The Republic of Kenya

SEZ Authority (SEZA)

TECHNICAL ASSISTANCE FOR MOMBASA SEZ (DK SEZ) DEVELOPMENT PROMOTION

Final Report (Volume 3)

January 2022

Japan International Cooperation Agency (JICA)

Nippon Koei Co., Ltd.
JIN Corporation

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Annex 5
Technical Report of Detailed Planning for Industrial Park Development in DK SEZ

Technical Report of Detailed Planning for Industrial Park Development in Mombasa SEZ (DK SEZ)

REPORT

December 2021

Japan International Cooperation Agency
(JICA)

Consultants
Nippon Koei Co., Ltd

Technical Report of Detailed Planning for Industrial Park Development in Mombasa SEZ (DK SEZ)

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1. CHAPTER 1: INTRODUCTION TO THE DK-SEZ & IP PLANNING

1.1. Project Introduction

The development of Special Economic Zones (SEZs) in the Kenyan towns of Mombasa, Kisumu, and Lamu were proposed as a one of the core instruments for the realisation of the Kenya Vision 2030, and Dongo Kundu-SEZ was regarded as one of the flagship projects under this strategic vision. The Government of Kenya (GOK) requested the Government of Japan (GOJ) to facilitate support for the SEZ development in Mombasa. In turn, the GOJ assented to the request, facilitating the formulation of the Master Plan, and thereafter, implementation of the first phase of the SEZ through Japan International Cooperation Agency (JICA).

1.2. Project Background

Support from a JICA-nominated consultant team was initiated in June 2020 with the inaugural meeting between the members from Special Economic Zones Authority (SEZA), JICA and Nippon Koei (Consultant Team). Such support was intended to include common facilities such as road, water supply, sewage, telecommunication and power to the proposed industrial park (IP). Therefore, the overall aims of the Project, especially from the point of IP development point of view, were to make basic concept of the IP and plans to coordinate the development of the IP and its connecting infrastructure.

1.3. Project Objectives

Overall, the project aims to establish a detailed plan for the industrial park development as a flagship for the rest of Dongo Kundu SEZ. The main output of the project support by the team is as outlined in table 1.1 below:

Table 1.1: Output of Detailed IP Planning

Sector	Output (Detailed Plans/ Drawings)
Land use plan	Land use & factory lot layout map
Land grading	Land grading plan/ Cut-fill map
Road	General road layout/ standard cross section
Drainage	General drainage network plan
Water Supply	General water supply layout plan, Off-site water supply connection map
Wastewater	Wastewater network general layout plan
Power Supply	Power supply network plan, Off-site power connection plan
Telecom	Telecom network general layout plan, Off-site Telecom connection plan
Cost	Bills of Quantities (BOQ) preparation, Unit price preparation

Source: JICA Study Team

For the technical output, the consultant team reviewed current conditions, received topographic data and generated land use plans and infrastructure plans for solid waste management, road, water supply, sewage, power, telecommunication. For this work, the consultant team and Kenyan supporting staff collected information of off-site infrastructure from other stakeholders

that informed harmonized design. In processing and developing these plans, the elements included were listed as follows:

1. Digital survey plan: Prepared by the survey department.
2. Base map: The topographic map by the survey department serves as the base map of this project.
3. Site and physical and land use plan: as a formulation of detailed plan and infrastructure plan, JICA Consultant Team generated the following planning elements:
    a. Land use & land grading plans,
    b. Road network & stormwater drainage plans,
    c. Water supply & sewerage plans, and
    d. Power, lighting & telecommunication networks.

1.4. Role of Government Institutions

The role of the GOK in the implementation of the DK-SEZ project lies in the coordination of support received from the GOJ partners and facilitation of the related activities. With the formation of Special Economic Zones Authority (SEZA) under Ministry of Industrialization, Trade and Enterprise Development (MoITED), this role of GOK is mandated to SEZA.

With support from SEZA, the following government institutions made contributions through technical input, design considerations, site-related data and information on related projects:

Table 1.2: Role of Various Kenyan Government Agencies in IP Planning

Government Agency		Role
1.	Government of Kenya (GOK)	• Overall administrative role for SEZs as projects of national importance. • Coordination with GOJ
2.	Ministry of Industrialization, Trade and Enterprise Development (MoITED)	• Facilitation of GOK operations for industrial parks, EPZs & SEZs • Coordination with other ministries for infrastructure planning
3.	Special Economic Zones Authority (SEZA)	• Leading role on behalf of GOK to implement SEZ projects • Coordination of other agencies through MoITED
4.	Export Processing Zones Authority (EPZA)	• Provision of information on development & operation of EPZs (similar to SEZs' industrial parks)
5.	Ministry Of Transport, Infrastructure, Housing, Urban Development (MOTIHUD)	• Infrastructure development guidelines & design requirements, construction standards and estimated cost • Coordination for information sharing with related infrastructure projects for DK-SEZ
6.	Kenya National Highways Authority (KeNHA)	• Coordination of highway & related road infrastructure projects within the DK-SEZ area
7.	Kenya Electricity Transmission Co. (KETRACO)	• Coordination of substation & related power infrastructure projects within the DK-SEZ area
8.	Kenya Power and Lighting Co. (KPLC)	• Provision of information on existing power infrastructure and future projects within the DK-SEZ area

9.	Local Government (County Government of Mombasa)	• Coordination on operational planning for DK-SEZ • Provision of information of current conditions of infrastructure • Coordination on future O&M for DK-SEZ
10.	Ministry of Environment, Water and Natural Resources	• Provision of information on existing water & sewerage infrastructure and future projects within the DK-SEZ area
11.	National Environment Management Authority (NEMA)	• Provision of information on environmental standards & approval processes
12.	Coast Water Works Development Agency (CWWDA)	• Coordination of water supply & related water infrastructure projects within the DK-SEZ area

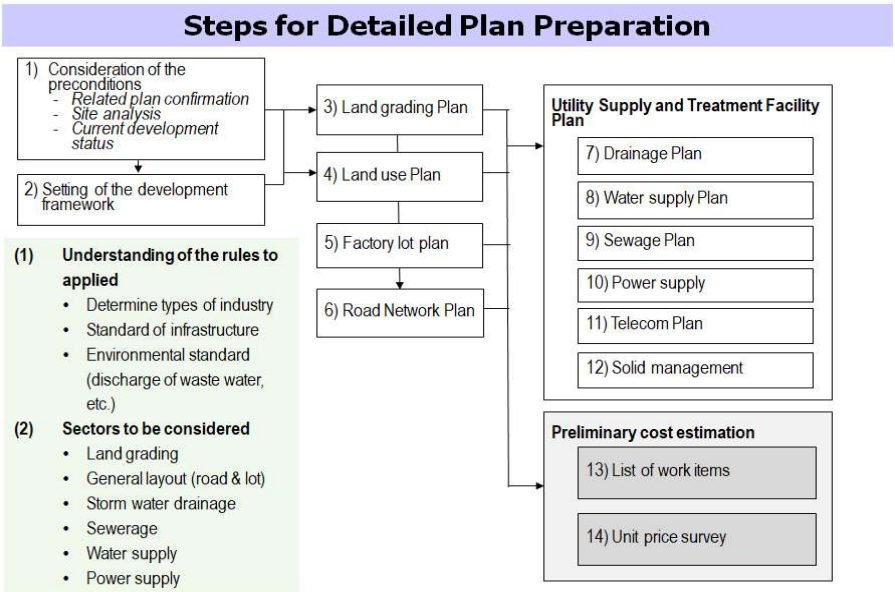
Source: JICA Study Team

1.5. Development Plan & Project timelines

1.5.1. The IP Development Plan

Within the master plan stage of preliminary planning, the development framework had been set to define the general direction for the development of the whole SEZ area. As such, the MP reviewed general land use plans, infrastructure demands, and a preliminary cost estimate. In sum, the design scale was large (1:10,000 to 1:50,000) to depict such preliminary plans.

For the Detailed Plan Preparation, a more comprehensive study of the site conditions, infrastructure and topographical factor (table 1.3) had to be carried out with the design scale of 1:2,000. In this regard, the following steps were followed for the detailed planning:



Source: JICA Study Team

Figure 1-1: Steps for IP Detailed Plan Preparation

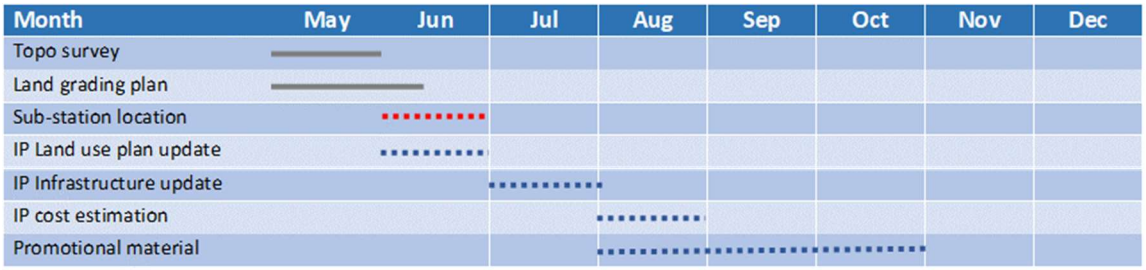
Table 1.3:Consideration of Conditions for IP Detailed Planning

	Site Conditions Considered	Detailed Planning Aspect Updated
1	Topographical survey data	Land grading, Land use plan
2	Land use demand & priority IP industries	General layout (road & lot)
3	Topographical data, related road projects (Mombasa southern bypass & Port access road)	Road network plan & road details
4	Land use plan, Road plan, Topographical data, regional rainfall data	Storm water drainage network, Disposal of stormwater
5	Land use plan, Road plan, Topographical data	Sewerage network, Sewerage treatment plan location
6	Land use plan, Road plan, Existing water supply system, location of reservoir, related water projects in DK area	Water supply network
7	Land use plan, Road plan, Existing power supply system, location of power substation, related power supply projects in DK area	Power supply network, Location of power cabling
8	Land use plan, Road plan	Telecommunications network, fibre optic cable ducting

Source: JICA Study Team

1.5.2. Project Schedule

The project was implemented within the schedule as indicated below:



Source: JICA Study Team

Figure 1-2: Project Schedule

An updated project schedule was prepared to reflect the timelines of other related projects, specific timelines and output dates for each project deliverable. This schedule includes the time utilised during engagement with relevant Kenyan government agencies, sourcing of information from site, review, design, discussions of detailed plans with relevant agencies and the presentation of these plans for approval.

1.6. Summary of the Industrial Park Plan

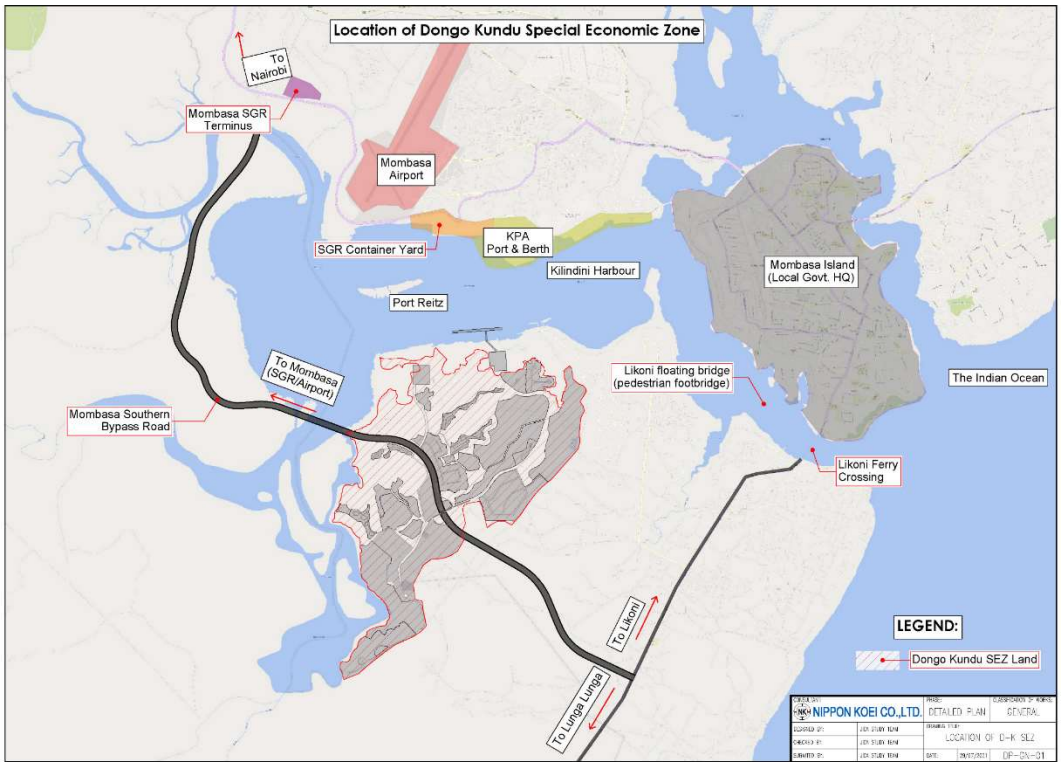
Project Location

The industrial park is located within the Special Economic Zone in Dongo Kundu area of Mombasa, along the East African coastline.

Source: JICA Study Team

Figure 1-3: General Location of DK SEZ Industrial Park in Kenya

Its location is adjacent to the ongoing Mombasa Southern Bypass Road connecting the coastal area to the Kenyan mainland. Other proximal infrastructure includes an international airport, a standard gauge railway station, an international port and administrative facilities.



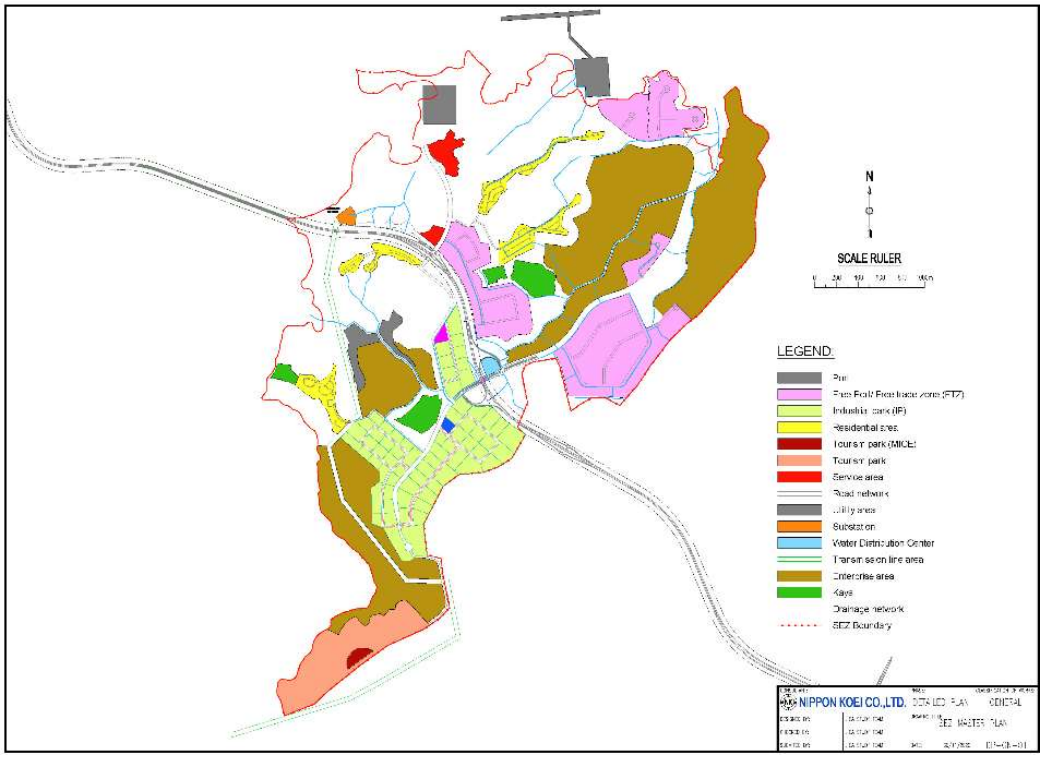
Source: JICA Study Team

Figure 1-4: Proximal Location of DK SEZ to Infrastructure

Master Plan for Dongo Kundu SEZ and Industrial Park

The industrial park is one of the key elements of Dongo Kundu Special Economic Zone, amongst other planned sectors including a free port and trading zone, enterprise areas, residential zones and tourism facilities which are captured by the DK SEZ Master Plan.

The industrial park was conceptualized within the overall Dongo Kundu Master Plan as below:



Source: JICA Study Team

Figure 1-5: The Dongo Kundu SEZ Master Plan Layout

A more detailed concept was developed with the consideration of information from the following:

- Updated boundary for the industrial park & the Dongo Kundu SEZ;
- Priority industries land demand estimates;
- Mombasa Southern Bypass Road design;
- Port access road interchange ramp design;
- Topographical survey of the industrial park area;
- Location of existing Kayas;
- Location of the water distribution centre;
- Location of the Dongo Kundu power substation, and;
- Administrative office requirements by SEZA.

During the detailed planning stage of IP development, the following factors and planning principles were observed;

General road plan & spatial factory lot arrangement:

As principle of factory lot planning, every factory lot is allocated at least one access. If the tenant would like front and behind accessibility, they would need to purchase two or more lots to combine. Since road planning (including utility pipes under road, etc.) is a major contributor to costs for industrial park development, ensuring cost efficiency necessitates that the roads in industrial park service factory lots on both sides of the road.

Co-relation to existing infrastructure

Design information and technical data was sought from relevant projects to inform land use and infrastructure planning, including the following:

- Mombasa Southern Bypass Road (MSBR) Interchange ramp design updates: MPARD design updates from the Kenya National Highways Authority (KeNHA)
- Tiwi Boreholes, transmission pipeline and water reservoir information received from the Coast Water Works Development Agency (CWWDA) projects updates
- Dongo Kundu Power Substation: location & capacity of substation information from the Kenya Electricity Transmission Company (KETRACO)
- Solid waste management systems for use by IP as per data provided by the Mombasa County Government

Location of administrative block:

SEZA required the location to house various functions including One Stop Shop, local administration, service providers for DK SEZ amongst other administrative functions. A plot adjacent to the termination point of the road from the interchange from the MSBR was selected. While meeting the requirement of proximity to the main highway, it also serves its secondary role as a host for commercial facilities such as restaurants, banking services and amenities.

Sewerage Treatment Plan Location:

The primary consideration for the sewerage treatment plant (STP) is the geographical situation, with the identified location being ideal to take advantage of gravity flow of the sewerage. From the proposed place of STP, the treated wastewater discharges to a canal. These details were confirmed and updated with the published information from the topographical map.

Power & Telecommunication Planning:

Overhead power distribution was identified to be most ideal for the IP, based on cost considerations, the local capacity for operation, maintenance and management of power systems - as well as common standards for utility delivery in the region.

Ducting was identified as the most functional means of planning for telecommunications from the viewpoint of cost, functionality and maintenance. Telecommunication companies would carry out the installations of fibre optic lines within such ducts, easing collaborative infrastructure development and avoiding damaging hardware installation at later stages.

2. CHAPTER 2: INDUSTRIAL PARK DEVELOPMENT PLAN

2.1. Current Conditions of Land Use & Infrastructure

2.1.1. Land Use & Overall Developments on Site

Within the IP, there are two village settlements (Mrongondoni & Mwangala) within which the local community lives. The commonest land use includes semi-permanent residential structures within small tracts of farmlands not exceeding 2 acres. There are empty sections of farmland that are sparsely occupied by a variety of naturally growing trees and some fruit trees.

Source: JICA Study Team

Figure 2-1: Various uses of farmland within the IP area

Source: JICA Study Team

Figure 2-2: Temporary Residential Structures within the IP area

2.1.2. Road Network & Transportation Infrastructure

Mombasa Southern Bypass Road (MSBR) Project

The MSBR project connects the South Coast region, Mombasa Island and the North Coast regions directly with DK SEZ. The SEZ straddles this road, with access provided by an interchange into SEZ land. As at December 2021, the construction is ongoing, with the section

bordering the DK SEZ nearing completion, having been tarmacked and slope protection works ongoing. However, the connecting bridges to the Mteza area, and the mainland are still underway- with the preparatory work for the bridge piers ongoing.

