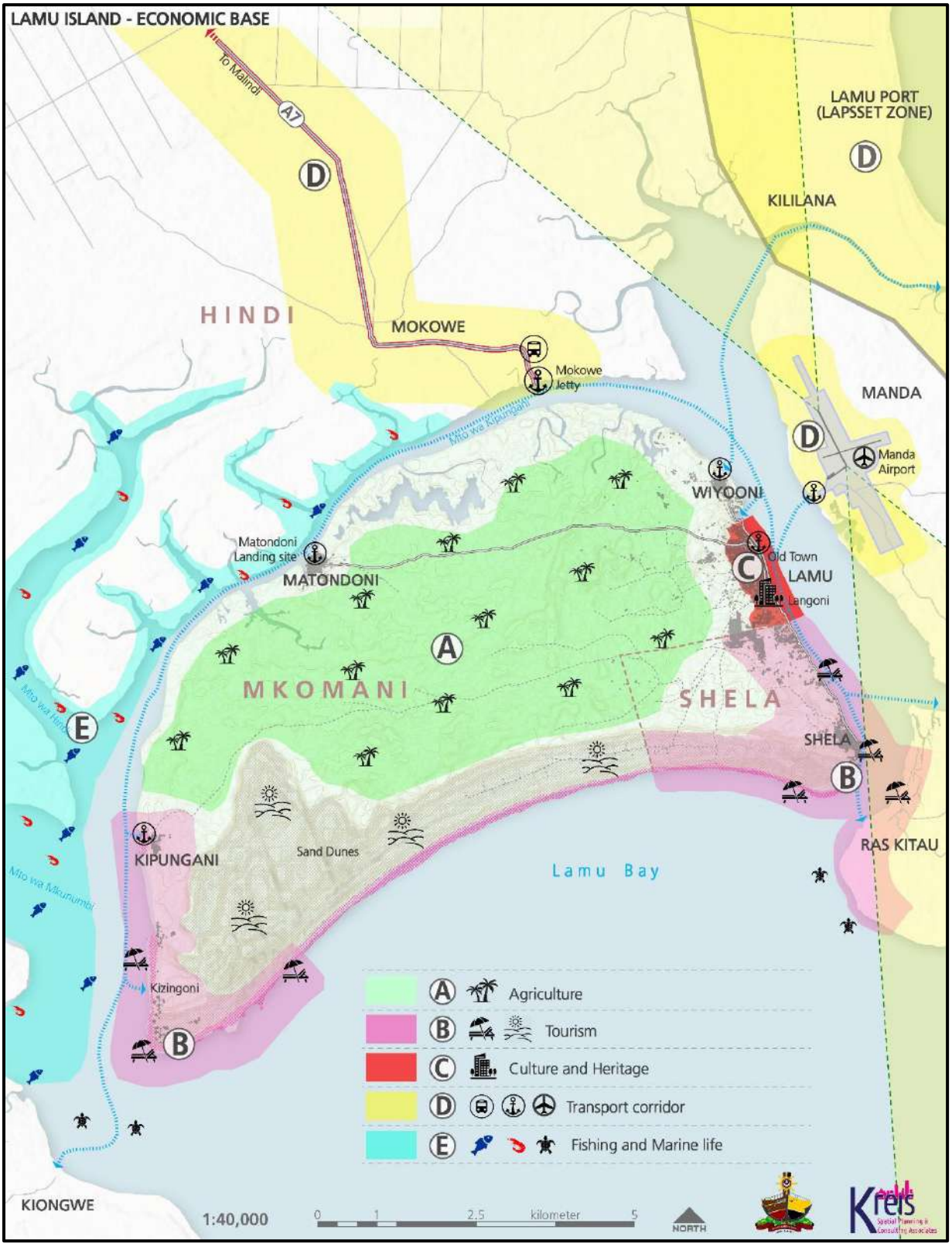
These various port sections will require human labour and specialized professional skills to function fully forming a major node of employment. Related industrial use under the special economic zone includes an oil refining and petrochemical industry, a food processing industry and fruit processing factories, a grain terminal, a flour mill, a live animal quarantine centre, a wood processing industry, a textile industry, ship repair and building, material processing for corridor construction, and a Service base for offshore oil and gas production. Most of these industrial related activities are set to gain from available and affordable local labour, both skilled and unskilled. These will contribute to increased incomes of residents and hence spur economic growth of the Island.

3.4.12 Agriculture

The practice of mixed farming is common among the residents of the Island. Horticulture mainly for mango trees, coconut and cassava farming are the main farm-based activities. Livestock production includes the rearing of poultry, sheep, goats and cows. Crop and livestock production are practised at subsistence level and commercial scale. Surplus produce is sold in the market to earn little income for other household needs. Lamu Market provides residents the opportunity to sell farm produce including vegetables, cereals, and tubers.

In a nutshell, the map below can be used to show the linkage between various economic zones within the island:

Map 3-27: Shows the sources of economic livelihoods within the island and related linkage



Source: KREIS, July 2020

3.4.13 Emerging issues

I. There are untapped investment opportunities in the tourism sector including proper marketing, packaging, infrastructure, accommodation etc.
II. There exist unexploited opportunities in the industrial sector such as mango fruit processing and agricultural value addition.
III. There lacks designated farmers market and fish market within the villages to allow trading of various farm produce e.g grains, groceries, meat.
IV. Poor and expensive transport cost affect cost of goods and business operation. This makes trading a difficult task and unattractive to potential micro-entrepreneurs.
V. Insecurity is a major detriment for the economic growth by impacting on tourism sector, fishing sector, transport and commerce.
VI. There is potential for agricultural expansion particularly modern irrigation, farming systems, aqua culture and nut production.
VII. The fishing industry has untapped potential, protection and investment in fish value addition.

3.5 INFRASTRUCTURAL PROFILE OF LAMU ISLAND

Infrastructure is a key driver for development in any given area. Availability of adequate infrastructural facilities or the lack thereof greatly determines the development trend of an area. This section presents the existing physical and social infrastructural facilities and evaluates their adequacy in supporting development within Lamu Island.

3.5.1 Transportation Infrastructure

The island is directly connected to three modes of transport namely water, road and air. From the mainland, the island is accessed through the A7 Highway terminating at Mokowe jetty; by air, the island is connected from Manda Airport at the Manda airport jetty; and from the jetties on water to either of the island jetties. These are discussed in sections below:

3.5.1.1 Water Transport

Water transport is the predominant means of transport through which commuters between the island villages use. Currently, there are established water ways as seen in map 3-28 that

the small passenger boats, speed-boats and dhows follow to arrive at various destinations. However, the cost of travelling by sea in between the villages is very expensive and this makes it unappealing to most of the residents who then prefer the tedious options of either walking or use of donkeys to connect in between the villages along the undeveloped paths/roads.

Navigation between Lamu harbour and the open sea is guided by several pillars, beacons and buoys (Navigational aids). Small vessels usually anchor at the customs jetty but departure and arrival are sometimes affected by tides. However, large vessels anchor in the sea far from the Lamu Island as the sea is shallow. Smaller vessels are then used to load or off-load them. There are five jetties within the Island; KPA and KMA, Matondoni, Manda, and Mokowe as seen in the photos below. There is however other infrastructure such as landing steps in various locations in the Island such as Shella and Kipungani.

Plate 3-6: Shows Matondoni and Mangrove (KMA) jetties within Matondoni and Lamu Old town respectively

Source: KREIS, July 2020

In the recent past, however, the use of *'bodabodas'* have become common among the island residents devoid of the undeveloped road systems. The option to use the motorcycles is convenient but equally expensive necessitating the need to develop a road system to connect the villages. This will be explored further and presented in the Plan.

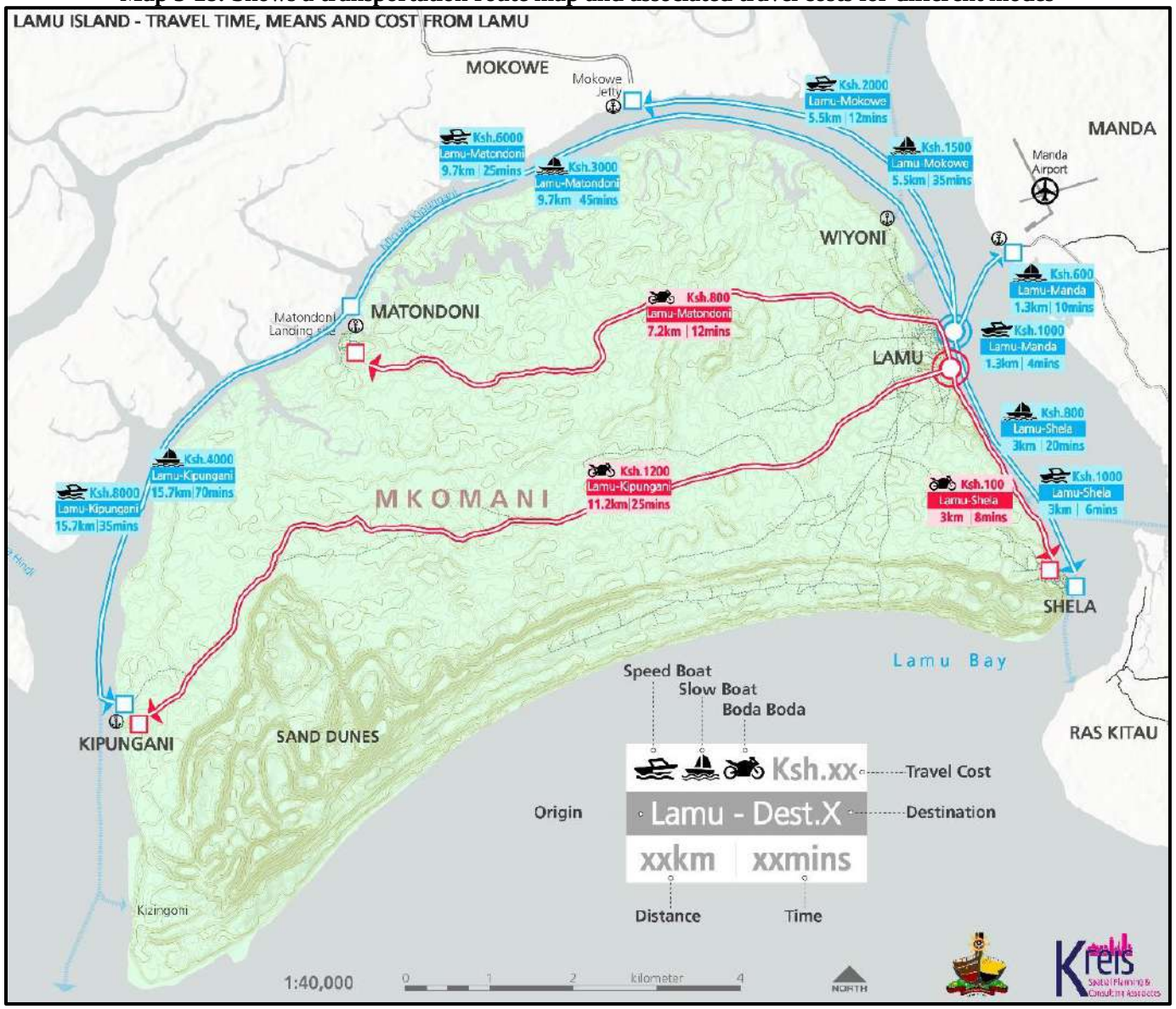
A comparative look of distance against the associated costs is presented in table 3-6 below:

Table 3-6: Comparative look of distance against time and associated costs to travel within Lamu Island

Travel Destinations		Lamu-Shella	Lamu-Mokowe	Lamu-Matondoni	Lamu-Kipungani	Lamu – Manda Airport jetty
Distance (Kms)		3 Kms	5.5 Kms	9.7 Kms (water) 7.2 Kms (road)	15.7 Kms (water) 11.2 Kms (road)	1.3 Kms
Bodaboda Cost (Kshs)		100	-	800 Kshs	1200 Kshs	-
Slow Boat Cost one way (Kshs)		150 per person /800 boat hire	200 per person /1500 boat hire	200 per person /3000 boat hire	300 per person /4000 boat hire	150 per person /600 boat hire
Speed Boat Cost one way (Kshs)		1000 per trip	2000 per trip	6000 per trip	8000 per trip	1000 per trip
Time (Mins.)	Boda	8 Mins	-	12 Mins	25 Mins	-
	Slow boat	20 Mins	35 Mins	45 Mins	70 Mins	10 Mins
	Speed boat	6 Mins	12 Mins	25 Mins	35 Mins	4 Mins

Source: KREIS, July 2020 (based on actual travel experience)

Map 3-28: Shows a transportation route map and associated travel costs for different modes



Source: KREIS, July 2020

3.5.2 Road Transport

Lamu Island has no classified road network. Road connectivity within the Island is limited and where access roads and streets are available, they are narrow and congested as will be seen in photos below. There exist traditional cutlines which connect Lamu Old Town to Matondoni and Kipungani as shown in the map above. However, these cutlines are most often sandy making walking quite a challenge thus reducing the volume of trade and social interaction between the various settlements.

Some of the roads are shown in the series of photos below:

Plate 3-7: Different roads/streets within Lamu Island

Narrow streets in Old Town (Lamu)

Street in Shella

Sandy road connecting Matondoni and Lamu

Cutline 'road' connecting Kipungani and Lamu

Source: KREIS, July 2020

The only motorable section of the island is along the Lamu town sea front where a cabro street has been established. The street connects directly from Wiyoni through Lamu Town to Shella through Langoni and King Fahd hospital among other major land uses along the street. There are efforts to develop the Matondoni-Lamu Road to motorable conditions, however the sandy soils in the Island are a challenge in development of cabro roads as seen in the photo below. The residents in Matondoni are of the view that they would be better served by a murram road than the cabro one being developed because the cabro one is likely to settle into the sandy soil and become usable in a very short time. The development of roads in the Island thus needs to take into account the geology and drainage patterns to ensure that the roads are well raised, curbed and drainage systems integrated in the road design to ensure their sustainability. The road below does not currently qualify with those standards and the design may need to be rethought as its construction continues.

Plate 3-8: Cabro road under construction through the NCDF and KeRRA to connect Lamu and Matondoni settlements

Source: KREIS, July 2020

There has recently been an increase in motorized transport in the island with *bodabodas* and private cars operating. Since the streets within the Island had been originally designed for NMT means, the introduction of *bodabodas* and cars have resulted in increased inter modal conflicts. The noises from *bodabodas* have disrupted the quiet Island and have

resulted to numerous accidents. It was implored to the consultants to mitigate some of these challenges in the development of the Island Plan.

3.5.3 Air Transport

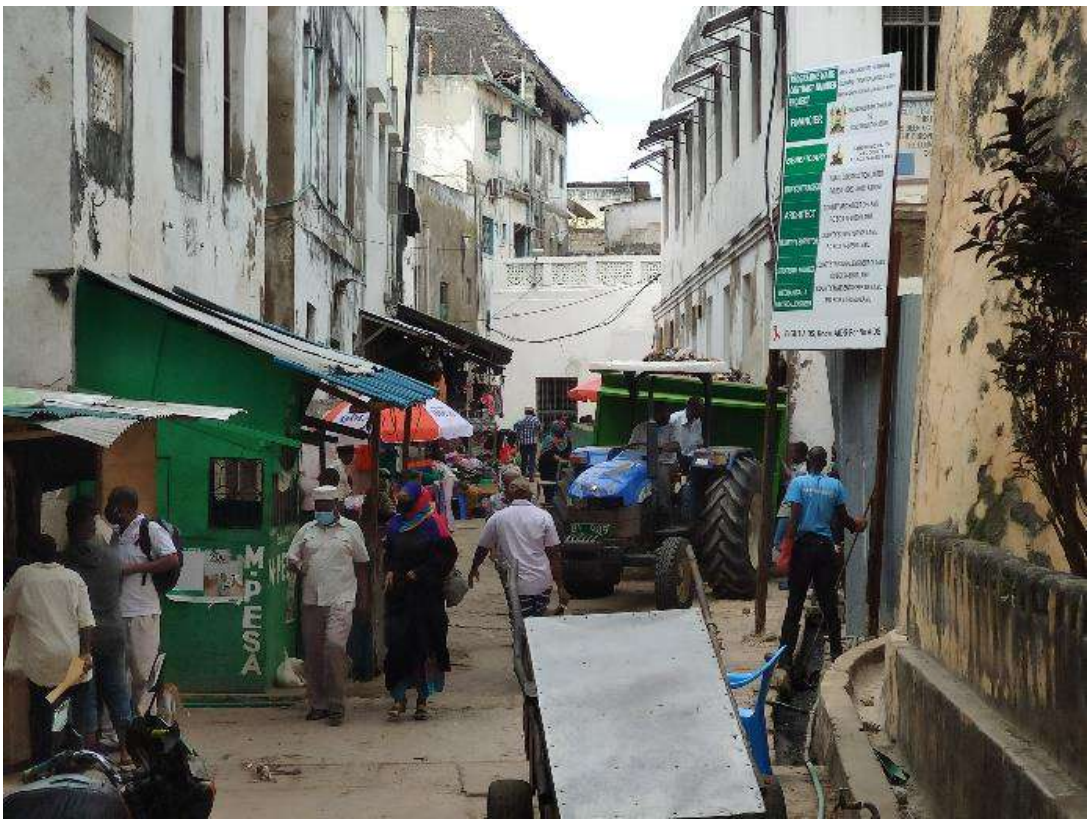
There are two air transport facilities around the Island; Manda Airport and Mokowe airstrip. While Mokowe airstrip is not well serviced or regularly used, the Manda Airport is busy and forms one of the gateways to Lamu island. Manda Airport is located 2km off the Island and is the primary mode of arrival to the Island for both local and foreign tourists. Currently, four carriers frequently use the airport; Skyward; Fly 540, Safarilink and East African Air Express Ltd formally Fly Sax. On average, the airport receives six flight arrivals daily translating to about 150 people daily.

The Airport is set to be expanded through the LAPSSET project and this may see more airlines flying into Lamu and this is expected to boost the local economy especially with regards to hotel and tourism related activities. This projection and anticipated growth will be considered in the Plan preparation.

3.5.4 Non-Motorized Transport (NMT)

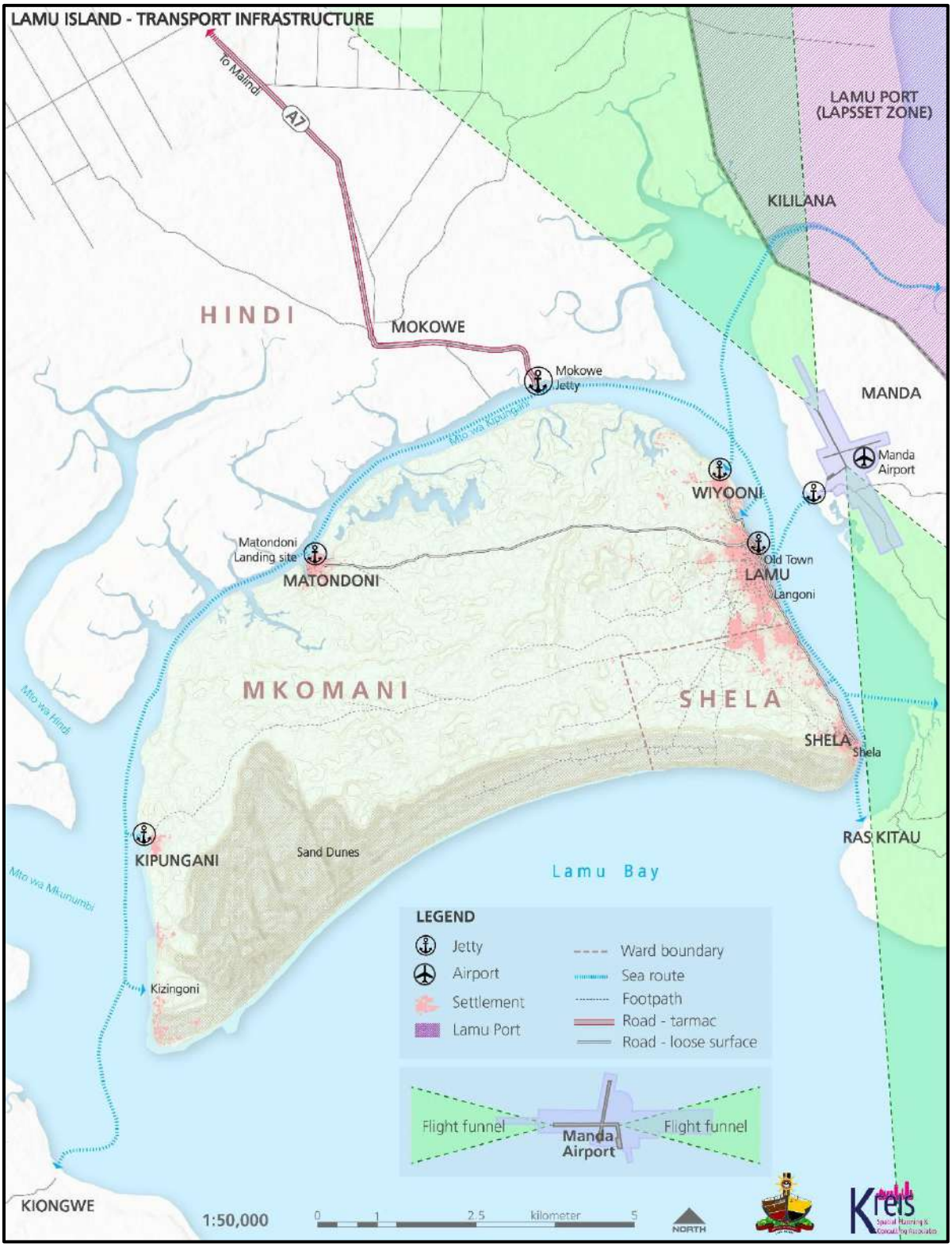
Due to lack of motorable roads within the Island, movement is mostly by use of non-motorized means. The commonly used NMT modes across the Island include donkeys, hand carts, bicycles and human transport.The street design in the Island has been influenced by the Swahili culture where settlements are clustered together and farm outside the settlements. The settlements are linked by narrow streets and roads that cannot accommodate motor vehicles. The Island, however, has a very limited network of developed NMT infrastructure especially within and linking the various urban settlements. Even where such infrastructure is developed, the introduction of *bodabodas* and private cars has increased contestation on the use of these infrastructure.

Plate 3-9: Shows the intermodal contestation of space along the sea front and Kenyatta Street which are the busiest corridors within the island with all forms of activities happening on them



Source: KREIS, July 2020

Overall, transportation linkage within the island can be represented as follows:



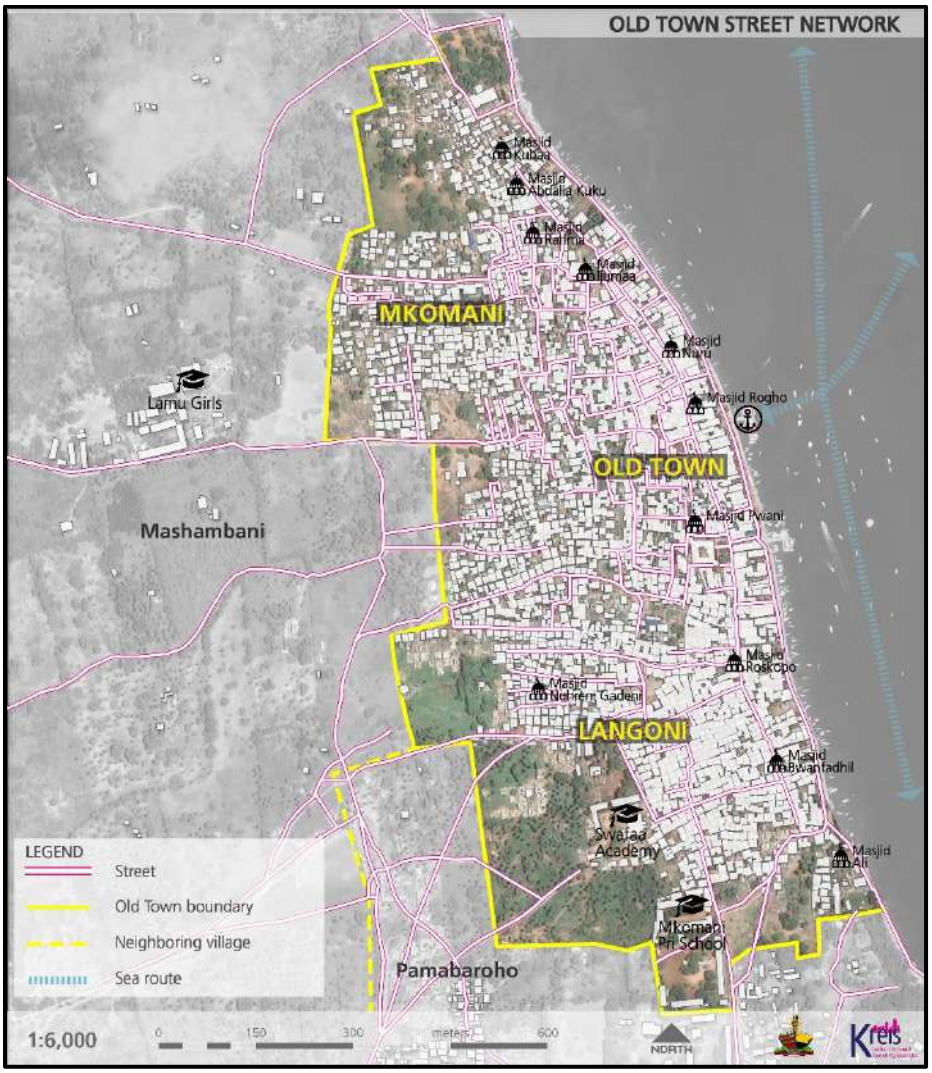
Source: KREIS, July 2020

3.5.5 Street layout

3.5.5.1 Old Town

The street layout within the old town is such that hierarchy can only be discussed and observed in two levels, that is the sea front and Kenyatta Street. All other streets have no hierarchy or level but are all connected to the two main streets and all oriented towards the ocean. Eventually, and arising from the various stakeholder engagements, there is need for providing a street hierarchy within the island and possibly provide larger carriageways along the streets that will allow services like drainage, fibre optic, electricity among others while still remaining prepared in case of a disaster occurrence.

Map 3-29: Shows the street layout in the Lamu Old town



Source: KREIS, July 2020

3.5.5.2 Shella

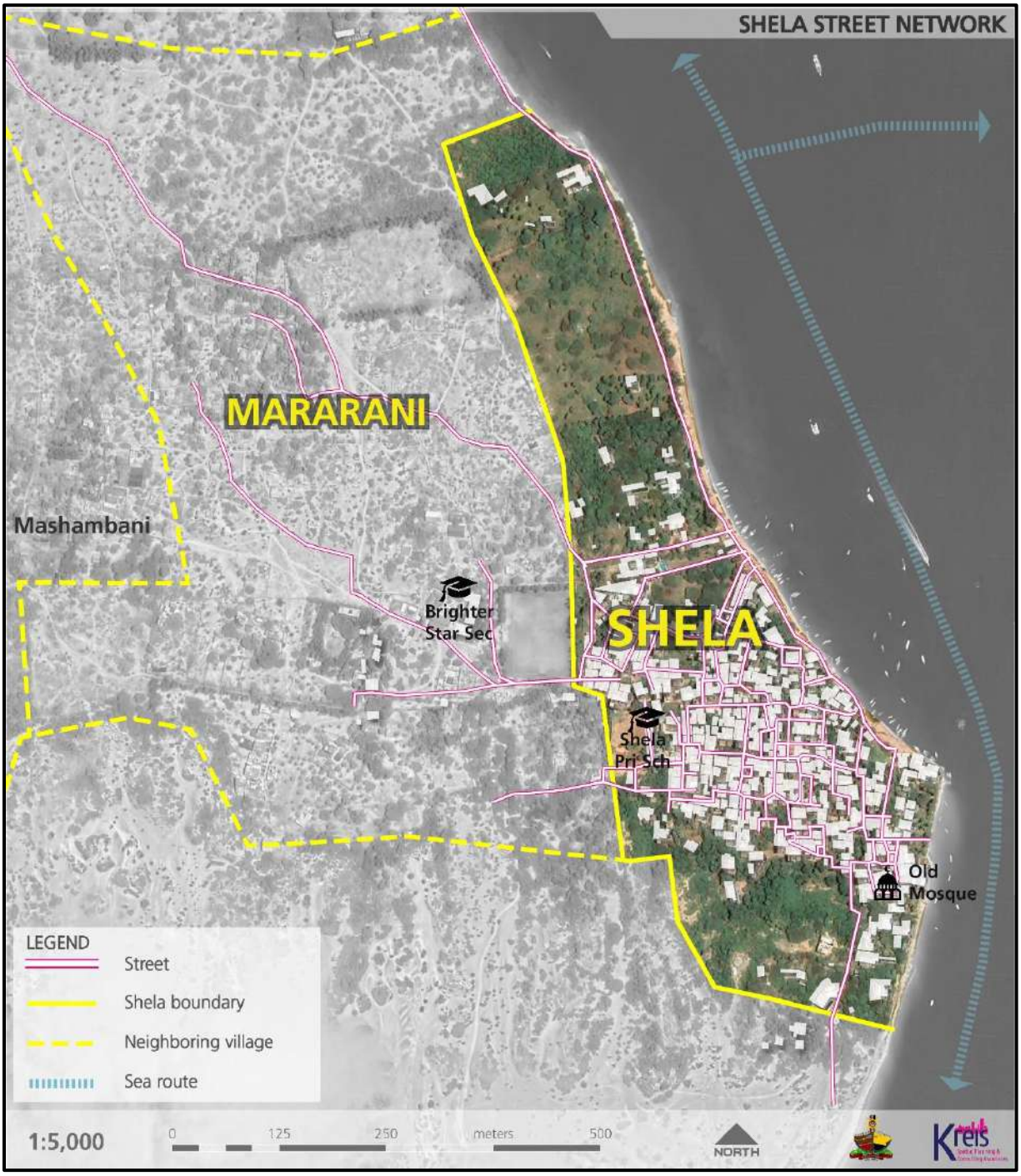
The streets in the Shella are also oriented radiating from the sea front. The streets are also narrow and mostly paved with cabro. The streets are mostly used for NMT transport with *bodabodas* and vehicles prohibited from accessing Shella. Most of the newly rehabilitated streets have poor drainage leading to increased water retention and flooding on the streets as seen in the photos below. However, new technologies are being tried where soak pits are drilled into the pavements to aid in drainage and ground recharge, so far, they have been successful.

Plate 3-10: Shows Timamy road in Shella which is poorly drained and, on the right, some of the soak pits

Source: KREIS, July 2020

Generally, the street layout is formed as follows:

Map 3-30: Shows the street layout in Shella

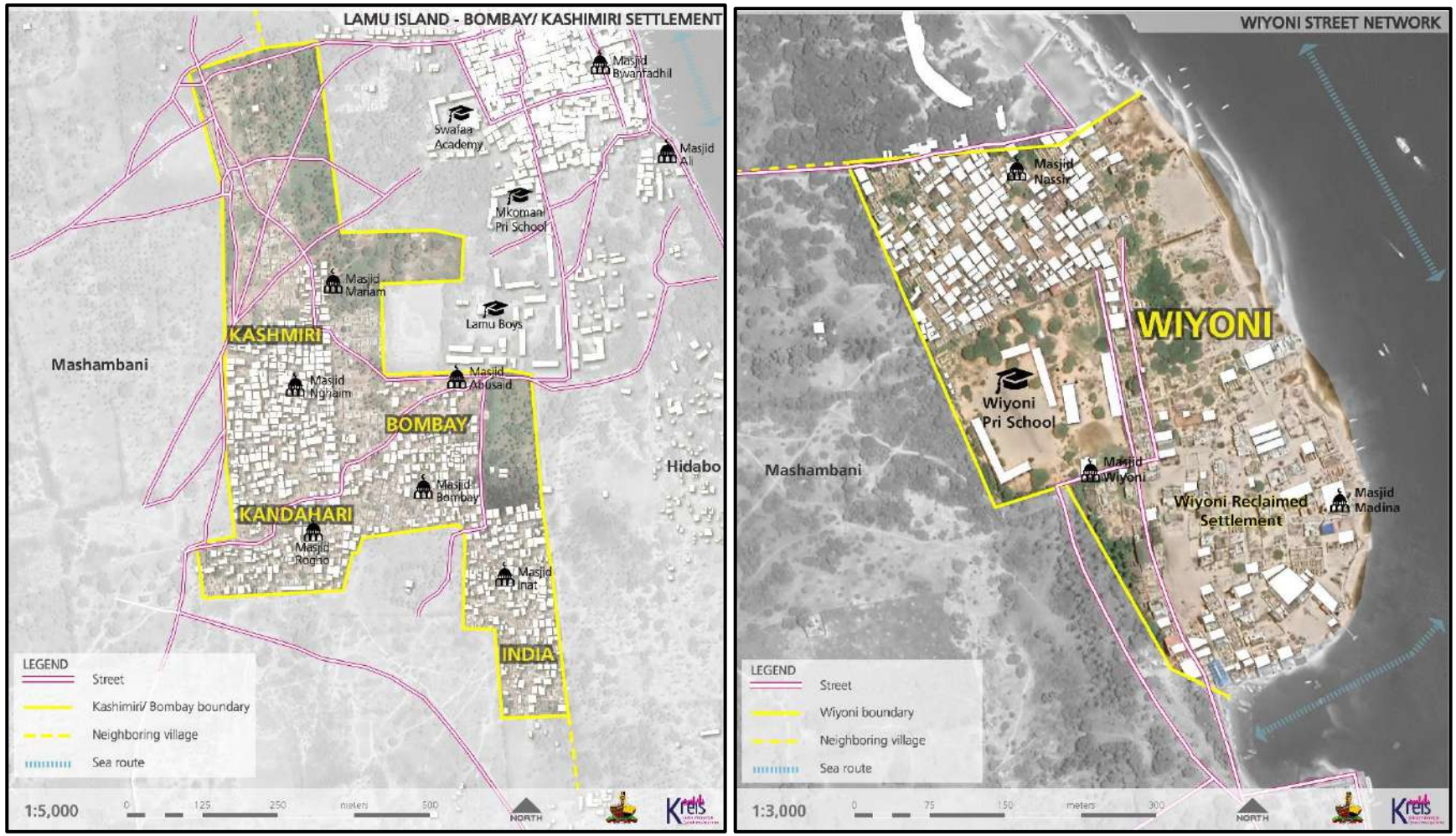


Source: KREIS, July 2020

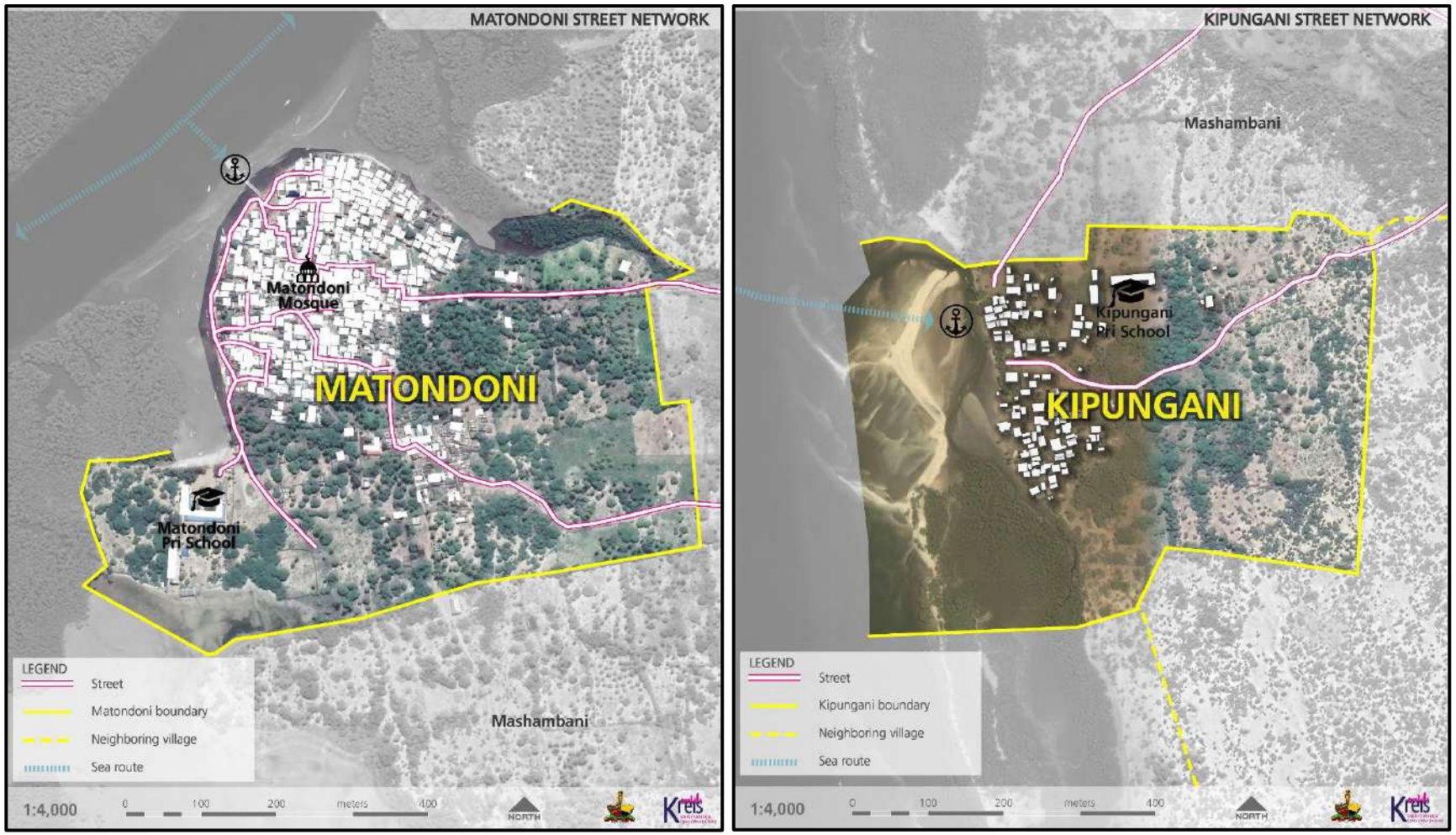
3.5.5.3 Other settlements

In the other settlements, while they are almost non-existent, streets are formed in the following manner:

Map 3-31: Shows the street layout in Kashmiri and neighboring villages; Wiyoni; Matondoni; and Kipungani



Source: KREIS, July 2020



Source: KREIS, July 2020

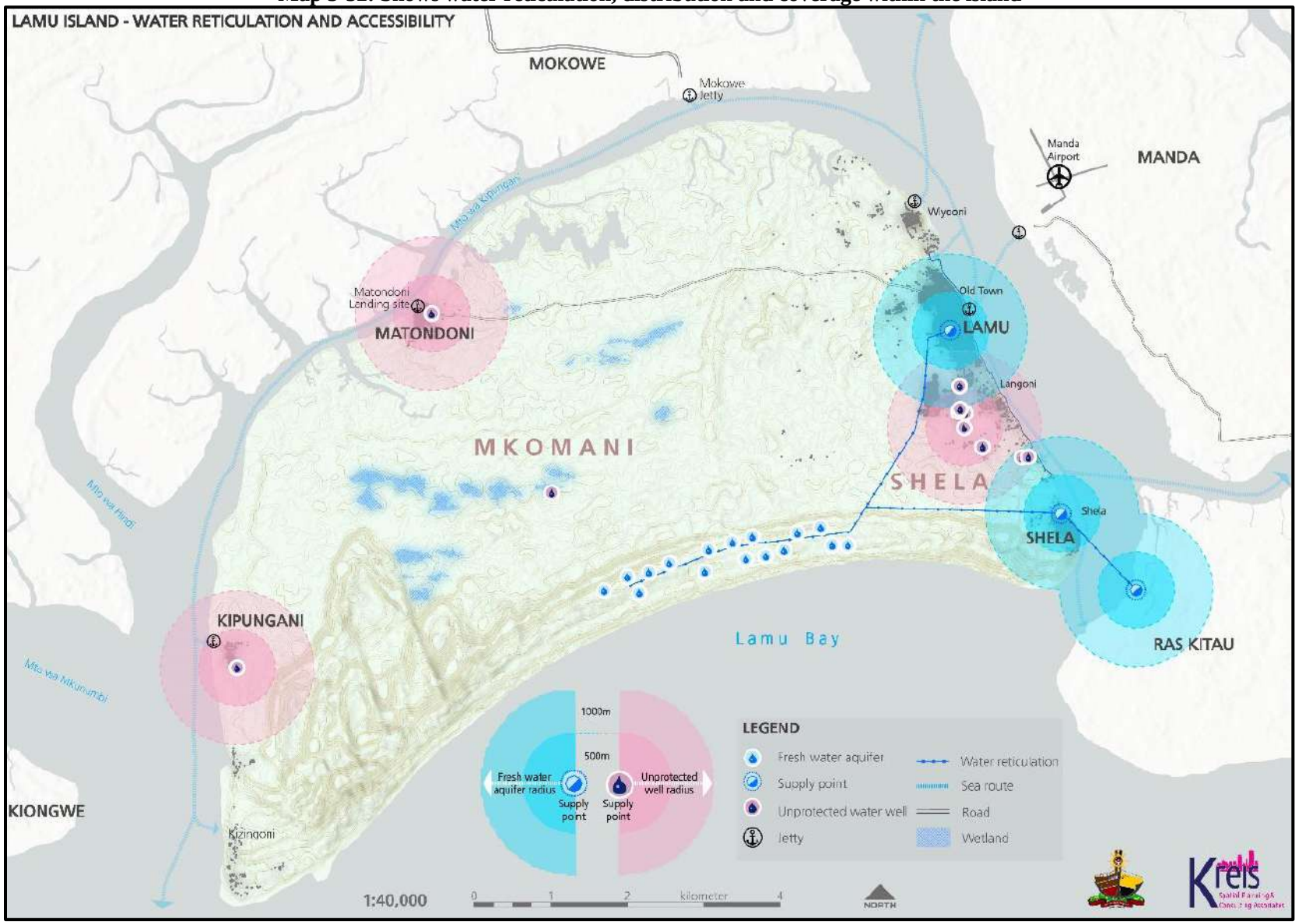
3.5.6 Domestic Water Supply

3.5.6.1 Water Sources

Lamu Island does not have scarcity of fresh water resources as most of the ground water, which is the main source for domestic needs, is fresh. A series of wells within the Shella aquifer on the sand dunes provide the much-needed commodity. These vegetated sand dunes act as filters and storage for water, hence improve the water quality and ensure reliable water supply within the Island and other areas of the County where they are formed. Dune formations are fragile ecosystems; this fragility means that apparently small changes induced by man or natural causes can have a great effect on their formation and sustainability as water catchment resources.

The exact demarcation to the extent of the sand dunes as water catchment ecosystems is still in contestation even though land ownership block titles have already been allocated to in trust to the County Government and WRA. It is of concern that fresh water from the sand dunes is overly exploited and/or encroached upon by active urban developments. Moreover, the uncontrolled use of septic tanks for liquid waste disposal threatens the quality of underground water. The plan has taken into account of these issues and put in place measures that aim to protect the sand dunes from further encroachments that are detrimental to its sustainability, as well as suggest proper liquid waste management for the entire Island.

Map 3-32: Shows water reticulation, distribution and coverage within the island



Source: KREIS, July 2020

3.5.6.2 Water Distribution

The ground water is supplied by the Lamu Water and Sewerage Company (LAWASCO). According to the Company's report, the current capacity of water supply in the Island is 2500m³/day while the total water production stands at 1500m³/day. The Company thus, records a deficit of 1000m³/day with only 4,927 households being connected to the piped network. The areas connected to piped water are Langoni, Gadeni, Mkomani, Jua Kali, Wiyoni, Kashmir, Bajuri and Shella.

In Matondoni, a community water project currently connected to over 98 households is currently operational with a capacity to connect additional households on demand. Kipungani also has a community water project that currently supply water to the village. All these water sources are fresh and contained in underground reservoirs recharged and purified by the sand dune ecosystems. They only intervention required to increase supply from the projected demand would be to increase the capacity and treatment of the projects.

Plate 3-11: Shows the Matondoni and Kipungani community water projects respectively


Source: KREIS, July 2020

Additionally, a majority of the residents who have not tapped into the main distribution reticulation systems of either project prefer to use water from their own shallow wells and boreholes. There are ongoing projects such as improvement of Wiyoni distribution network, the Shella water project and the construction of three shallow wells at Shella catchment. The use of wells however face health risks due to the porous soils and extensive use of pit latrines for disposal of waste that pose high risk for contamination of untreated ground water.

Plate 3-12: An open shallow well in Matondoni

Source: KREIS, July 2020

3.5.6.3 Water Demand Projection

The increase in population within the island will lead to overexploitation of the available water resources. There is thus a need to invest in other water sources like rain water harvesting and desalination of sea water. It is projected the Island will require over 0.7 billion litres of water annually by the year 2035, see Table 3-7 and graph below. This increased demand requires focused efforts in the provision of water for the growing population. This means the current water resources should sustainably be utilized to protect existing water aquifers and in addition, encourage rain water harvesting to increase water availability in the Island.

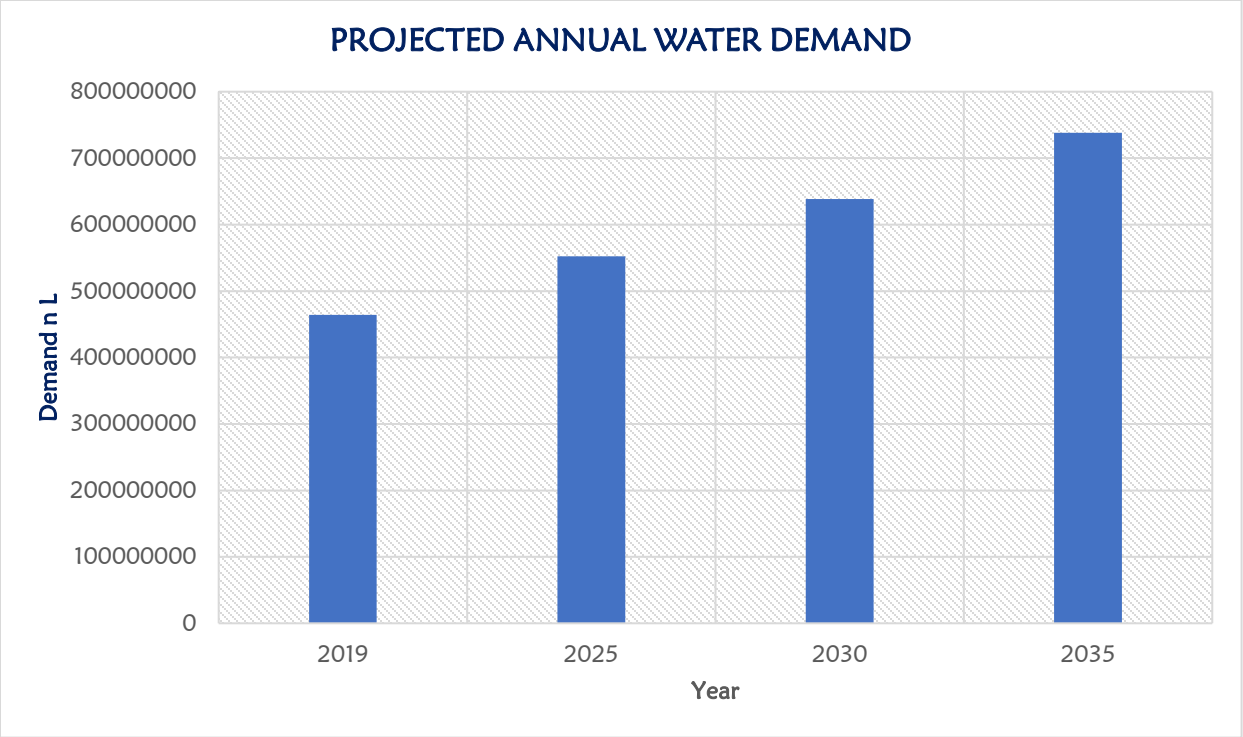
The county has come up with various proposals in meeting future water demand through three main projects identified under the feasibility study report for Lamu Municipality:

- Installation of 50M³ /hr Sea Water Desalination Plant at Magogoni with other assorted project components with an estimated budget of Kshs. 232 Million.
- Installation of 50M³ /hr Brackish Water Desalination Plant at Magogoni with other assorted project components with an estimated budget of Kshs. 149 Million.
- Construction of 10km Shella – Mokowe Pipeline with other assorted project components with an estimated budget of Kshs. 99.95 Million.

Detailed studies and designs for these proposals are yet to be conducted and will inform the most efficient choice for water to serve the Municipality.

Table 3-7: Projected Water Demand

Year	2019	2025	2030	2035
Population	28,032	33,360	38,566	44,584
Projected Daily Water Demand (Litres)	128,9472	153,4560	177,4013	205,0841
Projected Monthly Water Demand (Litres)	38,684,160	46,036,800	53,220,390	61,525,230
Projected annual Water Demand (Litres)	464,209,920	55,2441,600	638,644,680	738,302,760



Source: KREIS, July 2020 *Assumption: Average daily consumption of water per head is 46 litres

3.5.7 Solid Waste Management

The County Government has invested in solid waste management however it remains a huge task in the Island. Whereas there are several dustbins placed within the settlement areas collected periodically by the county government, the collection is haphazard and most of the time the residents are left to handle the waste on their own.

Plate 3-13: Solid waste disposal sites in Matondoni and Kipungani respectively

Source: KREIS, July 2020

While the impacts of unmitigated solid waste are many, most of which are related to erosion of the coast line and marine resources, Shella village have a proactive model of solid waste management. That is, waste is collected daily through a community driven process, segregated at source and recycled at the waste transfer facility. The non-recyclable materials are incinerated through a community cooker which is currently in use by Shella primary school. Such a model or an alternative is encouraged in the four acres of land already being used as a land fill by the County Government in Kashmiri area.

Plate 3-14: Shella solid waste transfer and recycling facility on the left; and the County government solid waste land fill in Kashmiri-Kandahari area on the right

Source: KREIS, July 2020

Due to the extensive use of donkeys for transport in the Island, the management of donkey waste was also picked out as a huge challenge. To this challenge, a proposal to develop stray donkeys holding grounds 'prison' was proposed by the residents especially in Lamu town and Shella.

The poor solid waste management in the island has resulted in environmental pollution which has extended both in the land and in the ocean. In the ocean, the beaches and sea front have been casually eroded that they have become an eye sour more than a recreative asset. Recently, increased efforts in solid waste management through the *Kazi Mtaani* program have seen tremendous progress in terms of settlements routine cleanliness and waste management as a whole. The works of *Takataka Heroes* in collecting tonnes of plastics for recycling is also a worthy endeavor in keeping the environment clean. Such

efforts would benefit from up-scaling, backed by concerted effort of the Municipality to achieve significant milestones in solid waste management. There is an urgent need to invest in a sustainable waste management model as the production of waste is expected to increase with increase in population. The provisions of waste management policy for the Municipality should form the back bone in guiding the Lamu municipality on best practices to adapt in managing its

The Draft National Sustainable Waste Management Policy projects that in urban areas, every person generates about 0.6 Kg of waste daily. Table 3-8 shows the projected waste generation up to the year 2035 in Lamu island.

Table 3-8: Projected Total Solid Waste Generation

Year	2019	2025	2030	2035
Population	28,032	33,360	38,566	44,584
Projected Daily Solid Waste Generated (Kgs)	16,819	20,016	23,140	26,750
Projected Monthly Solid Waste Generated (Kgs)	504,576	600,480	694,179	802,503
Projected annual Solid Waste Generated (Kgs)	6,054,912	7,205,760	8,330,148	9,630,036

Source: KREIS, July 2020 *Assumption: Average daily solid waste generation per head is 0.6Kgs

Of the total waste, 60-70% is estimated to be organic waste, 20% plastic (although this may have reduced with the ban of plastic bags in the country), 10% as paper, 1% medical waste and 2% from metal. Table 3-9 shows the projected segregated solid waste demand.

Table 3-9: Projected Waste Production Segregated into types

Waste (Kgs)	Percentage (%)	Year			
		2020	2025	2030	2035
Organic	65	13762	15454	17865	34775
Plastic	20	4234	4755	5497	10700
Paper	10	2117	2378	2749	5350
Medical	1	212	238	275	535
Metal	2	423	476	550	1070
E-waste	2	423	476	550	1070
Total	**100**	**21,172**	**23,776**	**27,485**	**53,500**

Source: KREIS, July 2020

There is therefore urgent need for the County to develop a comprehensive waste management strategy to ensure that solid waste from both domestic and urban areas is well handled. This is expected to be addressed through the solid waste management policy which is currently under formulation and which this Plan intends to harmonize with.

3.5.8 Liquid Waste Management

The Island lacks a conventional sewer system. Most of the waste water generated within the area run through open storm drains and drainage pipes and is directly drained into the ocean. In some sections of the town, waste water is drained into septic tanks located below the concrete-paved narrow streets. These septic tanks are poorly designed and are usually shallow due to the high-water table and therefore fill quite often and in most cases discharging the contents into the nearby open drains to drain into the ocean with consequent health and environmental concerns. Further, the use of septic tanks also results to potential contamination of ground water sources.

Plate 3-15: Shows an open drainage channel that empties into the ocean in Lamu town

Source: KREIS, July 2020

The current system of waste water disposal is unstainable for compact urban settlements and for increased population. Previous studies by UNESCO have proposed the use of decentralized treatment facilities for each settlement approximated to about 10 households per septic tank. With increase in population the amount of waste water generated is expected to increase as summarized in Table 3-10 below.

Table 3-10: Projected Waste Water Generation

Year	2019	2025	2030	2035
Population	28032	33360	38565.5	44583.5
Projected Daily Waste Water Generated (Litres)	1031577.5	1227648	1419210.5	1640673
Projected Monthly Waste Water Generated (Litres)	30,947,328	36,829,440	42,57,6312	49,220,184
Projected annual Waste Water Generated (litres)	371,367,936	441,953,280	510,915,744	590,642,208

Source: KREIS, July 2020 *Assumption: Average daily water generation is 36.8 litres.

3.5.9 Energy

In the Island, charcoal and liquefied petroleum gas are the most used fuels for household cooking while mains electricity and solar are the dominant sources of lighting energy. The Island has a mains electricity connection by Kenya Power that covers most of the settlement areas. However, there is need for improved electric capacity and coverage within the Island as necessitated by frequent power outages in settlements such as Kipungani and Matondoni.

3.5.10 Telecommunication

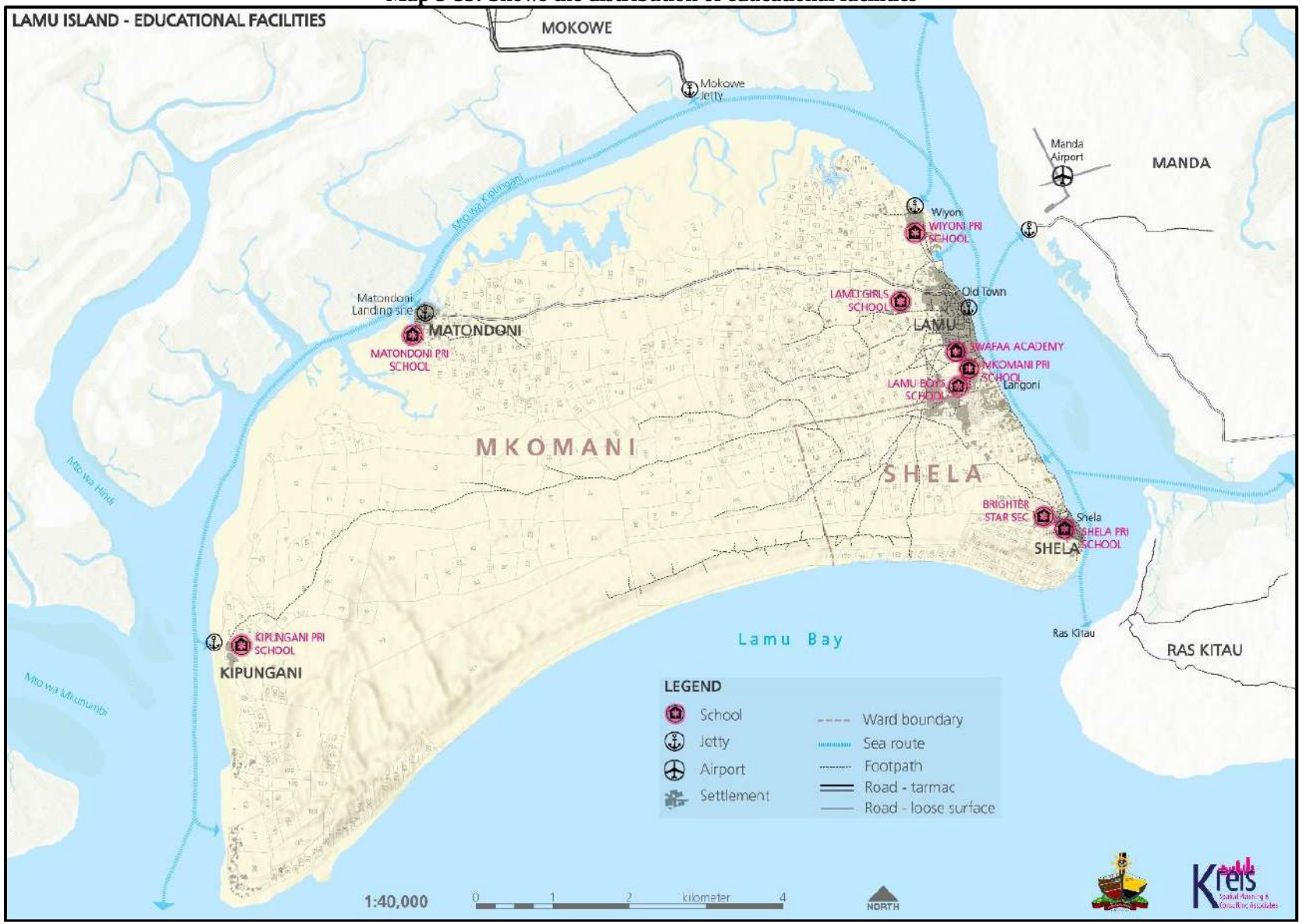
The Island has network coverage of the main network operators, namely Safaricom and Airtel. Whereas the coverage is strong within Lamu and Shella environs, it is weak in Matondoni and Kipungani. The Island is served by different modes of courier services. Most deliveries being done from other counties like Nairobi find air as the most convenient and efficient mode of delivery even though a little bit expensive as compared to other means. The Island also has a post office with a capacity of 800 mail boxes located in Lamu town.

3.5.11 Educational Facilities

The Island has 7 nursery schools, 7 public primary schools and 5 public secondary schools. Notable public primary schools within the Island include: Matondoni primary school, Kipungani primary school, Amu primary schools, Stone Town primary school, Shella primary school among others. Private primary schools include Lamu Amani academy and Swafaa Academy. Secondary schools include: Lamu boys' secondary schools, Lamu girls'

high school, Bright Girls Shella secondary school, and Wiyoni secondary school to name a few. The educational facilities are concentrated in the settlements of Shella and Lamu Old Town environs. The educational facilities are easily accessed from these settlements and analysis of distance of educational facilities versus location of population shows that students and pupils can comfortably access these facilities as detailed in maps 3-33 and 3-34.

Map 3-33: Shows the distribution of educational facilities



Source: KREIS, July 2020

According to the Physical Planning Handbook, one nursery school is required for every 2,500 people; one primary school for every 4,000 people and one secondary school for every 8,000 people. Using the projected population, the required educational facilities versus the available facilities were computed. From the computations, it was deduced that the Island will have a deficit of 14 nursery schools 7 primary schools and 3 secondary schools by the year 2035. **Table 3-11** summarises the educational facility requirement between 2019 and 2035.

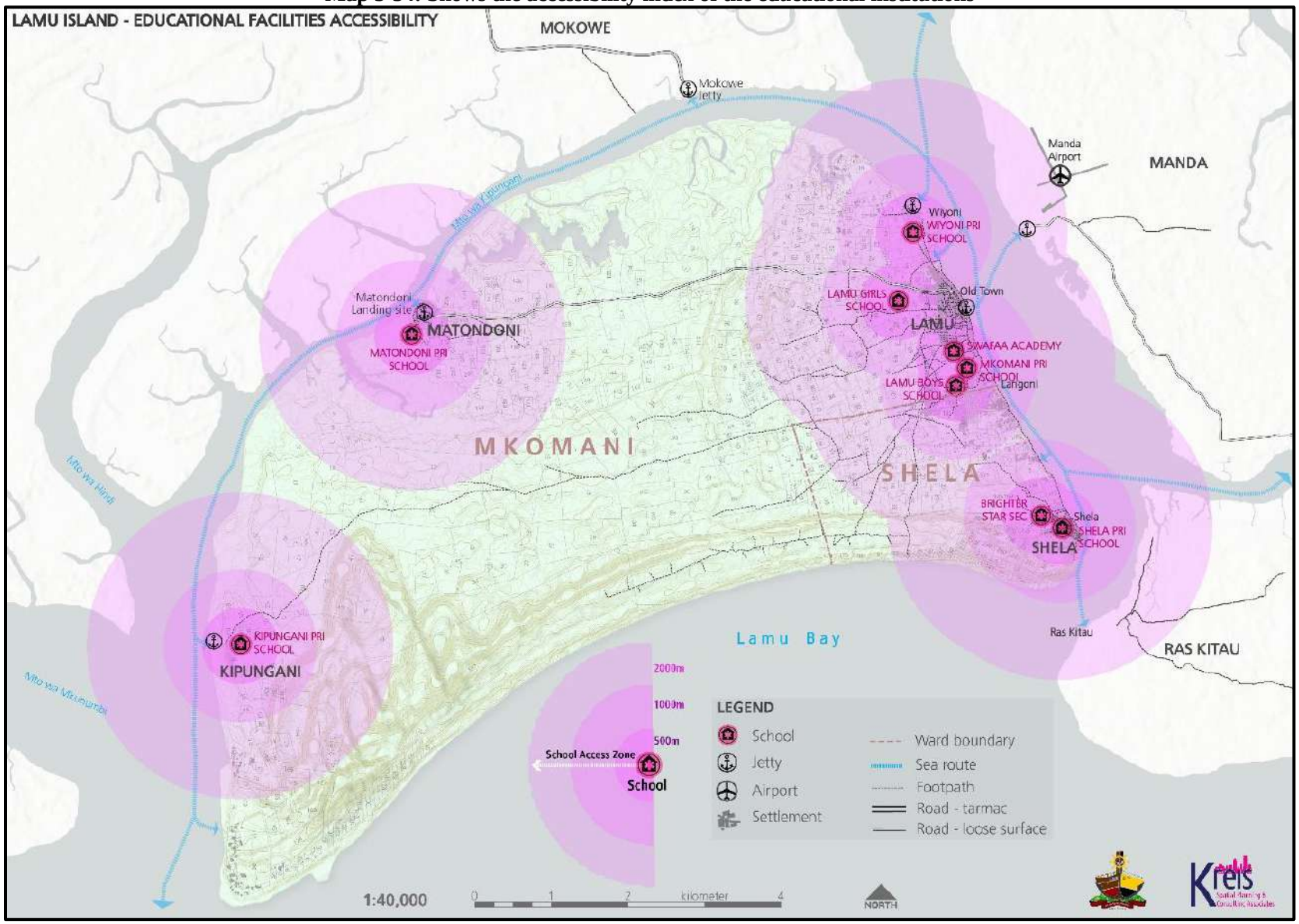
Table 3-11: Educational Facilities Requirement

YEAR		2019		2025		2030		2035	
Institutions	Available	Pop.	Surplus (+) Deficit (-)	Pop.	Surplus (+) Deficit (-)	Pop.	Surplus (+) Deficit (-)	Pop.	Surplus (+) Deficit (-)
ECDC	7	28,032	-7	33360	-10	38566	-12	44584	-14
Primary	7	28,032	-3	33360	-5	38566	-6	44584	-7
Secondary	5	28,032	-1	33360	-1	38566	-2	44584	-3

Source: KREIS, July 2020

However, and given the accessibility index of the existing institutions, there could be need to improve and increase the capacities of the existing institutions both in terms of infrastructure to support higher student population and human resource. This will ensure that accessibility is continually and sustainably guaranteed while still taking care of the projected demand.