Bridges allowing access to the DK SEZ have been provided for, with the design taking into consideration-controlled access to and from the SEZ area into the MSBR. Access to the IP from MSBR is shown in figure 2-3 below, with the actual work on site (left) compared to the proposed designs by KeNHA (right):

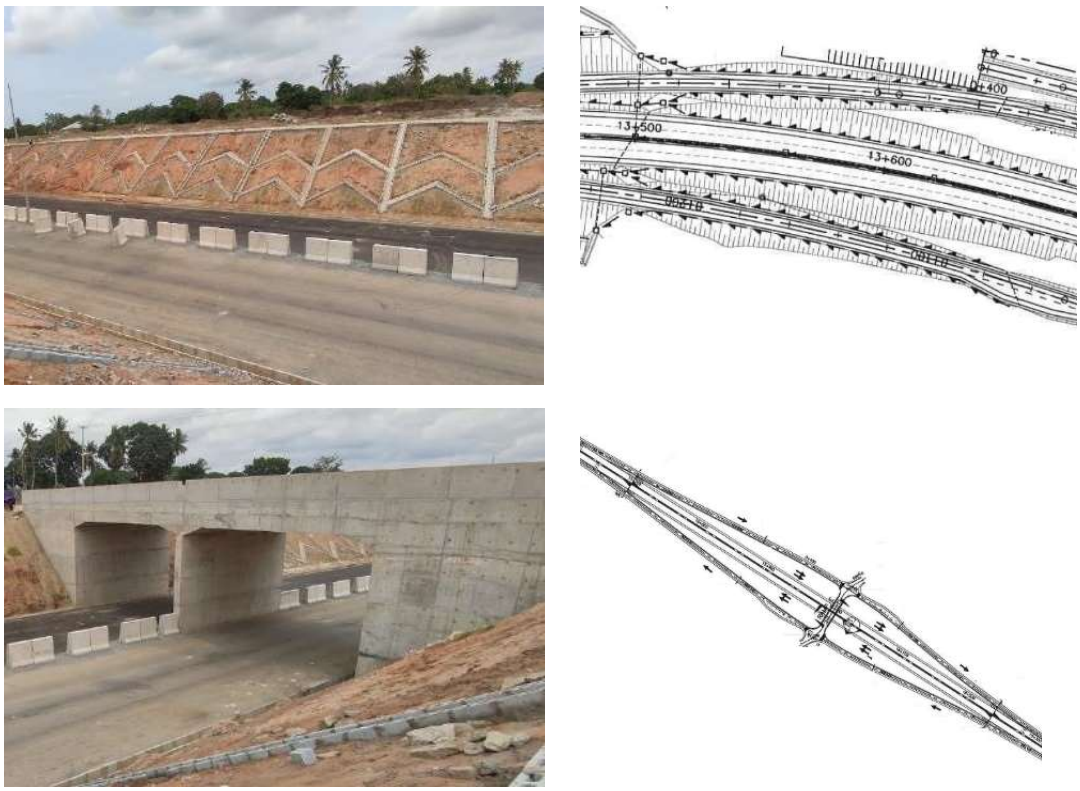


Figure 2-3: Access to the IP from the MSBR

Source: JICA Study Team & KeNHA

Port Access Road

The latest information of interchange ramp design between MSBR and port access road was received from the Port access road design team. The road control point design elevation is 48.1 (Survey of Kenya benchmark). The connection between the MSBR to the Port access road and the rest of the DK SEZ is shown in the figure 2-4 below.

Source: Mombasa Port access road design team

Figure 2-4: Layout of the Port Access Road Interchange

Mombasa Gate Bridge Project

The Kenya National Highway Authority (KeNHA) is developing the Mombasa Gate Bridge (MGB) Construction Project with the aim of providing a functional road connection between Mombasa Island and Mombasa Mainland South. These areas are currently still separated by the Likoni Channel which is currently crossed through ferries operated by the Kenya Ferry Service (KFS). Preliminary location & design is shown in the figure 2-5 below:

Source: NEMA EIA Report & KeNHA Project Inception Report

Figure 2-5: Layout of the Mombasa Gate Bridge Project

Current Condition of Roads in the Industrial Park

Motorable roads within the IP area are paved partly by gravel, approximately 6 m wide. There are some unpaved roads and footpaths of various widths connecting public utilities (mosques, community centres and water sources) to the existing residential structures.

Source: JICA Study Team

Figure 2-6: Roads within the IP area

2.1.3. Water Sources, Transmission & Supply

Tiwi Boreholes

The Tiwi Aquifer is located in Kwale County, between the Ukunda and Ngombeni areas. There are 12 boreholes in the wellfields, with a total production of approximately 10,000–12,000 m^3/day. The Tiwi Aquifer is shared by both Kwale and Mombasa counties. Some of the water is diverted to the Tiwi area and Diani Beach, while the rest flows to the Likoni neighbourhood of Mombasa.

The Tiwi Wellfield is under massive rehabilitation activities at present, as part of the Mombasa Water and Sanitation Service Improvement Project (WaSSIP). The average flow of each borehole in this field is around 35–40 m^3/h, and the total actual abstraction can be as low as 8,000 m^3/day, due to operational difficulties. The Tiwi Wellfield is divided into two groups of boreholes, as follows:

- The southern group, supplying water through the Magodzoni Water Tank, in which most of the water goes to the local villages, the Tiwi area and Diani Beach
- The northern group, supplying water through the Kaya Bombo Water Tank, in which most of the water is conducted to Mombasa via a 250 mm pipeline. It should be emphasized that this 250 mm pipeline supplies water up to Likoni District only.

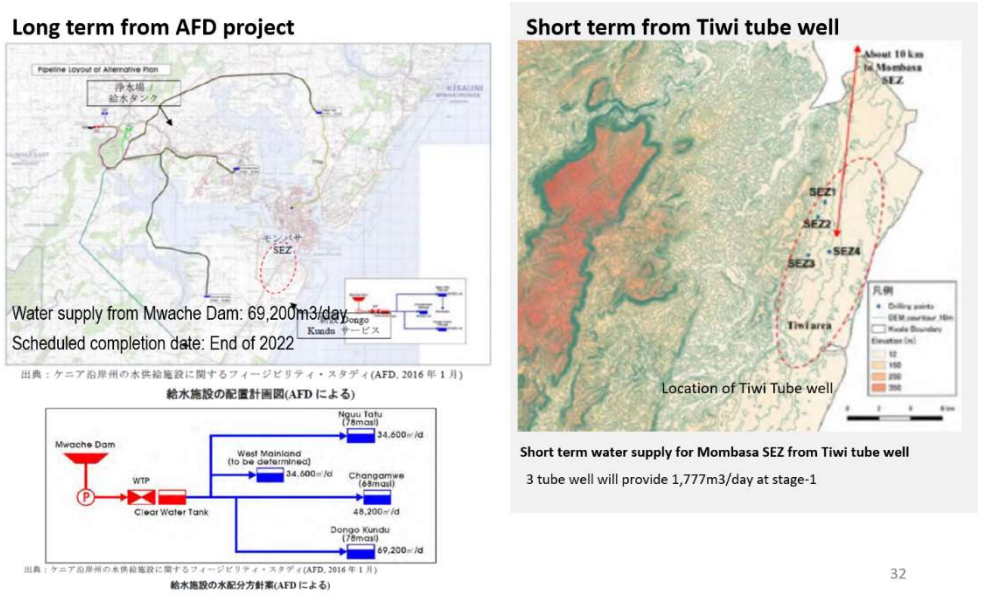
Source: JICA Study Team

Figure 2-7: Boreholes in Tiwi

Mwache dam & pipeline

The main dam is located at Kinango Sub-County of Kwale County, about 22 km northwest of Mombasa. The main dam is proposed to be a concrete gravity dam of 84m high and with a reservoir capacity of approximately 118 million m^3. The preliminary project completion deadline is set for mid- 2022.

There are three routes from Mwache dam water purification facility, 1 route following Southern bypass passing through DK-SEZ, flow to Dongo Kundu reservoir, as shown in Figure 2-8. The Water Transmission Facilities from Mwache Dam is being undertaken by the AFD. It includes 2 sections & a raw water pump station- which makes it the main water supply pipe to southern area which includes the Dongo Kundu Water Reservoir Tank.



Source: JICA Study Team/ JICA reports for Mombasa SEZ master plan

Figure 2-8: Planned long-term and short-term water sources for DK SEZ

Water demand for overall DK-SEZ is proposed in previous DK SEZ master plan is shown in the following;

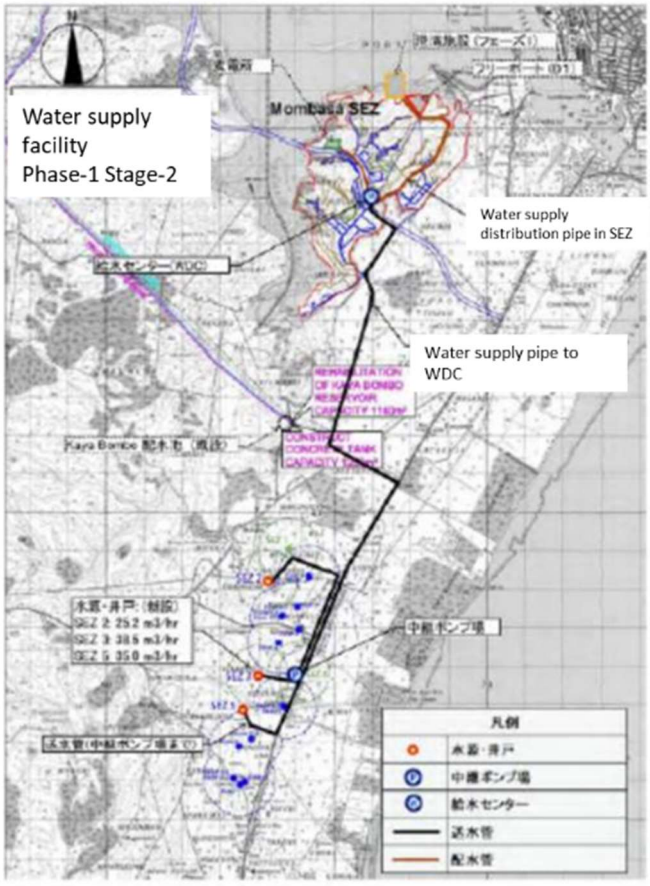
Short term:

Phase-1 stage-1: 800m3/day (2023)

Phase-1 stage-2: 2,000m3/day (2026)

Long term:

Phase-1 stage-3: 4,100m3/day (2030)



Source: JICA Study Team

Figure 2-9: Offsite Location of Mwache Dam & Pipeline

Current conditions of water access & supply within IP

Current water resources within the IP are limited to some ponds and pumps at natural access points. Community-based development projects by local authorities have provided locals with stationary water points that fluctuate in reliability depending on the weather (difficulty in accessing during heavy rains), and changing quality of the water during heavy abstraction.


Source: JICA Study Team

Figure 2-10: Water sources within the IP area

2.1.4. Electrical Connectivity

Available off-site power connection route

The proposed 53km 220kV Mariakani - Dongo Kundu double circuit transmission line project with a 220/33 kV substation at Dongo Kundu is meant to supply DK-SEZ to improve the reliability of power supply and to reinforce the power transmission grid in the Coast region and its environs. In order to ensure reliability, stability and efficiency in power supply, it is necessary to supply DK-SEZ with a dedicated 220kV feeder from Mariakani Substation.

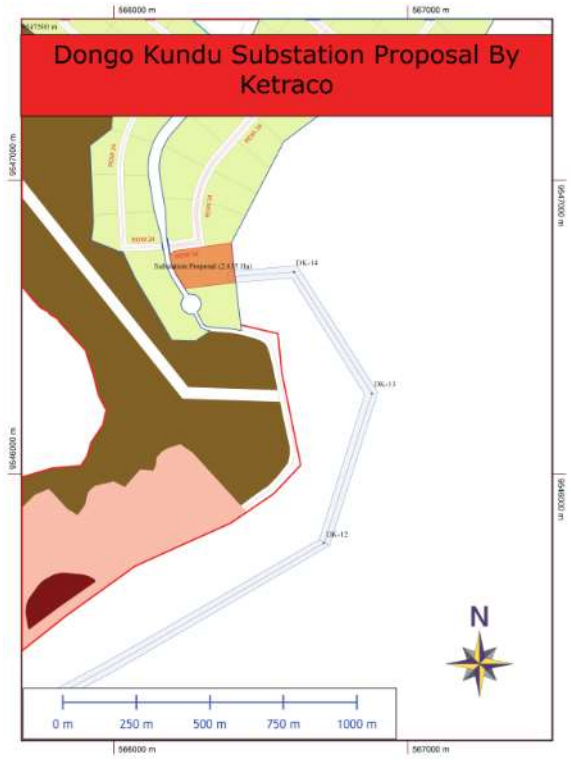
Source: JICA Study Team

Figure 2-11: Offsite Location of Mariakani S/S and Transmission Line

Connection to the Likoni Village from the power substation is to be done through a route outside the IP area, thereby not necessitating additional wayleaves from SEZ land.

S/S station capacity

Based on the request from the Kenya Electricity Transmission Co. (KETRACO), a 220/33kV substation will be established within the Industrial Park. The location as shown in Figure 2-12 is coordinated between KETRACO and SEZA to ensure the best efficiency for the transmission line alignment and not affect IP area land use plan



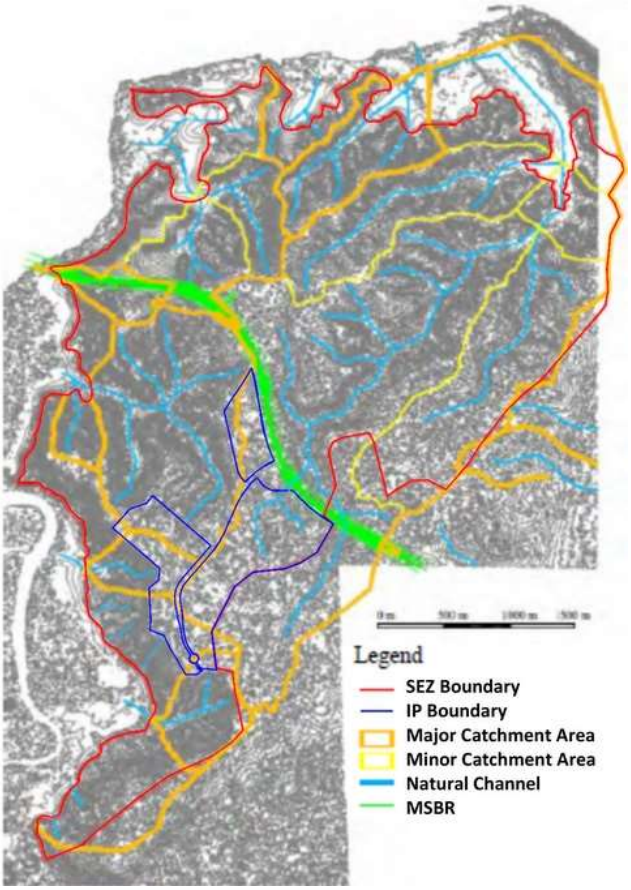
Source: KETRACO

Figure 2-12: Location of the Dongo Kundu Power Substation

2.1.5. Stormwater Drainage

Topography and existing natural drainage system

The South Coast region, within which the IP is found, experiences two distinct long and short rainy seasons that correspond to the monsoon winds. The long rains last from April to June (av. 1,040mm of rain)- corresponding to the south-eastern monsoon winds. Short rains last from October to December (av. 240mm of rain)- corresponding to the dry north-eastern monsoon winds.



Source: DK SEZ Master plan report (JICA)

Figure 2-13: Existing natural channel inside DK SEZ

General topography in the DK area is hilly, but with no drainage facilities. Specifically, within the IP area- there are no major rivers or streams (Figure 2-13). Thus, part of the rainwater penetrates into the ground and the remainder flows over the ground surface along existing valleys or natural channels downstream. Concrete culverts are built across motorable gravel roads to allow the passage of water under roads, but these structures are only found on few of the partially paved roads.

2.1.6. Solid Waste Management

Solid waste management is addressed at a devolved level by the County Government of Mombasa (CGM). Contractors licensed by the CGM Department of Environment, Waste Management and Energy and licensed by NEMA to handle solid waste (Private Public Partnership arrangements). CGM also operates vehicles internally to handle a portion of the solid waste from waste disposal sites which are also designated by the County Government.

Mombasa County produces approx. 2,200 tons of solid waste per day (domestic, commercial and industrial), with 65% of the waste collected (35% remains uncollected). 40% of the collected waste is partially recovered or recycled.

Source: JICA Study Team

Figure 2-14: Waste handling in the Likoni area

Waste disposal sites in Mombasa are located to serve various zones of waste collection- from which points sorted wastes is delivered to land fill sites. The National Environment Management Authority (NEMA) instituted a national policy for sustainable sold waste management in 2019, which requires the local government to sort, reuse and recycle before landfilling.

Source: NEMA

Figure 2-15: Location of waste disposal sites in Mombasa

2.1.7. Telecommunication Systems & Connectivity

The Ministry of ICT is responsible for the provision of a national optical fibre optic network and telephony services in the region. In the Likoni area, the off-site fibre and telephony connections terminate at the chief's camp adjacent to the MSBR within the Dongo Kundu area. Connectivity to both internet and telephony services is undertaken by private service providers who undertake the process of developing, operating and private distribution networks.

2.2. Industrial Park Development Concept

2.2.1. Consideration of Preconditions

Preliminary planning for DK SEZ informs the detailed plans and designs for development of sub-sectors, of which the industrial park exists. From the preliminary data used in planning land use, earthworks and infrastructure development, the estimated size and overall development framework of the IP formed the basis of further detailed planning. As such, further information was developed, sourced and evaluated for the identification of specific criteria from the preconditions which allowed for a development framework to be set.

The detailed land use plan was determined taking into consideration on a detailed topographic survey and alignment to adjacent infrastructure and utilities including the following;

- Mombasa Southern Bypass Road
- Port Access Road interchange ramp
- Power Substation
- Power transmission line & wayleave
- Water distribution center

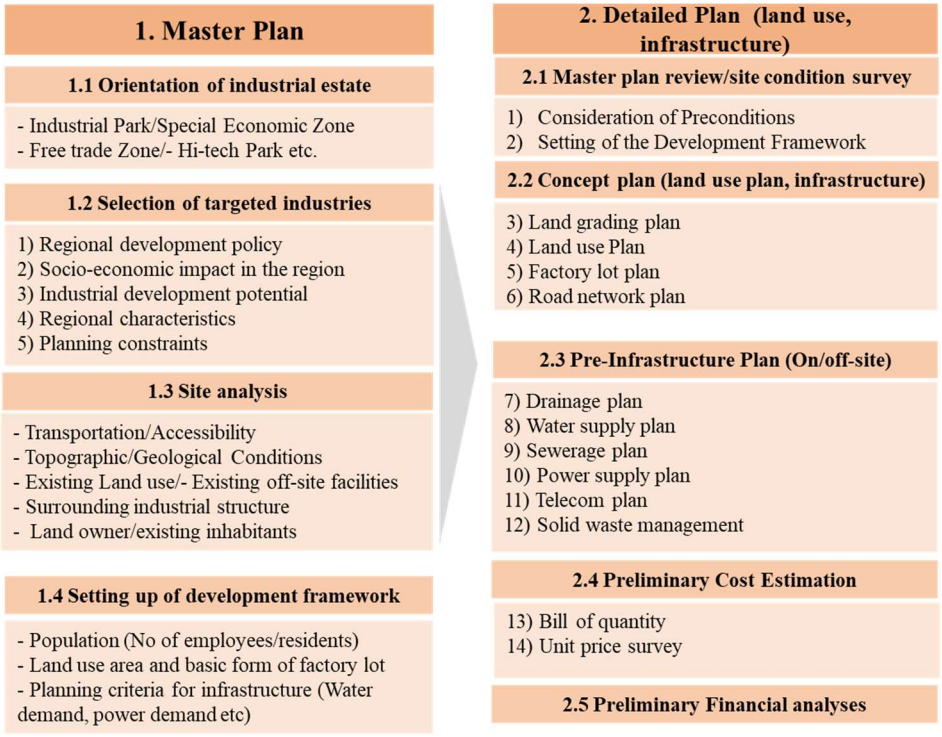
The detailed infrastructure plan was developed from the basis of relevant environmental and situational data relevant to each element. Such considerations included estimation of traffic data with regard to related road infrastructure, identification of hydrological conditions on site, the review of the topographical and boundary data and related utility capacity of the local authorities with regards to handling of various wastes.

At a preliminary level, SEZA and JICA Consultant Team collectively reviewed the outline of the IP as provisioned in the MP and developed a pre-infrastructure plan. The framework, therefore, was directed by the need for critical infrastructure for running an industrial park. A pre-infrastructure plan was tabled and discussed as the basis for the development of the detailed concept of the industrial park.

2.2.2. Setting of the Development Framework

In DK SEZ, MP conducted in 2015 was be considered as pre-feasibility study, which formed the basis for the development framework. From this, the detailed design confirmed land use plan, road structure, detail infrastructure, water supply, etc in the IP. Consequently, the cost of infrastructure development was calculated and confirmed to conform to the feasibility study. Since the feasibility study targets cost-benefit analysis, the ideal approach to planning was to first review information from the MP and then confirm that the detailed planning confirmed to the feasibility study.

The general approach to develop the industrial park (IP) within DK-SEZ is outlined as below:



Source: JICA Study Team

Figure 2-16: Flow of Detailed Planning for the IP

At the master plan stage, the MP report was structured to include concept for the IP layout from preliminary demand information for industrial activity. Such projections estimated the extent of the IP, its phasing plan, a preliminary road and infrastructure plan, and unstructured costs for development. It formed the basis for generation of further information at later stages, which included confirmation of current conditions, review of the IP topography, identification of existing infrastructure and a more detailed evaluation for land use requirements with the relevant GoK authorities.

At the detailed planning stage for the IP, Consultant Team reviewed more detailed data, specifically for the area of interest, and established design criteria that informed the framework further. Such information included the specifications, policies and legal requirements for the development of the IP as per the local standards. In addition, special requirements by GOK through the SEZA indicated the requirements for the infrastructure planning, cost implications that were acceptable, and operational criteria that would be influenced by infrastructure plans.

2.3. Land Use Planning for the Industrial Park

2.3.1. Planning Data

2.3.1.1. Topographical Survey

Basis of Topographical Survey

A topographical study was conducted in April 2021 by the Survey of Kenya (SOK) and SEZA with the support of the Consultant Team. Following engagement of the regional surveyor's office, local administration and necessary community engagement, the exercise was carried out over the expanse of the industrial park. This exercise established controls to facilitate topographic survey work, mapped natural, manmade features and terrain features and produced a detailed topographical map of the IP area.

Establishment of Controls for Topographical Study

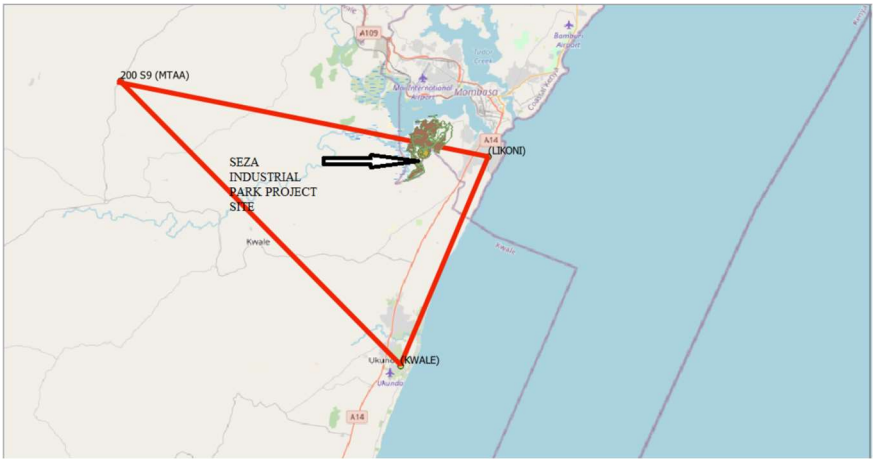
The survey team undertook geodetic control survey to tie the survey work to the national reference grid. The following Survey of Kenya pillars were used to coordinate 6 control points for the topographical survey as well as the boundary survey as in table 2.1 below:

Table 2.1:Topographical Survey Control Points

Point Name	Easting Value	Northings Value	Elevation
200 S 9 (MTAA)	536341.510	9554861.050	291.065
201 S 5 (DIANI)	564635.542	9526746.838	15.742
water	572773.176	9548187.394	15.321

Source: Survey of Kenya

Having identified the existing pillars a control network was designed as shown in figure 2-17:



Source: Survey of Kenya

Figure 2-17: Setting Topographical Survey Controls

The geodetic control survey resulted in coordination of 6 control points within the vicinity of the IP area.

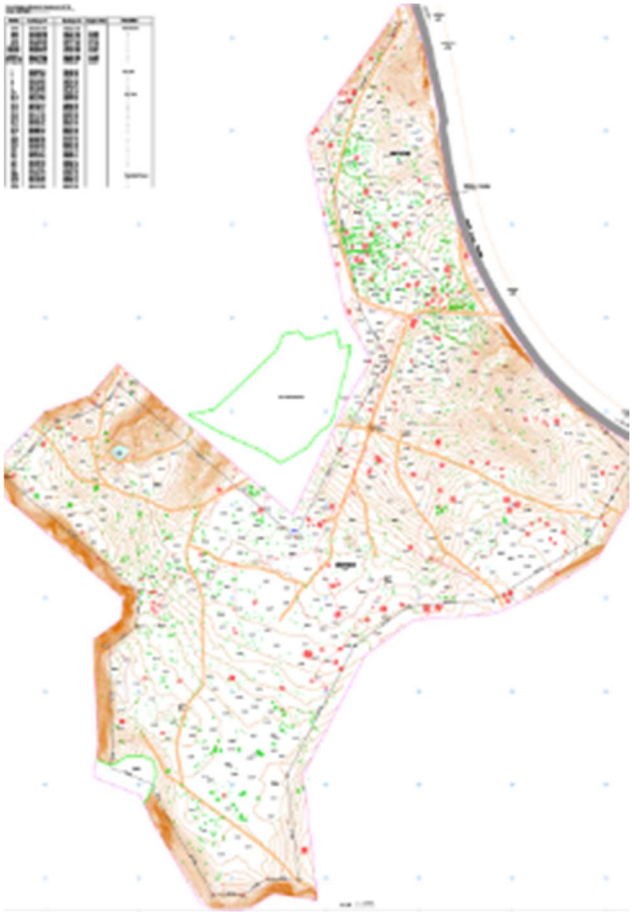
Similarly for vertical control, a consistency survey was undertaken to ensure control points elevations tallied. Benchmark MBR071 was chosen as the most preferred reference point for

elevations due to its proximity to the survey area. The benchmark had been used for the construction of the Dongo Kundu bypass. By applying the elevation of the benchmark, the team therefore tied the survey observations to the datum of the bypass.

Data Collection from Topographical Study

The survey captured data over the proposed IP area, including a 30m offset from the preliminary boundary. The following details were of interest: roads, footpaths, buildings, graves, trees, power line, drains, water points, ground level and any manmade features. Spot levels at regular interval were observed to depict the relief.

A topographical map was generated from the collated data as in figure 2-18 below:



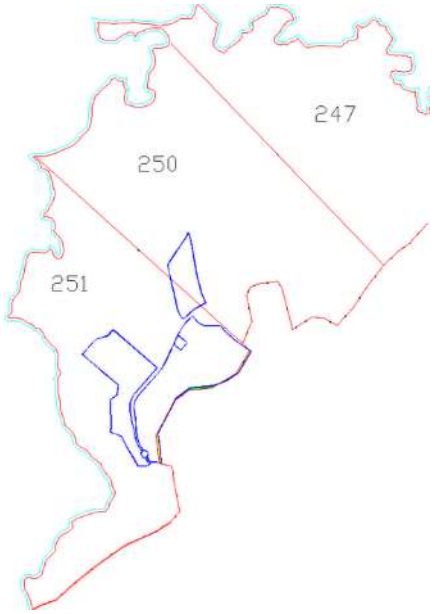
Source: Survey of Kenya

Figure 2-18: A topographical map of the IP

2.3.1.2. IP Boundary Identification & Demarcation

As an extension of the activities conducted by the survey team during the topographical survey, the surveyors confirmed the boundary of the SEZ area, identify and document the location of the existing beacons and demarcated the boundary of the industrial park. To undertake this exercise, the team used the survey map marking the KPA plot boundary, existing MSBR beacons, and the DK-SEZ Master Plan.

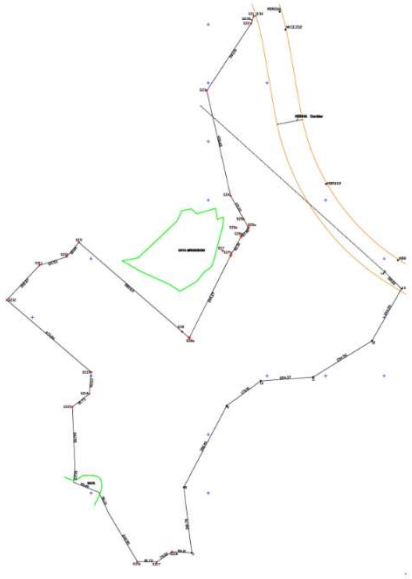
From the published survey map provided by SOK, the industrial park was identified to sit in two parcels Mombasa /Block IV/Mainland South/250 & 251. 89% of the IP sits in plot 251, while 11% sits on plot 250. This is as shown in figure 2-19 below:



Source: Survey of Kenya

Figure 2-19: Land parcel location of the IP

From the preliminary proposed boundary of the IP, a newly identified shrine (Kaya Tembo) was defined with the help of the local representatives, and a theoretical boundary was proposed.

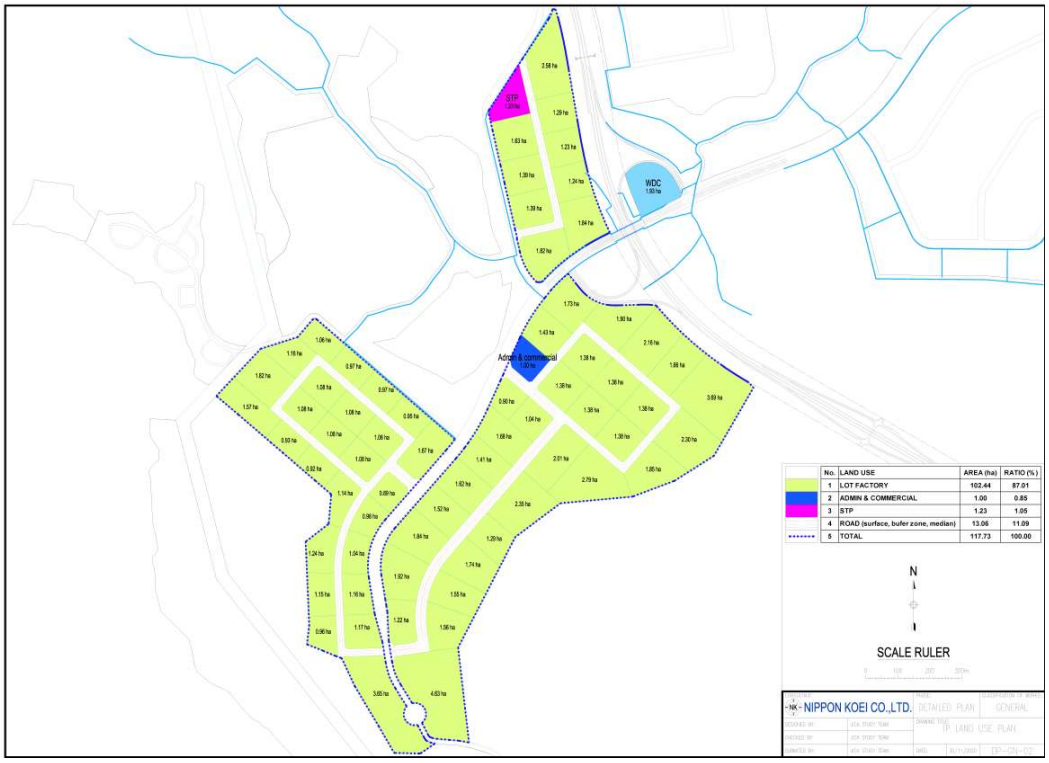


Source: Survey of Kenya

Figure 2-20: The revised IP boundary

Floating boundary points were established outside of the identified shrine, from which the newly defined IP boundary was plotted as shown in figure 2-20 above.

2.3.2. Industrial Park Land Use Plan



Source: JICA Study Team

Figure 2-21: The Industrial Park plan

Subdivision of land

For planning purposes, the minimum size of plot was limited to 1 ha. However, the standard size varied with the marketing, operation and maintenance interests of SEZA. It would be possible to combine several lots if larger plots would be required by investors later on.

Location of admin building for SEZA

The admin building to house OSS, SEZ officers was proposed to be located near the Main Gate, beside the main entry point and the customs gatehouse. However, the admin building is not necessarily linked to customs warehouse, marshalling yard or customs gatehouse but the planning principle was to locate them proximately.

Location of different facilities (STP, SS, WDC and MSBR interchange)

Updated detailed designs of the interchange for the Mombasa Southern Bypass Road (MSBR) informed the alteration of the overall land use plan in the vicinity of the highway. As such, the relocation of various related infrastructure was necessitated, including the SEZA's admin building, Water Distribution Centre (WDC), Sewerage Treatment Plant (STP) and Power Substation (SS). Primarily, the factors of accessibility to the road, sound and air pollution all define the limit to which each of these facilities could be proximate to the road and the interchange. In addition, the requirements of lots for prime factory use closest to the highway also limited the allocation of infrastructure that does not require such proximity, resulting in the distancing of power substation and sewerage treatment plant from the interchange.

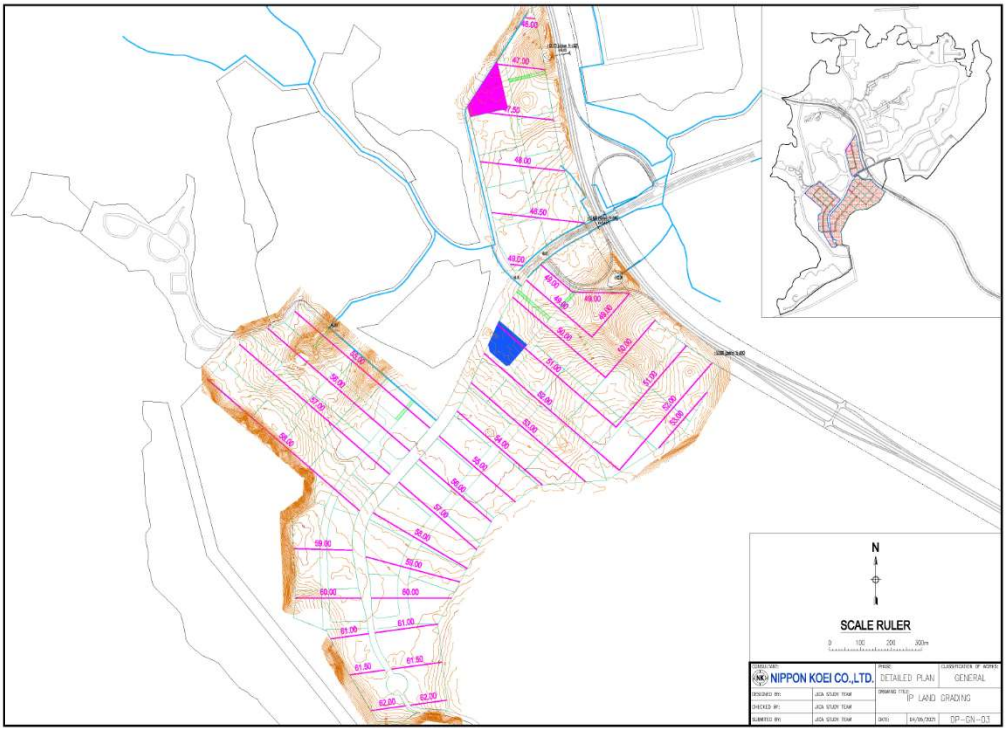
Table 2.2: Land Use

Functions	Net Area (ha)	Ratio of land
Industrial area (Factory lot)	97.9	83%
Admin & Commercial	1.0	1%
Utility area (STP, S/S)	3.8	3%
Road (buffer zone, median, green)	15.3	13%
Total	**118**	

Source: JICA Study Team

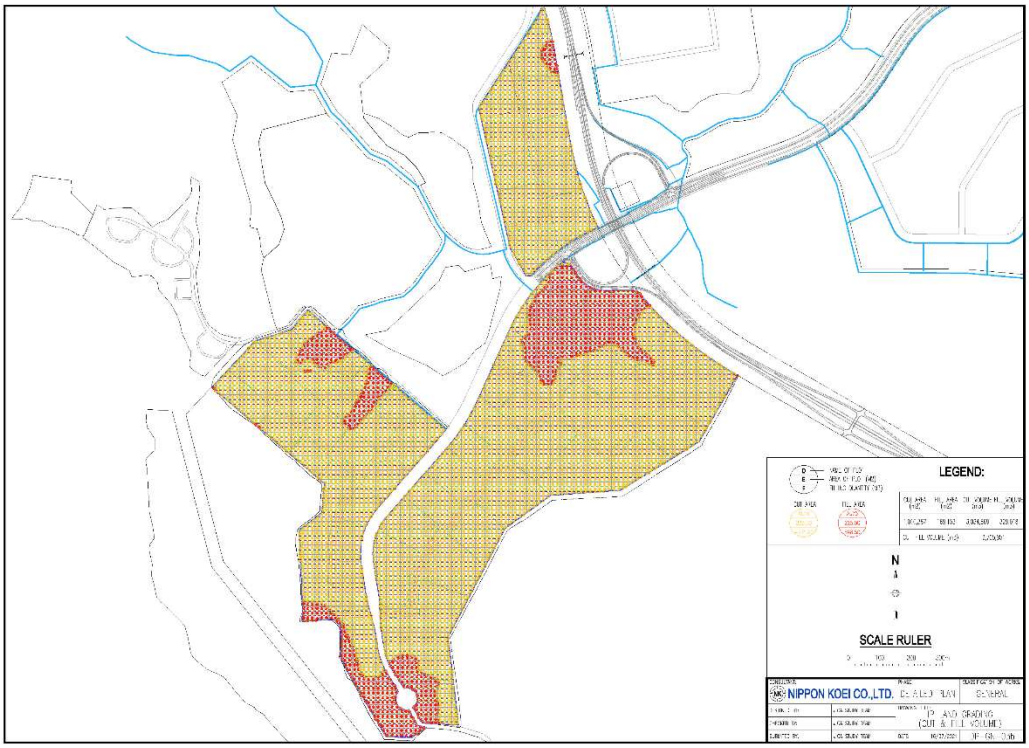
2.3.3. Land Grading plan

Data from the topo survey informed the land preparation planning requisite towards achieving the requirements of land for industrial use. Considerations for slope, sizing of factory lots, concurrence with other adjacent infrastructure and the existing natural drainage system altogether.



Source: JICA Study Team

Figure 2-22: IP land grading plan



Source: JICA Study Team

Figure 2-23: Cut and Fill plan

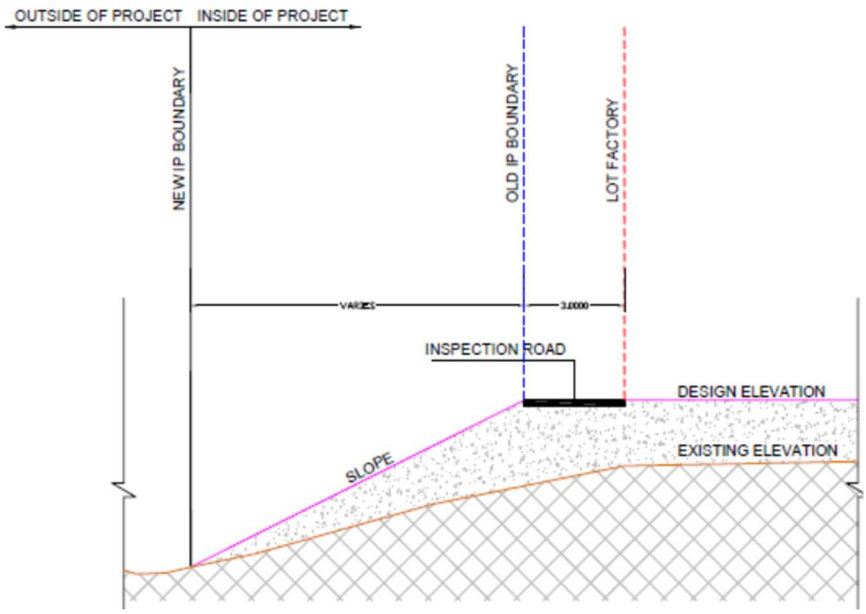
Design modifications resulting from topo survey included the adjustment to the preliminary land grading plan- to which the gentle slope (1%) system was altered. Consequently, the cut-fill plan was altered to appreciate the existence of existing natural topography versus the proposed levels of infrastructure in the IP. Volumes resulting from such design were established in table 2.3 below:

Table 2.3: Cut-Fill Areas and Volumes

Cut Area (m^2)	**Fill Area (m^2)**	**Cut Volume (m^3)**	**Fill Volume (m^3)**
1,010,367	169,153	3,034,869	329,018
Cut-Fill Volume (m^3)		2,705,851	

Source: JICA Study Team

Through discussions with SEZA, the embankment slope at the boundary of IP was planned outside of original IP boundary to maximize the factory saleable land as illustrated in figure 2-24.



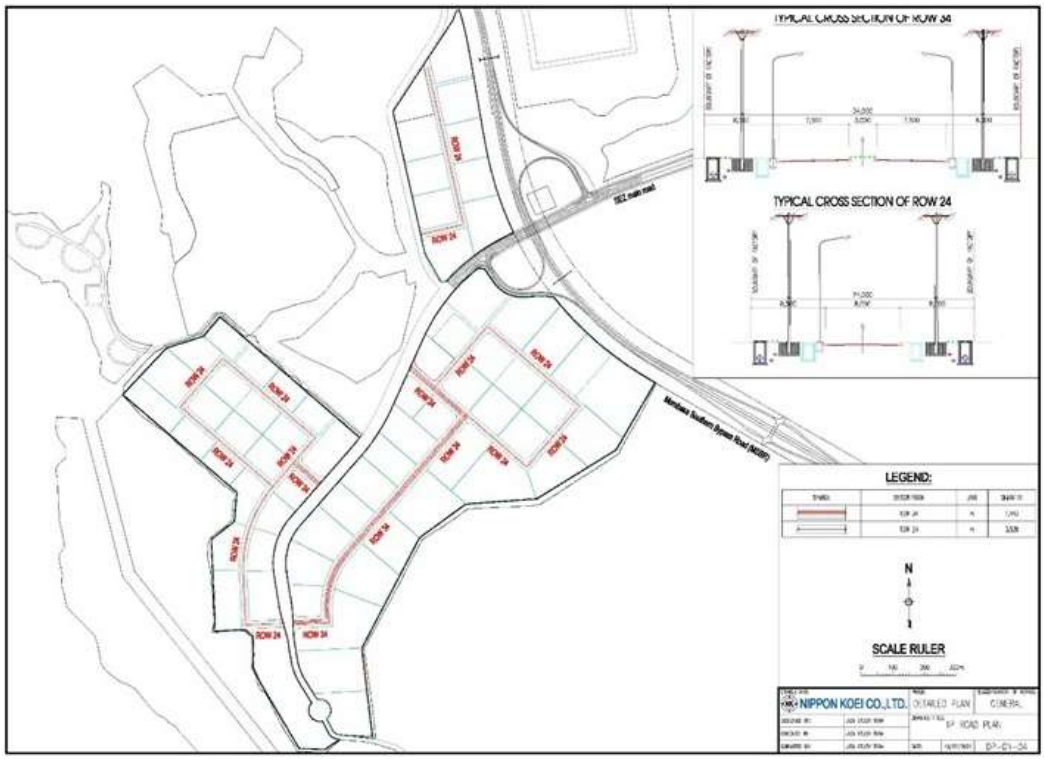
Source: JICA study team

Figure 2-24: Image of embankment slope at IP boundary

2.4. Infrastructure Development Plan

2.4.1. Road Network Plan

The Mombasa Southern Bypass Road (MSBR) acts as the access to the Mombasa Island, the Kenyan Mainland and the South Coast regions. The MSBR is designed as a 22,000 PCU per day, with 11,310 PCU generated from the SEZ area in total. Access to the IP and the Port is provided by the Port Access Road that connects to the main highway through an interchange as illustrated below.