Map 3-34: Shows the accessibility index of the educational institutions



Source: KREIS, July 2020

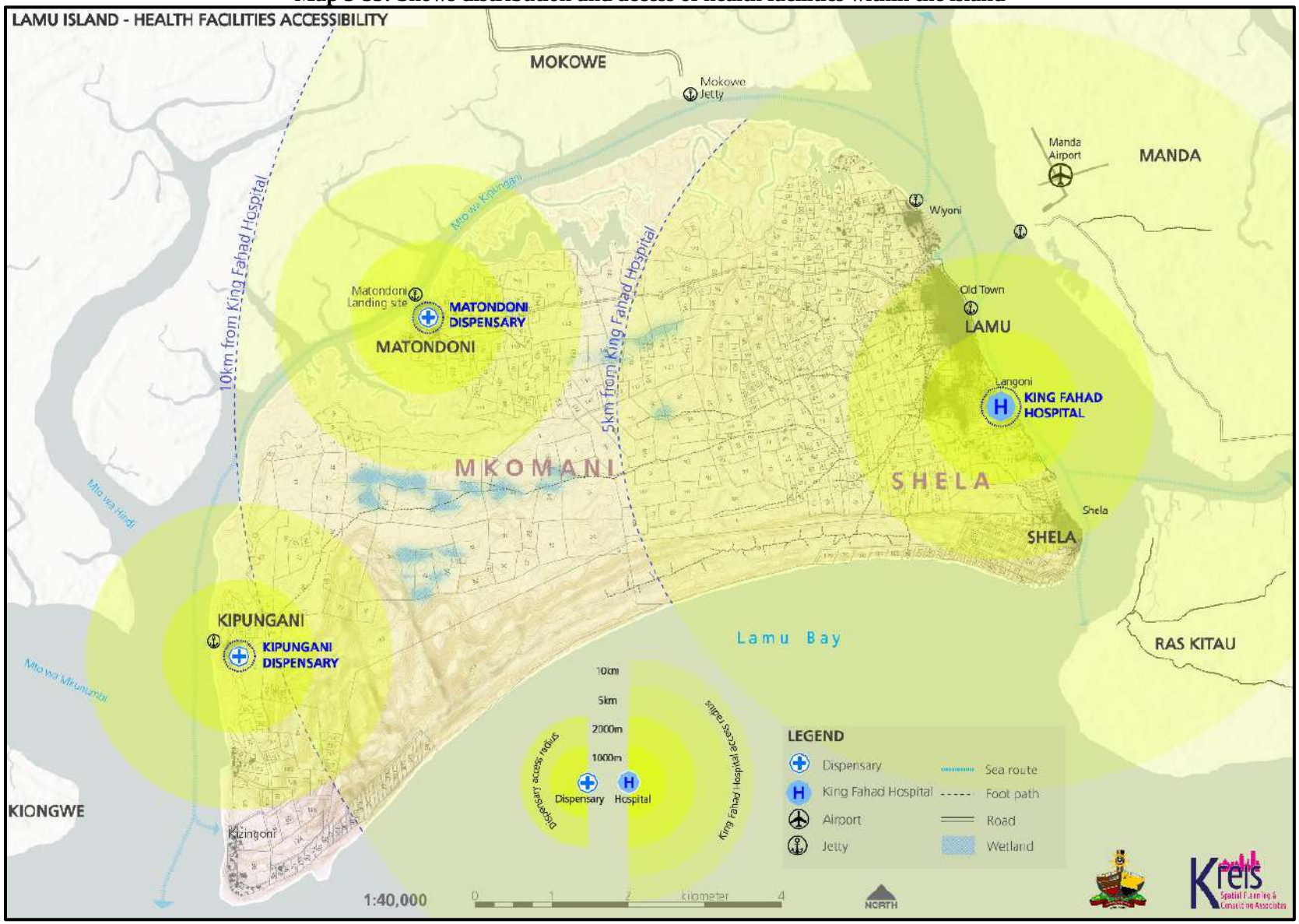
3.5.12 Access to Health

The Island has 5 health facilities. Lamu County King Fah'd Hospital is the largest health facility receiving referrals from all over the County. The other health facilities are: Kipungani dispensary; Matondoni dispensary; Pablo Horstmann pediatric health centre; and Shella dispensary.

All the settlement areas have access to a health facility. However, due to poor transportation infrastructure, both road and water, accessing the main referral hospital from settlements such as Matondoni and Kipungani is a huge challenge and sometimes results to casualties due to the time delay.

The map below shows the distribution and accessibility index of the health facilities within the Island

Map 3-35: Shows distribution and access of health facilities within the island



Source: KREIS, July 2020

3.5.13 Other Social Infrastructure

Recreational Facilities and Open Spaces

Due to the compact nature of development in the main nodes, there is limited development of open spaces and public spaces across the island. Besides inner courtyards within individual buildings, there is a notable open square within the old town actively used by Lamu residents for social gatherings and meetings. This is the *Mkunguni* square, located in front of the Lamu Fort.

The square was originally a landing site for marine activities during the Swahili golden age but was reclaimed as an active public space within the heritage town. In addition, streets have for a long time served as public social spaces for the residents and one of the most vibrant social streets in Lamu town is the sea front.

The Island has several recreational areas including the beaches and established play grounds. One of the major challenges highlighted by the residents during the workshops was the issue of public recreational spaces and grounds. It was however recommended that *'nyangwas'* local name for ocean land at its lowest tide to be utilized for this purpose around the settlements with very minimal intervention from the County Government, specifically, erection of sea walls to reclaim them. These 'nyangwas' were specifically identified in Matondoni, Kipungani, and Wiyoni.

Plate 3-16: Shows a 'nyangwa' in Matondoni

Source: KREIS, July 2020

The development of the sea front that lack sandy beaches will be utilized and converted into active recreation and social spaces such as the one in Shella.

Plate 3-17: A community square on the sea front in Shella on the left; and the sea front street in Lamu town on the right as examples of vibrant public spaces


Source: KREIS, July 2020

Religious Facilities

Lamu Island is predominantly inhabited by muslims and a sizeable number of Christians. The Island has about 28 mosques and about 20 churches. The religious facilities are distributed within the settlements at walking distances from the homes. Map 3-36 shows the distribution of the mosques within the island.

Table 3-12: Summary of other Social Infrastructure

Facility:	Status
Government Offices	Available in Lamu town
Court	Available in Lamu town
Post Office	Available in Lamu town
Fire Station	None
Police Stations	Available in Lamu town
Slaughterhouses	Available
Cemeteries	Available (Muslim & Christians)

Source: KREIS, July 2020

Map 3-36: Shows the distribution of religious facilities in Lamu island

Source: KREIS, July 2020

3.5.14 Emerging issues

- Lack of regional connectivity through road has led to limited interaction between the island and the main land thus slowing development and investment potential.
- Lack of motorable roads have led to overreliance on non-motorized transport within the Island and an upsurge in the use of *bodabodas* in the narrow streets increasing inter-modal conflicts and congestion in the Island.
- The need to establish a circumferential route network around the gazetted heritage site and immediate surrounding as a way of enhancing access and controlling development within the heritage zone.
- The need to develop policies to deal with roaming donkeys and the waste they produce.
- There is need to establish specialized jetties in the island i.e. function specific jetties for cargo and passengers.
- There is need for establishment of fish landing sites and related amenities like cold storage facilities and market.
- The Island has adequate educational facilities. However, there is need to invest in land banking for purposes of the establishment of extra institutions as dictated by future demand projections.
- Available sources of fresh water are experiencing pressure due to over utilization and human activities on the continental shelf and therefore, there is urgent need to identify alternative sources of fresh water supply within the Island.
- No conventional sewer system in the Island hence mismanagement of waste water leading to pollution of fragile ecosystems especially on the ocean resources.
- There is an urgent need to provide functional public spaces and recreational amenities
- There is an urgent need for extension of efficient mobile network coverage in the entire Island.
- There is need for setting up a functional disaster management unit for the Island.

- There is need for more social facilities such as rehabilitation centres and correctional facilities to address drugs and substance issues especially among the Youths of the Island.

3.6 INSTITUTIONS & GOVERNANCE

3.6.1 Institutional Structure for Governing Urban Municipalities

The governance and management of municipalities is primarily anchored on the Urban Areas and Cities Act and the County Government Act. These Acts provide specialized management of urban areas from the realization that due to the increasing urbanization in Kenya, urban areas face numerous challenges in providing services, infrastructure and ensuring sustainable use of resources. For this reason, the urban areas require specialized management. The Urban Areas and Cities Act thus provides that municipalities are to be managed by a Municipality Board and run by a Municipal Manager.

The institutional framework for implementation of Municipal functions is anchored on the structure as stipulated in the County Governments Act, 2012 and Urban Areas and Cities (Amendment) Act 2019. The semi-autonomous Municipality works harmoniously with other departments of the County government for successful implementation of its projects within the Municipality including National Government projects. The various actors in Lamu municipality include:

3.6.1.1 National Government

The National Government through the parliament plays a role in the provision of policies, legislation and regulation to guide development. The National Government allocate funds to the County Governments through the National Treasury and CDF kitty. They also facilitate seamless development in a sustainable equitable and integrated manner. Through the Director General of Physical Planning, the Ministry is in charge of developing land use regulations, National Spatial Plan and capacity building for planning within the planning units in the Counties. Additionally, the State Department of Housing and Urban Development plays a critical role in supporting the County Governments Municipalities as far as the implementation of projects under the KUSP.

National government bodies such as the ministry of interior and coordination of national government are important in maintaining law and order throughout the country. The national government is also responsible for other numerous functions in liaison with the County Government.

3.6.1.2 County Government of Lamu

The County Government of Lamu has the overall jurisdiction in the running and management of Lamu Island through the Lamu Municipality Board. The County Government of Lamu is organized into the Executive and the legislative branches. The county executive comprises of the Governor and County Executive Committee (CEC) members heading various county departments. The County has 10 CECs including the CEC in charge of Physical Planning, Housing and Urban Development. The CEC is a member of the board of the Municipality charged with supervising the administration and delivery of services in in the decentralized unit.

Currently, the County lacks a fully-fledged Physical Planning department and this may result to poor or slow implementation of approved land use Plans.

3.6.1.3 County Public Service Board

The county public service board on behalf of the County Government is charged with establishing and abolishing offices in the County Government and appoint persons to hold or act in offices of the County public service. The board also confirm appointments, exercise disciplinary control over, and remove, persons holding or acting in those offices, facilitate the development of coherent integrated human resource planning and budgeting for personnel emoluments and advise the on human resource management and development. The board is an important actor in recruitment, deployment and training of staff for service delivery in the municipality.

3.6.1.4 County Assembly

The Constitution confers powers on the County Assemblies to receive and approve plans and policies. These plans and policies affect the management and exploitation of the County's resources and by extension resources within the municipality. They also affect the

development and management of County infrastructure and institutions. The function of the County Assembly includes: Vetting and approving nominees for appointment to County public offices; Approving the budget and expenditure of the County government in accordance with Article 207 of the Constitution, and the legislation contemplated in Article 220 (2) of the Constitution, guided by Articles 201 and 203 of the Constitution; approve the borrowing by the County Government in accordance with Article 212 of the Constitution; Approve County development planning; and perform any other role as may be set out under the Constitution or legislation.

3.6.1.5 The Lamu Municipality Board

The Municipal Board of Lamu is appointed pursuant to section 14 of the Urban Areas and Cities (Amendment) Act 2019 and comprises nine members appointed by the governor with the approval of the Lamu County Assembly. The board members are charged with running the affairs of the municipality. The functions of Lamu Municipal Board are:

a) Promotion, regulation and provision of refuse collection and solid waste management services;
b) Promotion and provision of water and sanitation services and infrastructure (in areas within the Municipality not served by the Water and Sanitation Provider);
c) Construction and maintenance of urban roads and associated infrastructure;
d) Construction and maintenance of storm drainage and flood controls;
e) Construction and maintenance of walkways and other non-motorized transport infrastructure;
f) Construction and maintenance of recreational parks and green spaces;
g) Construction and maintenance of street lighting;
h) Construction, maintenance and regulation of traffic controls and parking facilities;
i) Construction and maintenance of bus stands and taxi stands;
j) Regulation of outdoor advertising;
k) Construction, maintenance and regulation of municipal markets and abattoirs;
l) Construction and maintenance of fire stations; provision of fire-fighting services, emergency preparedness and disaster management;

m) Promotion, regulation and provision of municipal sports and cultural activities;
n) Promotion, regulation and provision of animal control and welfare;
o) Development and enforcement of municipal plans and development controls;
p) Municipal administration services (including construction and maintenance of administrative offices);
q) Promoting and undertaking infrastructural development and services within municipality;
r) Any other functions as may be delegated by the County Executive Committee.

The Lamu municipality board is thus a semi-autonomous body charged with running the municipality to ensure service delivery and sustainable developments. The development of this plan is a step towards realization of the board's mandate to ensure guided and integrated developments in the municipality.

3.6.1.6 Municipal Staff

Lamu municipality's daily running and administration is overseen by the municipal manager under the guidance of the municipality board and the board's secretariat. The municipality is empowered under the guidance of the County public service board to employ other staff necessary to run the operations and execute the functions of the municipality. Currently, the municipality has not engaged enough staff to manage the municipality and principally uses the staff from various county departments.

3.6.1.7 Museum of Kenya

The National Museums of Kenya (NMK) is an important actor in the management of Lamu Island by the fact that the Old Town in the Island has been designated as a UNESCO heritage site under the NMK, Lamu. The NMK is in charge of ensuring that developments within the Old Town retain the cultural and heritage aspects while also encouraging the developments around the old town to conform to the approved developments. The museum curator is also involved in the vetting of developments that are likely to result to significant impacts in the Island.

3.6.1.8 Service Providers

Service providers play an important role in the development of Lamu Island. The various service providers in the Island include; Kenya Power, Lamu Water and Sanitation Company, Kenya Ports Authority among others. Telecommunication service providers include Safaricom, Telkom, and Airtel.

3.6.1.9 Beach Management Unit

Lamu Island has an established Beach Management Unit (BMU) that are association of fishermen and all other people who derive their living from the resources in the sea. The BMU is an important actor in that they enable the registration and regulation of members and in advocating for sound environmental management and utilization of ocean resources. The BMU is also helpful in marketing for fish and marine resources.

3.6.1.10 Private Sector

The private sector plays a major role in the Island development including investment in businesses, hotels, and the management of finances. The private sector within the Island includes banks, service providers, small and medium-size enterprises (SMEs), educational institutions, transport and communication companies, credit and savings societies, and manufacturing companies.

The private sector also plays a role in the training and employment of the residents in the County thus reducing unemployment. They are also expected to carry out various projects not limited to provision of services including health, education, ICT and industries.

3.6.1.11 Civil Societies

Civil organizations are considered one of the most important forums for advocating of development and championing for accountability. Civil society groups in Lamu engage in direct supervisory on the rulers and authority's performance. Through them, the people participate in the development of their residences and the County at large. Such societies have been identified and consulted in this planning process.

Table 3-13 shows a summary of development Actors and their roles.

Table 3-13: Summary of Actors and Roles

Actor	Roles and Responsibilities
National Government	▪ Formulating general principles, policies, standards and guidelines of land planning. ▪ Preparation and approval of National Physical Development Plan, National Policies i.e. land use. ▪ Planning at international boundaries within Kenya borders among Tanzania, Uganda, Somalia, South Sudan and Ethiopia. ▪ Coordination of Regional Spatial Plans/Inter County Spatial Plans. ▪ Capacity building and technical support to counties. ▪ Planning research at the national level
County Government of Lamu	▪ Preparation, approval and implementation of County Spatial Development Plans, Local Physical Development Plans, County Integrated Development Plans, Integrated Strategic Urban Development Plans, Sectoral Plans, development control and enforcement. ▪ Formulating county specific policies. ▪ Implementing national policies, standards and guidelines. ▪ Planning Research at the county level.
CECM in charge of Physical Planning	▪ Overall, in charge of Physical Planning and Development Control in the County ▪ Place a notice of competition to Plan in the Kenya Gazette and in two local dailies ▪ Forward the Plan to the Assembly for Approval
Lamu Municipality Board	▪ In charge of management of Lamu Municipality ▪ Supervision of the assignment with technical team comprising of members of the board ▪ Provide logistical support and administrative services needed by the project team and consultants ▪ Supply the required existing documents, data on development applications and approval procedures, development control

Actor	Roles and Responsibilities
	procedures, reports and support resources required by the planning team
County Assembly of Lamu	▪ Approval of plans ▪ Oversight
National Museums of Kenya	▪ Management of Old Town (gazette heritage site) ▪ Promotion of Cultural Conservation ▪ Advice on developments in the Island
The National Land Commission (NLC)	▪ Management of public land ▪ Advising the National and County Governments on land matters; ▪ Recommending a national land policy; ▪ Conducting research on land and natural resources; ▪ Monitoring and oversight responsibilities over land use planning among others
Service Providers	▪ Provision of services and infrastructure such as power, water, transportation
Beach Management Unit	▪ Organize and represent those getting resources from the ocean ▪ Lobby for welfare of fishermen, fish sellers and beach users
Community Organizations	▪ Advocating for developments in the Island ▪ Environmental and Cultural activism ▪ Supporting the Government in development

Source: KREIS, July 2020

3.6.2 Capacity Assessment Needs

A capacity assessment on planning needs for Lamu County conducted in 2018 identified that the county at the time had only one permanent physical planner and two assistants on contract. However, the County government currently lacks a fully-fledged Physical Planning department comprising of a Director (registered by the Physical Planning Registration Board), Principal Physical Planner (preferably with more than 5 years post qualification experience), County Physical Planners (About 3No. with about three years post qualification experience), cartographers and land surveyors.

In addition to the supporting role these officers will give the Municipality in the implementation of land use plans, the Municipality also requires a secretariat to support the day-to-day activities by the board under the Municipal Managers office, and a team of enforcement officers to ensure developments are done in accordance to stipulated guidelines and standards within the municipality.

3.6.3 Emerging issues

- *Inadequate funding:* The Municipality will have to strategize beyond the lifeline of the Kenya Urban Support Programme (KUSP) in terms of funding developments implemented in the Municipality. This will be achieved through ingenious ways and models to support revenue generation in the Municipality.
- *Understaffing:* To ensure that the Municipality functions as intended, the CPSB will need to recruit more technical experts and support staff to assist the Municipal Manager and the Board in the administration of the Municipality.
- *Goodwill in the implementation of the land use plans:* There has to be a deliberate effort to implement approved development plans as these offer the framework of growth of the Municipality
- *Integration and coordination of government institutions:* There has to be a deliberate effort in consulting with other government agencies within their respective mandates to ensure harmonious and guided growth. There is especially the need to widely consult and agree with the NMK on the developments intended in the gazette heritage and outer core areas.

3.7 SUMMARY OF THE SITUATIONAL ANALYSIS

In summary, the table below captures the overall sectoral strengths, weaknesses, opportunities and threats arising from those sectors.

Table 3-14: Shows a summary SWOT analysis for the sectoral areas of the situational analysis report

SECTOR	STRENGTH	WEAKNESS	OPPORTUNITIES	THREATS
Natural Environment	▪ Good climatic conditions ▪ Adequate fresh water resources ▪ Good sceneries ▪ Expansive and clean beach coast ▪ The ocean (blue economy) ▪ Expansive mangrove forests	▪ Poor utilization of rain water and solar radiation ▪ Untapped potential of the sceneries and beach coast ▪ Suboptimal utilization of the blue economy	▪ Opportunity to harvest rain water and invest in solar generated power ▪ Opportunity to harness blue economy and associated potentials in fishing and marine tourism optimally ▪ Optimizing on the gains of carbon trading through carbon credits	▪ Pollution of ocean resources ▪ Human encroachment on water resources ▪ Low capital base to invest in necessary investments to harness on the natural capital
Population & Demographic Profile	▪ A socially cohesive and cultural society ▪ Increasing population within the island	▪ Poor attitude to the heritage value of the town	▪ Potential harnessing of the cultural heritage as tourism asset	▪ Influx of people may result to erosion of the rich swahili culture ▪ Competition of the available and scarce resources
Land & Human Settlements	▪ Vacant land that allows flexibility in development ▪ Compact human settlement areas	▪ Poor disaster preparedness ▪ Informal land tenure system ▪ Lack of secure land tenure	▪ Easy to provide services in the human settlements ▪ Optimizing on compact development models	▪ Land grabbing by the elite especially the political class ▪ Encroachment on fragile ecosystems
Economic Profile	▪ Specialized trades in the island from settlement to settlement	▪ Disabling environment in the optimization of	▪ Optimizing on the blue economy as an asset in all avenues including marine	▪ Lack of political goodwill to support socio-economic

SECTOR	STRENGTH	WEAKNESS	OPPORTUNITIES	THREATS
	▪ Inter-Linkage of the island by both air, water, and road expanding the market reach of the island ▪ The Lamu Port net impact in Lamu County	specialized skills and trade ▪ Demotivated populace in harnessing their skilled labour for capital gains ▪ Lack of political support ▪ Poor infrastructure development within the island ▪ Small fishing vessels	sports and cruise tourism once the Lamu port is fully operational ▪ Diversifying in trade and skilled labour from settlement to settlement within the island to enhance integration and specialization	development of the local communities ▪
Transportation Infrastructure	▪ Undeveloped land that may allow road easements ▪ Lamu Port net impact in relation to water transport ▪ Availability of air transport linkage to the island	▪ Natural geological and soil structure that may make road construction expensive due to extra needs to support the road on the loose sand ▪ Limited funds for road development within the island	▪ To coordinate with other government agencies to invest and construct roads in the island ▪ Opportunity to widen market reach given the diverse options of transport from the County	▪ Hefty compensation needs for road easements ▪ Bureaucracy related to protection of the port area that may destabilize current source of livelihoods ▪ Narrow streets and roads
Utility Infrastructure	▪ Availability of fresh water reticulation systems ▪	▪ Limited capacity to meet projected water demand ▪ Lack of a conventional sewer system ▪ Poor solid waste management	▪ Opportunity to invest in a modern waste management facility that allows for segregation, recycling and reusing of waste ▪ Availability a waste management land ▪ Opportunity to explore avenues to invest in sewer	▪ The topographical nature of the island that may limit the functionality of a sewer system ▪ The slow and unsustainable destruction of water resources from human activities
Social Infrastructure	▪ Availability of a huge youthful population to	▪ Poor accessibility of the referral hospital	▪ Opportunities in the investment of tertiary	▪

SECTOR	STRENGTH	WEAKNESS	OPPORTUNITIES	THREATS
	be absorbed in educational institutions ▪ Availability of land for expansion and establishment of educational/health institutions ▪ Few cases related to lifestyle diseases ▪ Availability of a County referral hospital ▪ Availability of lower-level health facilities accessible in all settlement areas	from the farmlands and villages such as Matondoni, Kipungani, and Kizingo ▪ Unharnessed skilled talents at tertiary level ▪ Poor capacity of lower-level health facilities in the villages	institutions to harness diverse and specialized skills ▪ Opportunity to expand and/or establish educational/health facilities ▪	▪ Use of drug and substance abuse among the youths. ▪ Lack of secure land tenure to guarantee investments in this public realm ▪ Limited capital resources to guarantee quality investments in the sector
Governance & Institutions	▪ Established government structures and partner institutions	▪ Limited capacity in both personnel and funds to fully execute on mandates	▪ Opportunity to diversify on revenue generation pools as guided by the Plan ▪ Opportunity to implement the Plan and guarantee quality service delivery	▪ Poor coordination of institutional structures to ensure quality service delivery

Source: KREIS, July 2020

In conclusion, this situational analysis serves as a basis for responsive Plan formulation as presented in the subsequent chapters.

4PLAN FORMULATION

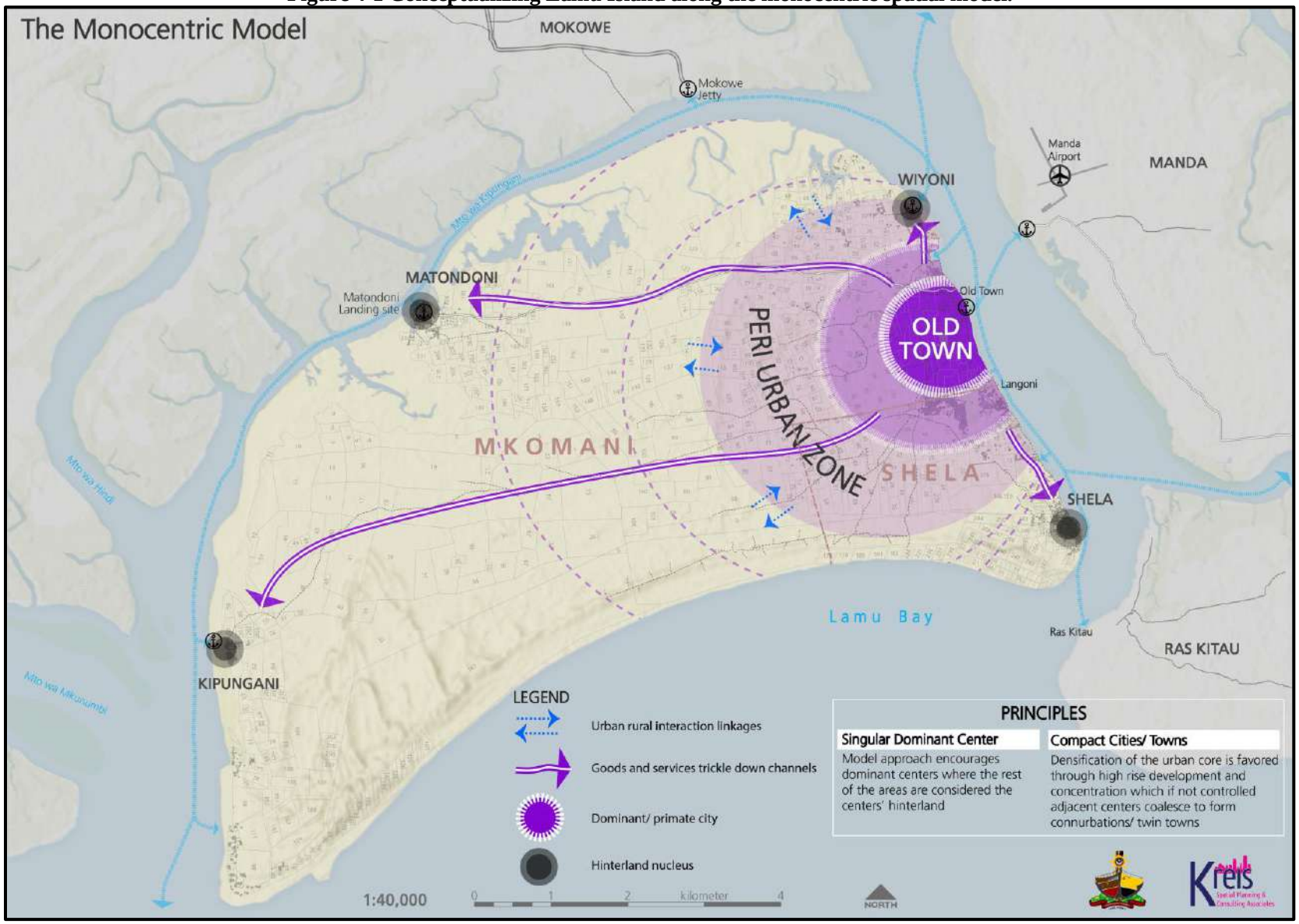
4.1 Plan Conceptualization and Strategy Formulation

The physical organization of human settlements within the Lamu Island is conceptualized around the spatial model of a polycentric city *vis-à-vis* a monocentric city. The two models are considered because they come close to how development within the Lamu settlements is currently shaped and manifests itself on the ground. Understanding the dynamics of both models is thus critical in structuring the urban nodes and rural hinterlands across the Island. The two models motivate us to visualize the pattern and form of future urban development in terms of where people will settle, work and traverse in their day-to-day living. In the long run, premising the development of Lamu Island on a suitable spatial concept will go a long way in configuring the human settlements in the most sustainable manner that guarantees environmental protection, growth of local economies, access to essential services and improved well-being of Lamu residents as discussed below.

4.1.1 Monocentric Urban Settlement Model

The monocentric urban model assumes one single Central Business District (CBD). This means that all employment is in one central area and each individual has to make round trip per day in order to access job opportunities and other essential services. Another feature of a monocentric city model is that it assumes the central area is connected by a network of radial transport channels to facilitate commuting. The description above relates to the current situation in Lamu whereby, all **essential** services are sought in Lamu old town compelling residents from as far as Matondoni and Kipungani to commute to access these services (refer to figure 4-1). However, the commuting is very expensive and unreliable as residents have to hire a boat to crisscross the ocean to reach the old town. The road linkage is still poor yet it is viewed as the alternative to sea transport by reducing cost and time taken to move from one settlement to another. The overreliance on Lamu old town as the main employment centre has also contributed to growth of informal settlements, urban sprawl and pressure on existing infrastructure/utility service provision. Consequently, other settlement nodes like Matondoni and Kipungani have lagged behind in their individual growth due to overdependence on the Lamu old town. As such, their local identities and potentials are not realized in the current development structure.

Figure 4-1 Conceptualizing Lamu Island along the monocentric spatial model.



Source: KREIS, 2020

It is in view of such outlined limitations of a monocentric urban growth that the planning team propose to situate the spatial development of Lamu Island on a polycentric model.