Source: JICA Study Team

Figure 2-25: Road network plan

Of total 118 hectares, 98 hectares of the IP is planned to be industrial area, hosting a variety of factories on the plots. Each of these plots is serviced directly by an access road, which in turn links to the port access road.

The road network plan optimizes land assignment as factory land, limiting the requirements for wayleaves and greenery to increase efficiency of land use. Two type of road cross section is planned as shown Figure 2-25. The green areas will cover up the buffer zone area which buried infrastructure including telecommunication ducting, sewer and water supply lines and drainage systems. Manholes and inspection chambers, however, have to be exposed intermittently within the green areas.

2.4.2. Stormwater Drainage Plan

The DK area is located in the tropical monsoon area, where the maximum rainfall occurs in the month of May. The consideration for stormwater design is based on the maximum monthly rainfall with the return period 20 years- from which the planning of the system develops hydraulic loads. Based on the land grading plan, catchment area plan is shown in Figure 2-26.

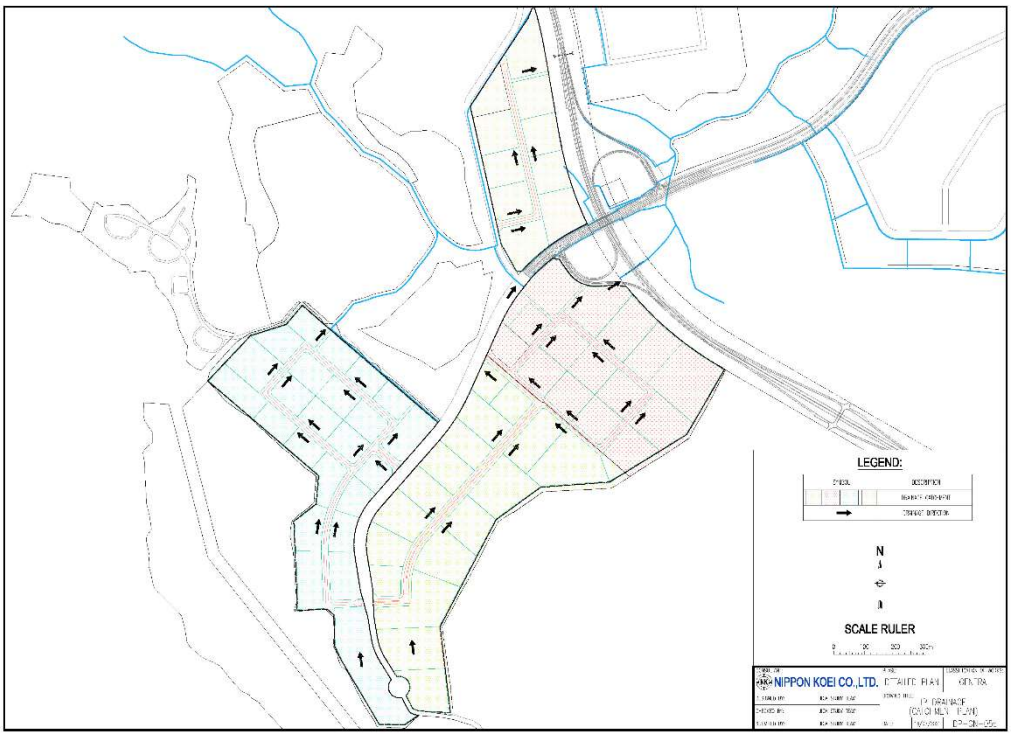


Figure 2-26: Drainage Catchment plan

Source: JICA Study Team

Peak runoff, therefore, also takes into account the road network plan and the road design guidelines by Kenyan Urban Roads Authority (KURA). As such, the rainfall intensity, runoff coefficient of various road surfaces and the overall area of stormwater collection informed the drainage network and sizing of U-drains and culvert sections. Drains were adopted as U-ditch collector systems, coupled with hume (reinforced concrete) pipes when crossing under roadways. Drainage box culverts along the road would connect to these u-ditchet/concrete pipes, serving as the main lines for draining strormwater into the natural waterways.

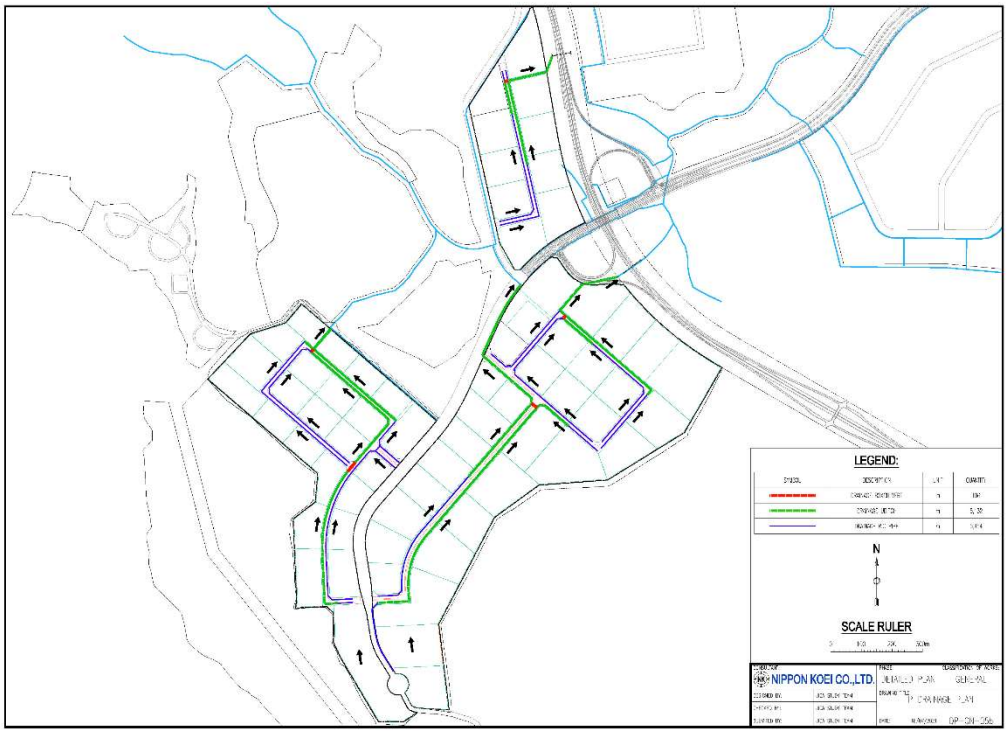
The drainage system is designed to work with gravity flow, which requires adjustment to the natural topography in the area and the planned land use and road network. From these considerations, the stormwater drains into existing natural drainage system, ultimately draining directly into the sea. The length of the drainage network systems was established as in table 2.4 below:

Table 2.4: Length of Stormwater Drainage Network in IP

Drainage Work	Length	Units	Sizes
Box Culvert	106	m	Assumed dims 2.0x2.0m section
U-Ditch	5,132	m	Assumed dims 1.5x1.0m section
R.C Pipe	5,954	m	D300 concrete pipe

Source: JICA Study Team

From the preliminary estimation data, D300 Hume pipes were adopted across the roadways, with 1m U-ditch drains serving as collector lines. Box culverts of max, 2x2m sections were estimated to serve along the roadways- connecting to the natural waterways and the MSBR drainage systems as shown in figure 2-27 below.



Source: JICA Study Team

Figure 2-27: Drainage plan

2.4.3. Water Supply & Distribution Plan

The IP is served by a water reservoir located within one of the MSBR interchange loops, which connects into a distribution line along the Port Access Road. The main pipe is linked to both the reservoir and the IP distribution system, from which the water supply to consumers is tapped and metered. Projections for water demand were generated based on the land use plan and known water demand estimates from similar IP designs, and were established as in the table 2.5 below:

Table 2.5: Water Supply Demand Projection

Functions	Net Area	Unit generation	Unit	Demand
Industrial area (Factory lot)	97.9	40	m3/ha/d	3,916
Admin & Commercial	1.0	6	litre/m2/d	130.9
Utility area (STP, S/S)	3.8	200	litre/c/d	4
Road (buffer zone, median, green)	15.3	0.5	litre/m2/d	76.5
Total	**118 ha**			**4,127 m3/day**

Source: JICA Study Team

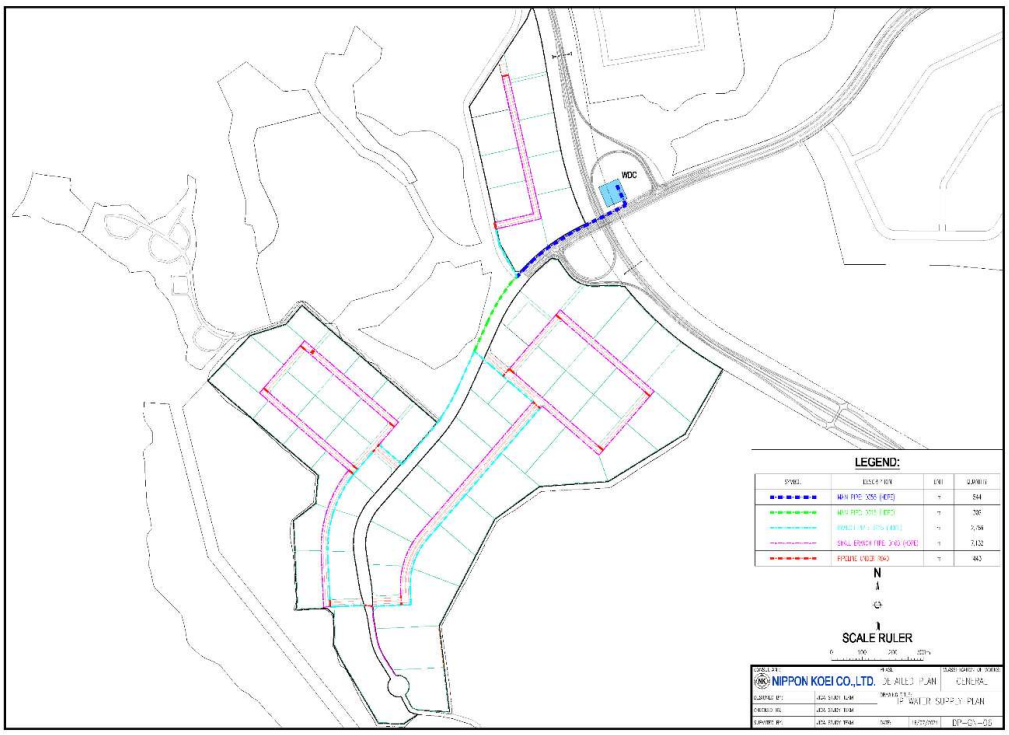
From the main pipe, D355 pipes will serve as the supply line for each IP zone as illustrated in figure 2-28. D315, D225 and D160 pipes will serve as secondary and connection lines to client respectively. The lengths were established as in the table 2.6 below:

Table 2.6: Length of Water Supply Pipes Network in IP

Pipe Size	Length	Units
D355	544	m
D315	309	m
D225	2769	m
D160	7132	m

Source: JICA Study Team

This network was connected to each factory lot, stemming from the supply line from the reservoir location following the road plan and land use plans as in the figure 2-28 below:



Source: JICA Study Team

Figure 2-28: Water Supply Plan

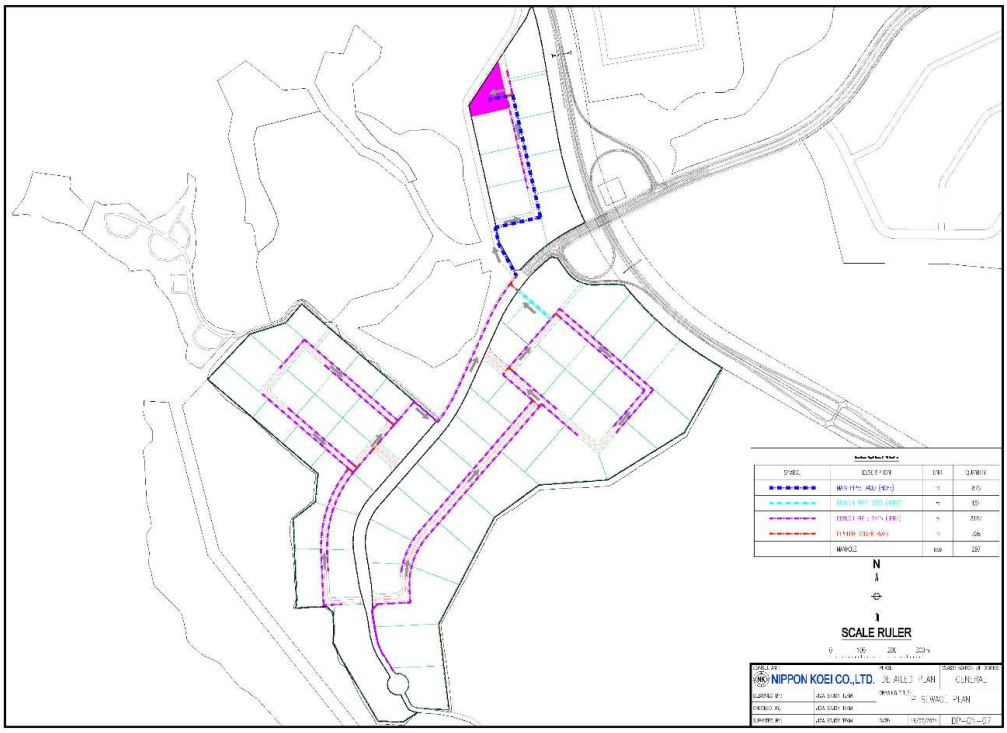
2.4.4. Wastewater Management Plan

Enterprises operating within the industrial park will be served by a common sewerage treatment facility. From the land use plans, estimates for the wastewater generation can be computed that 80% of water supplied would result in the sewerage system. The wastewater demand forecast is shown in Table 2.7.

Table 2.7: Sewage Output Projection

Functions	Net Area (ha)	Water Supply (m3/day)	80% of water supply
Industrial area (Factory lot)	97.9	3,916	3,133
Admin & Commercial	1.0	130.9	105
Utility area (STP, S/S)	3.8	4	3
Road (buffer zone, median, green)	15.3	76.5	61
Total	**118 hectares**	**4,127**	**3,302 m3/day**

Source: JICA Study Team



Source: JICA Study Team

Figure 2-29: Sewerage Plan

Collector pipes of size D315 will be connected to factories within the IP lots, with intermediate manholes serving to connect these to larger D400 pipes, as shown in figure 2-29 above. Such pipe lengths were established in the quantities as in table 2.8 below.

Table 2.8: Length of Sewerage Pipes Network in the IP

Pipe Size	Length	Units
D400	875	m
D355	154	m
D315	8,187	m
Manhole	297	No. s

Source: JICA Study Team

Manholes are placed at each point with a change in direction exceeding 45^0, a junction connection or a distance beyond which the gravitational flow does not attain self-cleaning velocity. Wastewater from each factory will be pre-treated then discharge to common sewerage pipes along the road flowing to STP. In addition, Kenya or international discharge standard should be applied for STP to discharge the treated wastewater.

2.4.5. Power Supply Plan

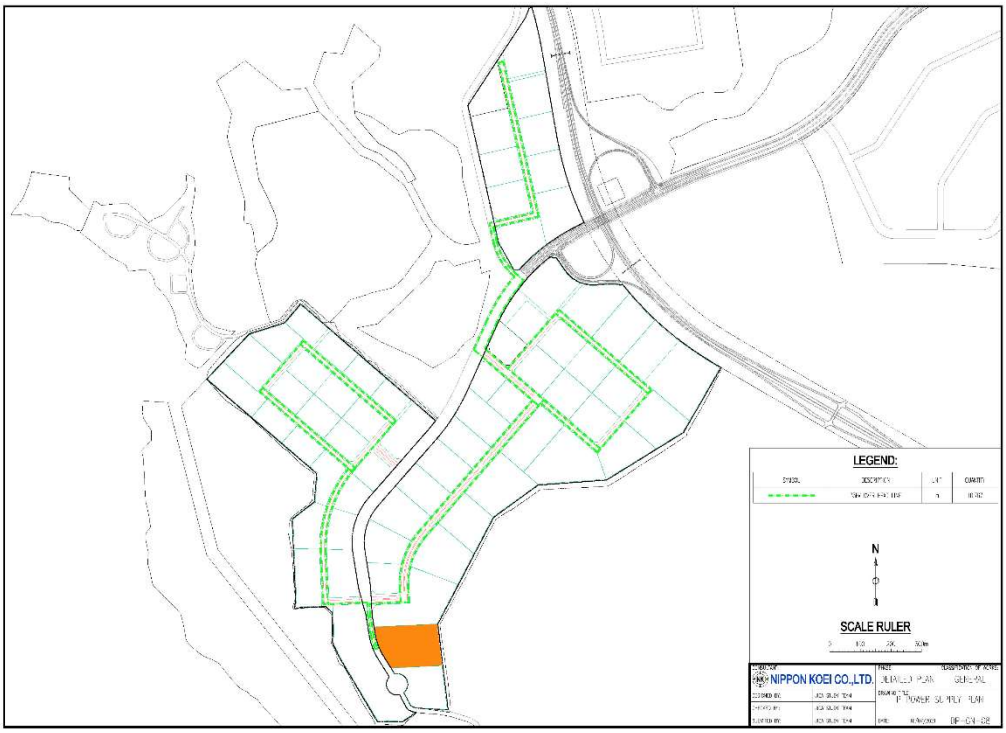
Power demand in the IP was forecasted based on the factory land and other utilities that are anticipated to consume power. Each of these was compared by the net area usage versus the load identified from similarly operating industrial parks, from which the demand estimate was calculated as in the table 2.9 below:

Table 2.9: Power Demand Projection

Functions	Net Area (ha)	Unit Generation (kVA/ha)	Demand (MVA)
Industrial area (Factory lot)	97.9	300	29.4
Admin & Commercial	1.0	600	0.6
Utility area (STP, S/S)	3.8	140	0.5
Road (buffer zone, median, green)	15.3	30	0.5
Total	**118**		**31 MVA**

Source: JICA Study Team

As a result of the calculation, the required total power demand for the IP is estimated at 31 MVA. This demand will be served by the power substation to be located within the IP, as per the power supply plan in figure 2-30 below, and the substation site location as indicated by KETRACO.



Source: JICA Study Team

Figure 2-30: Power Supply Plan

From the location of the substation and the overall land use plan, the length of overhead power lines, and street lighting system was established as in table 2.10, below:

Table 2.10: Length of the Power & Lighting Network in the IP

Power Supply Network	Length	Units
33kV overhead line	10,767	m
Street lighting pole	509	No. s
Lighting underground cable	11,680	m

Source: JICA Study Team

2.4.6. Solid Waste Management

The existing waste disposal sites are subject to the monitoring and control of NEMA inspectors in conjunction with the Mombasa County Government that operates these locations. For the industrial park, the generation of solid waste is estimated from the area usage of different elements of the IP, using data from other industrial parks for comparative estimation. The forecasted generation of solid waste is shown in Table 2.11.