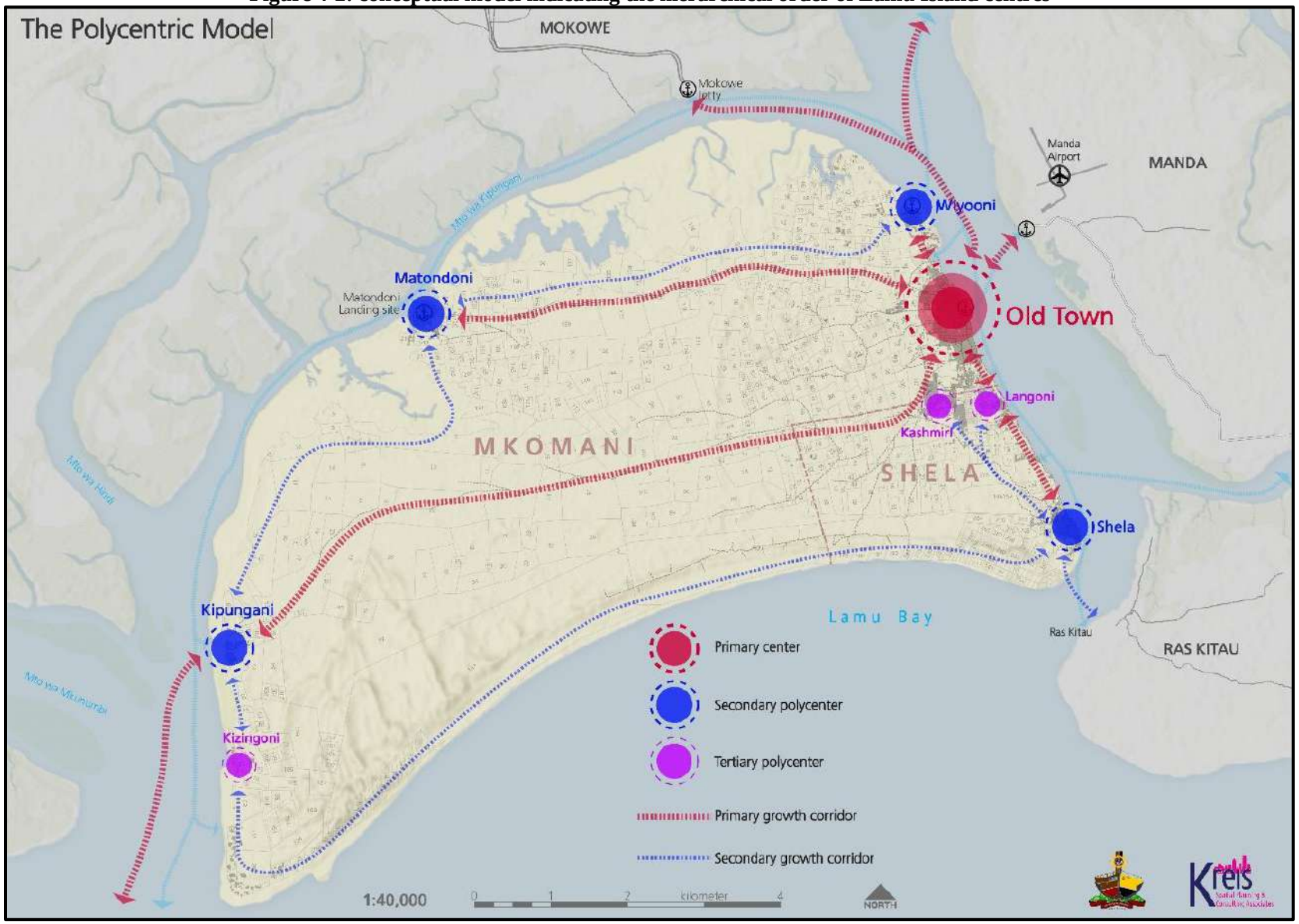
4.1.2 Polycentric Urban Settlement Model

The Lamu Island LPLUDP appropriates the conceptual basis of a polycentric model and its potential in enhancing sustainable settlements through apt utilization of contextual and locally-based resources for island-wide development. A polycentric model presupposes a network of urban nodes and their rural hinterland interlinked by corridors. The corridor could be a hydrological network, culture, transport network, green belt, flow of information or ICT infrastructures. These corridors are channels that promote interrelationship between the urban nodes and their functional hinterland areas. The aim of polycentric settlement model is to achieve an integrated development of the island and its countryside as a functional, spatial entity with diverse relationships and interdependences by acknowledging that small and medium-sized towns form important hubs and links in achieving a balanced development. Key structuring components that we emphasize include:

4.1.2.1 Settlement hierarchy:

A graduated ranking of urban core is essential in distribution and provision of different range of goods and services. Settlement hierarchy is based on the size of the core in terms of population and range of services available. The main centre thus provides the high-order services while the sub-centres provide low-order services. This implies that Lamu town as the main centre has a higher threshold as well as commands the largest sphere of influence (locally, nationally and globally) compared to Matondoni and Kipungani which are to be upgraded to second-rank centres. The hierarchy is also defined by the role, function and significance of each centre as proposed in each settlement plan.

Figure 4-2: conceptual model indicating the hierarchical order of Lamu Island centres



Source: KREIS, 2020

4.1.2.2 Compact or nucleated nodes:

The settlements in Lamu Island have grown into identifiable nucleated or clustered nodes. This pattern is maintained within the polycentric concept, whereby the centres develop around a central functional theme creating a common interest and urban identity. The potent of this pattern is that it allows for concentration of high-quality human activities at the core areas as a strategy to reach maximum population thresholds to be effectively and efficiently provided with infrastructure, social and economic services. Residents are therefore able to easily access clean water, health services, and education facilities among other amenities that enhances equal opportunities for economic growth. The enhanced social and economic functions of the nodes not only serve the population at the centre but also of its adjoining hinterland.

4.1.2.3 Concept of the hinterland:

This represents the region of influence for each of the urban core. It largely constitutes the rural surroundings that are sparsely developed and left as agricultural or conservation areas. The hinterlands reflect the ecological footprints of urban cores. They are the areas that produce material inputs that core areas need while absorbing the products that come out of it. Polycentric settlement system takes account of the spatial dimension by strengthening the core-hinterland functional interdependencies and synergies to promote integrated/balanced settlement pattern. That way, the backward linkage of the Centre through provision of municipal services and high-end goods/services to the hinterland is supported by the forward linkage of increasing the productivity of the hinterland.

4.1.2.4 Concept of an interconnecting corridor:

Provision of spatial linkages through networked infrastructures by way of developing robust transport routes that promote intra and interconnection with all the settlements is a key factor in polycentric settlement growth. The transport and communication routes should be able to generate enough trips to facilitate exchange of information, goods and services between the hinterland and the core area in order to sustain the local economy and improve livelihoods. The goal end is to connect each part of the settlement internally

and externally, facilitate economic growth, social integration and promote accessibility to networks.

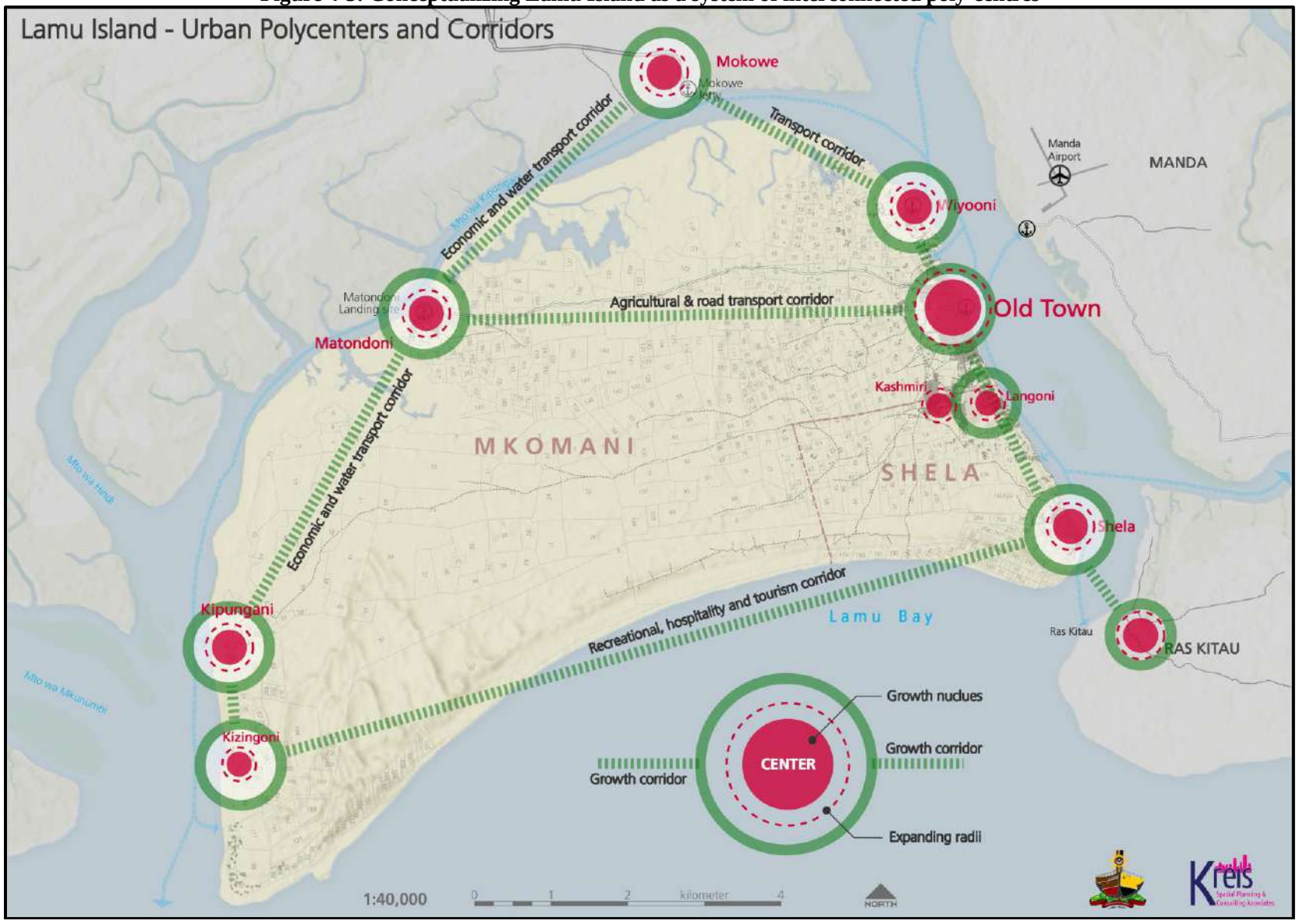
In conclusion, we adopt the polycentric urban spatial model as the preferred settlement character for Lamu Island. This can otherwise be understood as identification of several growth poles or network centers (poly centers) as opposed to monocentrism, which relies on one primate City/Town/Centre. Here, we envision Lamu town to be the main centre while Shella, Kipungani, Matondoni, Kashmir and adjoining areas to be sub-centres. Each Centre performs a specific socio-cultural and economic function and is to be linked by the proposed transport networks.

In this case, Lamu town will serve as the main commercial and administrative centre, Kashmir as the industrial centre, Shella as the centre for tourism, Matondoni as the centre for arts and culture while Kipungani as the socio-cultural centre. Each centre will have its own residential function and auxiliary serves while interrelating with their rural hinterland in terms of forward and backward linkages in a move to achieve sustainable development with emphasis on local identities. In essence, the poly centres will offer a plurality of choices for residents and investors within a networked system of urban centres. At the same time, the main urban core and the second-rank centres will create internal community cohesion while attracting external competitiveness.

The polycentricity will override the limitations of the monocentricity by:

- Effective spatial organization of urban activates (live, work, play in relative distance/time);
- Encourage smart growth of each identified urban node;
- Revitalize neglected settlements and areas through activating each settlement's local economy and identity;
- Enhance employment opportunities and balanced economic growth across the Island;
- Offering better quality urban environment through promotion of livable, safe and aesthetically appealing integrated settlements;
- Enhancing the environmentally and socially sustainable communities in each settlement;
- Increased housing stock and variety equally distributed among the settlements; and
- Democratization of planning and decision making in development

Figure 4-3: Conceptualizing Lamu Island as a system of interconnected poly-centres



Source: KREIS, 2020

4.2 Sectoral Strategic Interventions

This section presents the broad strategic interventions to boost the vitality and competitiveness of different urban sectors. The proposed interventions are to enable each sector to contribute to the economic growth and social development of all settlements within the Lamu Island. Broadly, the strategic interventions aim to improve the existing urban infrastructure systems, enhance economic growth of each center and support protection of the local heritage and natural environment. Specific interventions per sector is outlined in table 4-1 below.

Table 4-1: Strategic Interventions for urban development in Lamu Island

Sector	Objective	Strategic Interventions
Residential & Human Settlement	▪ To create a livable environment for sustainable human settlement.	▪ Preservation, conservation and rehabilitation of existing residential areas from incompatible land uses and activities. ▪ Enhance compact and nucleated settlement patterns in each settlement. ▪ Enhance the security of land tenure and ownership structure across the Island. ▪ Propose design guidelines for existing and proposed new residential areas. ▪ Designate new residential zones of character and distinction (modern +Swahili archetype). ▪ Encourage development of mixed-use areas, including housing, retail, office, and other compatible uses.
Industrial development	▪ To promote value addition to locally & regionally produced resources.	▪ Create employment opportunities for Lamu residents. ▪ Develop a manufacturing and processing industrial zone. ▪ Develop a light industrial zone to support local talents such as carpentry, dhow making, basketry and weaving. ▪ Construction of abattoirs. ▪ Develop agro-processing industries to add value to agricultural produce.

Sector	Objective	Strategic Interventions
Education	▪ To enhance the literacy knowledge and skills of the local & regional labour force.	▪ Expand/ upgrade existing primary and secondary schools. ▪ Develop tertiary level institution such as village polytechnics and vocational centers. ▪ Develop and equip new community libraries and resource centres.
Recreational/ Conservation	▪ To protect environmentally fragile areas and improve the quality of life in Lamu Island.	▪ Mapping, profiling and inventory of all archaeological sites, fragile ecosystem and points of historical significance. ▪ Gazette key religious and historical sites within the heritage site. ▪ Rehabilitation and renovation of historical buildings to sound levels. ▪ Preserve existing indigenous trees and natural landscape (sand dunes + mangrove+ marine) within the island. ▪ Conserve the heritage site and local culture. ▪ Revitalize existing football pitch and play grounds in the different neighbourhood. ▪ Develop a municipal stadium. ▪ Create a central urban park and neighbourhood open spaces. ▪ Revoke individual titles to recover irregularly allocated public land. ▪ Issue titles to existing and recovered public land. ▪ Enact a county heritage by-law and building code. ▪ Establish a world heritage site management committee. ▪ Establish a world heritage site community awareness program. ▪ Conduct annual environmental audit of the heritage site. ▪ Preservation of the unique cultural mixture of Swahili, Arabic and Persian culture including cuisine, language and religion. ▪ Brand, market and finance cultural festivals e.g. the Maulidi and donkey race. ▪ Patent cultural products. ▪ Packaging, branding & marketing of tourism products.
Public purpose	▪ To bring service delivery closer to the people of Lamu Island.	▪ Concentrate all national and county government offices and public offices at a central location.

Sector	Objective	Strategic Interventions
		▪ Construct village administrative offices in respective settlements e.g Chief's offices. ▪ Develop community facilities such as libraries, public halls and community centres in the various settlements. ▪ Equip and expand health facilities within each settlement.
Commercial Development	▪ To promote economic & financial vitality across Lamu Island.	▪ Designate primary, secondary and tertiary commercial centres to act as engines of urban growth. ▪ Encourage mixed-used commercial development in the urban nodes to discourage strip development. ▪ Rehabilitate the current municipal market and designate secondary market areas to facilitate trading in the Island. ▪ Enhance access to financial services such as credit facilities to promote micro & medium enterprises. ▪ Adoption of a 24-hour economy system in Lamu old town.
Public utility	▪ To provide adequate public facilities and services to support the current and future population of Lamu Island	▪ Expand the existing municipal and complementary water project, water storage and pumping station to sufficiently serve the current and future population. ▪ Promote water recycling and water saving practices. ▪ Setting up of septic tanks to be subjected to county and NEMA approval ▪ Develop a municipal wastewater treatment facility. ▪ Develop a sewer system with capacity to meet the long-term requirements for a fully-developed municipality. ▪ Device alternative means of waste disposal for areas where sewer services is impractical or cost-ineffective. ▪ Designate and implement a solid waste management facility. ▪ Establish municipal cemetery. ▪ Draft and implement a Municipality disaster management plan. ▪ Prepare and implement a municipal-wide storm water drainage plan.

Sector	Objective	Strategic Interventions
Transportation	▪ To enhance inter and intra linkages for economic growth and development.	▪ Tap advantages of the LAPSSET for regional, national and international connectivity. ▪ Construct roads to link Matondoni-Kipungani-Old town-Shella. ▪ Enhance the public sea transport; costing, capacity and frequency. ▪ Create a modal split to cater for specialized donkey, motorcycle, NMT and vehicle routes. ▪ Inventory of all roads and road reserves. ▪ Demarcate all the road reserves. ▪ Classify all road networks. ▪ Naming of all roads and streets. ▪ Upgrade roads outside the world heritage site motorable. ▪ Link all human settlement areas with a road network. ▪ Construction of specialized jetties to cater for cargo & passengers. ▪ License of all motorcycle operators. ▪ Designate separate routes for different means of transport e.g. donkey, motor cycle, NMT. ▪ Formation of a boat owners Sacco. ▪ Regulate the cost of transport across the Island. ▪ Designate docking sites for sea vessels.
Agricultural	▪ To intensify agricultural production in order to support the value addition industries.	▪ Conduct agricultural research to support farming activities. ▪ Adopt irrigation and green house farming techniques to modernize agriculture. ▪ Designate fish landing sites & complementary facilities. ▪ Enhance market accessibility of agricultural products. E.g Wakulima market, fish market. ▪ Provide cold storage facilitates to support fishing activities. ▪ Link agricultural produce to value addition and manufacturing industries.

5THE LOCAL PHYSICAL & LAND USE DEVELOPMENT PLAN FOR LAMU ISLAND

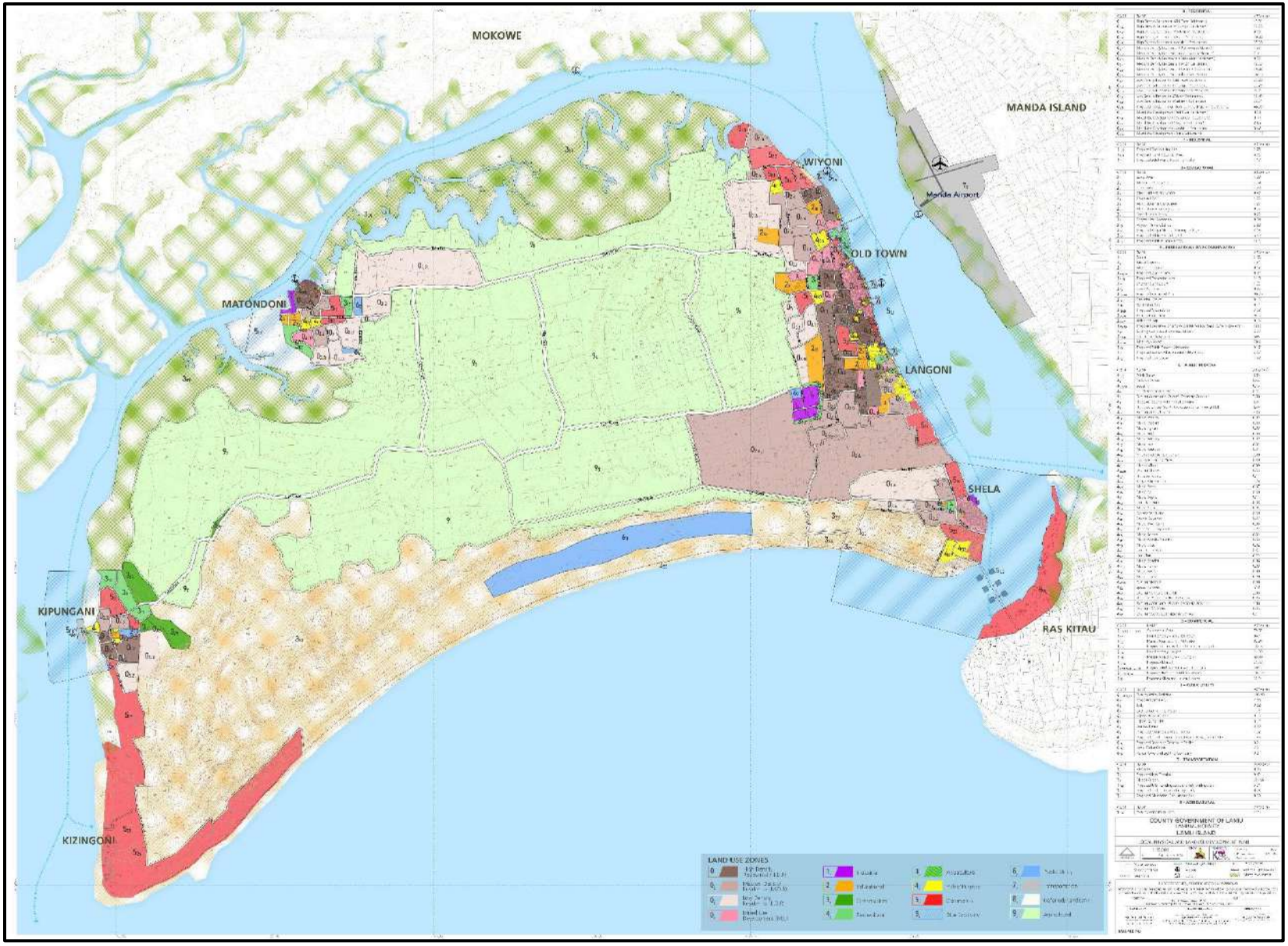
5.1 Introduction

The Local Physical & Land Use Development Plan for Lamu Island can only be understood from the basis of showing a functional link in the various urban settlements within the island. This follows the conceptualization that Lamu Island is seen as a system of functionally linked poly centres as discussed above.

The spatial linkage between the urban settlements traverse through a transition zone characterized by intense agricultural activities. It is proposed in this Plan that the Agricultural activities carried out in the zone be intensive as much as possible to ensure sustenance and food security of the island residents is guaranteed. More specifically, Zones 9_1, 9_5, 9_4, and 9_3 are seen as potential zones where this agricultural model could be heavily deployed while zones 9_8, 9_2, and 9_7 are seen as potential zones where agro-based value addition industries could be sited. In addition, these (latter) zones are seen as future areas where urban expansion could be accommodated hence acting as advisory boundaries where urban limits could be contained.

5.2 The Lamu Island Local Physical & Land Use Development Plan (LPLUDP)

Map 5-1: Proposed Lamu Island Local Physical & Land Use Development Plan



Source: KREIS, 2021

5.2.1 Broad Land Use Classification Manual

Save for the Agricultural zone highlighted above, land use classification within the island can only be understood within the context of proposed Urban settlement Plans that all together form the Lamu Island Local Physical & Land Use Development Plan. They are discussed in the following sections.

5.3 Human/Urban Settlement Plans

5.3.1 Lamu Old Town & Adjoining Areas Settlement Plan

5.3.1.1 Overview

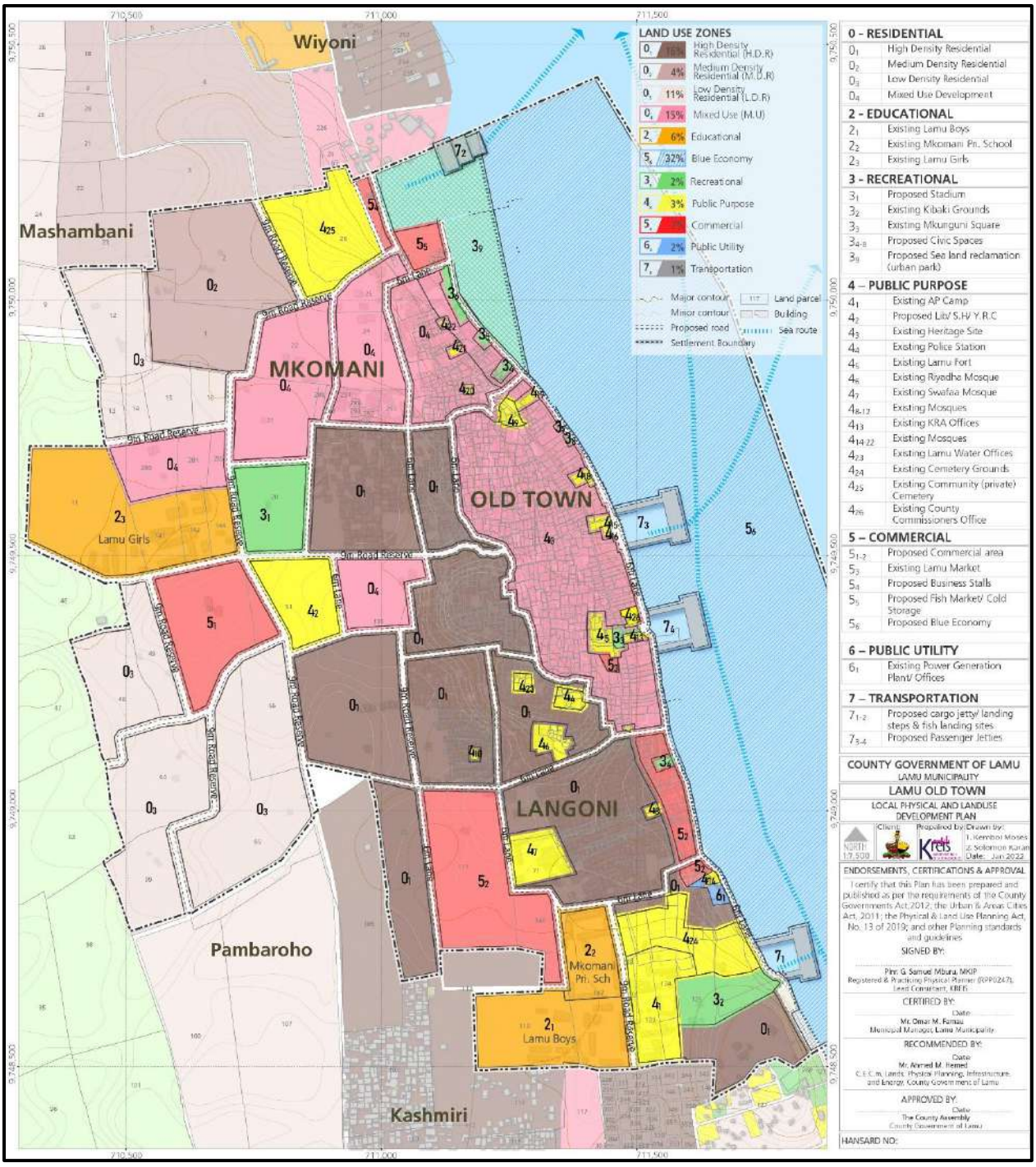
The Lamu Old Town and adjoining areas settlement plan covers the areas of Amu and the surrounding developments. This area covers the heritage site, two existing jetties and the surrounding residential and commercial developments as shown in Map 5-2. Due to the cultural and historical significance of the developments in this area, the plan recommends a delineation and preservation of the cultural town by a circumferential road separating the old town and the buffering outer areas. The plan also proposes that the areas surrounding the old town adopt similar development character where possible to that in the old town. The plan aims at achieving a balance between conservation and modernization by promoting conservation in the cultural sites and proposing new commercial and dense development sites within the adopted Urban boundary of the adjoining area.

A transport strategy has also provided for the development of a road around the old town terminating at a new proposed cargo Jetty near Wiyoni area. The plan proposes specialization of jetties as cargo and passenger jetties where the proposed cargo jetties are located to the outer edges of the urban area and connected to the proposed circumferential streets/roads. This proposal is aimed at integrating the management of donkeys within the town. This will be achieved by locating donkey sheds near the cargo jetties and in so doing, restrict their movement along the circumferential streets and inner streets from the circumferential streets. The same movement pattern will be applied to the motorcycle '*boda boda*' in effect leaving the ocean front to vibrance and non-hindered pedestrian movement.

In addition, the plan also aims at promoting public spaces and have thus provided a series of public open spaces both along the seafront and within the settlements. Most of these spaces especially the ones along the sea front are very small and no practical development can be put up on them. However, as small as they are, some are in private hands and will need to be acquired for use as public spaces.

Reference is made to the Settlement Plan below.

Map 5-2: Lamu Old Town and adjoining areas proposed settlement plan



Source: KREIS, 2021

5.3.1.2 Development Control Guidelines; Land Use Regulations; and Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined in the table 5-1 below.

Table 5-1: Proposed land use regulations and development standards for the growth of Lamu Old Town and adjoining areas settlement Plan

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Construction of multi dwelling residential blocks allowed on sites that are not currently developed with a maximum of 4 floors (Ground plus 3). • The immediate properties next to the outer edge of the old town to adopt building typology, material and massing similar to the old town so as to act as a graduating buffer area as the development spans to the outer peripheral edges of the urban boundary. • The overall scale and massing of new buildings is consistent with the proportions, bulk and volume of the adjacent traditional buildings • All views of the building are considered, not only the view from the street but also the views from adjoining open spaces and from the surrounding buildings. • The land uses fronting the ocean to integrate the access to the ocean frontage in the design • The use of colour and the choice of building material is compatible with those traditionally allowed in the old town. • All renovations to use local materials and be consistent with the original structure materials
			Commercial	• Convenient retail stores and corner shops within the residential buildings will be allowed on the ground and first floors of the buildings • Compatible offices could be allowed in the ground floor of the buildings. • Leisure and Commercial Recreational places like restaurants, pubs, hotels, and guest houses will be carefully allowed in buildings bordering major streets.