Table 2.11: Solid Waste Generation Projection

Functions	Net Area (ha)	Unit generation	Unit	Demand (ton/day)
Industrial area (Factory lot)	97.9	135	ton/ha/y	55.1
Admin & Commercial	1.0	0.6	kg/c/d	0.18
Utility area (STP, S/S)	3.8	0.6	kg/c/d	0.012
Road (buffer zone, median, green)	15.3	30	kg/c/d	-

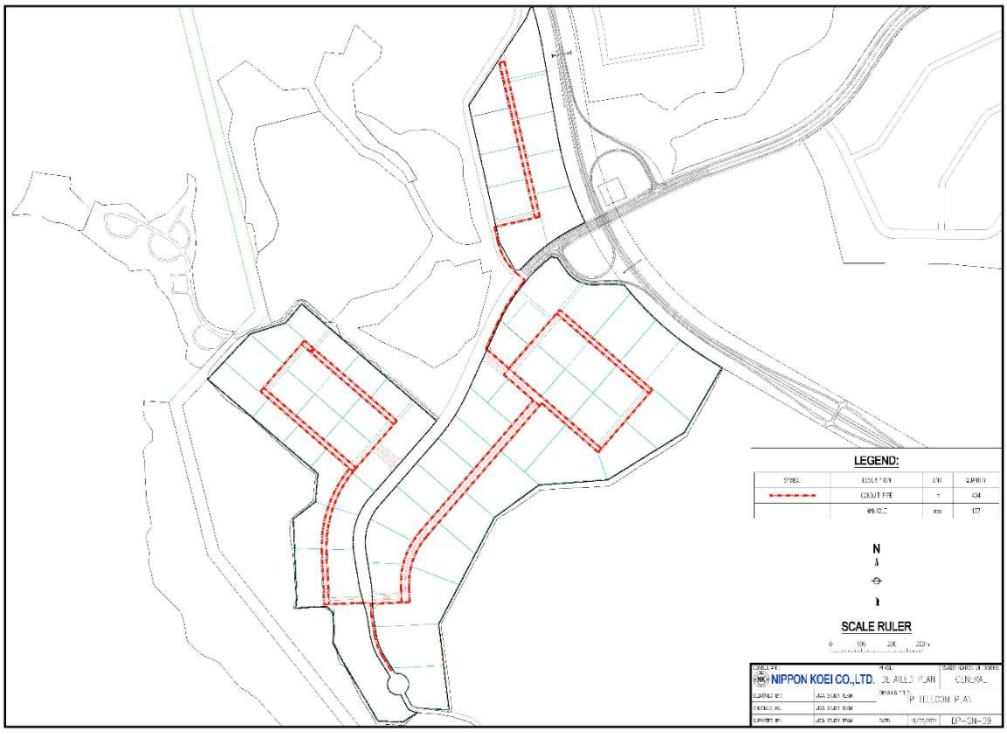
Total	**118 hectares**			**55 ton/day**

Source: JICA Study Team

The Mombasa County Government is mandated to collect, sort and manage solid waste within the region. The IP is located closest to the Shoda Quarry landfill site, which also serves the rest of the Likoni and Mtongwe areas in the Mainland South waste collection zone. Capacity development of the site, and the planning for the additional waste load from the IP was presented to the Mombasa County Government to facilitate planning for the expansion of the site.

2.4.7. Telecommunications System Plan

The plan of connection routes and underground ducting for private fibre and telephony service providers was aligned to the road network plans and the allotted factory areas as in the figure 2-31 below:



Source: JICA Study Team

Figure 2-31: IP Telecommunications Ducting Plan

From figure 2-31, the length of ducting and number of manholes required was established as in the figure 2.12 below.

Table 2.12: Length of Telecommunications Network in IP

Telecommunications Network	Length	Units
Conduit pipe	404	m
Manholes	137	No. s

Source: JICA Study Team

3. CHAPTER 3: PROJECT IMPLEMENTATION

3.1. Project Implementation Costs

3.1.1. Bills of Quantities

From the detailed planning, estimates for various works were calculated using existing information on construction standards, assumptions on the requirements of the IP for operational infrastructure and information from similarly planned industrial parks. Such works also included critical facilities for the integration of other utilities and networks to be provided by third party and private service providers within the IP with regard to the local operating standards for water supply, wastewater management, solid waste management, telecommunications and power requirements.

Table 3.1: IP Bills of Quantities

No.	Description of work	Unit	Quantities	Remarks
1	**Land grading work**			**Does not include bush clearance / tree felling**
	Cutting	m3	3,034,869	Assumed to be cut to spoil (dumping)
	Land filling	m3	329,018	Assumed to be borrowed land filling (up to 2km distance)
2	**Road work**			
	Row 34	m	1,143	
	Row 24	m	3,529	
3	**Drainage work**			
	Box culvert	m	106	Assumed dims 2.0x2.0m section
	U-ditch	m	5,132	Assumed dims 1.5x1.0m section
	R.C pipe	m	5,954	D300 concrete pipe
4	**Water supply work**			
	D355	m	544	
	D315	m	309	
	D225	m	2,769	
	D160	m	7,132	
	Pipe under road	m	443	Assumed burying depth= 1.8m
5	**Sewage work**			
	D400	m	875	
	D355	m	154	
	D315	m	8,187	
	Pipe under road	m	306	Assumed burying depth= 1.8m
	Manhole	no's	297	
	Wastewater treatment plant	m3	3,274	
6	**Power supply work**			
	33kV overhead line	m	10,767	
	Street lighting pole	no's	226	Estimate includes pole, lamp & overall installation
	Lighting underground cable	m	11,680	
7	**Telecommunication work**			
	Conduit pipe	m	404	
	Manhole	no's	137	
8	**Gate work**			
	Gate	no's	4	Assumed to be wide gate (~30m) with gatehouses
9	**Fence work**			
	Fence	m	9,836	Assumed to be masonry walling with coping & razor wire

Source: JICA Study Team

3.1.2. Cost Estimation for IP Implementation

Unit cost of construction work in Kenya was developed from various sources including previous research on similar works, ongoing projects in the Mombasa Region, costing standards from the Kenyan government and estimations from professional institutions offering consultancy services.

Table 3.2: IP Preliminary Cost Estimates

No.	Description of work	Unit	Combined Unit price (USD)	Quantities	Total Cost (USD)
1	**Land grading work**				
	Cutting	m3	6.0	3,034,869	18,209,214
	Land filling	m3	3.0	329,018	987,054
2	**Road work**				
	Row 34	m	1,772.2	1,143	2,025,623
	Row 24	m	907.1	3,529	3,201,306
3	**Drainage work**				
	Box culvert	m	796.0	106	84,376
	U-ditch	m	300.0	5,132	1,539,600
	R.C pipe	m	100.0	5,954	595,400
4	**Water supply work**				
	D355	m	165.0	544	89,760
	D315	m	114.0	309	35,226
	D225	m	71.0	2,769	196,599
	D160	m	61.0	7,132	435,052
	Pipe under road	m	272.0	443	120,496
5	**Sewage work**				
	D400	m	399.0	875	349,125
	D355	m	244.0	154	37,576
	D315	m	192.0	8,187	1,571,904
	Pipe under road	m	272.0	306	83,232
	Manhole	no's	651.0	297	193,347
	Wastewater treatment plant	m3	500.0	3,274	1,637,000
6	**Power supply work**				
	33kV overhead line	m	49.6	10,767	533,700
	Street lighting pole	no's	509.0	226	114,791
	Lighting underground cable	m	72.6	11,680	847,810
7	**Telecommunication work**				
	Conduit pipe	m	60.0	404	24,215
	Manhole	no's	650.0	137	89,079
8	**Gate work**				
	Gate	no's	55,800.0	4	223,200
9	**Fence work**				
	Fence	m	246.5	9,836	2,424,082
10	**Total Construction cost**				**35,648,767**
	Management cost			20%	7,129,753
	Contingency			10%	3,564,877
	Engineering consultancy fee			5%	1,782,438
	Overall total project cost				**46,343,397**
	Average cost per m2			USD/m2	39

Source: JICA Study Team

3.2. Financial Analysis of IP Development[1]

3.2.1. Financial Analysis Method

The preconditions and assumptions for the financial analysis were adopted to be similar as defined in the 2015 Master Plan. The project costs were estimated in based on the quantities calculated from the detailed IP development plan, taking into consideration earthworks, infrastructure development, operation of various utilities and overall management costs.

Cash flow analysis and FIRR are used for financial viability.

3.2.2. Conditions & Assumptions for IP Development

Industrial Park Development Concept

From the land use and infrastructure plan, the IP has a total area of 118 hectares, with leasable land of 97.9 hectares (17 % of total area is considered non leasable (road, public facility/space, green spaces).

Project Period

A project period of 50 years was specified to match assumptions for design life, and for ease of comparison for viability of projects with a similar development plan. However, with the size of the industrial park, the construction time was estimated as 3 years, including the preparation of the land and installation of basic infrastructure in readiness for leasing.

Revenue sources:

Land Lease

Land prices from nearby industrial estates was used as a reference, in addition to the standard rates as implemented by the Export Processing Zones Authority (EPZA), which operates in similar financial models as industrial parks in SEZs. Comparable lease prices indicate the highest cases to be 17,297 KES/m2 (170 USD), and the average case as 9,390 KES/m2 (93 USD). For reference, the EPZA offers 6,000 USD/ha (60USD/m2).

Leasing in the first phase will start from the area developed, with the zoning plan working as a proposal for development of the IP in blocks. Figure 3-1 illustrates the zones, from which the assumption that two plots would be leased every year cumulatively as the area is developed. Leasable land in each of these zones was calculated, using the standard lease price, and the revenue compiled in table 3.3 below- totaling 587,211USD/year.

Table 3.3: Leasable land in each IP Zone

No	Zone	Area (ha)	Revenue (year) (USD)
1	Zone A	14.2	85,142
2	Zone B1	33.2	199,036
3	Zone B2	20.2	121,010
4	Zone C	30.3	182,024

[1] Figures shown for the financial analysis is not reflecting the actual case since detail on implementation has not been finalized. Conditions of revenue and cost has to be reviewed when there is progress.

Total	**97.9**	**587,211**

Source: JICA Study Team

Office rental

The administration block, housing the centre of operations for the IP and the rest of the SEZ was proposed to be offered for rent- with the One Stop Shop occupying the ground floor of the four-storey structure, and the administrative functions to be conducted on the top floor.

Estimation of the area was calculated from the tender documents for the SEZA administration building, with the occupancy rate of 70% applied to the rentable spaces. Table 3.4 shows these usable spaces.

Table 3.4: Rentable Space in the Administration Building

No	Floor	Total Office Area (Square Meters)	Rentable Office Area (Square Meters)	70% Occupancy	Floor Use
1	Ground	600	350	-	Use as OSS
2	First	600	480	336	Floor for rent
3	Second	600	480	336	Floor for rent
4	Third	600	350	245	Floor for rent
5	Fourth	600	350	-	Used by SEZA
Total		**3,000**	**1,780**	**1,001**	

Source: JICA Study Team

From the total floor area of 3,000 m2, the rentable floor area was 1,780 m2- and with the assumption of 70% occupancy and rent rate of 27USD/m2/year- the expected revenue was 27,000USD/year.

Rental factory

Rental factories can be included in the revenue source. At this moment, SEZA does not have a plan to construct rental factory. This should be considered as a part of marketing strategy.

Management fee

Management fee was assumed to be collected for the operation and management of public facilities and shared infrastructure from all operators within the industrial park. The going rate in the region was established as 0.03 USD/m2/year (5% of land lease)- totalling 29,361 USD/year.

3.2.3. Costs of IP Development & Operation

Preparation of the IP area, including land grading, basic infrastructure and utility development is detailed in table 3.2, with the total cost of development as 46,343,397 USD. From the combined estimates for revenue generated from the 50-year project period below, the total is estimated at 29,293,165 USD. The detailed revenue generation is as listed below;

Land lease: 587,211 USD/year

Office rent: 27,027 USD/year

Total from lease/rent: 614,238 USD/year

Management Fee: 29,361 USD/year

Total: 643,599 USD/year (including management fee)

Total revenue: 29,293,165 USD (50 years)

Operation and management costs were estimated as 3% of construction cost which totals to 1,069,812 USD/year. Therefore, the total for 50 years is 54,740,868 USD

From the operation costs for each year of full operation (not including investment cost recovery) totals -426,214 USD. Cumulative operational and management costs for the 50-year period totals -24,806,702 USD. However, the cumulative operational cost including investment costs is -72,282,530 USD.

3.3. Operation and Management of IP Utilities & Infrastructure

From the effective functioning of the utility and infrastructure systems within the industrial park, a variety of institutional frameworks have to be used for zone development, operation and regulation. The One Stop Shop (OSS) is to be established as the centre through which enterprises can channel their applications for permits, approvals, licences and facilities. While such applications may not be handled directly by the Authority, the OSS relies on coordination with such other Government or private entities as maybe necessary through agreements with the entities or procedures defined in their prescribed procedures.

3.3.1. Pre-Requisites for Development in the SEZ

According to section 11 (h) of the Special Economic Zones Act (No. 16 of 2015), SEZA shall administer the one-stop centre through which special economic zone enterprises can channel all their applications for permits, approvals, licences and facilities. Amongst these, approval for operation, development, provision of utilities and infrastructure-related services may be offered by SEZA, other government agencies or private entities as may be necessary.

Such requirements for licensing and approval are listed below:

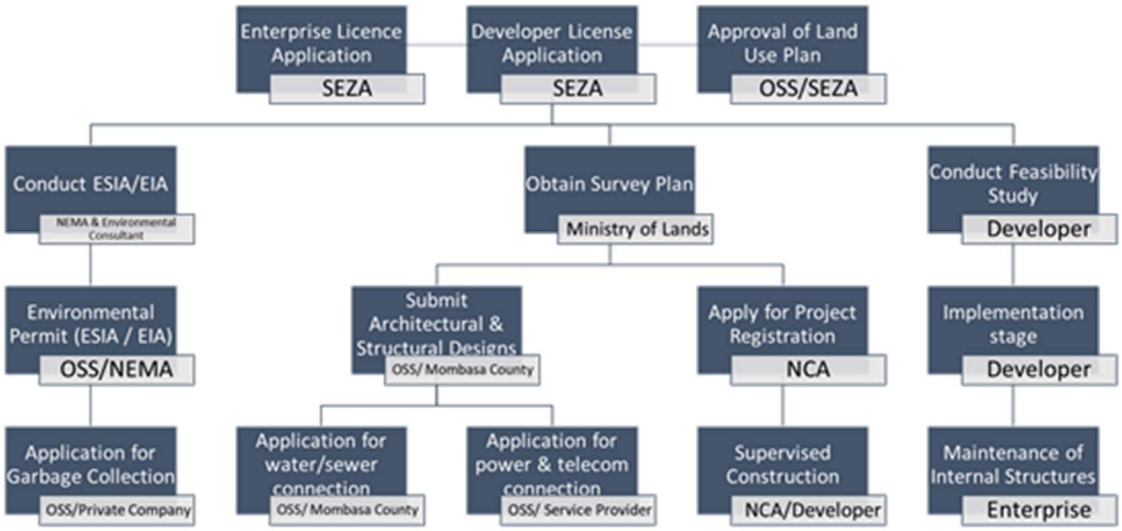
Table 3.5: Requirements & Applications for developing SEZ land

Steps		Necessary documents submitted by Applicant	Responsible party And its action
APPLICATION FOR DEVELOPMENT PERMIT FOR SEZ LAND			
1.	Special economic zone resident registration and business licencing	Business registration documents pre-submitted and approved.	Letter of approval in principle is issued by SEZA highlighting conditions to be fulfilled to allow issuance of respective SEZ license(s).
2.	Registration for SEZ developers and operators	SEZ Developer License Application Form	SEZ Developer License Application Form is issued by SEZA and filled and
3.	Environmental permits	Environmental Impact Assessment (EIA) report	National Environment Management Authority (NEMA)
4.	Development and construction permit	Proposal for land use, detailing all construction works	National Construction Authority (NCA) SEZA County Government of Mombasa
5.	Labour reporting		Immigration Department
6.	Tax reporting & material handling	Import Export code Construction materials Movement of consignments to and from an SEZ	KRA
7.	Construction inspections and other enforcement activities	Shop Drawings of detailed construction works As built designs as work	National Construction Authority (NCA) SEZA

		progresses	County Government of Mombasa
APPLICATION FOR UTILITIES & SERVICES			
8.	Power Supply	Power Consumption proposal outlining power demand	Kenya Power & Lighting Company (KPLC) SEZA
9.	Water Supply	Water consumption proposal outlining water demand & proposed reuse/recycling plans	Mombasa Water & Sanitation Company Water Service Board SEZA (internal distribution & billing, source of income)
10.	Sewer System	Preliminary wastewater generation proposal Internal wastewater pre-treatment systems design report Preliminary wastewater quality report based on proposed operations	Mombasa Water & Sanitation Company SEZA (internal distribution & billing, source of income)
11.	Garbage collection	Preliminary solid waste generation proposal Internal solid waste pre-sorting proposal Preliminary solid waste quality (detailing hazardous/biochemical waste generation)	County Government of Mombasa SEZA
12.	Telecommunication	nil	Telecommunication companies SEZA

Source: JICA Study Team

Fulfilling the requirements for development of SEZ land allows the proponent to access an allocated section of the IP, deliver materials, machinery and manpower to the site and develop it to the set guidelines. Below are details of application steps and the overall process flow;



Source: JICA Study Team

Figure 3-1: Process flow of applications for developing on SEZ land

3.3.2. Land Management, Development & Construction

The IP land use plan defines the part development plan for the land, which is prepared on the basis of the physical development plan as outlined in the DK SEZ master plan. As such, it indicates the land subdivision plan. The SEZ land use policy defines the requirements for plot beaconing, allocation of land to developers and operators. Similarly, the policy defines lease requirements for SEZ enterprises.

Plots within the SEZ are offered as serviced, graded lots with relevant infrastructure and utilities supplied to the nearest feasible connection point. Such land is served by an access road, stormwater drainage systems, freshwater supply pipes, fire suppression systems, sewerage systems, telecommunications ducting, power lines and pedestrian access paths.

3.3.3. Development & Construction on Industrial Land

Construction within the IP shall be subject to the industry-specific urban design guidelines. The design guidelines checklist will be used for addressing design issues in all review processes. When an applicant submits a development application a design review shall be conducted as part of the applicable permit processing.

Where there is a conflict between these design standards and other County's plans, policies, and regulations, the most specific standard, guideline, or regulation shall apply. All building plans for new work as well as alterations to existing structures must be prepared by professional architects registered with the Architectural Association of Kenya (AAK) and the Board of Registration of Architects and Quantity Surveyors (BORAQS).

Architectural planning shall conform to the requirements of the National Construction Authority (NCA), Kenya Planning & Building Regulations 2009 as well as "KS 2390: A guide to making your premises safe from fire (2012)", developed by Kenya Bureau of Standards (KEBS) on fire resistance, safety and evacuation.

Site Planning

Architectural plans shall aim to improve aesthetics by establishing a positive visual identity for the industrial park. Site planning for industrial development shall consider adjacent uses and exercise care to locate incompatible uses away from adjoining uses.

Developments of more than one building must be complimentary to each other in terms of form and scale. Outdoor storage areas and industrial activities shall be screened from public view

When the site is adjacent to parks/ green areas, convenient pedestrian circulation shall be provided to these areas. Landscaped garden shall be created between the building lines and the boundary shared with a public open space or natural open space

Service Areas

Service areas may be considered to include loading docks, trash dumpsters, compactors, mechanical equipment, and storage yards. These shall be located to avoid negative visual, auditory (noise), or physical impact on the streets, and adjacent residentially zoned or developed properties, as well as parks and green areas. Where such provisions are not feasible due to topography or physical site constraints, screening shall be provided.

Safety & Environmental Standards

Buildings must conform to safety standards as outlined in the Kenya Building Code, the Occupational Safety Act and Kenya Bureau of Standards regulations. Particular attention should be paid to life safety requirements outlined in the above standards

Facilities shall be designed in the most sustainable way possible in order to reduce resource demand and ensure the highest possible standard of environmental protection. Specific requirements are outlined in the Occupational Safety Act and NEMA regulations.

3.3.4. Transport & Logistics

Vehicular Access, Pedestrian Access and Parking

Parking areas will be paved with asphalt or concrete. On-site directional signs shall be provided to direct motorized vehicles to appropriate parking or delivery areas. Securely fixed wheel guards shall be placed to prevent vehicles from overhanging a public right-of-way or contacting a wall or building that abuts the parking space.

Paved pedestrian paths shall be provided from the street sidewalk to the main entry of all buildings. Clearly delineated pedestrian paths or walkways shall be provided connecting all businesses and the entries of multiple buildings on the same development site. Such paths shall be separate from vehicular traffic or raised above the vehicular pavement.

Security and Access Control

As custom controlled area, the cordoned-off sections of the SEZ have to observe the requirements of the customs regulators outlined by the Kenya Revenue Authority (KRA). As such, the installation of security gates, fencing, guard houses and customs offices at the access points is necessary for the operation of access control. Similarly, the location of the parking facility within the IP provides for further inspection of goods vehicles entering and leaving the custom controlled zones- further easing management of vehicular movement.

3.3.5. Water, Fire Suppression systems, Drainage & Sewerage

Water supply main pipes will offer connectivity to consumers through the services of the water service provider (WSP) in the DK region. As such, applications for connection to water supply systems is to be channeled through the WSP. Fire suppression systems are integrated into the supply main line, allowing hydrants to be installed along the same lines- as per the KS 2390 guidelines on fire safety systems.

Sewer and stormwater drainage systems have to be developed internally within each plot, and connected to the overall IP drainage systems after applications with the sanitation company have been cleared. Industrial operators will only discharge wastewater into the sewerage system after such waste has been treated in a treatment facility and that meets local NEMA standards. For the stable and effective operation, monitoring capacity enhancement and procurement of equipment are proposed. In addition, these enterprises are required to provide monthly quality test reports to SEZA to ensure compliance. Recording accurate flow data is essential for planning and monitoring. It is also recommended to install flow measuring devices and conduct regular sampling for the effluents from each industry within the IP

3.3.6. Power & Telecommunication Networks

Requisite hardware is planned for the IP area to offer the reticulation system for power and telecommunication networks. Such systems include overhead power lines, underground ducting for communication networks and points at each consumer section for connectivity by the service provider to the enterprises operating within each lot. In this regard, applications have to be made to the service providers, through the OSS where applicable, from which consumers can be linked to the overall networks depending on their demands for each service.

3.3.7. Solid Waste Management

Extended producer responsibility is engrained in the National Sustainable Waste Management Policy (2019) as a principle that waste generators have a significant responsibility (financial and physical) for the treatment or disposal of the waste from the products they create.

The ‘Polluter Pays’ principle is based on this policy. It prescribes that those who produce waste should bear the costs of managing it to prevent damage to human health or environment. This makes the party who produces wastes/ pollution be responsible for paying in lieu of damage done or the recovery efforts.

Operators within the IP shall minimize the waste generated by adopting the cleaner production principles within NEMA guidelines. A concept of 3R (reuse, recover, recycle) as opposed to disposal within IP should be promoted as a policy for SEZA management.

Collection and Transportation Plan

Outsourcing from the Mombasa County administration and private waste management firms shall be planned to ensure efficiency and effectiveness, as it may be difficult for local authority to effectively manage the generated waste on its own.

A proposal for privatized resource-recovery and recycling may be discussed among stakeholders. For example, cost sharing for the development of intermediate value-recovery plants, priority to use the generated power or fuel and improvement of solid waste management system by the main polluter expense

Responsibility of Waste Generator

Every trade or industrial undertaking will install appropriate technology for the treatment of waste emanating at its premises to meet the local requirements by NEMA.

a) Hazardous waste management

Hazardous waste is to be separated before disposal in collection points for regular industrial waste. Such hazardous waste can be managed separately after the proper source separation. Operators shall obtain the relevant certification from SEZA and NEMA for the generation, handling and disposal of hazardous waste.

b) Biomedical waste

Operators who generate biomedical waste shall segregate the waste at the point of generation in accordance with the categories provided by NEMA. For sterilization, autoclaves shall be used to effectively decontaminate potentially biomedical waste. Chemical decontamination shall be carried out where necessary as directed by NEMA guidelines.

c) Construction waste

Developers shall keep construction areas free from accumulation of waste material or rubbish. All waste water and sewerage from office, residential and mobile camps shall be piped to soak pits or other disposal areas constructed in accordance with NEMA regulations. Where and when regulations require it, the developer shall obtain a permit or other appropriate documentation approving the disposal methods used.

Annex 6
Manual for Industrial Park Development in DK SEZ

Technical Assistance for Dongo Kundu SEZ Development:

Industrial Park & Infrastructure Planning

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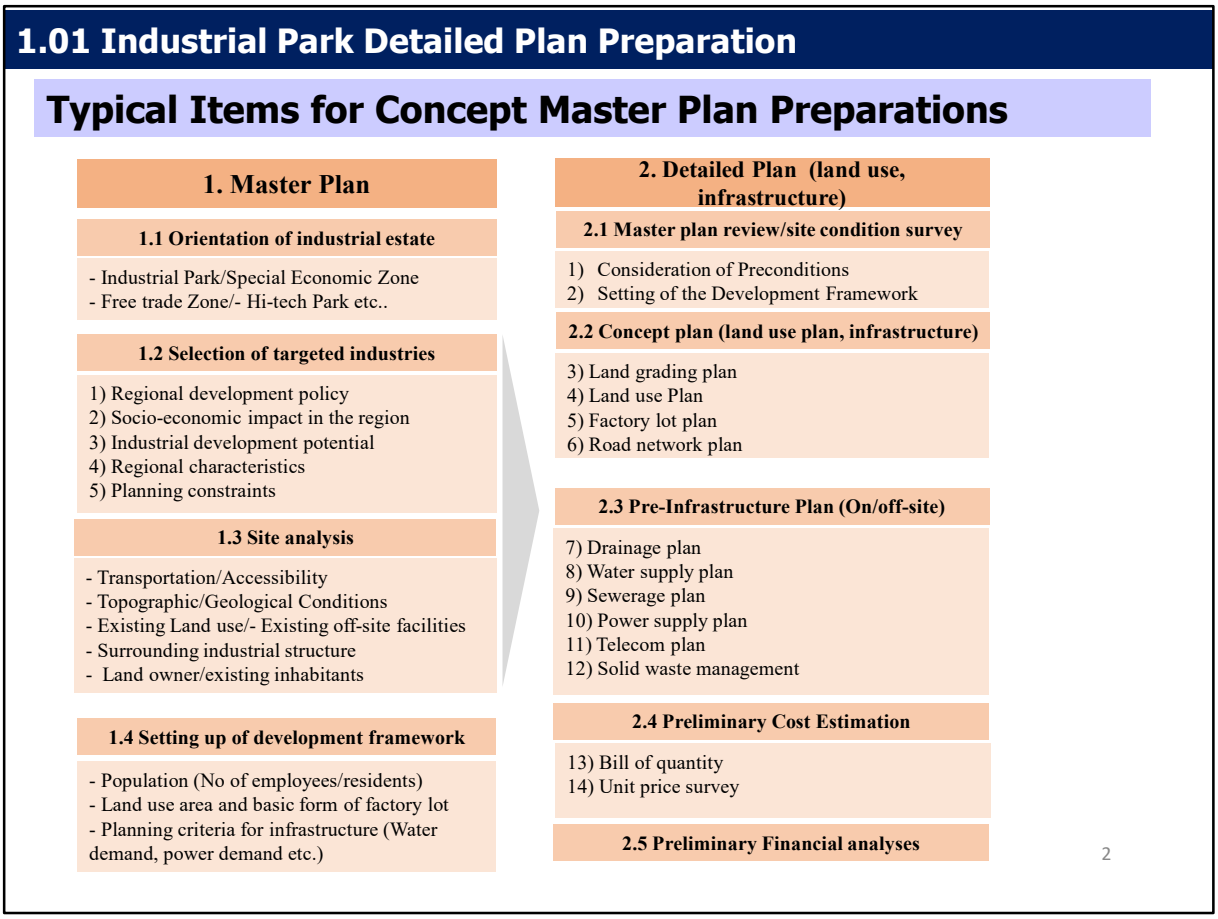
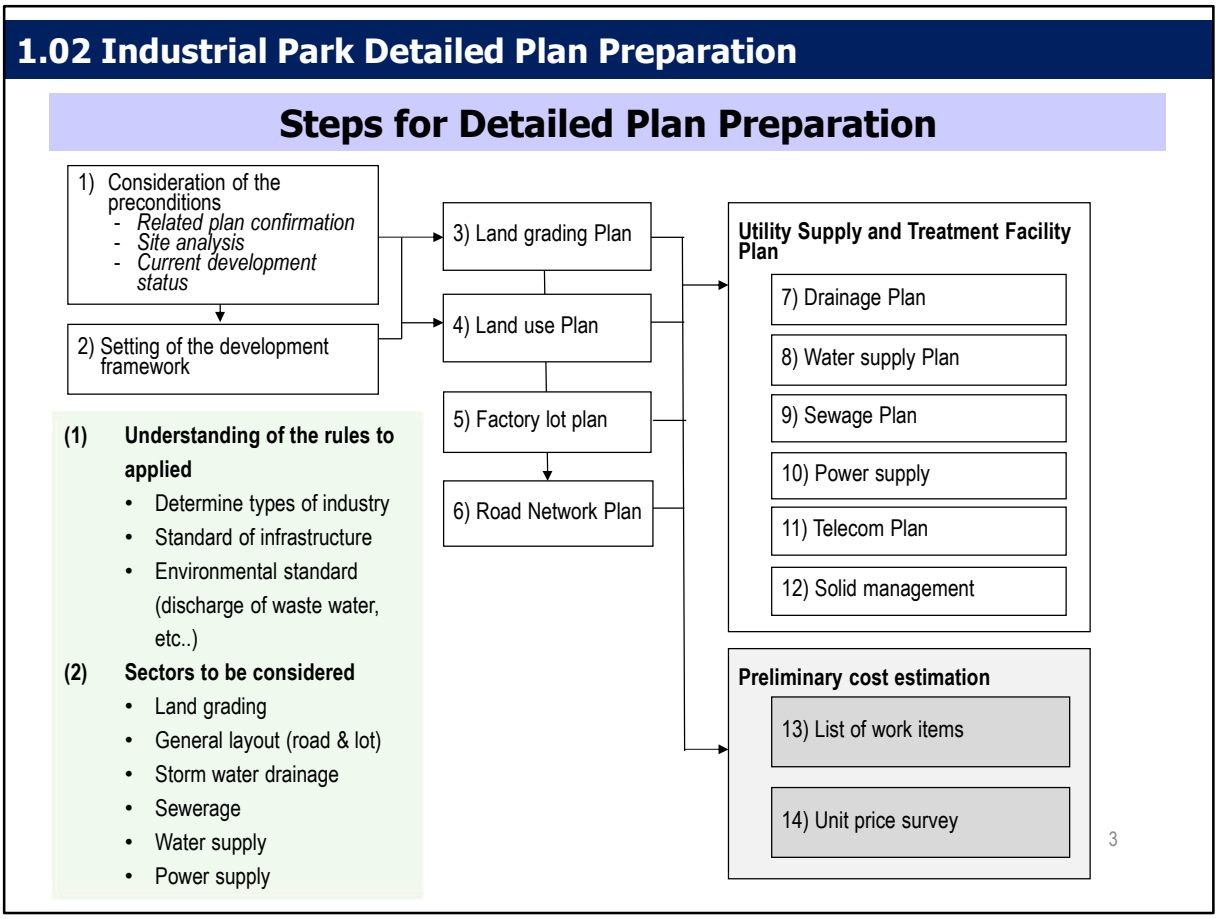


The general approach to developing the Industrial Park (IP) within the DK-SEZ is as outlined below:

i. Master Plan: At this stage, the following elements are included:
ii. Detailed Master Plan/ Detailed Plan for land use plan and general concept for IP layout etc..
iii. Basic design for infrastructures such as road, water supply pipeline
iv. Detailed design which elaborated with more detailed information with coordination

The differences of No.3 Basic Design (BD) and No.4 Detailed Design (DD) are outlined below:

- Depending on the development cases, BD and DD can be combined. For example, when using design-build scheme for contractor, government prepare the BD then, contractor will develop based on the BD. Hence, government doesn't need to conduct DD. The reason JICA Consultant Team shows this flow is because we'd like to show the working process and items so that you can refer based on the situation of Naivasha.
- From the example of the Naivasha SEZ, MP and pre-FS were developed first, but later, there was need to review the MP into a high standard. Afterward, pre-FS would be reviewed as the progress in the development work was to be conducted along a similar concept to the DK SEZ.



From the process map, the following elements should be noted regarding the flow of project development:

i. Relevance of Master Plan (MP) in detailed plan preparation

The MP for overall DK SEZ was prepared in 2015 and updated in 2019.

ii. Detailed Plan

Detailed plan becomes next step of MP. For specific area such as industry, commercial and tourism etc.., it is applicable to conduct detailed plan separately with consideration of connectivity of infrastructure.

iii. Detailed Design

This is a different stage of MP and it indicates engineering work for construction. After making sure the boundary of area and confirm overall land use, road networks and other utilities, engineering work such as design of elevation of pipes, coordination, and slopes are conducted.

iv. Clarification of works to be done in the DK SEZ

In DK SEZ, MP conducted in 2015 can be considered as pre-feasibility study. From this, the detailed design would confirm land use plan, road structure, detail infrastructure, water supply, etc. in IP. Then, cost of infrastructure development will be calculated.

1.03 Industrial Park Detailed Plan Preparation

Stages for development

	Steps	Remarks
1	Master Plan (MP, Pre/FS for priority area (entire SEZ area)	▪ Show general direction of the development of whole SEZ area ▪ Situational analysis, Vision, policy, strategy, Land use plan, Infrastructure/facility development, Environmental consideration, Preliminary cost estimate ▪ Design scale : 1,10,000 to 1/50,000 depending on technical guideline of the country
2	Feasibility Study (FS) depending on the purposed of the plan (selected zone or area)	▪ Conducted to provide information on development cost for determining operation method, promotion and for next step action ▪ Conducted by government or developer/operator ▪ Design scale: 1/500 to 1/2,000 ▪ Contour: 2 m ▪ Detailed plan, project analysis (technical, social/environmental, financial) and conclusion for FS
3	Basic Design (BD) (selected zone or area)	▪ Conducted by developer/operator ▪ Conducted to provide information for cost to be estimated for budget request (more detail) ▪ Design scale: 1/100 to 1/500 ▪ Contour: 50 cm ▪ 3 and 4 can be combined depending on the development method (design build, government, private)
4	Detailed Design (DD) (selected zone or area)	▪ Conducted by developer/operator ▪ Conducted to provide information for cost to be estimated by developer/contractor for construction ▪ Design scale: 1/10 to 1/100 ▪ Contour: 50 cm ▪ 3 and 4 can be combined depending on the development method (design build, government, private)
5	Construction/Construction supervision	▪ Construction and supervision based on development scheme: directly by government, private, PPP, JV
6	Management and Operation	▪ Operation by designated organizations: directly by government, private, SPC, JV

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The following output would be necessary for the detailed plan preparation:

1. Digital survey plan: It will be prepared by survey department.
2. Base map: The topographic map made by survey department will be used as base map of this project.
3. Declaration of the project as a Special Planning Area: DK SEZ is already declared as special planning area by the government
4. Site and Physical and land use plan: as a formulation of detailed plan and infrastructure plan.

Thus, the Consultant Team would offer the following output:

Sector	Output (Detailed Plans/ Drawings)
Land use plan	Land use & factory lot layout map
Land grading	Land grading plan/ Cut-fill map
Road	General road layout/ standard cross section
Drainage	General drainage network plan
Water Supply	General water supply layout plan, Off-site water supply connection map
Wastewater	Wastewater network general layout plan
Power Supply	Power supply network plan, Off-site power connection plan
Telecom	Telecom network general layout plan, Off-site Telecom connection plan
Cost	Bills of Quantities (BOQ) preparation, Unit price preparation

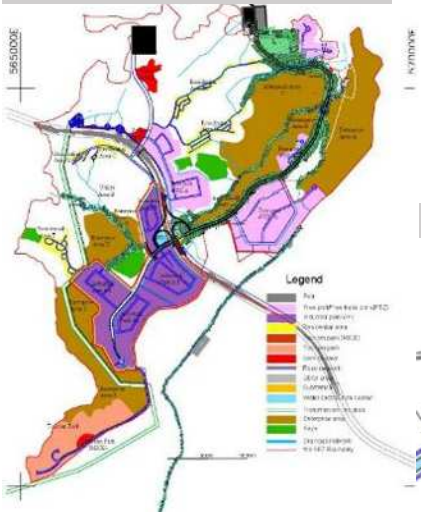
1.04 Industrial Park Detailed Plan Preparation

Development stages and Consulting Services

MP: Master Plan
FS: Feasibility Study
BD: Basic Design
DD: Detail Design
CS: Construction Supervision

(1) SEZ Master Plan (MP, Pre-FS for Priority Area	(2) FS (Detailed plan, Social, Environment, Finance)	(3) Basic Design (BD)	(4) Detailed Design (DD)	(5) Construction/Construction supervision (CS)	(6) M&O

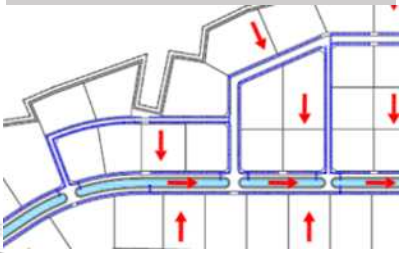
DK-SEZ over all land use plan



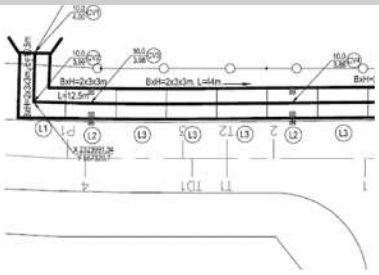
Detailed land use plan

Basic design Drawings

Infrastructure development plan



Detailed design Drawings



From the County Government Act, the following is the process of approval:
i) Development plan is sent to Governor
ii) Governor sends to Minister of physical planning
iii) Minister prepares documentation
iv) County Assembly approves the plan

In the case of DK-SEZ, the Mombasa County Government will form a committee to evaluate the proposed development plan. DK SEZ was declared and gazetted as special planning area under the Physical Planning Act.

For the industrial park project in the DK SEZ, there is further requirement for approval in (environmental approval) from several organizations such as NEMA's headquarters and its county office and MoITED,. From such situations coordination is necessary to ensure coordinated planning between all relevant organization is achieved.

SEZA (with the support of the JICA Study Team), has the mandate to make local physical development plan, which harmonizes the physical planning of County Government planning. A thematic meeting with the County Government of Mombasa was organized to ensure coordination on these matters.

1.05 Industrial Park Detailed Plan Preparation

General Rule of Layout

Land use plan principles

Category of Industry	Num. of enterprises	Plot area (ha)	Unit area of factory plot (ha/factory)
Food	7,239	10,461	1.4
Beverages, tobacco and feed	689	2,904	4.2
Textile mill products	631	2,227	3.5
Garments and shirts	1,277	1,075	0.8
Lumber and wood products, except Furniture	597	2,061	3.5
Furniture and fixtures	530	1,240	2.3
Pulp, paper and paper products	1,473	5,282	3.6
Printing and allied industries	1,973	1,604	0.8
Chemical and allied products	2,130	16,344	7.7
Petroleum and coal products	99	4,511	45.6
Plastic products	3,049	6,284	2.1
Rubber products	597	1,689	2.8
Leather tanning, leather products and fur skins	139	107	0.8
Ceramic, stone and clay products	1,430	7,854	5.5
Iron and steel	1,215	17,268	14.2
Non-ferrous metals and products	788	5,422	6.9
Metal products	3,952	7,484	1.9
General - purpose machinery	1,623	5,099	3.1
Production machinery	3,498	7,244	2.1
Business oriented machinery	1,134	2,752	2.4
Electronic parts, devices and electronic circuits	1,778	5,023	2.8
Electrical Machinery, equipment and supplies	2,617	5,509	2.1
Information and communication electronics equipment	619	1,527	2.5
Transportation equipment	3,557	17,772	5.0
Miscellaneous manufacturing industries	827	1,559	1.9
Total	43,461	140,303	3.2

Source: JICA Consultant Team

Basic planning principles:

- Maximizing ratio of salable land (>80%)
- Balancing the small (<2.0ha), medium(2~4ha) and large lot (>4ha)
- Providing rectangle shapes for industrial land
- Utilizing irregular shape for utility facility
- Provide efficient road network
- Providing rental factory for small-medium companies

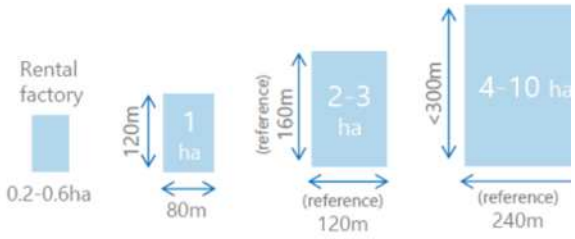
From the 2015 Master Plan study, the categories of industries suited to the industrial park were identified- and their land requirements balanced with the planning principles.

1.06 Industrial Park Detailed Plan Preparation

General Rule of Layout

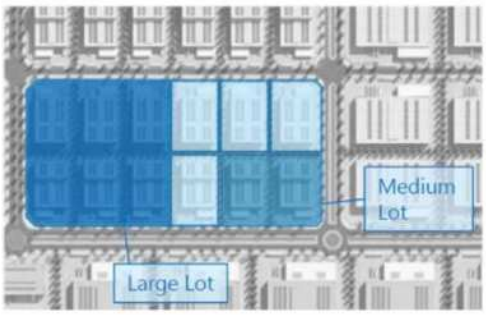
Land use plan principles

- Before making road network, the plot size must be studied.
  - ✓ A few typologies for lot size should be provided. Here's size sample:



Source: JICA Consultant Team

- ✓ Lots should be basically small ones, so that they can be integrated into medium/big lot flexibly.



Source: JICA Consultant Team

7

Various sizes (large, medium, and small) of factory lots should be prepared in the IP to meet the diverse needs from tenant investors.

Basically, the area distribution ratio by each lot size shall be planned to be almost the same.