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
			Educational	• This use is only limited to the educational facilities that already exist within the residential zone
			Recreational (Especially applies to the areas that are not currently developed proposed for 0_1)	• Provision of public recreation amenities and open spaces or public/civic squares for every 2000 people within every residential neighborhood. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Areas adjacent to the ocean to integrate ocean frontage as part of recreational and public spaces
			Religious	• Development of mosques/Church is allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.
Residential	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes / Bungalows/Town Houses)	• Housing typologies acceptable in this area are Maisionettes, Bungalows and Town Houses designed in the Swahili arch-type. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha • Every plot will be served by a road that is not less than 9 meters in width
Residential	0_3	Low Density Residential	Residential (Preferably Maisonettes / Bungalows)	• These will be exclusive areas where maisionettes or bungalow residential units are allowed on plots that are not less than 0.1012 Ha in size • All properties should be served by roads not less than 9 meters
			Educational	• This will be limited to day care and kindergarten facilities within the residential blocks within a radius of 500 meters from each other. • Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.1012 Ha and the building footprint/built up area should not exceed 50% of the total land
Mixed Use	0_4	Mixed Use Development	• Residential • Commercial	• Construction of multi dwelling building blocks with a maximum of 4 floors (Ground plus 3). • Accommodation hotels/guest houses allowed within the buildings • Buildings designs to adopt the Swahili architecture • All buildings should observe building setbacks of not less than 2 meters

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• The minimum plot size will be 0.1012 Ha unless in areas where a proposed development is to be comprehensively developed • Every plot will be served by a road that is not less than 9 meters in width • Provision of recreational/public spaces within these zones recommended
Educational Educational	2_1	Existing Lamu Boys High School	• Outdoor recreational facilities consistent with educational land use • Classrooms and Administration blocks	• Any erected buildings should be used for educational or related activities • All buildings to incorporate designs to cater for physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time • Allowable number of floors for any building is 3 (Ground plus 2).
	2_2	Existing Mkomani Primary School		
	2_3	Existing Lamu Girls High School		
Recreational / Conservation / Public Space	3_1	Proposed Stadium	Recreational use	• The proposed stadium is 2.365 ha • Facility is to accommodate recreational and sports activities within Lamu Island. It is to accommodate a stadium with associated facilities • Other complementary facilities such as food courts and restaurants may be permitted to operate within these establishments upon careful consideration of the County Planning Authority
	3_2	Existing Public Park, Kibaki Ground	Recreational use	• Proper landscaping with manicured plant elements; installation of sitting benches; street furniture; and lighting to make the grounds more appealing as a vibrant recreational park • Provision of facilities that cater for physically challenged persons
	3_3	Existing Mkunguni Square	Public Space	• The square is a key public space within the Island where public barazas and recreations are undertaken. It is located outside Lamu Fort and has a frontage to the ocean • The square should be well maintained at all times and all trees conserved • An integrated urban design constituting the ocean frontage, the square and the Fort should be implemented to create a continuum of public space • The management of the square should continue to be undertaken in liaison with the Museums of Kenya

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	$3_{4\text{-}8}$	Proposed Open Spaces	Recreational use / Public Spaces	• Open spaces recommended for urgent acquisition and registration to secure tenure as public spaces • Landscaping and installation of street furniture; benches; and lighting resonating with the Swahili culture • Provision of facilities that cater for physically challenged persons • Design to incorporate access to ocean front
	3_9	Proposed Urban Parks/public land (Sea Land reclamation)	Outdoor Recreational use / Public Amenities	• Open spaces recommended for urgent acquisition and registration to secure tenure as public spaces; public amenities; public buildings • Landscaping and installation of street furniture; benches; and lighting resonating with the Swahili culture • Provision of facilities that cater for physically challenged persons and design to incorporate access to ocean front • Sports (assorted) pitches for active recreation
Public Purpose	$4_{1\ \&\ 4}$	Existing AP Camp and Police Station	Police camp	• This zone has an existing Administration Police Camp and should be regulated and developed in accordance to security installation needs and special planning areas • All access points to be kept free from obstructions to ensure speedy response in case of emergencies • Maximum number of floors for building is 4 (ground plus 3). • All buildings should observe building setbacks of not less than 2 meters
	4_2	Proposed Library/Social Hall and Youth Resource Centre	Community resource center	• This zone is proposed to be a resource center and safe space for youths to learn and engage in creative activities and talent pooling. The zone is aimed at having libraries, halls with internet connectivity, workshops, indoor sports facilities, youth counselling among others. • Maximum number of floors for building is 4 (ground plus 3). • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • Building footprint/built up area should not exceed 70% of the total land at any time

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	4_3	Proposed Special Planning Area	Lamu Old Town (Gazetted Heritage Site)	• The Lamu Old Town/ Heritage Site is a 16 Ha site gazetted as a world heritage site. The site is recognized due to its ancient Swahili architecture. • Within the zone, an order to maintain the building in their state has been issued in line with the National Museums and Heritage Act. • All new buildings to conform to the existing architectural form, character and material. • No alterations should be made on existing buildings within the heritage site unless authorized for rehabilitation and supervised by the County Government and the National Museums of Kenya. • All renovations and rehabilitation works should maintain the original character of the building. • All development application within the heritage site to be passed through the National Museum and Heritage office for review and recommendation. • There shall be an annual review, monitoring and evaluation of the state of archaeological and historical sites to determine their condition and make appropriate recommendations for actions. • Where need be, the State should consider facilitating the owners to maintain the buildings in their required state • No motorized transport including motorcycles will be allowed within the heritage site especially along the sea front unless it is for purposes of garbage collection and emergency response. • All narrow streets to be retained within the heritage site save for the proposed circumferential street. The circumferential street is intended to help buffer the inner core from the outer buffer peripheral areas • Motorized transport and donkey use will be allowed along the proposed circumferential streets • In the Mkomani area, restrict uses to the current residential use, guest houses are allowed but hotels and lodgings is prohibited in this area. Even with the allowed guest houses, alterations to the old houses are to be discouraged. • Along the seafront and bazar street, allow administrative, commercial and mixed development land uses. Tourist oriented developments such as guest houses, curio shops are allowable in this area. Cargo related activities are prohibited unless operated from the proposed cargo jetties.

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	4_5	Existing Lamu Fort	Any type of development in line with the permitted land use	• The fort is to be maintained in the original structure and color, any repairs and alterations are to be done with consultation between the County Government and the National Museums of Kenya. • An integration between the seafront, the public square and the fort is to be maintained as important public spaces
	4_{6-23}	Existing Mosques	Religious use	• Remain un-altered as they are and/or with minimal alterations upon request for approval by the Municipality.
	4_{24-25}	Cemetery	Cemetery Use	• Landscaping of the cemetery • Fence the cemetery • Ensure constant maintenance of the grounds • Could double up as a recreational parks
Commercial	5_{1-2}	Proposed Commercial Node	• Business premises and shops • Offices • Hotels and restaurants • Banks • Health Facilities • etc	• The zones are envisioned to be commercial zones with intense developments to serve as a sub hubs within Lamu old town. They are planned to bring out the mix and balance between conservation and modernity within the island as the new commercial nodes. In the long term, it is envisaged that much of the zone will be redeveloped into multi storey developments to create more space for business accommodation to make the areas more competitive and vibrant. • The zone is expected to provide examples of the best modern architectural and urban design practices with careful consideration given to heritage and conservation of buildings and places of historical significance and interest. • Development applications in this zone is mandatory as a way of justifying easements that will be a conditional requirement before any approval is granted as a way of ensuring the developments are regularized and the desired road reserves are obtained • To ensure the zones functions efficiently, strict measures will be applied to servicing and building design and all engineering services required to be high to ensure that businesses have reliable supply of electricity, water, internet access, telecommunication and waste management. • The buildings in this zone be required to observe a setback of 2 meters

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• The buildings are proposed to be a maximum of 4 floors (Ground plus 3) with the building footprint in every plot not exceeding 80% ground coverage • Aesthetics in the zone will be enhanced through the development of an integrated network of the adjacent proposed public spaces including the resource Centre and the stadium.
	5_3	Existing Market		• The market is currently being redeveloped. It is designated to serve as the main market within the Island. The market is to ensure provision for public toilets and waste management. • Solid waste collection to be done daily in the market
	5_4	Proposed Business Complex/stalls	• Business premises and shops • Bars and restaurants	• The zone is envisioned to provide a high-density mix of commercial activities through the development of a business complex centre. It is designed to accommodate various commercial uses that will spur creative and vibrant economic developments within the Island. • The buildings are proposed to be a modern design structures that complement ocean front design and outdoor furniture preferably done in container fabrications • Building designs to encourage use of natural lighting as much as possible and incorporate squares and civic spaces in the design
	5_5	Proposed Fish Market	• Fishing market • Fish restaurants • Fish landing site • Donkey/boda boda sheds	• This zone is provided to create a specialized selling area for fish and encourage value addition and marketing of the fish resource in the Island. It is further provided so as to enable tourists have a place to sample various seafoods. It is located next to the fish landing site and the proposed business complex that will pool lot of traffic. • The zone is recommended for fish selling markets, fish restaurants and related activities. • The fish landing site is designated to provide the fishermen a space for offloading their catch and an avenue for consolidation of products for marketing. The zone is expected to have complementally facilities such as cold rooms, ice making equipment among others. • Liaison with BMUs in the management of the landing site • Strict adherence to liquid and solid waste management is to be undertaken

Land Use	Zone No.	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• A donkey and boda boda shed will be proposed on this site to complement the proposed cargo landing steps which is to be accessed through a proposed path to be constructed on the reclaimed sea-land.
	5_6	Commercial – Blue economy	Restricted for fishing activities and recreational sports	• Areas are key transport routes to the Island and important for fishing and recreation. • Restrict discharge of untreated waste water and solid waste into the ocean. • Restrict the sale of petroleum products in the ocean waters • Liaison with Kenya Maritime Authority in the management of this zone • Commercial Fishing zone.
Public Utility	6_1	Existing Power Offices	Utility Office	• All buildings should observe building setbacks of not less than 4 meters while fronting a major road and not less than 2 meters while fronting secondary access roads • Access to the facility should be restricted and kept clear at all times to ensure unhindered response in case of emergency
Transportation	7_{1-2}	Proposed Jetty and Landing Steps (Cargo)	Jetty/Landing Steps Complementary amenities e.g.	• The jetties are planned to be transport hubs of the town where complementary facilities such as petrol serving station, vehicle and boat minor repairs are to be included. • The zone is also to incorporate a multi modal interchange facility that will have parking areas for motorized vehicles and donkeys. • There should be established a hub for donkeys and motorized transport modes to park to facilitate the transport of the cargo (Ref. zone 7_5) • Street furniture and street lighting to be actualized on the jetty to maximize as civic recreational spaces • Road linking to the jetty should be maintained in all-weather condition
	7_{3-4}	Transportation Jetties (Passengers only)	Existing Jetties	• To be utilized purely for pedestrian docking purposes – no cargo requiring *boda boda* or donkey transport allowed • Provision of facilities that cater for physically challenged persons
	7_5	Transportation	Boda boda / donkey sheds	• Provision of facilities where boda bodas and donkeys could dock awaiting transportation of passengers and cargo

5.3.2 Shella, Mararani Settlement Plan

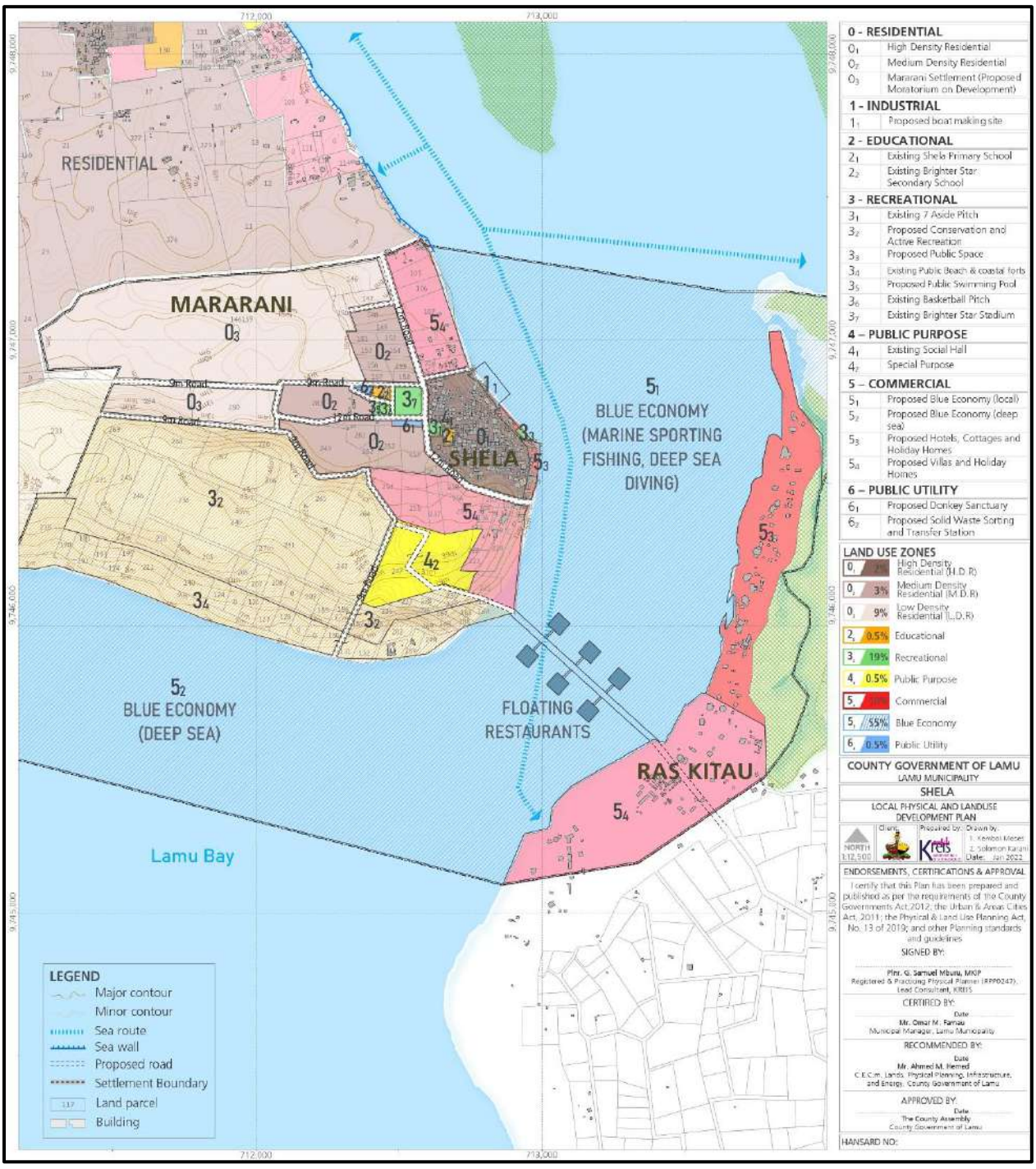
5.3.2.1 Overview

The settlement plan for Shella and Mararani covers the areas of Shella and Mararani as shown in Map 5-3. Shella is a competitive tourist destination within Lamu Island as it hosts prestigious hotel amenities and boarding facilities while still offering some of the best marine sporting and coastal beach experience. Additionally, the dunes with the freshwater aquifers where water in the island is sourced from originate from there. From the onset, Shella area is considered one of the best managed and planned among the settlements within the island. The streets are maintained in a clean way with a deliberate community action on routine solid waste management. Furthermore, the community through self-driven initiatives have been able to secure a string of public purpose areas for recreation purposes including a civic space along the ocean front, the Brighter Stars stadium, the 7-aside football pitch within the settlement and the basketball pitch and swimming pool near the primary school. In a bid to advance the good initiatives started by the residents, the Plan deliberately mapped these areas for purposes of posterity and made new proposals as suggested by the residents.

The plan proposes that the settled area of Shella and Mararani be the main residential zones with a moratorium being placed in Mararani area to allow for regularization while areas to the South West along the dunes classified for conservation. Activities such as site seeing and yoga festivals could be allowed in the conservation dune zones. The plan proposes that due to the existing high-end commercial hotels in Ras Kitau area of Manda Island and the proposed tourist activities in Shella, the ocean in this area can be harnessed for sports and recreation activities such as water skiing, boat racing among others. Floating restaurants could also be allowed in this area to offer more tourist destinations. However, all developments near the military installation are to be carried out having in mind the security and privacy of the facility.

Reference is made to the proposed Settlement Plan below.

Map -5-3 Shella and Mararani Proposed Settlement Plan



Source: KREIS, 2021

5.3.2.2 Development Control Guidelines; Regulations; Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined in table 5-2 below.

Table 5-2: Proposed land use regulations and development standards for Shella and Mararani areas settlement Plan

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Construction of multi dwelling residential blocks allowed with a maximum of 4 floors (Ground plus 3). • The land uses fronting the ocean to integrate the access to the ocean frontage in the design
			Commercial	• Convenient retail stores; corner shops; and small office establishments within the residential buildings will be allowed on the ground and first floors of the buildings • Leisure and Commercial Recreational places like restaurants, hotels will be carefully allowed in the first and second rows from the beach fronts.
			Educational	• This will be limited to existing facilities and day care/kindergarten facilities within the residential blocks within a radius of 500 meters from each other. • Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.1 Ha and the building footprint/built up area should not exceed 50% of the total land at any time
			Recreational	• Limited to existing amenities within the zone • Designs of residential courts/neighborhoods and streets to incorporate recreational and civic spaces. • Areas adjacent to the ocean to design without hindering public access to the ocean frontage
			Public Purpose	• Development of mosques/Church is allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.
	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes / Bungalows/Town Houses)	• Housing typologies accept able in this area are Maisionettes, Bungalows and Town Houses designed in the Swahili arch-type.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha • Every plot will be served by a road that is not less than 9 meters in width
			Educational	• This will be limited to day care and kindergarten facilities within the residential blocks within a radius of 500 meters from each other. • Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.1 Ha and the building footprint/built up area should not exceed 35% of the total land at any time

	0_3	Proposed Moratorium (Mararani)	Residential (Preferably Maisonettes / Bungalows)	• These areas are fast developing with haphazard subdivision of land, the zone is currently developing with a residential character.
				• A moratorium is proposed in this zone to give room for regularization of subdivision and developments in the settlement.
				• The regularization should ensure that:
				  ○ The developments do not encroach into the sand dunes
				  ○ The plots not to be less than 0.045 ha
				  ○ All developments are accessible by roads not less than 6m
				  ○ The developments maintain a building setback of not less than 2m
				  ○ Housing typologies allowed in this zone are maisonettes or bungalow
				  ○ Waste management site is provided for in the settlement.

Industrial	1_1	Industrial Use	Boat making and Boat Repair	• The zone is located along the shore and currently used for boat making and boat repair. The plan proposes to have the zone dedicated for the same use under strict environmental compliance on waste generated. • Development to provide for a comprehensive waste management plan before being allowed to operate

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Regular environmental audit to be carried out to ensure environmental sustainability of the site
Educational	2_1	Existing Shella Primary School	• Outdoor recreational facilities consistent with educational land use • Classrooms and Administration blocks	• These zones include two existing education facilities • Any erected buildings should be used for educational or related activities • All buildings to incorporate designs to cater for physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time • Allowable number of floors for any building is 3 (Ground plus 2). • All adjacent developments to be guided as provided for in these regulations
	2_2	Existing Brighter Star Secondary School		
Recreational	$3_{1,3}$	Recreational – Existing 7 aside Pitch & Civic space along the ocean frontage	Recreational Use	• The two sites are to be used for recreation use; one for active recreation and the other one for passive recreation • The active recreation site has already been identified for development of a 7 aside playground and is in the process of being developed while the passive recreation was a result of community action to reclaim the ocean front to develop a civic space • No other use is allowed on the two sites
	3_2	The Sand Dunes Ecosystem	Recreational – Conservation and Active Recreation Areas	• The entire sand dune ecosystem has to be demarcated and gazette as a critically fragile ecosystem to protect it from permanent human encroachment. • Passive recreational amenities such as Yoga festivals and beach carnivals will be allowed • Subdivisions in this zone is prohibited • Permanent developments not allowed in the zone • Setting up of tented areas for temporary camping is allowable • Outdoor marine sporting infrastructure on the shore is allowable • Provision of marine sports training grounds on the shore with regulated supporting shops for sporting gear • Active recreation in this zone to be allowed in liaison with WRA

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	3_4	Existing Public Beach & Coastal Forts	Recreational Use	• This zone is characterized by beautiful white beaches that are clean and attract locals and foreign tourists. The plan aims at protecting the area as a public beach and promoting it for recreational and tourist activities such as yoga festivals and beach carnivals • The area is to have no other permanent structures other than the existing coastal forts and should at all times remain open to the public • Motorized transport is prohibited in this zone
	3_5	Existing Public Swimming pool	Recreational Use	• This facility had been developed to train and encourage residents in the area especially ladies on how to swim. • The pool is proposed to be equipped with appropriate facilities including those catering for people with disabilities. • Support infrastructure sch as changing rooms to be provided
	3_6	Existing Basketball Pitch	Recreational Use	• Existing recreational and sports facilities in Shela. • Proper landscaping with manicured plant elements; installation of sitting benches; street furniture; and lighting to make the grounds more appealing as a vibrant recreational area
	3_7	Existing Brighter Star Stadium		
Public Purpose	4_1	Existing Social Hall	Public Purpose Use	• This zone has an existing social hall for the community • Any new attached structures to incorporate designs to cater to physically challenged persons • Maximum number of floors for the building is 3 (ground plus 2). • Considerations for upgrade are allowed for use as a resource center with more facilities such as indoor games and theatres
	4_2	Special Purpose	Military use	• The zone is to be used for approved military use • The facility to be properly demarcated and fenced • Developments in the neighborhood to observe appropriate building heights that respect the privacy and security of the military installation
Commercial	5_1	Commercial – Proposed Blue economy	Fishing / Marine Sporting Activities	• This zone is aimed at establishing an active blue economy zone that supports integration of marine resources to the economy of the Island • Restrict discharge of untreated waste water and solid waste into the ocean.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Liaison with Kenya Maritime Authority in the management of this zone • Commercial Fishing zone and all marine sports are allowed. • This area is proposed for development of marine sports such as boat racing, water skiing, swimming among others • Outdoor marine sporting infrastructure on the shore is allowable • The sporting areas are to be clearly demarcated
	5_2	Commercial – Proposed Floating Restaurant	Recreational Commercial use	• This zone is proposed for development of floating restaurants in line with the aim of attracting tourists to the island • The development of floating restaurants is to have strict observance of environmental and design rules • CGL, NEMA and KMA to be involved in vetting applications for such developments • The restaurants are not to be located along the established water transport routes to prevent hinderance to transport
	5_3- 5_4	Proposed Holiday homes and cottages	• Proposed Holiday homes and cottages • Health Facilities	• These zones are proposed for establishment of holiday homes, villas and cottages to promote tourism • The buildings are proposed to be a maximum of 4 floors (Ground plus 3) with the building footprint in every plot not exceeding 80% ground coverage • The buildings in this zone be required to observe a setback of 2 meters • The zone is expected to provide examples of the best modern architectural and urban design practices with careful consideration given to heritage and conservation of buildings and places of historical significance and interest. • Development applications in this zone is mandatory as a way of justifying easements that will be a conditional requirement before any approval is granted as a way of ensuring the developments are regularized and the desired road reserves are obtained • To ensure the zones functions efficiently, strict measures will be applied to servicing and building design and all engineering services required to be high to ensure that businesses have

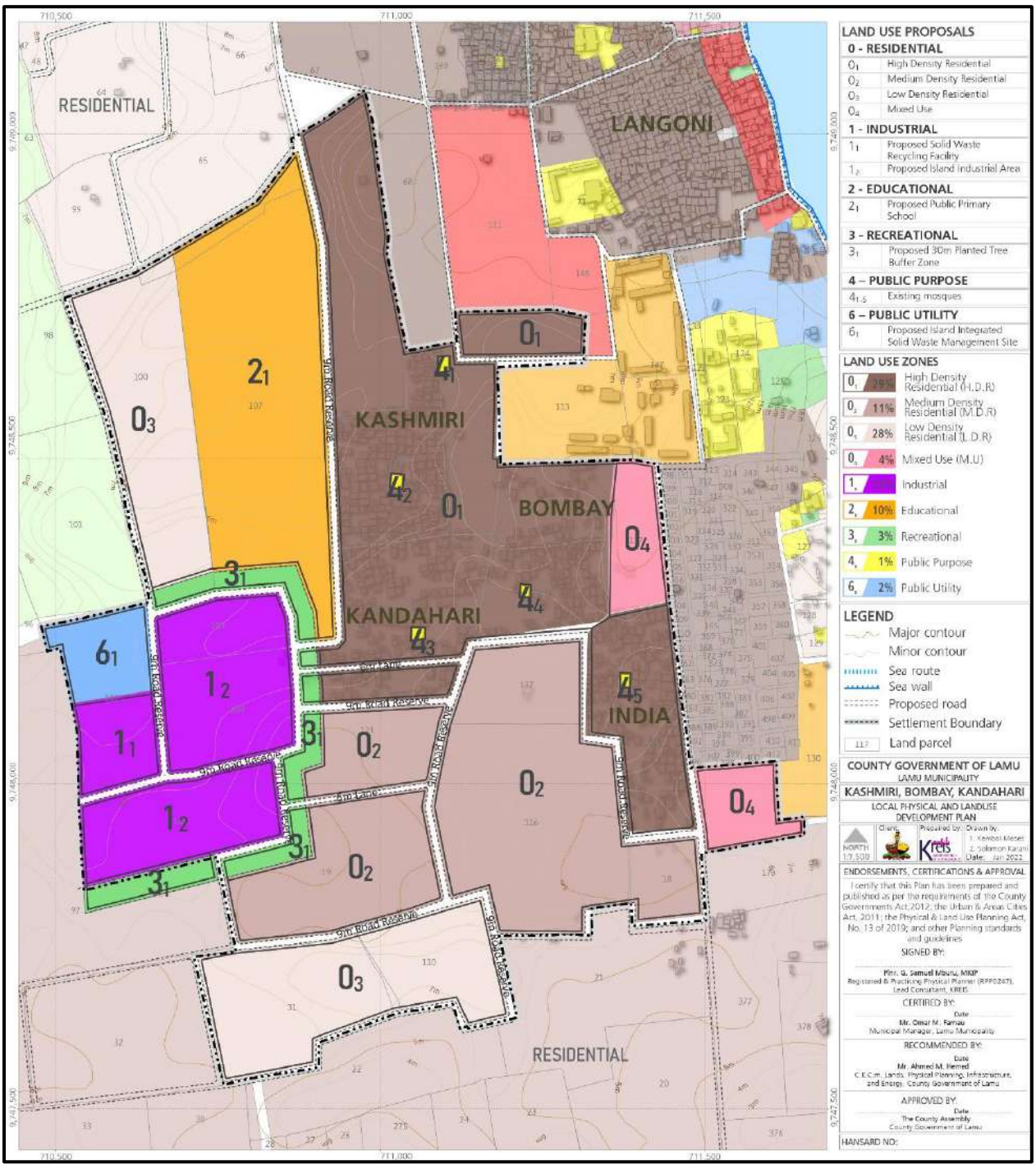
Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				reliable supply of electricity, water, internet access, telecommunication and waste management. • Building designs to encourage use of natural lighting as much as possible and incorporate green spaces.
Public Utility	6_1	Public Utility	Donkey Sanctuary	• This is a site proposed as a donkey sanctuary to be used for temporarily holding stray donkeys and also for treatment of the sick ones
	6_2	Solid Waste management site (sorting & transfer site)	Integrated waste management: Segregation and Recycling	• The site is to be used as an integrated solid waste management site where segregation of waste and recycling can be done • Also, to be utilized as a solid waste transfer facility for temporarily holding waste before it is transported to the main island solid waste management site near Kashmiri

5.3.3 Kashmiri, Bombay Settlement Plan

5.3.3.1 Overview

Kashmiri, Kandahari and Bombay areas are fast emerging settlements that have developed without any guiding plan. They are located to the South Western Side of Amu as seen in Map 5-1. The settlements have been conceptualized to play an important role as high density residential zones that will help to absorb the increasing population in the Island. The zone has also been planned to be the major industrial aera for the Island having an industrial zone and a waste management facility, these facilities will be buffered by a 30m tree plantation from the rest of the proposed developments. Map 5-4 and Table 5-3 details out the proposed settlement plan and the attendant land use regulations together with the development control guidelines and design standards.

Map-5-4: Kashmiri, Kandahari, India and Bombay Areas Proposed Settlement Plan



Source: KREIS, 2021

5.3.3.2 Development Control Guidelines; Regulations; Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined in table 18 below.

Table 5-3: Proposed land use regulations and development standards for Kashmiri and Bombay areas settlement Plan

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Regularization of the existing residential development to conform with the zone standards All new developments within the zone to ensure they conform to the standards below: • Construction of multi dwelling residential blocks allowed with a maximum of 4 floors (Ground plus 3). • All buildings should observe building setbacks of not less than 4 meters while fronting a major road and not less than 2 meters while fronting secondary access roads • All views of the building are considered, not only the view from the street but also the views from adjoining open spaces and from the surrounding buildings. • The minimum plot sizes with shared sewer management infrastructure will be 0.02 Ha • Road reserves to be acquired as proposed in the Plan • Save for the areas that are already developed, all new development areas provided for in the Plan to be served by roads that are not less than 6meters
			Commercial	• Convenient retail stores and corner shops within the residential buildings will be allowed on the ground and first floors of the buildings • Compatible offices could be allowed in the ground floor of the buildings. • Leisure and Commercial Recreational places like restaurants, pubs, hotels will be carefully allowed in streets that border primary streets.
			Educational	• This will be limited to full day primary school with day care/ kindergarten facilities within the residential blocks within a radius of 500 meters from each other.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.2 Ha and the building footprint/built up area should not exceed 50% of the total land at any time
			Recreational	• Mosques, churches, schools and any other public purpose areas within the zone to offer the opportunity for recreation activities • Designs of residential courts/neighborhoods to incorporate recreational spaces
			Religious	• Development of mosques/Church is allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.
	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes / Bungalows/Town Houses)	• Housing typologies acceptable in this area are Maisionettes, Bungalows and Town Houses designed in the Swahili arch-type. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha for all new development areas • Every plot will be served by a road that is not less than 9 meters in width
	0_3	Low Density Residential	Residential	• These will be exclusive areas where maisionettes or bungalow residential units are allowed on plots that are not less than 0.1012 Ha in size • All properties should be served by roads not less than 9 meters
	0_4	Mixed Use Zone	Commercial and Residential	• Construction of multi dwelling residential buildings with a maximum of 4 floors (Ground plus 3). • Commercial activities; Accommodation hotels/guest houses allowed within the buildings • Buildings designs to adopt the Swahili architecture • All buildings should observe building setbacks of not less than 2 meters • The minimum plot size will be 0.045 Ha unless in areas where a proposed development is to be comprehensively developed • Every plot will be served by a road that is not less than 9 meters in width
Industrial	1_1	Industrial	Waste Recycling	• The site is proposed to be developed with a solid waste recycling facility • All developments within the site are to be limited to those associated with solid waste recycling establishments

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	1_2	Industrial –	Logistics; go downs; and ancillary services	• All land use activities within this zone are to be utilized as either warehouse/go-downs; logistical facilities and other related ancillary service • Incase of different investor interests where the sites may undergo further subdivision, it is proposed that every plot not to be less than 0.3Ha • Every site after subdivision will be served by a road that is 9 meters • Building footprint/built up area should not exceed 65% of the total land at any time • All developments within the zone will be required to provide adequate fire disaster preparedness equipment in all their premises or show preparedness of the same before occupancy/operating certificated are issued by relevant authorities • Landscaping of the area to improve aesthetics.
Recreational	3_1	Proposed 30m Tree Planted Strip	Recreational – Tree Planting	• This zone is intended to act as a buffer between the industrial zone and the surrounding developments to reduce the effect of noise and air pollution that might emanate from the industrial uses • Planting of appropriate trees and grass • Proper and constant maintenance of the trees • Landscaping of the area to improve aesthetics.
Public Purpose	4_{1-5}	Existing Mosques	Religious use	• These areas have existing mosques • Remain un-altered as they are and/or with minimal alterations upon request for approval by the Municipality.
Public Utility	6_1	Public Utility – Existing solid waste management site	Integrated solid waste management	• Proper fencing of the waste management site with appropriate access control • Zone to act as a primary sorting area for waste before being taken to the recycling facility

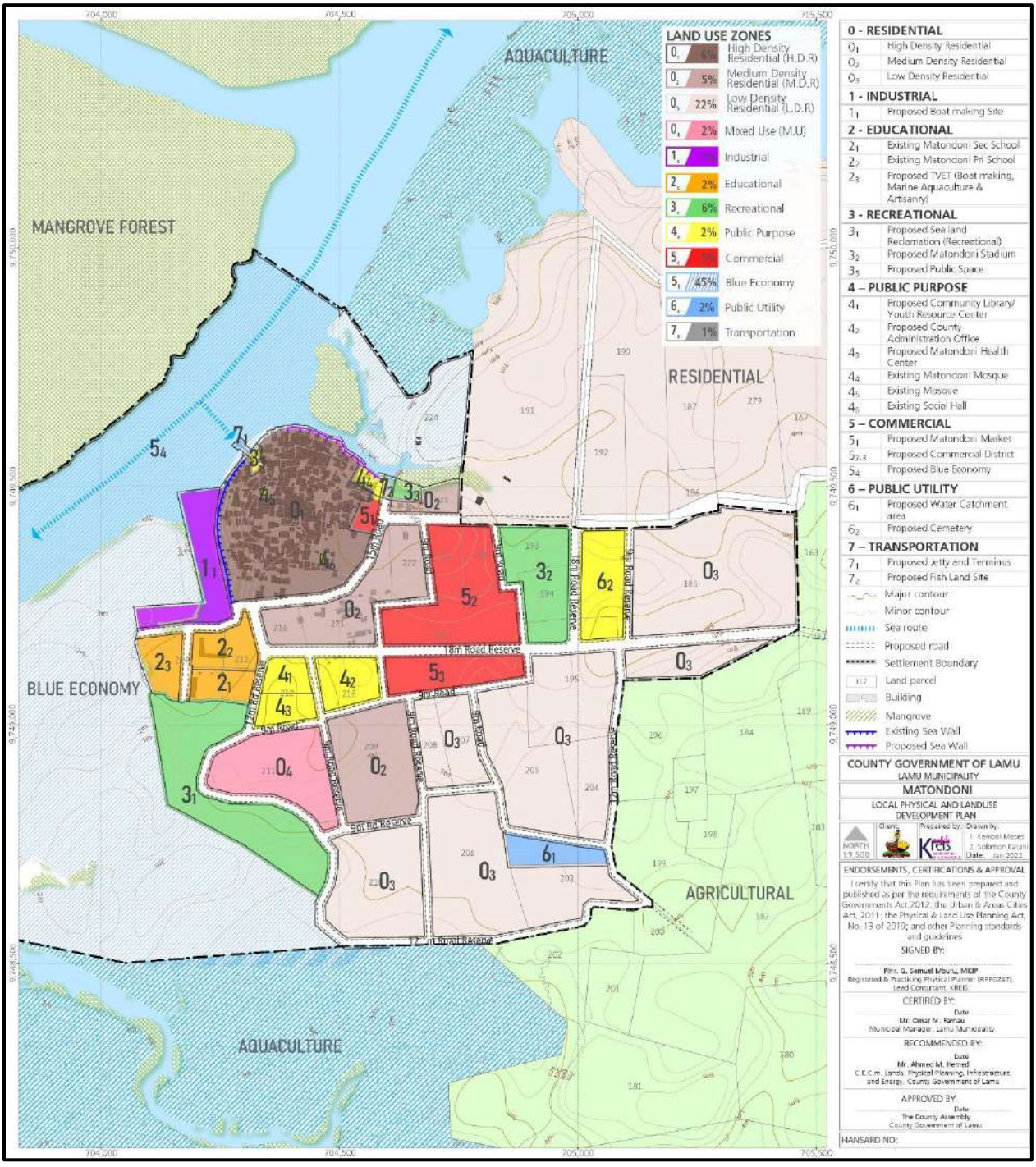
5.3.4 Matondoni Settlement Plan

5.3.4.1 Overview

Matondoni area is located to the North West of the Island and is accessed both via water and road. Matondoni has a dense settlement character and is one of the major settlements in the Island. Matondoni area is renowned for boat making, weaving and cultural dances. The plan seeks to take advantage of these strengths and provides space for boat making industry accompanied by a tertiary institute for boat making and related activities. The plan has also made proposals aimed at livelihood improvement by designating new commercial zones and a market for improved exchange of goods and services locally and attracting even foreign investments. On the same note, the plan proposes the construction of sea walls, seen as embarkments in a move to reclaim dry land from the sea land meant to serve as recreational areas to ensure quality of life is sustained within the settlement.