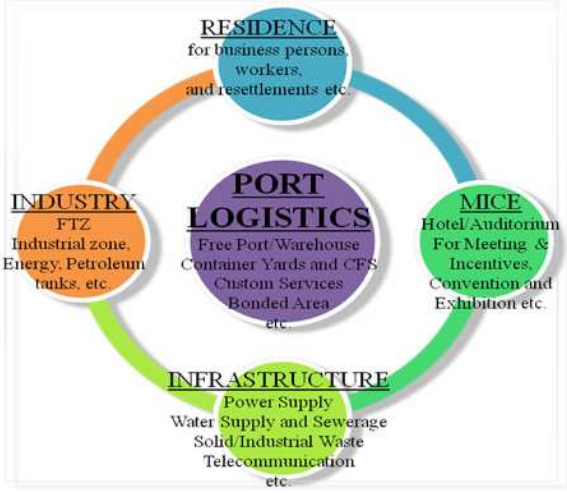
Provision of rental factory to tenants can be constructed as an effective promotion of investors by giving advantageous investment situation for tenants as well as drastically reducing the initial investment cost. In an export-oriented enterprise, especially apparel and leather production, etc., companies have strong demand for a rental factory

1.07 Industrial Park Detailed Plan Preparation

Master plan for IP in DK-SEZ

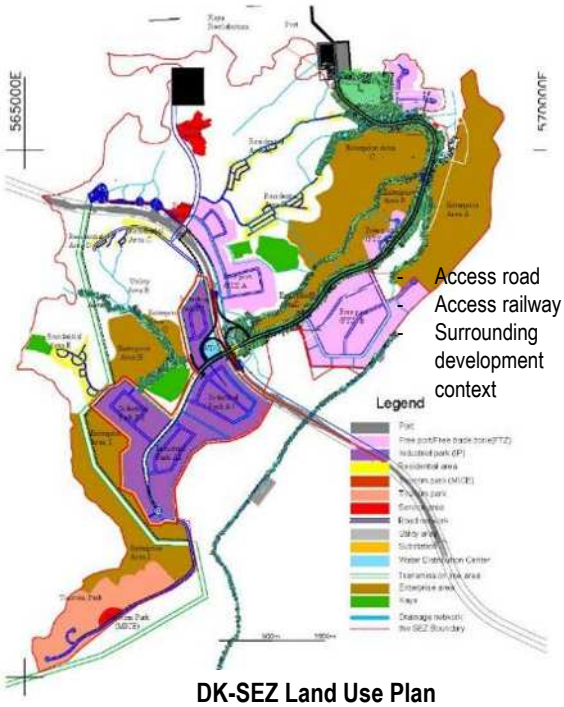
1) Confirmation of pre-conditions

- Master plan confirmation
  > Land use plan
  > Development concept



Development Concept of Mombasa SEZ

Source: JICA Mombasa SEZ development study report 2019



DK-SEZ Land Use Plan

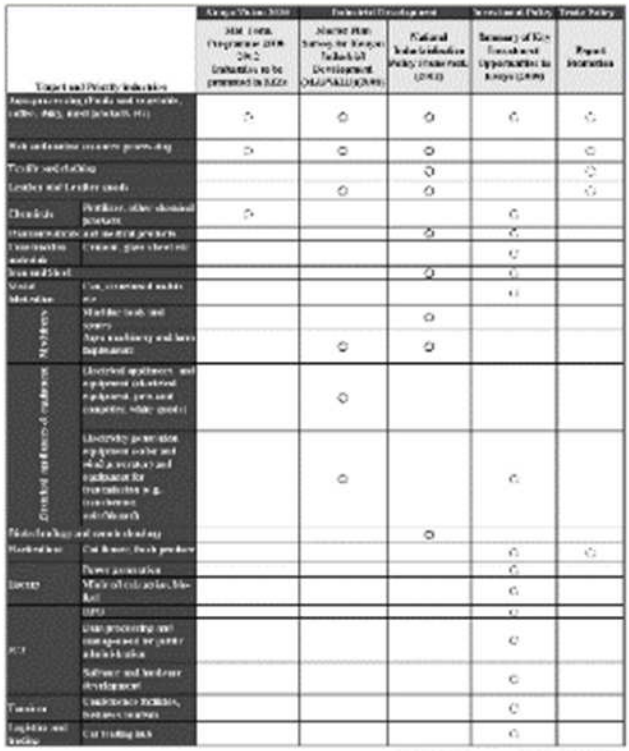
Within the master plan stage of preliminary planning, the development framework had been set to define the general direction of the development of the whole SEZ area. As such, the MP reviewed the vision, policy, strategy, general land use plans, infrastructure demands, environmental considerations and a preliminary cost estimate. In sum, the design scale was large (1:10,000 to 1:50,000 to depict such preliminary plans).

A more detailed concept was developed with the consideration of information from the following:

- Updated boundary for the industrial park & the Dongo Kundu SEZ,
- Priority industries land demand estimates,
- Mombasa Southern Bypass Road design,
- Port access road design,
- Topographical survey of the Industrial Park area
- Location of the water distribution centre
- Location of the Dongo Kundu power substation
- Administrative requirements by SEZA.

1.08 Industrial Park Detailed Plan Preparation

Development Concept for IP in DK-SEZ



Target Industries & Anticipated IP functionality

The detailed land use plan was determined with consideration on a detailed topographic survey and alignment to adjacent infrastructure & utilities including the following;

- Mombasa Southern Bypass Road
- Port Access Road
- Power Substation
- Power transmission line & wayleave
- Water reservoir

In addition to infrastructure conditions, social and environmental considerations were considered as below:

- Residents living near & in the IP area
- Heritage sites and religious grounds

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Originally, the assumption for Industry type in DK-SEZ is light Industry. The SEZ MP concept gives a detailed breakdown on suitable industry types. (TBC)

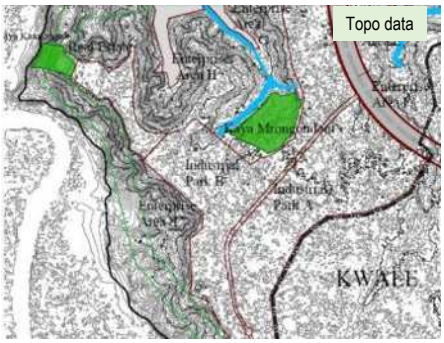
Next to Industrial Park (IP), there are tourism zone, MICE and residential area. If SEZA would like to put heavy industries, some structurally modification is necessary. SEZA plans to establish heavy industry such as steel factory. Some industries might emit pollution and dusts.

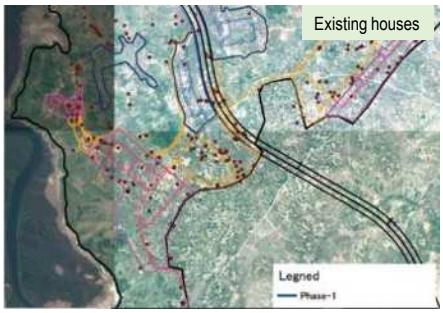
Since the feasibility study targets cost benefit analysis, the ideal approach to planning would be to first conduct MP and then feasibility study. However, the process of conducting the feasibility study depends on the target area. If area such as MICE developed as concession, the feasibility study is conducted by private companies.

1.09 Industrial Park Detailed Plan Preparation

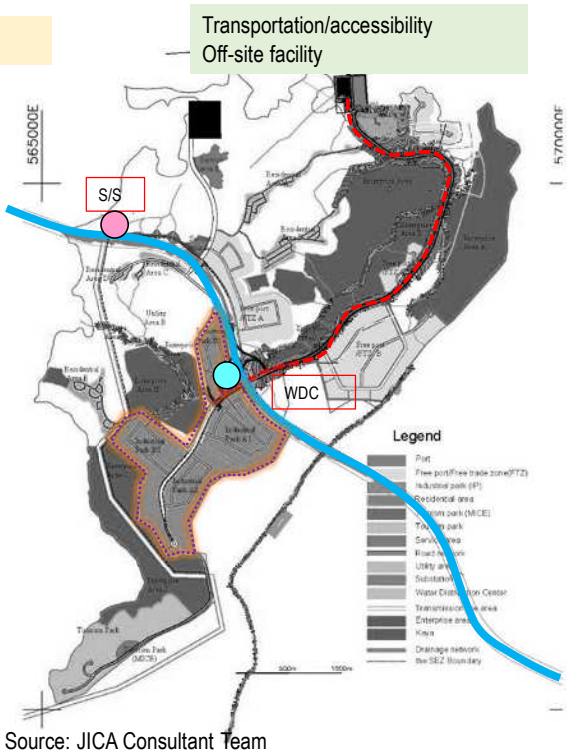
Master plan for IP in DK-SEZ

1) Confirmation of pre-conditions- Site analysis





Source: JICA Consultant Team



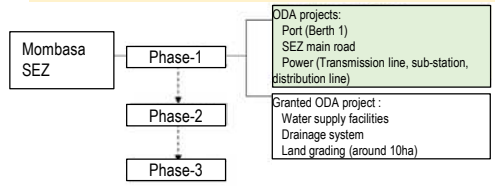
Source: JICA Consultant Team

	Site Conditions Considered	Detailed Planning Aspect Updated
1	Topographical survey data	Land grading, Land use plan
2	Land use demand & priority IP industries	General layout (road & lot)
3	Topographical data, related road projects (Mombasa southern bypass & Port access road)	Road network plan & road details
4	Land use plan, Road plan, Topographical data, regional rainfall data	Storm water drainage network, Disposal of stormwater
5	Land use plan, Road plan, Topographical data	Sewerage network, Sewerage treatment plan location
6	Land use plan, Road plan, Existing water supply system, location of reservoir, related water projects in DK area	Water supply network
7	Land use plan, Road plan, Existing power supply system, location of power substation, related power supply projects in DK area	Power supply network, Location of power cabling
8	Land use plan, Road plan	Telecommunications network, fibre optic cable ducting

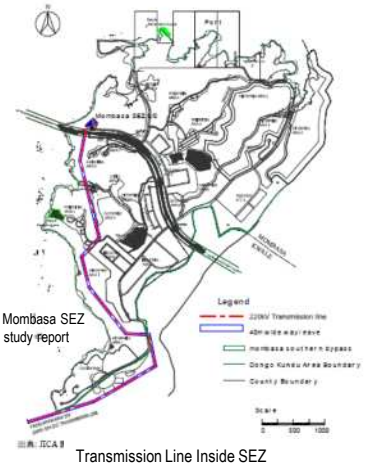
1.10 Industrial Park Detailed Plan Preparation

Master plan for IP in DK-SEZ

1) Confirmation of pre-conditions- Current development status

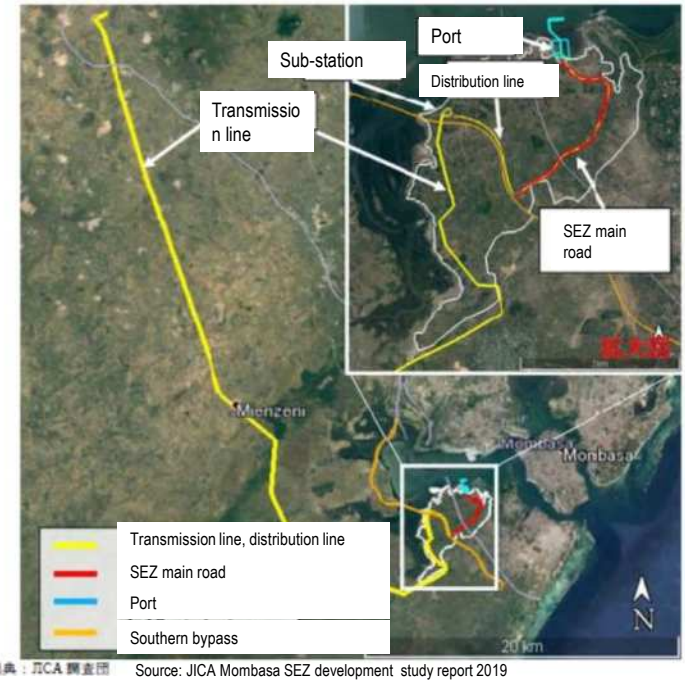


Source: JICA Mombasa SEZ development study report 2019



Source: JICA Mombasa SEZ development study report 2019

Transmission Line Inside SEZ



出典：JICA 調査団 Source: JICA Mombasa SEZ development study report 2019

During the detailed stage of planning for IP development, the following factors and planning principles were observed;

- General road plan & spatial factory lot arrangement
- Co-relation to existing infrastructure
- Location of administrative block
- Sewerage Treatment Plan Location
- Power & Telecommunication plans

1.11 Industrial Park Detailed Plan Preparation

2) Setting of the development framework

In principle, the basic plan uses the development framework set at the concept or master plan phase.

Development area (ha)	112.5	Will be revised after survey
Type of industry	Light	SEZA

Items	Unit demand		Volume	
No of workers	100	ppl/ha	11,250	ppl
Water	40	m3/ha/day	4,500	m3/day
Wastewater	75%	of water supply	3,375	of water supply
Power	400	kVA/ha	45,000	kVA
Solid waste	3.1	ton/day	348.75	ton/day

- Initial image of IP
- Scale of Facility

Expected Industry:
- Printing
- Logistic
- Apparel
- Food production etc..

12

For the technical output, the consultant team reviewed current conditions, received topographic data and generated land use plans and infrastructure plans for solid waste management, road, water supply, sewage, power, telecommunication.

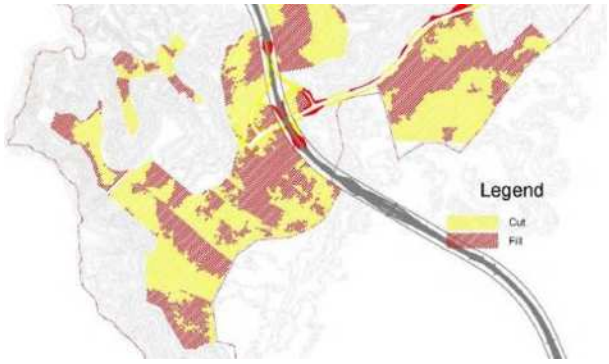
For this work, the consultant team and Kenyan supporting staff collected information of off-site infrastructure from other stakeholders that informed harmonized design.

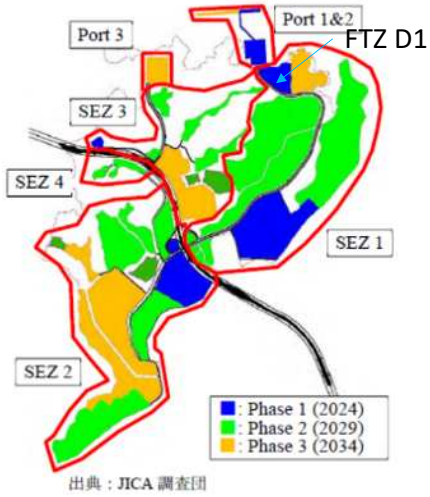
For the Detailed Plan Preparation, a more comprehensive study of the site conditions, infrastructure, environmental and topographical factors had to be carried out. Assessment of the current conditions was critical for the output of various design elements.

Conservation of Kayas should be considered for the purpose of environmental countermeasures. Utility and facility such as wastewater treatment plant, power substation, and water supply facility necessary for industrial activity and residential purpose are planned to be constructed in the land specifically reserved for utilities.

1.12 Industrial Park Detailed Plan Preparation

3) Land Grading plan





Phase-1: -444,000 m3
Phase-2&3: +95,000 m3
Extra soil from land development FTZ D1 will be utilized for IP land fill

Phasing alternatives:
1) Following DK-SEZ phasing plan, 3 phases
2) IP land grading development one time, infrastructure development can be separated to 3 phases

The land grading area was precisely identified by paying due attention to the following items:

- Excluding the untouchable land use such as cemetery, natural valuable area, cultural sacred area, etc.. Discussion with local community will be advisable.
- Existing green areas such as grove, forest, stream, etc.., were preserved by excluding from grading area.
- Land grading cut-fill volume shall be simulated roughly to ensure economic land grading work.
- Land grading area should be designed to balance the volume of cut and filling work within the site area in order to minimize the land grading cost.

The preliminary calculation for earthwork volume was estimated by the following process:
1. Define the elevation levels according to the road alignment.
2. Define the land formation area based on the changing points of the planned road level.
3. Calculate the average elevation of each land formation based on the average road level.
4. Estimate the earthwork volume using the contour method.

1.13 Industrial Park Detailed Plan Preparation

4) Land use plan
5) Factory lot plan
6) Road network plan

Functions:
- Factory lot
- Utility zone (Wastewater treatment plant, WDC)
- Administration/Commercial
- Road (including parking and gate area)
- Green and water body

Initial STP Location:
- This lot is in the back of IP, minimize the affect to other tenant
- This lot near drainage canal, easy to discharge treated wastewater.

STP: Sewerage Treatment Plant
WDC: Water Distribution Center

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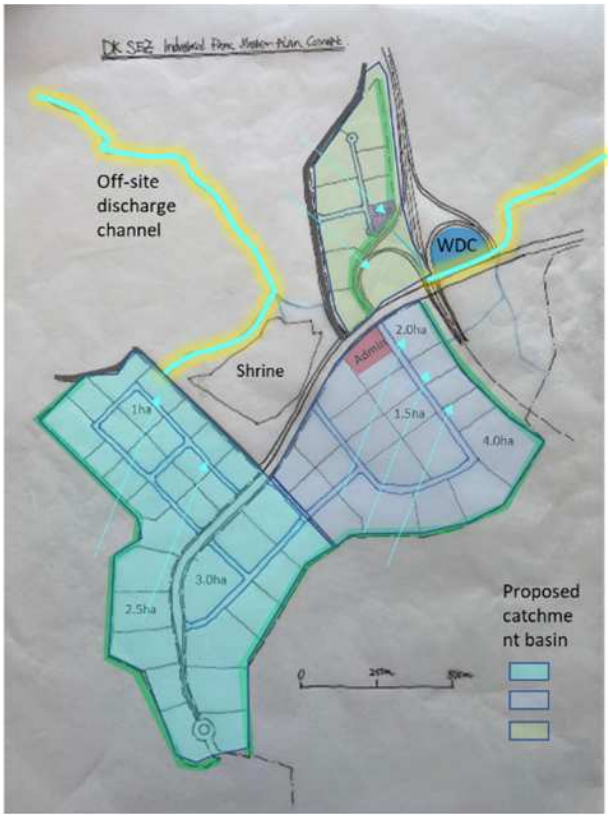
As a principle of factory lot planning, every factory lot will have one access. If the tenant wants front and behind accessibility, they will need to purchase two lot to combine. Since road including utility pipes under road is the main cost for industrial park development, to ensure the cost efficiency, road in industrial park shall service two side factory lot.

Regarding the location of administrative block, the location should be such that it's easy to access from main road. However, since commercial facilities such as restaurant, ATM, shops will also be arranged in administration lot, access to the rest of the IP for the other factory workers need be provided as well.

The STP (Sewerage Treatment Plan) needs planning with regard to geographical situation, such that the location allows gravity flow of sewerage. From the preliminary STP location (above) the sewerage was proposed to discharge to canals since it met the discharge standards of NEMA. However, the location was updated following the new confirmed details with cost implications after topographical map is done.

1.14 Industrial Park Detailed Plan Preparation



7) Drainage plan

Initial catchment area proposal

- The drainage catchment basins are determined in the light of watersheds as well as the regional development plan, including land reclamation works at upstream and downstream areas since the rainwater flows depend on the topographical conditions.
- A drainage system is planned to discharge water by the drainage line with the shortest distance with gravity flow to ensure the economic efficiency.

15

The South Coast region, within which the IP is found, experiences two distinct long and short rainy seasons that correspond to the monsoon winds. The long rains last from April to June- corresponding to the south-eastern monsoon winds. Short rains last from October to December- corresponding to the dry north-eastern monsoon winds.

General topography in the DK area is hilly, but with no drainage facilities. Specifically, within the IP area- there are no major rivers or streams. Thus, part of the rainwater penetrates into the ground and the remainder flows over the ground surface along existing valleys or natural channels downstream. Concrete culverts are built across motorable gravel roads to allow the passage of water under roads, but these structures are only found on few of the partially paved roads.

- In Mombasa, average annual rainfall: 640mm
- According to Mombasa flood control master plan, rainfall intensity: 48.7mm/hour (5 years return period)
- Currently there is no river and drainage facility on site.
- Rainwater will penetrate to earth or flow through natural valley.

The current rainwater catchment basins after construction for Mombasa southern by-pass is shown in the figure above.

1.15 Industrial Park Detailed Plan Preparation

8) Water supply plan | Water sources

Long term

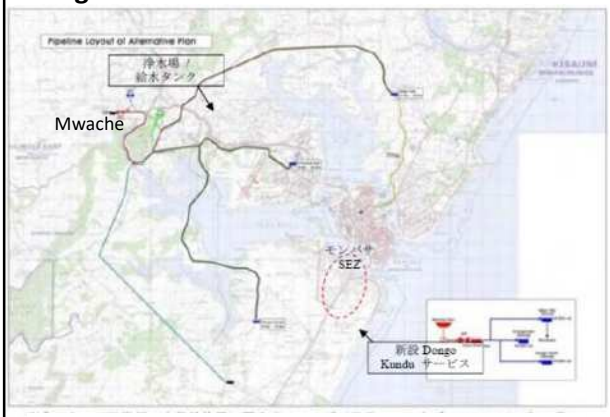
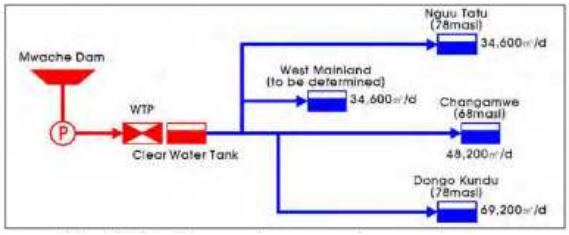
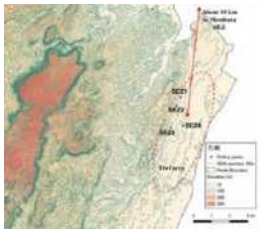


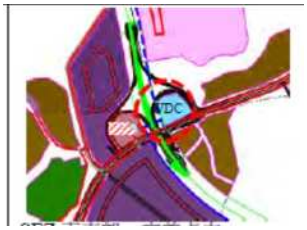
Figure: Water supply facility distribution plan (by AFD 2016)

Source: JICA Mombasa SEZ development study report 2019





Borehole locations



WDC location

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There are three routes from Mwache dam water purification facility, 1 route following Southern bypass passing through DK-SEZ, flow to Dongo Kundu reservoir.