Overall, Matondoni is viewed as the secondary growth node after Lamu old town and public administration for service delivery will have to be extended to the settlement. Implementation of the Plan will see the residents diversify their skills and tap into their talents and resources to produce and earn individual revenue while still paying taxes to the County Government. To achieve this, the County government will be required to partner with the NLC in acquiring some of the land fronted for public use as way of inducing new developments within the settlement and in line with the Plan shown in Map 5-5. Land use regulations guiding the implementation of the Plan have been proposed and are discussed in Table 5-4.

Map 5-5: Matondoni Area Proposed Settlement Plan



Source: KREIS, 2021

5.3.4.2 Development Control Guidelines; Regulations; Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined below.

Table 5-4: Proposed land use regulations and development standards for Matondoni settlement Plan

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Construction of multi dwelling residential blocks allowed with a maximum of 4 floors (Ground plus 3). • The overall scale and massing of new buildings is consistent with the proportions, bulk and volume of the adjacent traditional buildings • All views of the building are considered, not only the view from the street but also the views from adjoining open spaces and from the surrounding buildings. • The land uses fronting the ocean to integrate public access to the ocean frontage in the design. • The treatment of the facade - proportions, scale, and modelling of the various facade elements - is in harmony with the surrounding elevations
			Commercial	• Convenient retail stores and corner shops within the residential buildings will be allowed on the ground and first floors of the buildings • Leisure and Commercial Recreational places like restaurants, pubs, hotels will be carefully allowed in streets that border the beaches and major streets.
			Recreational	• Mosques, churches, schools and any other public purpose areas within the zone to offer the opportunity for recreation activities • Designs of residential courts/neighborhoods to incorporate recreational spaces
			• Religious	• Existing mosques allowed • Any new religious facilities allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.
	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes /	• Housing typologies acceptable in this area are Maisonettes, Bungalows and Town Houses designed in the Swahili arch-type. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
			Bungalows/Town Houses)	• Every plot will be served by a road that is not less than 9 meters in width
	0_3	Low Density Residential	Residential (Preferably Maisonettes / Bungalows)	• These will be exclusive areas where maisonettes or bungalow residential units with Swahili arch type are allowed on plots that are not less than 0.1012 Ha in size • All properties should be served by roads not less than 9 meters
			Educational	• This will be limited to full day primary school with day care/ kindergarten facilities within the residential blocks within a radius of 500 meters from each other (cf. parcel 195). • Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.2 Ha and the building footprint/built up area should not exceed 50% of the total land at any time
	0_4	Mixed Use Zone	Residential/ Commercial	• Construction of multi dwelling residential buildings with a maximum of 4 floors (Ground plus 3). • Commercial activities; Accommodation hotels/guest houses allowed within the buildings • Buildings designs to adopt the Swahili architecture • All buildings should observe building setbacks of not less than 2 meters • The minimum plot size will be 0.045 Ha unless in areas where a proposed development is to be comprehensively developed • Every plot will be served by a road that is not less than 9 meters in width
Industrial	1_1	Proposed Industrial (Boat making)	Industrial Activates	• The site is proposed to be used for industrial use as a boat/dhow making area which is consistent with the current land use • Require an environmental management plan before activities commence • The industrial activities are to be well organized with waste management being observed to ensure the activities do not pollute the ocean
Educational	2_1	Proposed Matondoni (Boarding) Secondary School	- Educational Use	• Any erected buildings should be used for educational or related activities • All buildings to incorporate designs to cater for physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time • Allowable number of floors for any building is 3 (Ground plus 2).

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	2_2	Existing Matondoni Primary School		
	2_3	Proposed Vocational Training		• The proposed vocational training institute is to be used for training activities such as dhow making and other skills that are specialized in this area like basket weaving • All buildings to incorporate design to cater to physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time • Allowable number of floors for any building is 3 (Ground plus 2).
Recreational	3_1	Proposed Sea Land Reclamation	Recreation	• This zone is currently used for recreational activities, though it floods from time to time. • A seawall is proposed to be constructed as a permanent embarkment against sea overflows. This is aimed at reclaiming the site as a dry land for recreation purposes to include different pitches, jogging tracks, etc • The site once reclaimed is to be jointly used both by the general public and the student population within the proposed adjacent training institutions
	3_2	Proposed Matondoni Stadium	Sports and Recreational Use	• Development of appropriate infrastructure to enhance access to the proposed site • Other complementary facilities such as food courts and restaurants may be permitted to operate within these establishments upon careful consideration of the County Planning Authority.
	3_3	Proposed Public Space	Civic activities	• These two sites are proposed for passive and active recreation. The first site fronts the Matondoni jetty and it is to be designed and developed with street furniture to allow for passive use as a civic space; while the second one, near the mosque will require the construction of a sea wall up to the edge of the mosque as a way of reclaiming dry land from sea land. It is then to be used complementary with the mosque public space as an active social space where events and cultural talents can be showcased.
Public Purpose	4_1	Proposed Public Library, Social Hall and Resource Center	Any type of development in line with the permitted land use	• This zone is proposed to be a resource center and safe space for youths to learn and engage in creative activities and talent pooling. The zone is aimed at having libraries, halls with internet connectivity, workshops, indoor sports facilities, youth counselling among others. • Maximum number of floors for building is 4 (ground plus 3).

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • Building footprint/built up area should not exceed 70% of the total land at any time
	4_2	Proposed Administration Offices	Administration	• Maximum number of floors for building is 4 (ground plus 3). • All buildings should observe building setbacks of not less than 2 meters • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • All access points to be kept free from obstructions to ensure speedy response in case of emergencies • Building footprint/built up area should not exceed 60% of the total land at any time
	4_3	Proposed Matondoni Health Centre	Level III health centre	• Development of a hospital. • Maximum number of floors for building is 4 (ground plus 3). • All buildings should observe building setbacks of not less than 2 meters • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of ramps and other facilities that cater for physically challenged persons • All access points to be kept free from obstructions to ensure speedy response in case of emergencies • Building footprint/built up area should not exceed 50% of the total land at any time
	$4_{4,5}$	Existing Mosque	Religious Use	• Remain un-altered as they are and/or with minimal alterations upon request for approval by the Municipality.
	4_6	Existing Social Hall	Public Purpose	• The zone has an existing public social hall • Facility to be well maintained and used for intended public purpose
Commercial	5_1	Proposed Matondoni Market	Market Stalls and storage facilities	• The zone is proposed for the setting up of market facilities to facilitate trade in the area • The built-up area is proposed with a ground coverage not exceeding 65% and a maximum of 2 floors

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Road reserves to the market to be acquired through conditional easements and where necessary through monetary compensation
	$5_{2 \text{ and } 3}$	Proposed New Commercial District	Commercial Use	• The zones are envisioned to be commercial zones with intense developments to serve as a sub hub within Matondoni Area • The zone is expected to provide examples of the best modern architectural and urban design practices incorporating the Swahili architecture • To ensure the zones functions efficiently, strict measures will be applied to servicing and building design and all engineering services required to be high to ensure that businesses have reliable supply of electricity, water, internet access, telecommunication and waste management. • The buildings in this zone be required to observe a setback of 2 meters • The buildings are proposed to be a maximum of 4 floors (Ground plus 3) with the building footprint in every plot not exceeding 80% ground coverage • Aesthetics in the zone will be enhanced through the development of an integrated network of the adjacent proposed public spaces including the stadium, public purpose facilities and the conservation area.
	5_4	Blue economy	Restricted for fishing activities	• Area to be predominantly used for marine aquaculture and fishing activities • Restrict discharge of untreated waste water and solid waste into the ocean. • Liaison with Kenya Maritime Authority in the management of this zone
Public Utility	6_1	Proposed Community Water Service	Water utility	• Proposed site to be acquired and protected as a resource area • Restrict intense developments within a 100m of the site to ensure the ground water sources are unpolluted • Pit latrines prohibited within the site; mobile toilets to be used • Expansion of existing storage and reticulation facilities • Planting of trees that are environmentally friendly; those that do not have a rapid depleting effect of ground water resources
	6_2	Proposed Cemetery	Cemetery	• To be utilized for both Muslim and Christian needs • Appropriate landscaping and maintenance of the cemetery encouraged • Demarcation and fencing of the cemetery proposed

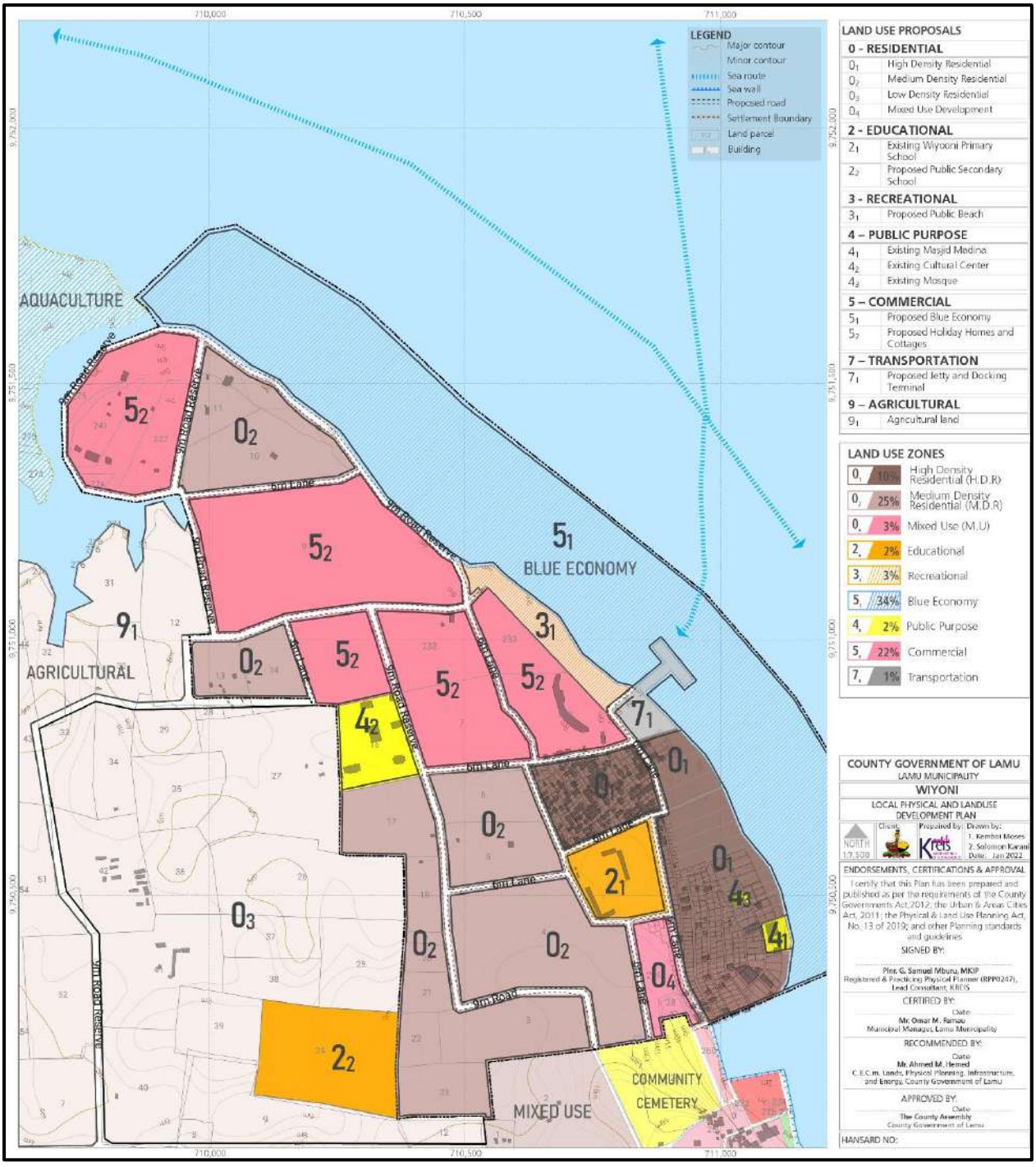
Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Transportation	7_1	Proposed Jetty and Terminus	Transport use	• The jetty is planned to be a transportation hub of the town. • The zone is also to incorporate a multi modal interchange facility that will have parking areas for motorized vehicles. • There should be established a hub for motorized transport modes to park to facilitate the transport of the cargo • Street furniture and street lighting to be actualized on the jetty and the site fronting the jetty to maximize as civic recreational spaces • Road linking to the jetty should be maintained in all-weather condition
	7_2	Proposed Fish landing site	Fishing value addition	• Development of boat docking and landing infrastructure • Development of cold storage facilities with ancillary services including BMU offices for fish stock taking and selling • Development of a fish market

5.3.5 Wiyoni Settlement Plan

5.3.5.1 Overview

Wiyoni area is located to the North of Amu at the edge of the old town. Part of the area was reclaimed from the sea and is developed with residential developments and commercial hotels. From the onset, Wiyoni is seen as an extension area of the old town and has been planned to have high end residential developments along the ocean to double up as holiday homes and cottages. Various transportation routes have been proposed to serve the various developments including a jetty which is seen as a means to enable sea transport serving that area. The proposed plan for the settlement and attendant land use regulations are discussed below in map 5-6 and table 5-5 respectively.

Map 5-6: Wiyoni Proposed Settlement Plan



Source: KREIS, 2021

5.3.5.2 Development Control Guidelines; Regulations; Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined below.

Table 5-5: Proposed land use regulations and development standards for Wiyoni settlement Plan

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Construction of multi dwelling residential blocks allowed with a maximum of 4 floors (Ground plus 3). • The overall scale and massing of new buildings is consistent with the proportions, bulk and volume of the adjacent traditional buildings • All views of the building are considered, not only the view from the street but also the views from adjoining open spaces and from the surrounding buildings. • The land uses fronting the ocean to integrate the access to the ocean frontage in the design. • The treatment of the facade - proportions, scale, and modelling of the various facade elements - is in harmony with the surrounding elevations
			Commercial	• Convenient retail stores and corner shops within the residential buildings will be allowed on the ground and first floors of the buildings • Leisure and Commercial Recreational places like restaurants, pubs, hotels will be carefully allowed in streets that border the beaches and major streets.
			Recreational	• Mosques, churches, schools and any other public purpose areas within the zone to offer the opportunity for recreation activities • Designs of residential courts/neighborhoods to incorporate recreational spaces
			Religious	• Existing mosques allowed • Any new religious facilities allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.
	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes /	• Housing typologies acceptable in this area are Maisonettes, Bungalows and Town Houses designed in the Swahili arch-type. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
			Bungalows/Town Houses)	• Every plot will be served by a road that is not less than 9 meters in width
	0_3	Low Density Residential	Residential (Preferably Maisonettes / Bungalows)	• These will be exclusive areas where maisonettes or bungalow residential units with Swahili arch type are allowed on plots that are not less than 0.1012 Ha in size • All properties should be served by roads not less than 9 meters
			Educational	• This will be limited to day care/ kindergarten facilities within the residential blocks within a radius of 500 meters from each other. • Where such kindergarten facilities are to be established, they should not be allowed on land that is less than 0.2 Ha and the building footprint/built up area should not exceed 50% of the total land at any time
	0_4	Mixed Use Zone	Residential/ Commercial	• Construction of multi dwelling residential buildings with a maximum of 4 floors (Ground plus 3). • Commercial activities; Accommodation hotels/guest houses allowed within the buildings • Buildings designs to adopt the Swahili architecture • All buildings should observe building setbacks of not less than 2 meters • The minimum plot size will be 0.045 Ha unless in areas where a proposed development is to be comprehensively developed • Every plot will be served by a road that is not less than 9 meters in width
Educational	2_1	Existing Wiyoni Primary School	Outdoor recreational facilities consistent with educational land use - Classrooms and Administration blocks	• Any erected buildings should be used for educational or related activities • All buildings to incorporate designs to cater for physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time; allowable number of floors for any building is 3 (Ground plus 2).

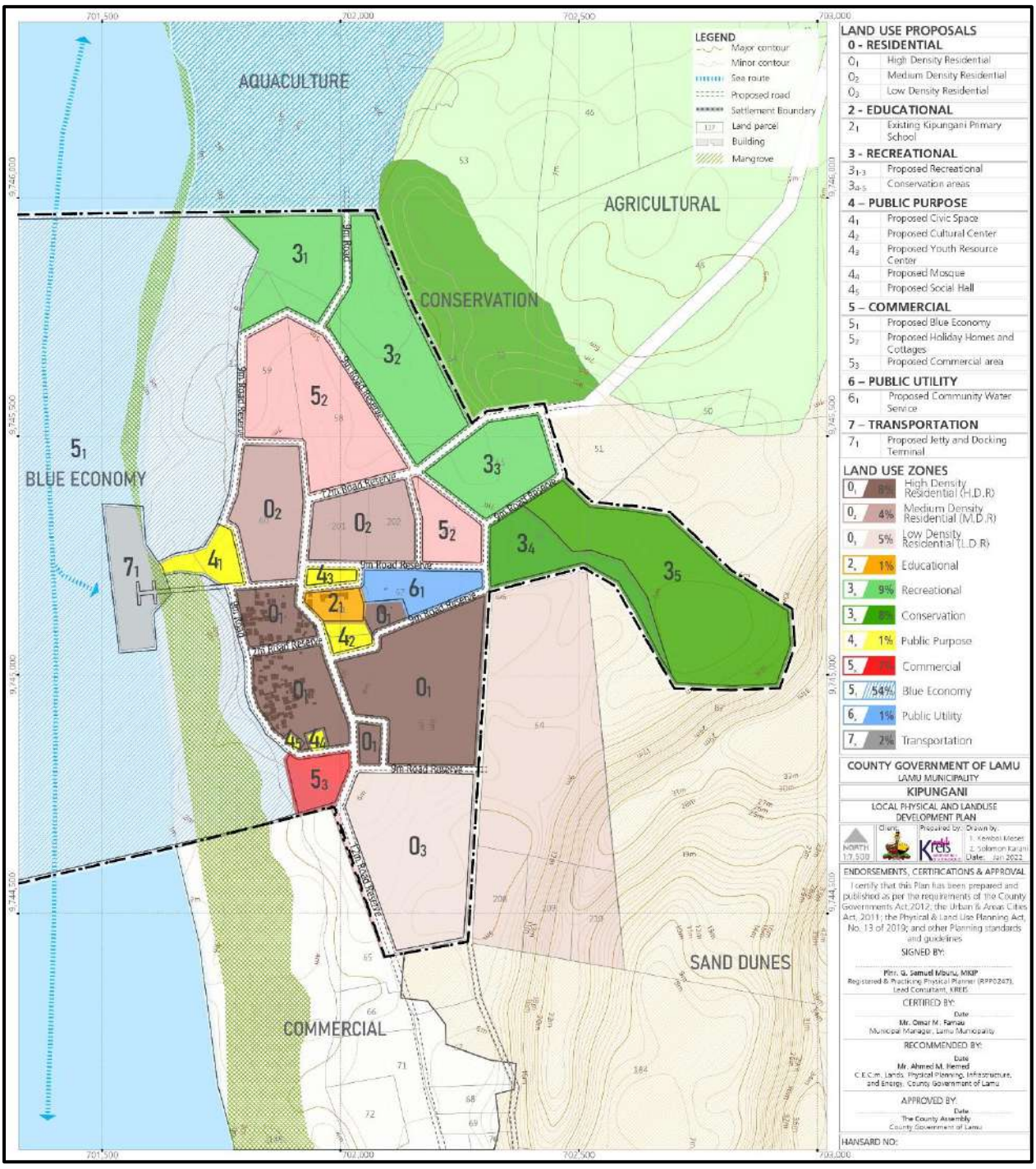
Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Public Purpose	4_1	Existing Masjid Madina	Religious use	• Remain un-altered as they are and/or with minimal alterations upon request for approval by the Municipality/ County Government.
	4_2	Existing Cultural Centre	Any type of development in line with the permitted land use	• This zone is proposed to be a resource center and safe space culture show casing and preservation. The zone is aimed at having libraries, exhibitions centres. • Maximum number of floors for building is 4 (ground plus 3). • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • Building footprint/built up area should not exceed 60% of the total land at any time
Commercial	5_1	Blue economy	Restricted for fishing activities and recreational sports	• This zone is aimed at establishing an active blue economy zone that supports integration of marine resources to the economy of the Island • Restrict discharge of untreated waste water and solid waste into the ocean. • Liaison with Kenya Maritime Authority in the management of this zone • Commercial Fishing zone and all marine sports are allowed.
	5_2	Proposed Holiday homes and cottages	Special type of development in line with the permitted land use	• The buildings are proposed to be a maximum of 3 floors (Ground plus two) with the building footprint in every plot not exceeding 50 % ground coverage • As such, building will be required to observe a setback of 4 meters from a primary road and about 2 meters from a secondary road. • Single dwelling residential and guest houses are allowed in this zone; or detached cottages within same property site for guests is allowed • Building designs to encourage use of natural lighting as much as possible and incorporate green spaces.
Transportation	7_1	Transportation - Proposed Jetty and Terminus	Jetty	• The jetty area is to incorporate a multi modal interchange facility that will have docking areas for sea vessels. • Street furniture and street lighting to be actualized on the jetty and the site fronting the jetty to maximize as civic recreational spaces • Road linking to the jetty should be maintained in all-weather condition.

5.3.6 Kipungani Settlement Plan

5.3.6.1 Overview

Kipungani settlement is located to the West of Amu and is accessed by both water and road. The settlement and adjoining areas are seen as a highly potential area for both domestic and foreign tourism and hence the various land use proposals related to the same. To complement the touristic strength of the town, various civic spaces and sites to show case the cultural heritage of Kipungani and Lamu as a whole has been proposed in an integrated manner. The areas towards the sand dunes have been proposed for passive and active recreation use while existing water catchment areas have been identified for protection. The proposals and attendant land use regulations are detailed in map 5-7 and table 5-6 respectively.

Map-5-7: Kipungani Proposed Settlement Plan



Source: KREIS, 2021

5.3.6.2 Development Control Guidelines; Regulations; Design Standards

For sustainable development in the growth of the proposed settlement Plan, various land use regulations and development standards need to be abided by. They are outlined below.

Table 5-6: Proposed land use regulations and development standards for Kipungani settlement Plan

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_1	High Density Residential	Residential – (Apartments)	• Construction of multi dwelling residential blocks allowed with a maximum of 4 floors (Ground plus 3). • The overall scale and massing of new buildings is consistent with the proportions, bulk and volume of the adjacent traditional buildings • All views of the building are considered, not only the view from the streets but also the views from adjoining open spaces and from the surrounding buildings. • The land uses fronting the ocean to integrate public access to the ocean frontage in the design. • The treatment of the facade - proportions, scale, and modelling of the various facade elements - is in harmony with the surrounding elevations
			Commercial	• Convenient retail stores and corner shops within the residential buildings will be allowed on the ground and first floors of the buildings • Leisure and Commercial Recreational places like restaurants, pubs, hotels will be carefully allowed in streets that border the beaches and major streets.
			Educational	• This will be limited to full day primary school with day care/ kindergarten facilities within the residential blocks within a radius of 500 meters from each other. • Where such facilities are to be established, they should not be allowed on land that is less than 0.6 Ha and the building footprint/built up area should not exceed 50% of the total land at any time
			Recreational	• Mosques, churches, schools and any other public purpose areas within the zone to offer the opportunity for recreation activities • Designs of residential courts/neighborhoods to incorporate recreational spaces
			Religious Use	• Development of mosques/Church is allowed preferably within corner plots so as to increase access and minimize noise pollution to the residential areas.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
Residential	0_2	Medium Density Residential	Primarily Residential (Preferably Maisonettes / Bungalows/Town Houses)	• Housing typologies acceptable in this area are Maisionettes, Bungalows and Town Houses designed in the Swahili arch-type. • Designs of residential courts/neighborhoods to incorporate recreational spaces. • Plot sizes to be a minimum of 0.045 ha • Every plot will be served by a road that is not less than 9 meters in width
	0_3	Low density	Residential (Preferably Maisonettes / Bungalows)	• These will be exclusive areas where maisionettes or bungalow residential units are allowed on plots that are not less than 0.1012 Ha in size • All properties should be served by roads not less than 9 meters
Educational	2_1	Educational – Kipungani Primary School	- Classrooms and Administration blocks	• Any erected buildings should be used for educational or related activities • All buildings to incorporate designs to cater for physically challenged persons • Building footprint/built up area should not exceed 50% of the total land at any time • Allowable number of floors for any building is 3 (Ground plus 2).
Recreational	$3_{1\text{-}3}$	Proposed Recreational Areas.	Any type of development in line with the permitted land use	• A seawall is proposed to be constructed as a permanent embarkment against sea overflows. This is aimed at reclaiming the site as a dry land for recreation purposes • Football, volleyball, basketball pitches, jogging tracks etc are allowed for development in this site once reclaimed
	$3_{4\text{-}5}$	Recreational - Conservation Areas	Conservation	• This zone is meant to be a conservation zone supporting the water aquifers in the area • Planting of appropriate vegetation that does not deplete underground water resource • Passive recreation activities like jogging and nature walks allowed
Public Purpose	4_1	Proposed Civic Space & Livelihood Development Area	Any type of development in line with the permitted land use	• This zone is provided to create a specialized selling area for fish and encourage value addition and marketing of the fish resource within the settlement and island as a whole. It is further provided so as to enable tourists have a place to sample various seafoods. It is located next to the proposed jetty and fish landing site. • The zone is recommended for fish selling markets, fish restaurants and related activities. • Strict adherence to liquid and solid waste management is to be undertaken • The area is expected to pool a lot of traffic and hence a detailed site plan for the area will have to be undertaken once the County Government acquires the land.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
	4_2	Proposed Civic Space	Public purpose	• This site has strongly been proposed for acquisition by the government for utilization as a public civic space • It is to be developed as an urban park while maintaining the natural vegetation of the site i.e. indigenous trees. Designs for development of the park should be such that the trees are integrated in the overall design • Wi-Fi is to be provided freely in the site and park furniture installed. The furniture and lighting should portray the rich culture of Lamu as a theme • Cultural events and artefacts will be allowed for showcasing in the site as a livelihood earner for the residents • The proposed 12m boulevard guaranteeing a clear sight line will have to be acquired to add value to the existence and vibrance of the site as a public area
	4_3	Proposed Youth Resource Center	Public Purpose	• This zone is proposed to be a resource center and safe space for youths to learn and engage in creative activities and talent pooling. The zone is aimed at having libraries, halls with internet connectivity, workshops, indoor sports facilities, youth counselling among others. • Maximum number of floors for building is 4 (ground plus 3). • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • Building footprint/built up area should not exceed 70% of the total land at any time
	4_4	Proposed Mosque	Religious Use	• The site has remnants of an ancient mosque. • The Plan proposes its rehabilitation to serve the religious function of the settlement
	4_5	Proposed Social Hall	Public Social Hall	• This zone is proposed to be a meeting centre for the residents. It is proposed to have meeting hall with internet connectivity. • Maximum number of floors for building is 3 (ground plus 2). • All developments on site to incorporate Swahili arch-type designs and landscaping to improve the aesthetics of the site as a whole • Provision of facilities that cater for physically challenged persons • Building footprint/built up area should not exceed 70% of the total land at any time
Commercial	5_1	Blue economy	Marine Resources	• Area to be predominantly used for marine aquaculture and fishing activities • Restrict discharge of untreated waste water and solid waste into the ocean.

Land Use	Zone Number	Specific Zone Classification	PERMITTED LAND USE	DEVELOPMENT CONTROL GUIDELINES/ DESIGN STANDARDS
				• Liaison with Kenya Maritime Authority in the management of this zone
	5_2	Proposed Holiday homes and cottages	Holiday homes and cottages	• The buildings are proposed to be a maximum of 3 floors (Ground plus two) with the building footprint in every plot not exceeding 50 % ground coverage • As such, building will be required to observe a setback of 4 meters from a primary road and about 2 meters from a secondary road. • Single dwelling residential and guest houses are allowed in this zone; or detached cottages within same property site for guests is allowed • Building designs to encourage use of natural lighting as much as possible and incorporate green spaces.
	5_3	Proposed Commercial area	▪ Business and commerce ▪ Offices ▪ Hotels	• The buildings are proposed to be a maximum of 3 floors (Ground plus two) with the building footprint in every plot not exceeding 50 % ground coverage • As such, building will be required to observe a setback of 6 meters from the ocean frontage and about 4 meters from the 9m road. • Building designs to encourage use of natural lighting as much as possible and incorporate green spaces and to integrate unhindered public access to the beach
Public Utility	6_1	Proposed water Reticulation Services	Water Abstraction; Storage; Reticulation source	• Proposed site to be acquired and protected as a resource area • Restrict intense developments within a 100m of the site to ensure the ground water sources are unpolluted • Pit latrines prohibited within the site; mobile toilets to be used • Expansion of existing storage and reticulation facilities • Planting of trees that are environmentally friendly; those that do not have a rapid depleting effect of ground water resources
Transportation	7_1	Proposed Jetty and Terminus	Special type of development in line with the permitted land use	• The jetty is planned to be a transportation hub of the town. • The zone is also to incorporate a multi modal interchange facility that will have parking areas for motorized vehicles. • There should be established a hub for motorized transport modes to park to facilitate the transport of the cargo • Street furniture and street lighting to be actualized on the jetty and the site fronting the jetty to maximize as civic recreational spaces • Road linking to the jetty should be maintained in all-weather condition

5.4 Urban Development Strategies

Urban development strategies are action-oriented development proposals that aim to promote equitable growth of cities together with their adjoining hinterland. The basis for crafting urban development strategies for Lamu Island include:

- Sustainable development: the strategies take into account the long-term preservation of tangible and intangible heritage, cultural and natural resources in an integrated manner that protects the environment.
- Socio-economic development: Lamu Island as one of the preferred tourist destinations worldwide is economically catalytic in accruing local and foreign exchange from showcasing its heritage assets. Job creation as a strategy to link to local economy, creates sustainable livelihood avenues in form of specialized and professional local tour guides, local traders, artists, carpentry, weavers, sailors that will uplift the well-being of the local community by alleviating joblessness and reducing poverty.
- Urban identity: the preservation of heritage and cultural assets create a sense of place and local pride that is unique to Lamu Island.
- Community participation: active involvement of the local community in all aspects of development and implementation.
- Partnership and collaborations: inclusion of different stakeholders to achieve the overall development actions proposed in the plan. This includes; financial service providers, private sector, training and academia institutes (e.g KMTC), development agencies, NGOs, and national government agencies among others.

The plan identifies several strategies that are detailed out in the next sections.

5.4.1 Heritage Preservation Strategy

The Lamu Island LPLUDP envisages an effective and actionable heritage preservation and conservation strategy that will not only safeguard natural resources but also revitalize the local economy. More importantly, the strategy buttresses the urban identity, pride and sense of belonging of Lamu residents. In line with the vision of having ''a world-class, culturally sustainable Municipality'', the proposed strategy appreciates the value of

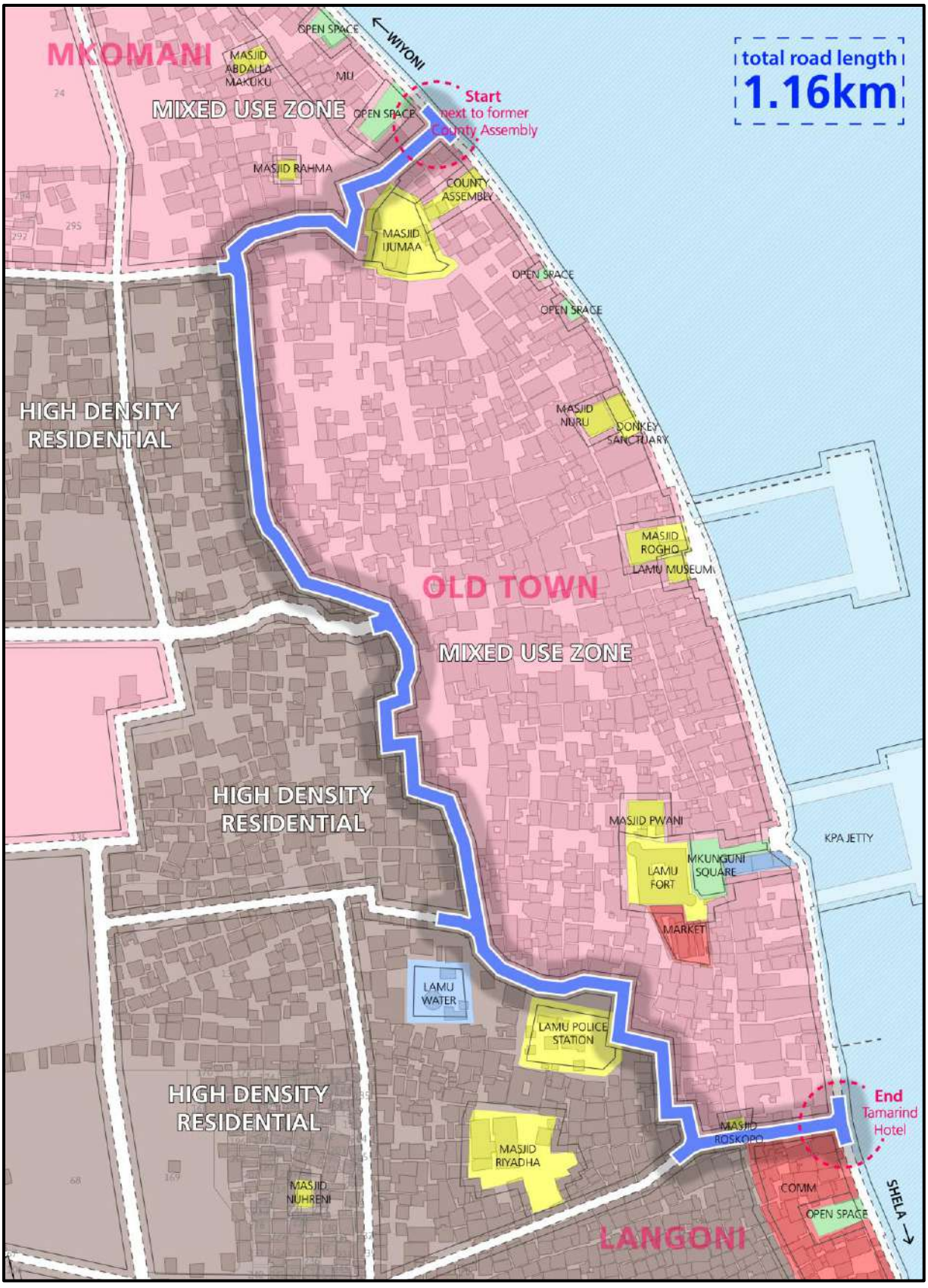
heritage assets found in Lamu including: historical buildings e.g Lamu fort, Lamu museum, festivals such as the *Maulidi* and donkey races; architectural designs of Swahili typology; art forms; religion; cuisine; cultural fusion of Arabs, Indians, Persians, Europeans and Bantus; and natural resources such as the sand dunes, expansive mangrove forests and the ocean.

The integration of the distinct Lamu heritage in the planning and development of the Island is therefore very crucial in achieving the local community and the Municipality's vision. The strategy also expands on target 11.4 of the sustainable development goals that calls for 'strengthening efforts to protect and safeguard the world's cultural and natural heritage''.

Key actions identified for preservation of the Lamu Island heritage include:

- Buffering of the gazetted world heritage site with a circumferential road. This will act as a permanent property boundary of the area measuring 16 Ha in Lamu Old town that needs to be preserved for posterity in its current form or within other prescribed NMK guidelines. This implies that no new structure developments, other than those under authorized rehabilitation will be allowed within the zone. The proposed road is also meant to serve as the boundary signifying the integration of the old and the modern as a land use continuum. The road is envisioned to be 6-metres in width originating from Tamarind restaurant along the seafront and terminating behind former Lamu County Assembly offices, now Municipality offices as shown in figure. It is to be paved with cabro surface with the use of motorable transport restricted to the provisions outlined in the land use regulations detailed above.

Figure 5-1: The proposed circumferential road buffering the inner core of the heritage site



Source: KREIS, 2021

5.4.1.1 Affected Properties: Inner Circumferential Street

The implementation of this project is expected to impact on a number of private properties within the Old Town. The affected properties have been detailed in table 5-7 and estimated to be 123 in number. The nature and extent of impact is yet to be established at the point of the Plan preparation. Once the Plan is ratified for implementation, it is expected that due processes for land acquisition and compensation for private land will be followed. In addition, it is expected that a Resettlement Action Plan (RAP) for the project will be carried to bring out other social-cultural impacts the project may have on the island residents and a mitigation framework for the impacts.

It is expected that this will be a huge capital project for the Municipality to undertake on its own and therefore, synergized efforts from other authorities including UNESCO, NMK, KURA, NLC, SoK, and the County Government of Lamu will need to be seen and felt through the Project implementation once the actual and associated project costs are brought out by the RAP.

Table 5-7: List of affected properties by the proposed inner circumferential street

S/N	Plot_No	S/N	Plot_No	S/N	Plot_No
1.	251	18.	897	35.	164
2.	165	19.	1237	36.	686
3.	134	20.	250	37.	661
4.	687	21.	664	38.	1215
5.	907	22.	198	39.	856
6.	80	23.	184	40.	155
7.	851	24.	285	41.	1283
8.	203	25.	154	42.	1303
9.	847	26.	852	43.	978
10.	132	27.	858	44.	935
11.	895	28.	200	45.	199
12.	284	29.	282	46.	662
13.	152	30.	127	47.	906
14.	857	31.	848	48.	283
15.	125	32.	248	49.	136
16.	244	33.	850	50.	685
17.	1201	34.	153	51.	126

S/N	Plot_No
52.	855
53.	165
54.	137
55.	854
56.	741
57.	584
58.	1139
59.	1372
60.	1257
61.	725
62.	612
63.	575
64.	1133
65.	614
66.	1164
67.	728
68.	605
69.	1155
70.	609
71.	603
72.	719
73.	611
74.	1141
75.	1158

S/N	Plot_No
76.	755
77.	604
78.	720
79.	749
80.	724
81.	499
82.	601
83.	560
84.	1165
85.	1131
86.	1297
87.	1252
88.	
89.	1299
90.	615
91.	460
92.	1438
93.	1437
94.	
95.	981
96.	1254
97.	1182
98.	975
99.	461

S/N	Plot_No
100.	544
101.	465
102.	1250
103.	336
104.	106
105.	1104
106.	935
107.	562
108.	464
109.	466
110.	1097
111.	459
112.	977
113.	319
114.	1105
115.	1273
116.	1251
117.	1103
118.	983
119.	976
120.	
121.	
122.	885
123.	1083

Source: KREIS, 2021

5.4.1.2 Affected Properties: Outer Circumferential Street

Similarly, to the inner circumferential street, the implementation of this project will also have certain impacts on private land and acquisition and compensation procedures will need to be abided to. However, considering this proposal has been made on private land with no current active developments, built up forms, the County Government of Lamu together with the NLC may initiate discussions with the affected property owners to secure the corridor through negotiated easements free of charge. Nevertheless, a RAP will also be carried out to discuss and bring out the grievance redress mechanisms as agreed between

the parties. The affected parcels are preliminarily determined to be 43 in number and are detailed in table 5-8.

Table 5-8: List of affected properties by the proposed outer circumferential street

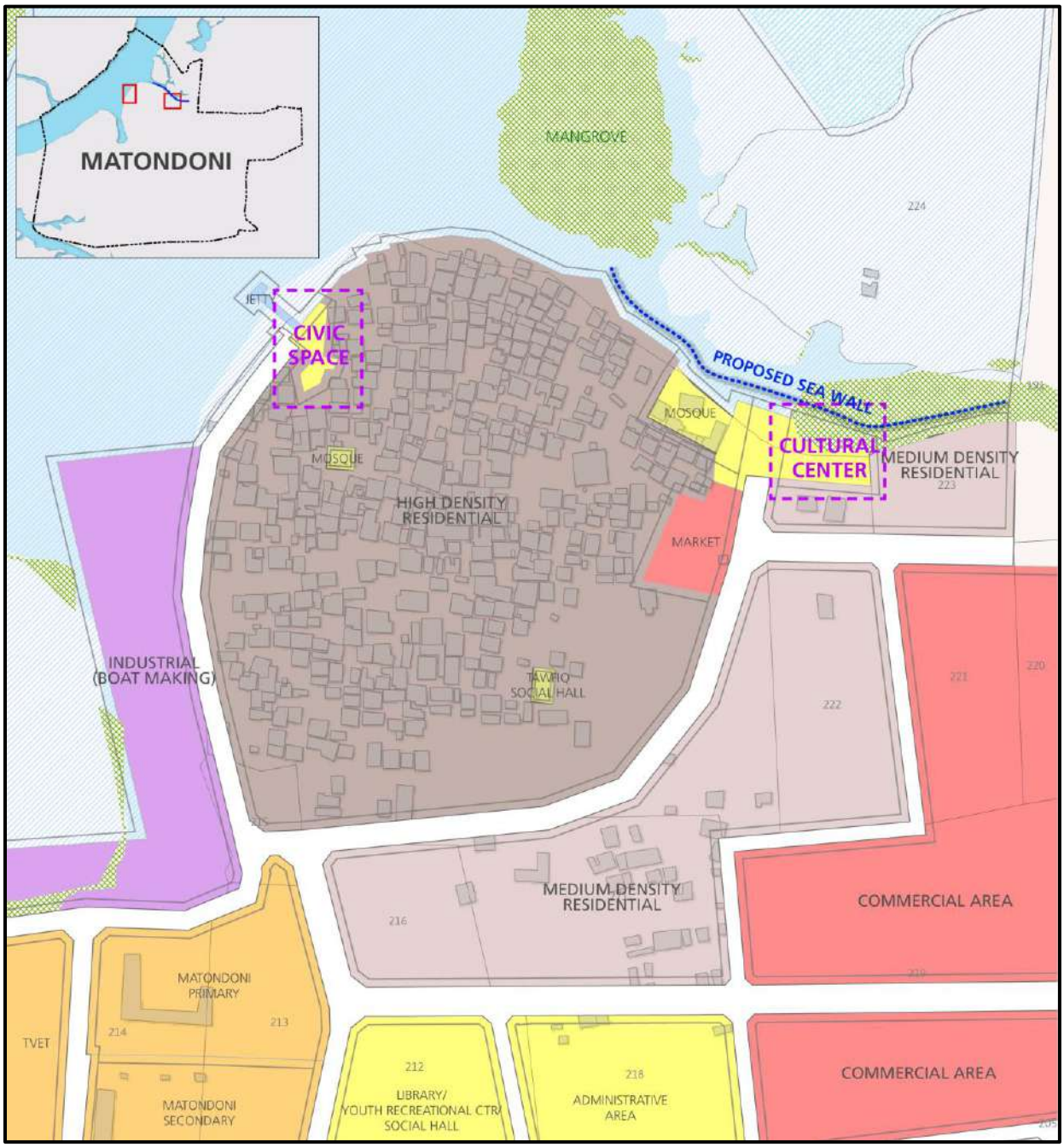
S/N	Plot_No
1.	1281
2.	803
3.	1187
4.	1280
5.	260
6.	0
7.	294
8.	289
9.	21
10.	26
11.	25
12.	24
13.	22
14.	273
15.	253
16.	252
17.	251
18.	250
19.	249
20.	248
21.	247
22.	254
23.	255
24.	240
25.	241
26.	242
27.	243
28.	244
29.	245
30.	246
31.	106
32.	68
33.	135
34.	51
35.	67
36.	134
37.	20
38.	138
39.	145
40.	146
41.	71
42.	70
43.	111

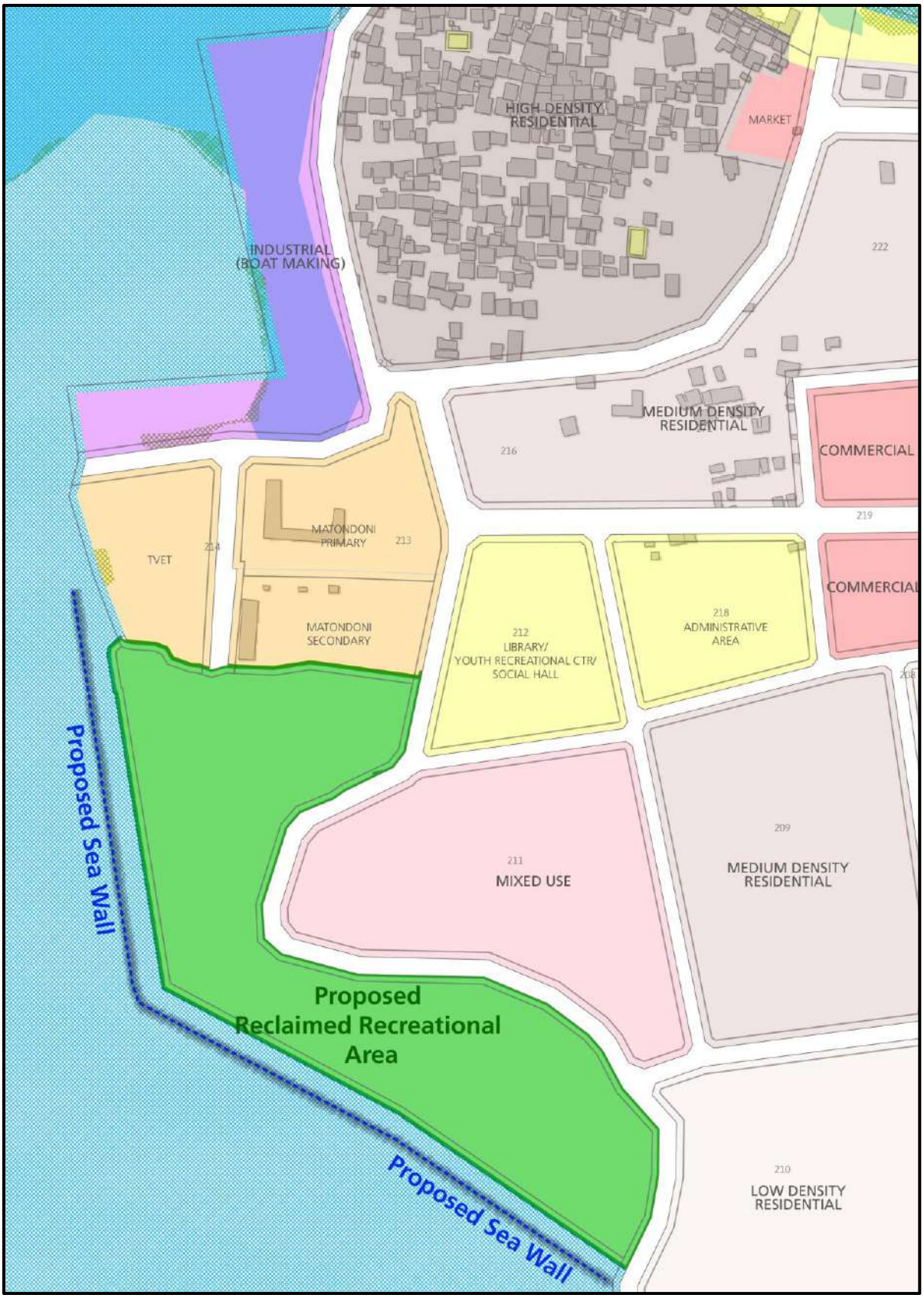
Source: KREIS, 2021

- Setting up of a few social and cultural public spaces in Matondoni. Two of these public spaces will be acquired through compensation or other agreed form of compensation for purposes of use as public spaces. The respective values attached to the acquisition are not expected to be too high and this is not foreseen as an activity that will constrain the County's budget. The third social and cultural space within Matondoni is to be acquired through construction of a sea wall seen as a way of reclaiming dry land from sea land. Construction of the sea wall will be the major activity undertaken by the County and this may have a huge impact on the

County budget. Once the site is reclaimed, various recreational amenities and public spaces will be hosted within the site. These sites are shown below.

Figure 5-2: The proposed public spaces in Matondoni

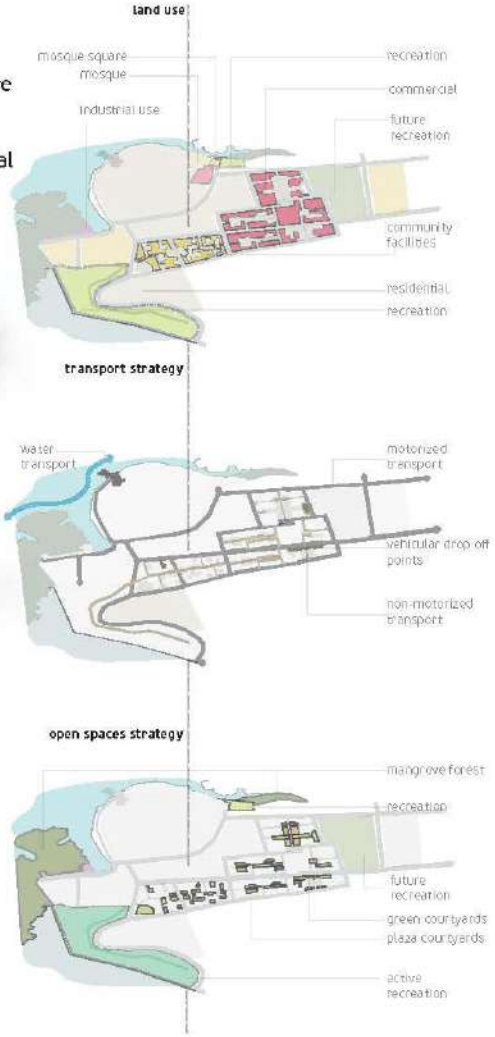




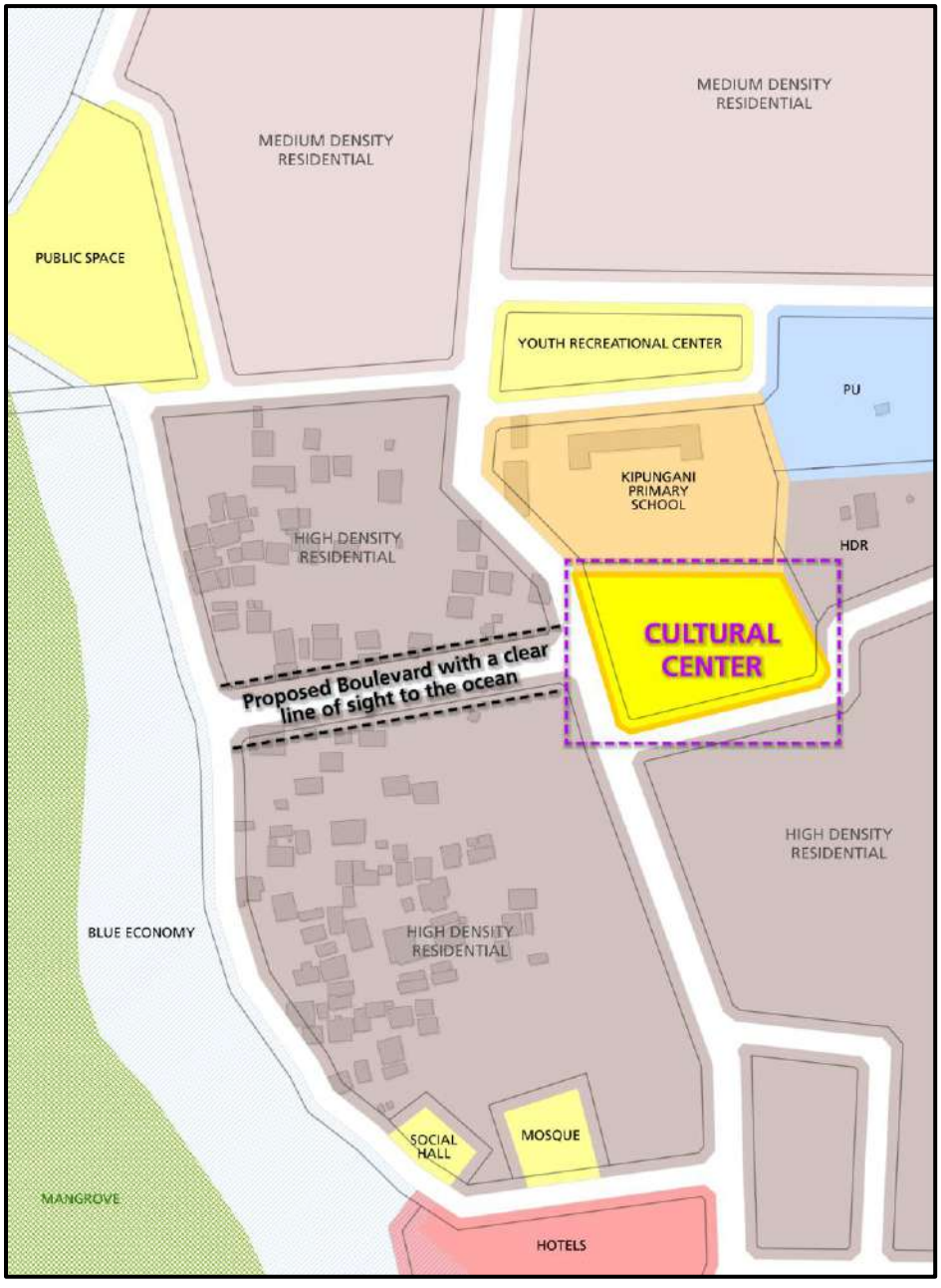
Source: KREIS, 2021

matondoni

matondoni is envisioned as a revitalized mixed use node with intensified commercial, community facilities, recreation, industrial and residential uses. the community resource centre designed includes a library and talent centre which encapsulates performance spaces, recording studios among other uses. there is a new mosque square designed to the north with a recreation space right next to it. an open air market is also designed to near the mosque. through the construction of a sea wall, recreation space is reclaimed from 'nyangwa' creating football, basketball pitches with spectator stands. adjacent to the mangrove forest is a boat making area making use of local talents.

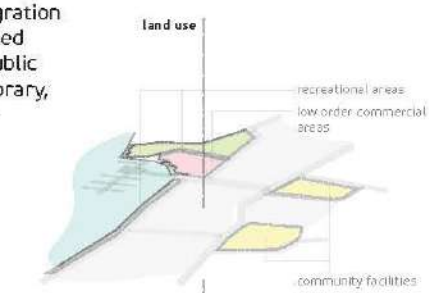


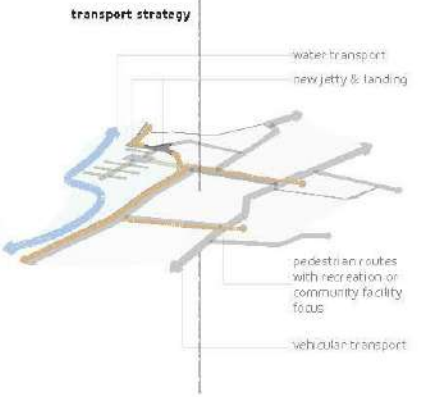
- Acquisition of land has been proposed in various settlements within the island to set up community libraries and community resource centres. For instance, the Plan proposes the acquisition of land in Kipungani inclusive of existing live indigenous tree linings with a local identity to set up a cultural market integrated with a civic square with free WiFi enabled capabilities. The site improvements should not uproot any indigenous tree to maintain the local heritage and identity of Kipungani village.



kipungani

kipungani is treated with few strategic interventions to grow its profile as a tourist destination. key among these is the integration of water and land transport. a new focal point is created around an expanded jetty which incorporates light recreation themed commerce like seaside restaurants. it also incorporates outdoor performance spaces and large versatile open space. two public spaces are created in the youth resource centre and community centre. the youth centre incorporates spaces like a small library, artisan working spaces, and recording studios. the community centre includes an amphitheatre, public square among other versatile spaces





- Additionally, an upgrade of the existing art and culture school at Wiyoni. The action is aimed to preserve the rich cultural fabric of Lamu Island through various forms of arts that can be specialized in visual arts, poetry, wood carvings, furniture making, boat building, jewelry, weaving, sewing among others. These art forms express the heritage and tradition of the people of Lamu and the Swahili culture over the years.

To ensure successful implementation of the strategic actions proposed above, policy directions can be drawn from the framework outlined below.

- All new buildings, street lighting and furniture to conform to the existing architectural form, Swahili culture, character and material
- All development applications within the heritage site to be shared with the NMK heritage office for review and recommendation.
- Proposed annual review, monitoring and evaluation of the state of archaeological and historical sites to determine their condition and make appropriate recommendations for actions.
- Activate a community awareness program on the economic values of their cultural heritage.
- Marketing and branding of Lamu as a culturally oriented tourist destination
- Designate and regulate proposed docking area and specialised use of jetties for passengers and cargo to maintain order and harmony in the old town.
- Control hawking of goods and services along the ocean frontage in old town
- Designation of waste collection bins on all proposed public spaces

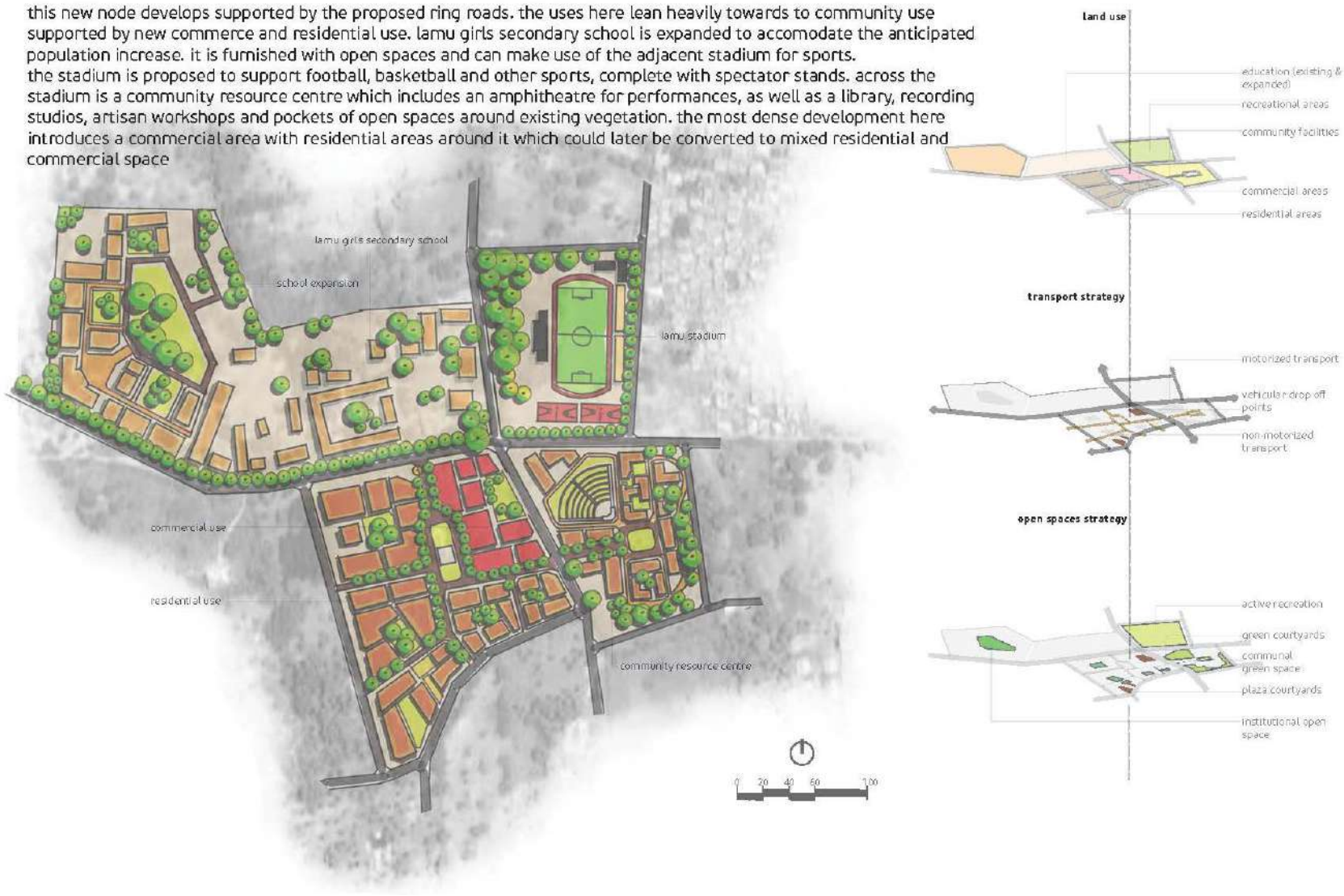
5.4.2 Livelihood Development & Economic Strategy

Lamu Island offers innumerable and multiple opportunities that are predominantly associated with fishing, agriculture, trade and commerce, tourism and natural resources. However, the sectors are not yet fully developed to tap the opportunities presented by their existence and operation within the Island. Thus, the livelihood development and economic strategy aims to sustainably manage the natural resources while transforming the livelihoods of the Lamu population through promotion of production of local products, enhancing value addition to natural and agricultural resources, promoting development of small and medium industrial enterprises, attracting local and foreign investment besides facilitating transfer of technology to local residents.

Specific actions proposed to catalyze economic development while increasing employment avenues for the increasing population include:

- Development and improvement of fish landing sites. This action focuses on improving the livelihood of the fishing community who have for a long time been without a designated place for landing as well as to bring order across the Island. The fish landing sites have been integrated with the proposed jetties/landing steps and activities meant to add to the fish value chain like cold storage facilities and fish markets. It is expected that various actors in the marine sector including the BMUs will come together to form cooperatives and saccos meant to manage these crucial amenities. These management offices are expected to also have a registry of information on fish stock caught in terms of types and quantity as this information may also be useful in furthering marine studies within the island to sustain fishing models. In some proposed fish landing sites, there will be need for the construction of sea walls or small embarkments as a platform to anchor the proposed developments. The landing sites though functionally specialized have been proposed in all the island settlements as demonstrated in map 5-1.
- Establishment and development of new commercial zones and markets. This action will entail the following set of activities:
    - Enforcement to comply with the Plan provisions especially where commercial and mixed-use development areas have been proposed. For instance, the mixed-use development area around Lamu Girls Secondary School and the business stalls proposed within the Lamu old town settlement Plan near Wiyoni will offer a wide array of business and commercial services. The developments are expected to diversify the already existing commercial fabric and, in a way, integrate modernity with development trends around the area that are already perceived as old. The site near Wiyoni for instance fronts the proposed urban park to be secured from sea land reclamation, it is expected to be an exciting space that offers convenient business and commerce options.

Figure 5-3: Artistic impression of the development of the site near Lamu Girls Secondary School



Source: KREIS, 2021

- Acquisition of land demarcated as market sites or other commercial areas e.g proposed market in Matondoni, fish market in Lamu and Kipungani among others and ensuring they are serviced with essential utilities such as water, power, lighting, solid waste management and governance.

- Acquisition of land for industrial development proposed within Kashmir-Kandahari areas to complement waste recycling initiatives near the solid waste landfill and industrial boat making sites in Matondoni and Shella.
- Activate the blue economy activities like the marine aquaculture in Kipungani, Wiyoni, Matondoni, and marine sporting activities and related ventures in Shella, and the old town
- Disseminating to the public procedures for business & investment approval.

It is worth noting that not all developments will be realized as a result of government action. Most of the proposed projects will only materialize as a result of collaborative actions between the government and the private sector through public private partnerships.

5.4.3 Environment & Conservation Strategy

The environment and conservation strategy provides guidelines and actions that aid in the protection, management and restoration of natural fragile ecosystem and its component flora and fauna. The strategy will assist to guide urban development within Lamu Island in a manner that will conserve proposed open spaces, recreational areas, nature reserves such as the sand dunes, shore lines, mangrove strips, pristine beaches, and marine ecosystem. The guidelines ensure that residents and visitors enjoy good amenities and recreational places without rescinding the environment for future generations. Focus is also put in building the environment's ability to adapt to climate change; protecting threatened indigenous species as well as enhancing opportunities for everyone to enjoy nature and scenic landscapes only found in Lamu Island. Adoption of the strategy will go a long way to satisfy the residents' demand among multiple competitive interests. Community recognition besides mandatory compliance to the proposed guidelines should be enforced to ensure achievement of the environmental goals set by this plan.

Key recommended actions under the environment and conservation strategy include:

Gazettement and protection of sensitive and critically fragile natural ecosystems including:

- The sand dunes;
- The mangrove forests;
- The hinterland swamps and wetlands;
- All indigenous tree species at the base of the sand dunes like those found within the proposed cultural marker and civic space in Kipungani.

The above-mentioned ecosystems are very fragile to pressures of urban development yet play critical environmental services to surrounding human settlements. For instance, gazettement of the sand dune features will buttress the significance to protect the fresh water aquifers for the present and future generations by keeping off encroachments by notorious developers. The mangrove ecosystem on the other hand is extremely significant when it comes to controlling sea level rise and coastal erosion in the wake of global warming. More importantly, mangroves act as productive ecosystems for plant, fish, crab, and other sea species and thus destroying them will cause ripple effect to the entire ecosystem. Proper utilization and conservation of such high-valued ecosystem will ensure sustainable benefits to local communities only if the ecological, economic and social values are protected under the gazettement and recommended development control guidelines.

A 30m wayleave have to be acquired by the County Government around the industrial zone proposed at Kashmiri-Kandahari area. The wayleave is meant for forestation and tree planting to separate the two distinct land use zones. Additionally, the action aims at increasing the vegetation cover of the Island to harness on the economic benefits attributed to carbon credits on the onset of climate change phenomena.

Conservation within the mangrove forests will ensure that the harvested mangrove trees are replanted as a way of restoring the ground to natural conditions through reforestation. Increasing pockets of greenery into the built-up settlements will transform the environmental quality of the living spaces as well improve the general landscape of streets fronting the sea when lined with say palm trees.

It is emphasized as a priority that the County Government need to prioritize on the purchase and installation of strategic waste bins on all public spaces (proposed and existing); the sea frontage after every 200 meters and along the beach coast as a way of improving the environmental quality of the island.

5.4.4 Transportation strategy

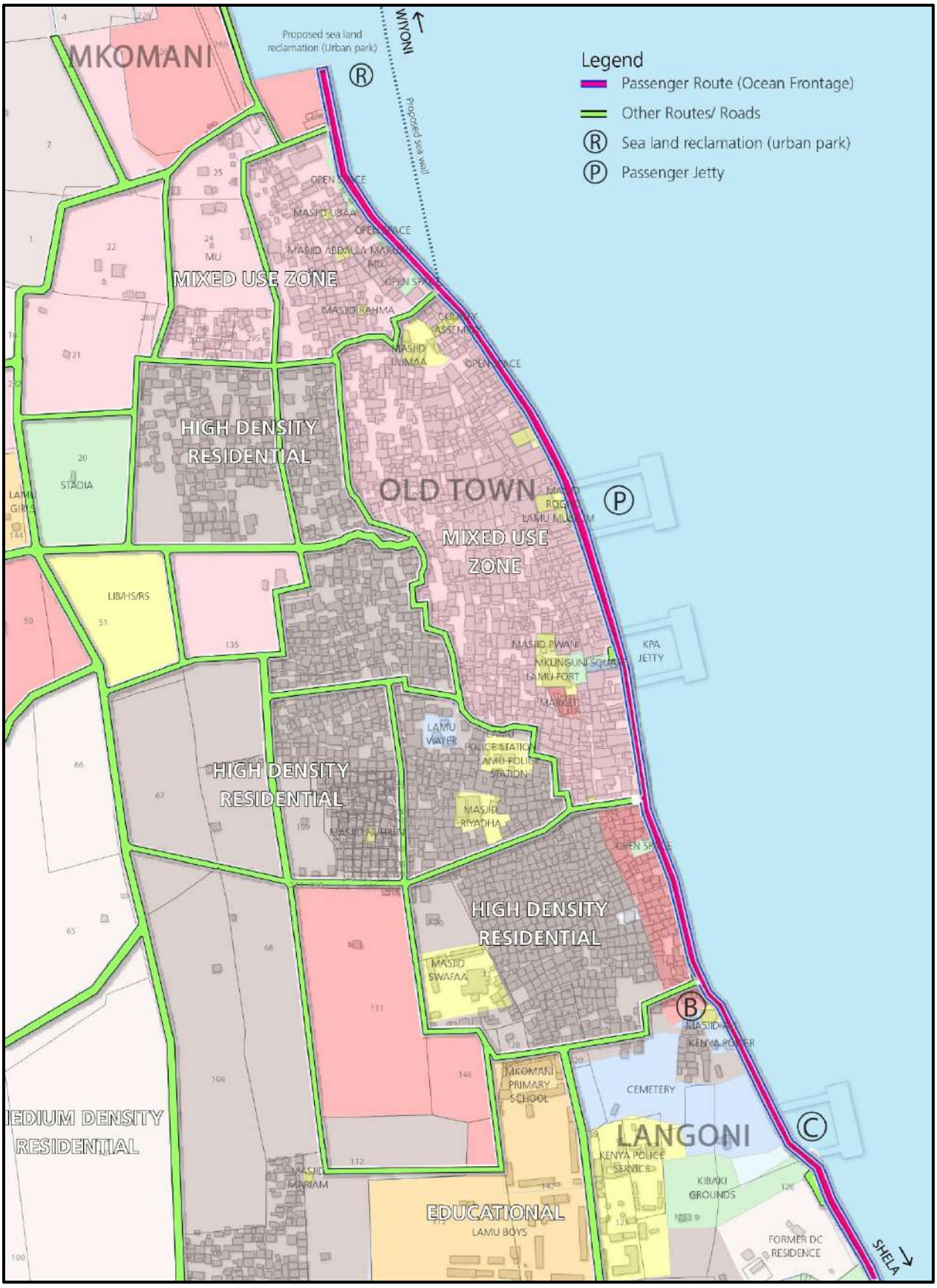
The proposed transportation strategy aims to enhance connectivity of the settlements while offering efficiency in terms of time spent over the travelling distance, improved capacity, increased frequency and affordable cost incurred in traversing the Island. As a general condition, the plan has proposed all the roads within the cadastral parcel boundaries as a way to ensure that the road wayleaves will be secured through rightful easements other than mandatory compensations. These are to be secured within the proposed reserves of between 6M, 9M, 12M, 15M, 18M as prescribed in each settlement.

The strategy will not only solve the problems faced in the sector but also enhance economic growth. Worth noting is that the transportation networks be it on land surface, ocean or air will form the basic physical and organizational structure needed to catalyze economic development across and outside the Island. To achieve these, the following actions are proposed:

- Construction of motorable link roads (preferably bitumen or cabro standard) to connect Lamu town to Matondoni and Kipungani to reduce time travel and associated costs. The roads will also offer convenience and allow quick exchange of goods and services between the island settlements.
- Construction of circumferential roads within the old town and adjoining areas to act as physical structuring elements and buffer zones as a continuum of land use mix between the old and the proposed modern. The inner circumferential road buffers the inner core of the heritage site while the outer circumferential road buffers the outer core of the heritage site and connects to the two proposed cargo jetties. The two roads form the route maps to be adopted within the old town and adjoining areas for the various users as detailed in figure 5-4.

- Construction of jetties to ease transfer, embarkment, landing, loading and offloading of goods and passengers from ocean vehicles to land transport means. Several jetties are proposed at specific places as shown in map 5-1. Jetties are vital constituent of transport system in Lamu Island since they mark the entry and exit points in each settlement. As part of the transportation strategy, the following actions are proposed:
    - Cargo jetties/landing steps to the eastern and western edge of Lamu old town;
    - Construction of a terminus facility adjacent to the cargo jetties. This terminus facility will comprise a boat docking area, an information office, essential amenities like public toilet, a parking zone for bodaboda, a loading and offloading zone for donkeys as well as fuel pumps;
    - Mixed-use jetties, one at each settlement of Matondoni, Kipungani, Wiyoni and Shella;
    - Upgrading of the existing jetties at Mangrove and KPA to passenger-only facility;
    - Equipping and upgrading the landing steps at King Fah'd Hospital to a small jetty with supporting amenities for the disabled including a ramp and strong guard rails.

Figure 5-4: The proposed circulation networks and supporting infrastructure within the old town area


MKOMANI
Proposed sea land reclamation (Urban park)
MWONI
Proposed sea wall
Legend
Passenger Route (Ocean Frontage)
Other Routes/ Roads
Sea land reclamation (urban park)
Passenger Jetty
MIXED USE ZONE
HIGH DENSITY RESIDENTIAL
OLD TOWN
MIXED USE ZONE
HIGH DENSITY RESIDENTIAL
HIGH DENSITY RESIDENTIAL
EDIUM DENSITY RESIDENTIAL
EDUCATIONAL
LAMU BOYS
LANGONI
STADIA
LIB/HS/RS
MASJID RAHMA
MASJID JUMAA
MASJID PWANI
MKUNGUNI SQUARE
LAMU FORT
MARKET
KPA JETTY
LAMU WATER
LAMU POLICE STATION
MASJID RIYADHA
MASJID SWAFAA
MKOMANI PRIMARY SCHOOL
CEMETERY
KENYA POLICE SERVICE
KIBAKI GROUNDS
FORMER DC RESIDENCE
SHELA

5.4.5 Land Acquisition Strategy

The County Government of Lamu will definitely need to acquire various properties and land for public purpose and public utility use. Specifically, all the land proposed for use as a public utility or a public purpose will have to be acquired save for the land that is already owned by the government. With regards to roads, the reserves will be acquired through conditional easements enforced through development control applications made to the County Government for land properties that are still undeveloped and outside core settlement areas. For the proposed roads within the settlement areas, those will have to be acquired through monetary compensation of affected structures or properties. Their real values will be computed at the point of project implementation and contained in a RAP. Others will be implemented through public private partnerships initiatives including:

- The proposed water catchment area in Matondoni can be a shared utility between the County Government and the owner of land; where, the County drills the required boreholes for reticulation purposes while the owner retains the rights of ownership to the land. The accrued benefits of the project get shared within certain acceptable formula.

Other proposals made for public purpose and utility areas will have to be acquired either through land for land compensation being the most preferred method, or through monetary compensation. For areas like new commercial zones and proposed market areas that require real government action for them to be utilized as anticipated in the plan, those has to be acquired and private investments sought by the government through allocation. The actual land size against cost implications for all the parcels of land requiring government acquisition are discussed in the Capital Investment Plan (CIP) presented under the Municipality IDeP.

5.4.6 Public Spaces Strategy

Public spaces are open areas that are left for people of all walks of life to access freely and breathe from the bustles of busy town life. Such spaces include public gathering areas such as the *Mkunguni* square in front of the Lamu Fort. It also includes parks, gardens, sidewalks and streets. Public spaces enhance social mixing, civic participation, recreational and creates

a sense of belonging by community members. Public spaces as those found and proposed in Lamu Island are aimed at integrating the natural landscape with the community interests including leisure, sports, talent resource pooling, passive recreation, local art and culture among others as a boost to quality life. Some of the deliberate intentions proposed in the plan meant to achieve an integrated string of public spaces include but not limited to:

- The deliberate proposal to acquire a civic space integrated with a clear sight of line to the ocean front through the proposed boulevard in Kipungani.
- The proposed acquisition of the 15No. small pockets of open spaces along the old town's ocean front. These are meant to be well designed and developed with different forms of street furniture that tell the story of the cultural heritage of Lamu people.
- The deliberate proposal to construct sea wall embarkments on the two sites in Matondoni meant to serve the civic interest and satisfy the recreational needs of the settlement and adjacent institutions.
- The bold proposal to gazette and protect the sanctity of the sand dune ecosystem as critical fragile ecosystem protected from active development but open for passive recreation
- Protection of all existing public spaces within the island through the intentional documentation and accurate mapping for purposes of posterity
- The proposed monetary acquisition of land meant for public purpose facilities like the youth resource centres and libraries across the various settlements within the island

5.4.7 Revenue Enhancement Strategy

The enhancement of revenue is an important area that the municipality should work on to ensure more funds are available for service delivery. However, a balance should be made so as not to overburden the residents with taxes. In a bid to increase revenue within the planning area, the following strategies are proposed.

Automation of Revenue Collection: This means making it possible for the public to honour their financial obligations to the Municipality via electronic means and online platforms.

Examples include mobile applications, web-based applications and Unstructured Supplementary Service Data (USSD). Through the use of such revenue collection methods, the collection losses occasioned by manual collection will be avoided.

Incentives: These refer to measures that the County Government and Municipality can undertake to encourage the public to be more compliant and raise revenues. The Municipality can offer incentives to the public to encourage them to comply. Some of the incentives the county can effect include; introduce waiver on penalties imposed on land rate defaulters to encourage them to pay up and offer discounts to those who comply before a specified period of time.

Enforcement: The Municipality can increase the revenue collected through strict enforcement to ensure those supposed to pay fees have complied. This can be achieved through measures such as: conducting regular and random checks on businesses and premises, imposing penalties on defaulters and increasing the human and capital capacity for enforcement.

Other strategies that the municipality should explore are public awareness on revenue obligations and better fiscal management.

5.5 MONITORING AND EVALUATION FRAMEWORK

To effectively track and assess the results of the proposed planning interventions, a practical monitoring and evaluation framework that encompasses all components of the Local Physical & Land Use Development Plan for Lamu Island within the lifespan of the planning period was envisaged. The monitoring framework emphasizes on specific indicators and commitment from relevant actors for each program identified under the plan with the aim of meeting targeted socio-economic and capital investment projects. These are as presented in table 5-7.

Table 5-9: Proposed Monitoring & Evaluation Framework

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
RESIDENTIAL AND HUMAN SETTLEMENT				
A liveable environment	Preservation, conservation and rehabilitation of existing residential areas from incompatible land uses and activities. Enhance compact and nucleated settlement patterns in each settlement. Buffering of the gazetted world heritage site with a circumferential road	Construction of the 1.16km, 6m wide circumferential cabro road Number of preserved/ conserved residential buildings Number of rehabilitated residential buildings Controlling development within planned boundaries to reduce urban sprawl Relocated incompatible uses/ realigned land uses	Lamu Island residents Lamu County Government Lamu Municipality Private developers NGOs and CBOs National Museums of Kenya (NMK) UNESCO Development Partners	Short-term 1-3 yrs.
	Enhance the security of land tenure and ownership across the Island.	Number of residents issued with land ownership documents.	NG - Ministry of lands and Physical Planning Lamu County Government NLC Lamu Municipality	Short term 1-5 yrs.
	Design guidelines for existing and proposed new residential areas. Designated new residential zones of character and distinction (modern +Swahili archetype).	Development of areas as proposed in the plan guided by the proposed development standards and guidelines. Enactment of the municipality building code	Lamu County Government Lamu Municipality. Private developers/agencies	Short term 1-5 yrs.

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
	Encourage development of mixed-use areas, including housing, retail, office, and other compatible uses.			
INDUSTRIAL DEVELOPMENT				
Value addition to locally produced resources **Processing industries and factories**	Acquisition of land for industrial development within Kashmir-Kandahari and Matondoni areas Develop manufacturing and processing industrial zone. Develop a light industrial zone to support local talents such as carpentry, dhow making, basketry and weaving. Develop agro-processing industries to add value to agricultural produce. Construct abattoirs Develop policies to operationalize industrial growth	Acres of industrial land acquired as proposed in the plan Uptake and expressed interest in the industrial land Number of manufacturing and processing industries established by 2030 Number of jobs in industries & manufacturing plants Amount of locally processed products in the market Development of a business and industrialization policy	National Government. Lamu County Government. Lamu County Assembly Private developers/ investors Lamu Island residents NLC Lamu Municipal Board	Medium-term 5-10 Yrs.
EDUCATION				
Enhanced literacy levels locally and regionally	Upgrade existing primary and secondary schools. Upgrade of existing art and culture school at Wiyoni.	Number of upgraded education facilities – new classes, new laboratories, expanded dormitories, additional staff members, renovated school infrastructure.	Lamu County Government National Government - Ministry of Education Lamu Island residents NGOs, CBOs and FBOs Private Investors	Short term 1-5 Yrs. Medium-term 5-10Yrs

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
		Number of new pre-primary, primary and secondary schools established by 2025 Acres of land acquired for new education facilities. Upgraded art and culture schools.	NLC Lamu Municipality	
	Develop tertiary level institutions	Acres of land acquired for tertiary institutions Number of constructed vocational and technical facilities e.g. proposed KMTC, and Matondoni TVET	NLC Lamu County Government	Short- term 1-5Yrs
	Develop and equip proposed Community libraries and resource centres within the island Establishment of the proposed Civic and cultural centres withing the island	Acres of Land acquired for community facilities. Number of completed libraries and resources centres. Inventory of social and cultural centres. Extended and constructed sea wall in Matondoni Constructed boulevard ensuring unhindered visual line of sight to the ocean in Kipungani.	NLC Lamu County Government KNLS Lamu Island residents	Short -term 1-5Yrs
RECREATION AND CONSERVATION				

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
Protected fragile environments **Improved quality of life in Lamu Island**	Mapping, profiling and inventory of all archaeological sites, fragile ecosystem and points of historical significance. Preserve existing indigenous trees and natural landscape (sand dunes + mangrove+ marine) within the island. Conservation of the gazette world heritage site. Establish a world heritage site management committee. Establish world heritage site community awareness programs. Preservation of the unique cultural mixture of Swahili, Arabic and Persian culture including cuisine, language and religion. Patent cultural products.	Periodic documentation and inventories on mangroves, sand dunes and other fragile ecosystems areas and/or perfomance. Inventories of points of historical significance. Inventory of demarcated, fenced and protected fragile sites. Existence of WHS Committee Inventories of protected and secured cultural sites. Inventories of cultural preservation, language, religion and cuisine. Number of patents repository	Lamu County Government Lamu Municipality National Museums of Kenya (NMK) KFS NLC UNESCO World Heritage Sites NLC Lamu Island residents WHS Committee KIPI Development Partners NGOs, CBOs	Short -term 1-5Yrs
	Gazettement and protection of sensitive and fragile natural ecosystems mainly sand dunes, mangroves, hinterland swamps and all indigenous tree species in these ecosystems	Number of gazetted sensitive and fragile natural ecosystems Number of acres of replanted mangrove forest		Short -term 1-5Yrs
	Gazette key religious and historical sites within the heritage site.	Number of gazetted religious and historical sites		Short -term 1-5Yrs

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
	Rehabilitation and renovation of historical buildings to sound levels.	Number of renovated historical buildings.		Short -term 1-5Yrs
	Revitalize existing football pitch and play grounds in the different neighbourhood. Develop settlement based municipal stadiums.	Acres of land acquired and reclaimed for municipal stadiums. Inventory of outdoor sporting facilities.		Immediate Short -term 1-5Yrs
	Create a central urban park and neighbourhood open spaces.	Acres of Land acquired and demarcated for urban parks. Number of open green spaces and urban parks.	NLC Lamu county government. Lamu Municipality CBOs, NGOs and FBOs	Short -term 1-5Yrs
	Acquisition and installation of waste bins in public spaces	Number of waste bins installed in public open spaces	Lamu County Government Lamu Municipality NGOs	Immediate
	Development of public sanitary facilities along the coastal beaches to improve environmental quality	No. of facilities developed	Lamu County Government Lamu Municipality	Immediate
	Revoke individual titles to recover irregularly allocated public land. Issue titles to existing and recovered public land.	Number of revoked titles Amount of public land recovered Number of new titles to recovered public land	Lamu County Government NLC NG - Ministry of Lands & Physical Planning	Short -term 1-5Yrs
	Enact a Municipality Heritage by-law and building code.	Enacted Municipality Heritage By-laws.	Lamu Municipality Lamu County Assembly	Immediately

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
		Enacted Municipality Building Code.		
	Brand, market and finance cultural festivals e.g., the Maulidi, donkey race, proposed beach carnivals and commercial recreation activities on the dunes Packaging, branding & marketing of tourism products.	Inventory of cultural festivals Amount of revenue generated from the activities Periodic documentation of the impact of the commercial recreation activities on the dune ecosystem Number of branded tourism products.	Lamu County Government Ministry of tourism Lamu Island residents NGOs and CBOs	Short- term 1-5 Yrs
PUBLIC PURPOSE				
Easily accessible, high quality and effective public services	Concentration of public offices within the proposed administration sites in the settlement plans. Construct village administrative offices in respective settlements e.g Chief's offices.	Acres of Land acquired for administrative offices. No. of constructed chiefs' and assistant chiefs' offices within the settlements.	Lamu County Government Ministry of interior and coordination of national government NLC NG - CDF Lamu Residents	Short- term 1-5 Yrs
	Develop community facilities: Social halls, community centres, health facilities etc	Acres of land acquired, demarcated and fenced for social hall, health facilities and community centres.	NLC Lamu County Government Lamu Municipal Board	Short- term 1-5 Yrs.
ECONOMY AND COMMERCIAL DEVELOPMENT				
	Designation of primary, secondary centres	Number of commercial nodes established within the island.	Lamu County Government Lamu Municipality	Short- term 1-5 Yrs.

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
Sustained economic growth and financial vitality across Lamu Island	Mixed use commercial development	Acres of land developed in line with the proposed guidelines of the plan.	Private investors NGOs, CBOs and FBOs	
	Facilitation of credit access by micro-SMEs	Number of credit facilities established by 2025. Number of locally driven and constituted cooperatives and saccos Number of people with credit facilities	Lamu County Government Lamu County Assembly Financiers and financial institutions	Short- term 1-5 Yrs.
	Adoption of a 24-hour economy	An operationalized 24-hour economic model within the island	Lamu County Government Lamu County Assembly	Medium -term 5-10 Yrs.
	Activate blue economy activities Marine aquaculture Marine sporting activities	Inventory of the net production and returns generated from the proposed marine aquaculture and sporting activities.	Lamu County Government Lamu Municipality LMMAs and MPAs BMUs	Short- term 1-5 Yrs
	Dissemination to the public procedures for business and investment approval	Number of public sensitization forums held and information materials disseminated.	Lamu Municipality Lamu County Government	Immediate
PUBLIC UTILITY				
Sustainable and adequate public facilities and services	Expansion of existing municipal water projects	Number of new households connected to the municipality water service Volume of water supply available on a daily basis	Lamu County Government CWSB / LAWASCo Lamu Municipality Community members	Short- term 1-5 Yrs

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
	Develop municipal water treatment plant	Expansion and construction of water treatment works on the proposed site within the dune ecosystem.		Immediate
	Designate and implement integrated solid waste management facility.	Acre of land designated for solid waste management. Acquisition and uptake of industrial land set aside for solid waste recycling Designated land for waste collection and transfer points.	Lamu County Government Lamu Municipality Lamu County Assembly NLC Private entities, CBOs, FBOs, NGOs etc Development Partners	Immediate
	Municipal Cemeteries	Acres of land acquired for municipal/settlement-based cemetery.	Lamu County Government Lamu Municipality FBOs NLC	Immediate
	Develop island-wide storm water drainage plan.	Construction of civil storm water drainage channels within the proposed road corridors.	Lamu County Government	Short term (1-5 Yrs.)
TRANSPORTATION				
Enhanced inter and intra linkages for economic growth and development	Construction of roads to link Matondoni – Kipungani – Old Town – Shella	Amount of acquired road corridors by 2025 Number of kilometers of constructed proposed roads	NLC KURA Lamu County Government Lamu Municipality	Short- Medium-term (1-10 yrs.)

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
	Establish link roads to all human settlements – connecting Lamu town to Matondoni and Kipungani Acquisition and demarcation of proposed road reserves within the island Create a modal split to cater for specialized donkey, motorcycle, NMT and vehicle routes.	Number of modal splits for NMTs and vehicle transport systems	KERRA NMK UNESCO NLC SoK CGL	
	Construction of circumferential roads within the old town and adjoining areas	Number of kilometers of circumferential roads constructed		Short- Medium-term (1-10 yrs.)
	Enhance the public sea transport; costing, capacity and frequency.	Number of acquired public sea transport vessels. Frequency of scheduled, public sea transport means. Cost of Public Sea transport.	Lamu County Government KMA MoTIHUD NGOs and CBOs	Short- Medium-term (1-10 yrs.)
	Construction of proposed jetties within the island Construction of terminus facility next to cargo jetties Upgrading of existing jetties with ramps, steps guard rails and other amenities supporting PLWDs	Number of constructed jetties. Number of completed termini adjacent to jetties. Constructed PLWDs support amenities within existing jetties		Short- Medium-term (1-10 yrs.)

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
	Designate docking sites for sea vessels	Sea docking infrastructure and spaces created. Amount of revenue generated through controlled sea docking.	Lamu County Government NLC KMA Kenya Ports Authority	Short term 1-5 Yrs.
	Regulate the cost of transport across the Island.	Inventory of transport costs.	Lamu County Government Lamu Municipality Private investors in the transportation industry	Immediate
AGRICULTURE				
Intensified agricultural production that supports agro-processing industries	Conduct agricultural research to support farming activities.	Number of conducted agricultural researches. Number of published agricultural research material.	Lamu County Government KIPPRA KALRO NACOSTI	Immediate
	Adopt irrigation and green house farming techniques to modernize agriculture.	Inventory of irrigation sites and projects. Inventory of greenhouse projects. Size of land under capital intensive horticulture and irrigation	Lamu County Government NIB NLC	Short term 1-5 Yrs.
	Designate fish landing sites & complementary facilities i.e. cold storage facilities, BMU offices etc.	Number of fish landing sites and associated amenities secured and established. Number of locally driven BMU cooperatives and SACCOs formed	Lamu County Government Lamu Municipality Lamu island residents (Fisherfolk community and farmers)	Short term 1-5 Yrs.

Outcome	Program/Project	Indicators	Responsible Actors	Timeframe
		Amount of fish stock recorded and collected Amount of revenue generated from the local fishing economy	NGOs, CBOs Private developers/investors	
	Enhance market accessibility of agricultural products such as fish market, fresh produce wakulima market etc	Inventory of agricultural products accessing market. Size of land acquired for new markets. Inventory of new markets and stalls.	Lamu Municipality Lamu County Government Local Island residents NLC	Immediate
	Link agricultural produce to value addition and manufacturing industries.	Inventory of locally value added agro-products Amount of revenue generated from value added products	Lamu County Government Investors	Short term 1-5Yrs.

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