Water supply from Mwache Dam: 69,200m3/day- Scheduled completion date: 2024.Sep
Phase-1 water demand in overall DK-SEZ MP :
Short term:
Phase-1 stage-1: 800m3/day (2023)
Phase-1 stage-2: 2,000m3/day (2026)
Long term:
Phase-1 stage-3: 4,100m3/day (2030)

Water supply planned by Grant Aid:
The Tiwi Aquifer is located in Kwale County, between the Ukunda and Ngombeni areas. There are 12 boreholes in the wellfields, with a total production of approximately 10,000–12,000 m3/d. Some of the water is diverted to the Tiwi area and Diani Beach, while the rest flows to the Likoni neighbourhood of Mombasa.
Of the total, 3 Boreholes will provide 2,300m3/day to WDC for DK-SEZ

1.16 Industrial Park Detailed Plan Preparation

8) Sewerage plan

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The primary consideration for the STP is the geographical situation, with the identified location being ideal to take advantage of gravity flow of the sewerage. From the proposed place of STP, the treated wastewater discharges to canal. These details were confirmed and updated with the published information from the topographical map.

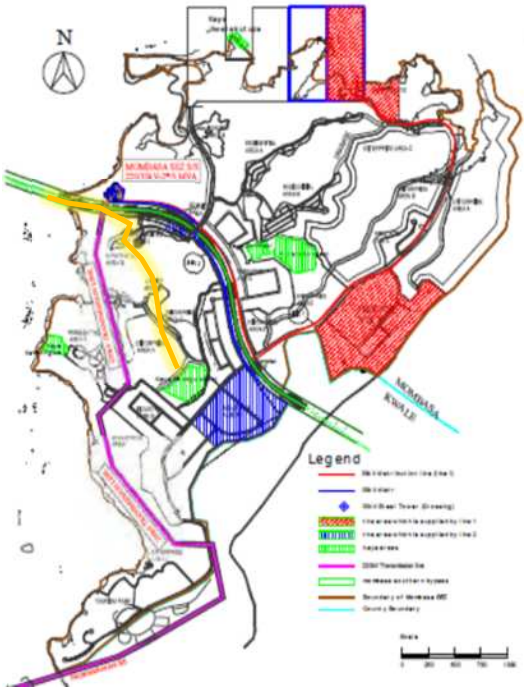
The discharged wastewater from each factory shall satisfy the Kenya discharge water quality standard.

Concept:

Alternative-1: Pre-treatment wastewater in each factory lot, then discharge to public sewerage pipe flow to IP sewerage treatment plant for final treatment.

Alternative-2: Each factory shall install wastewater treatment facility to treat wastewater to meet Kenya discharge standard

1.17 Industrial Park Detailed Plan Preparation



9) Power plan

Source: JICA Mombasa SEZ development study report 2019

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The proposed 53km 220kV Mariakani – Dongo Kundu double circuit transmission line project with a 220/33 kV substation at Dongo Kundu is meant to supply the DK-SEZ to improve the reliability of power supply

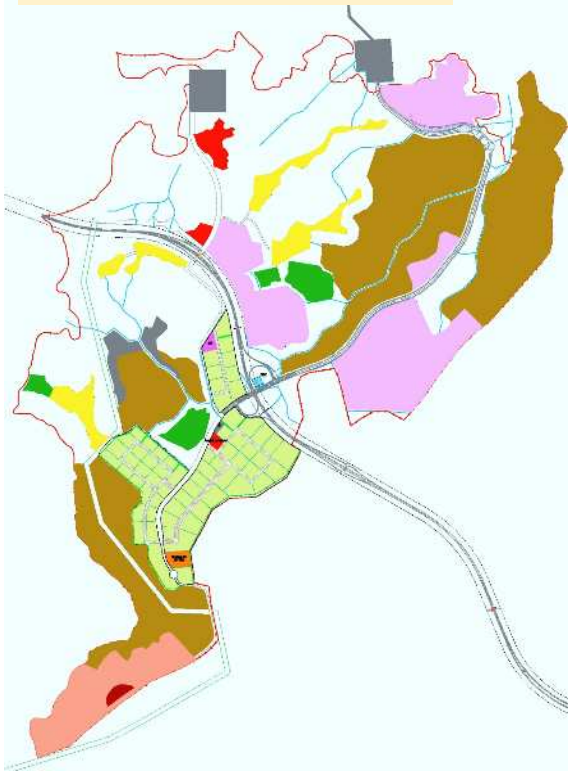
Mombasa S/S plan:
Transformer: 75MVA x2 220KV to 33KV

Off-site power supply connection shall be subject to the phasing plan of Industrial park

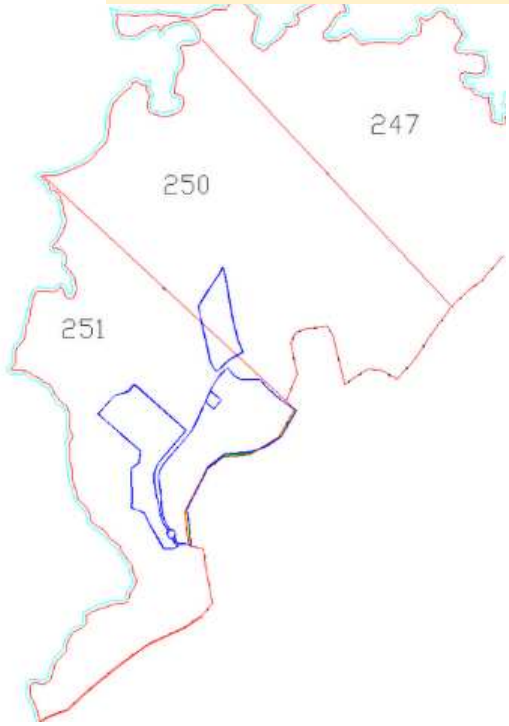
For the IP preliminary plan, it was evaluated that common ducts on the roadsides be used for telecommunications. However, common ducts would not be effective from the viewpoint of cost and maintenance. As for the underground power cables, it would also be costly for SEZ development.

2.01 IP Land Use Planning

1) Updated DK-SEZ Masterplan



2) IP Layout within plot-map



19

A survey team from the SOK confirmed the boundary of the SEZ area, identify and document the location of the existing beacons and demarcated the boundary of the Industrial Park.
To undertake this exercise, the team used the survey map marking the KPA plot boundary, existing MSBR beacons, and the DK-SEZ Master Plan.

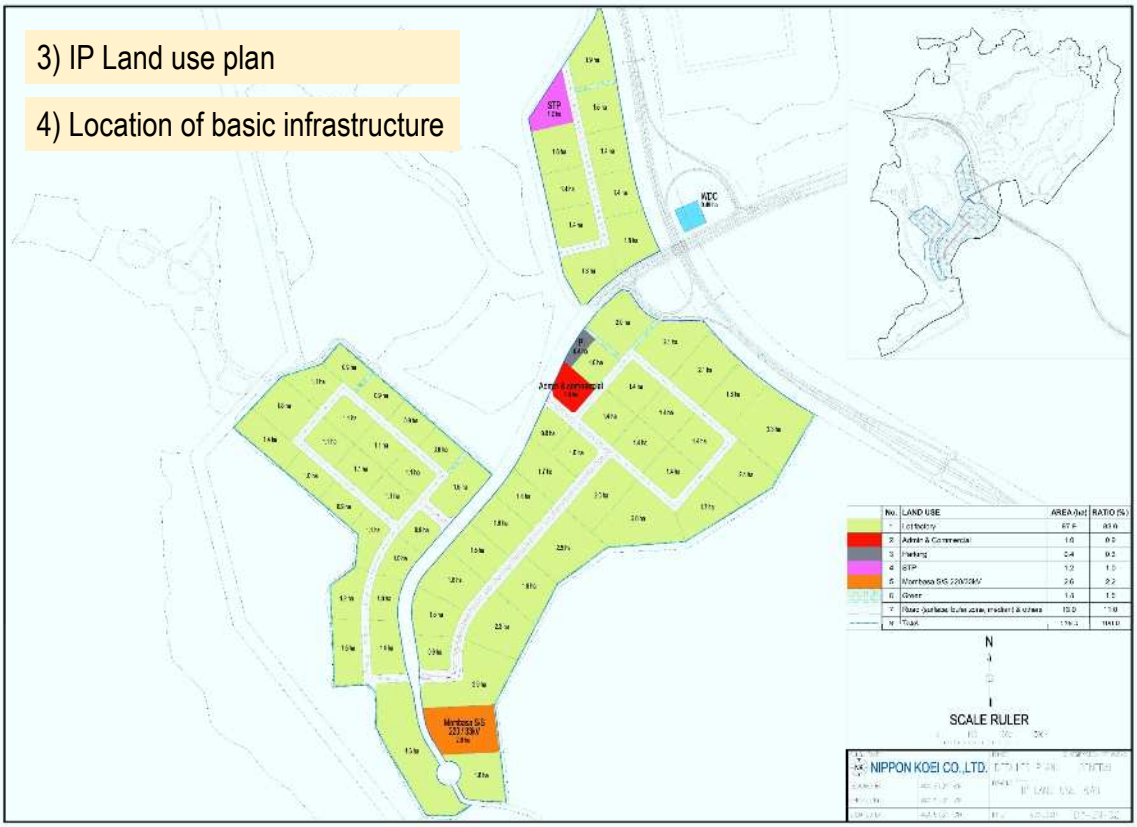
Updated land use & infrastructure plans feature:

- Of the total 118 hectares, 98 hectares will be industrial land (83 % of IP land)
- Road network connecting the industrial park to the Port Access road & Southern Bypass road
- A 220/33kV power station to be done by KETRACO
- A water reservoir & water distribution centre to be done by CWWDA
- Stormwater drainage system connecting to the natural drainage system of the area

2.02 IP Land Use Planning

3) IP Land use plan

4) Location of basic infrastructure



The land use plan is updated to include:

- The administration building
- Parking area next to admin & access gate
- Water distribution centre
- Sewerage treatment plant
- Power Substation

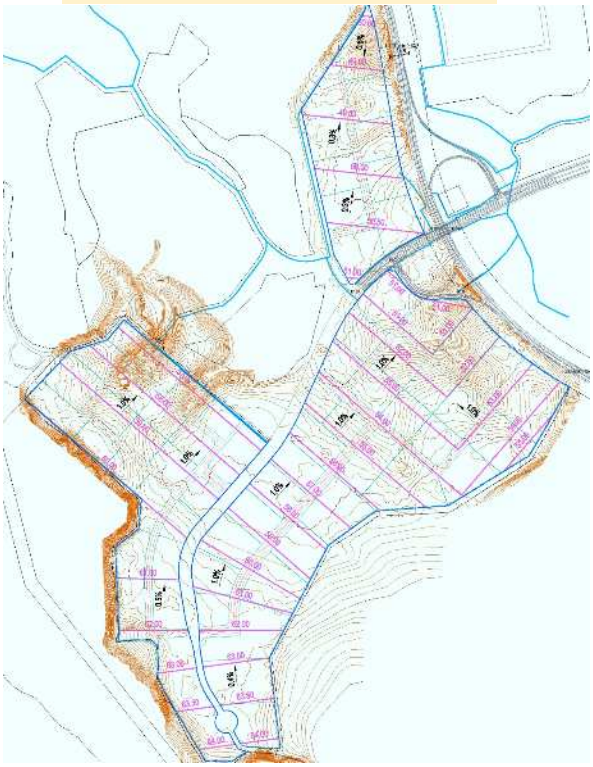
For planning purposes, the minimum size of plot was limited to 1 ha. However, the standard size varied with the marketing, operation and maintenance interests of SEZA. It would be possible to combine several lots if larger plots would be required by investors later on.

The admin building to house OSS, SEZ officers was proposed to be located near the Main Gate, beside the main entry point and the customs gatehouse. However, the Admin Building is not necessarily linked to customs warehouse, marshalling yard or customs gatehouse but the planning principle was to locate them proximately.

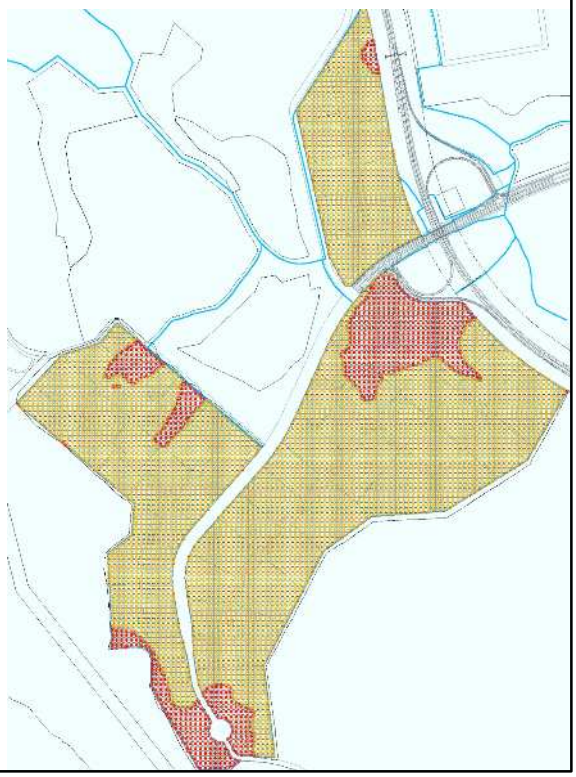
The entire Industrial Park is planned to be a customs-controlled zone, with one entrance/exit point to act as the customs gate. As such, the gate house is to serve as control point and the only access to the Industrial Park. In addition, a marshalling yard outside the IP gate would serve as parking area.

2.03 IP Land Use Planning

5) Land grading plan (terracing)



6) Cit-fill plan for land grading



A topographical study was conducted in April 2021 by the Survey of Kenya (SOK) and SEZA with the support of the Consultant Team.

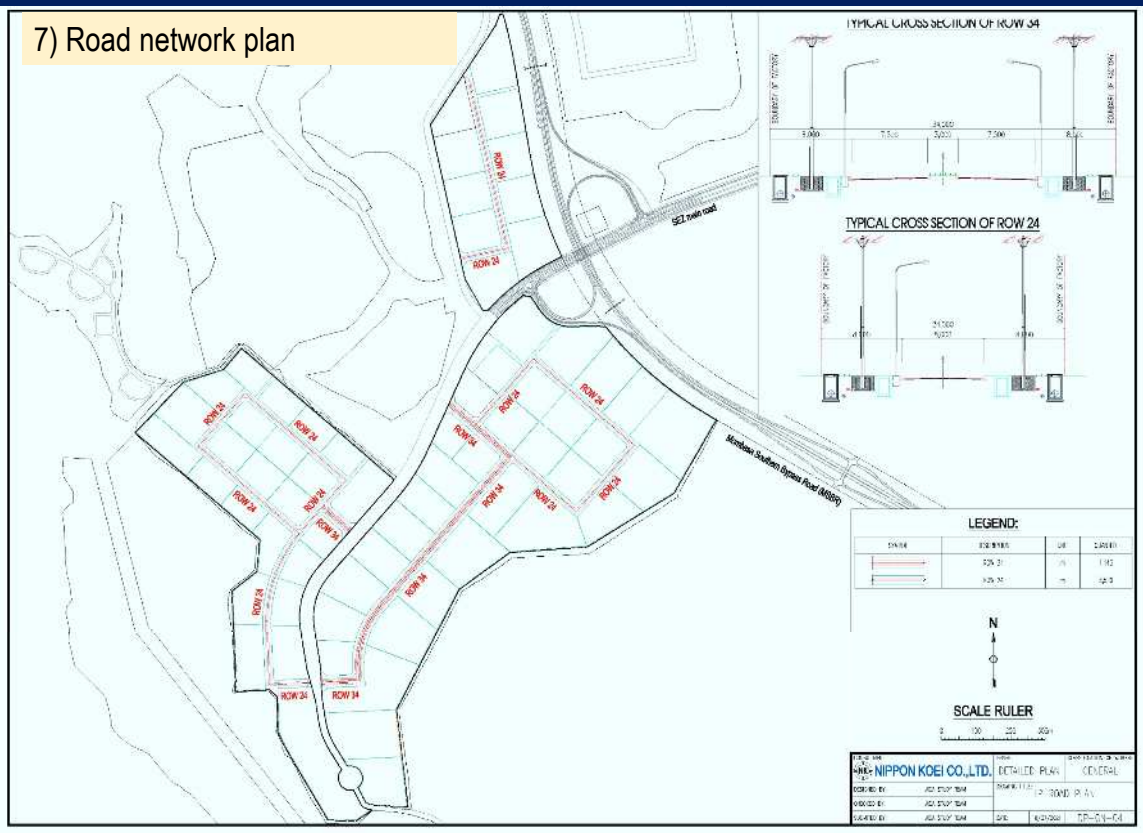
Following engagement of the regional surveyor's office, local administration and necessary community engagement, the exercise was carried out over the expanse of the industrial park. This exercise established controls to facilitate topographic survey work, mapped natural, manmade features and terrain features and produced a detailed topographical map of the IP area.

A topographical survey exercise was conducted in April 2021 on site with a team from Survey of Kenya. From the results of the topographical survey a land grading proposal has been developed:

- Hilly sections of the land to be cut
- Gullies & pits to be filled using material cut from higher sections
- Levels of the proposed Access Road to match to the adjacent factory land
- A material haul plan will balance the cut & fill
- Factory land will be allocated (in the land use plan) to match the grading plan
- Each lot will be positioned within a relatively flat section of land

2.04 IP Infrastructure Planning

7) Road network plan



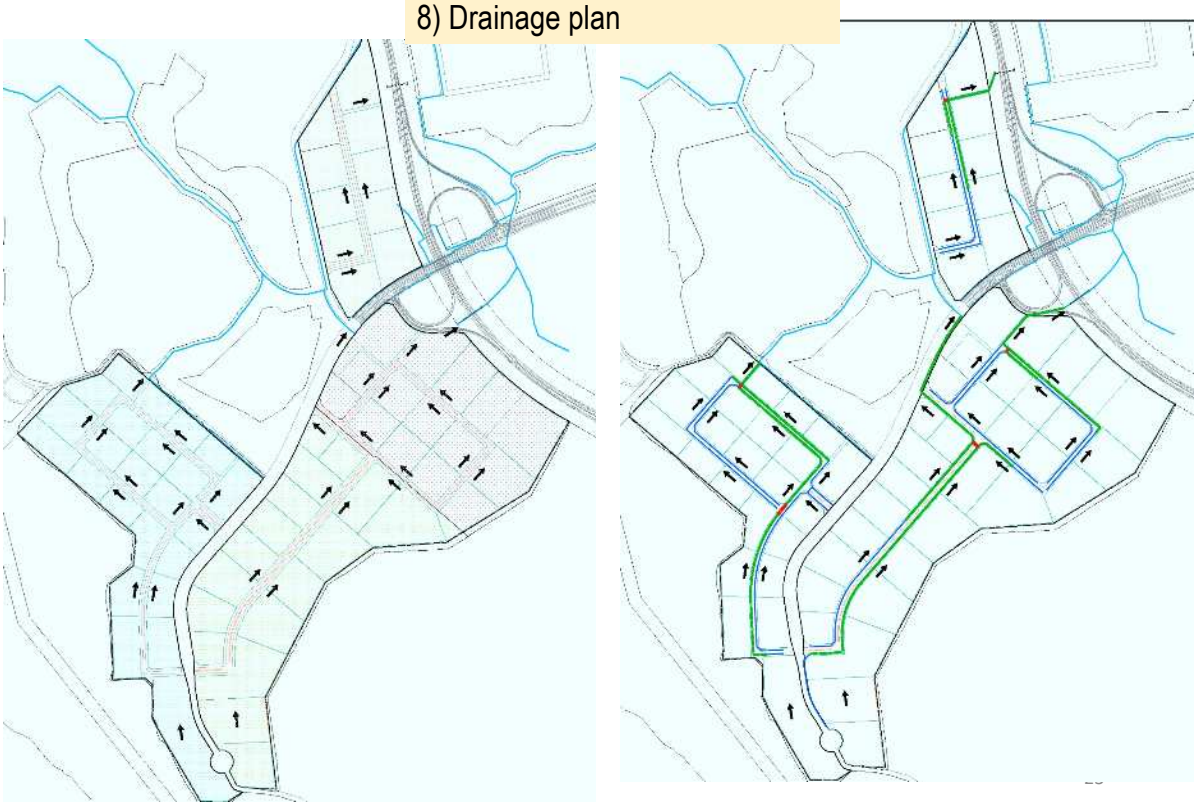
Of the total 118 hectares, 98 hectares of the IP is planned to be industrial area, hosting a variety of factories on the plots. Access to the IP and the Port is provided by the Port Access Road that connects to the main highway through an interchange as illustrated. Each of these plots is serviced directly by an access road, which in turn links to the port access road..

The road network plan optimizes land assignment as factory land, limiting the requirements for wayleaves and greenery to increase efficiency of land use.
There are provisions for these facilities, with the design requiring the green areas be adjacent to footpaths and to also include road islands.

Similarly, these green areas cover up buried infrastructure including telecommunication ducting, sewer and water supply lines and drainage systems. Manholes and inspection chambers, however, have to be exposed intermittently within the green areas

2.05 IP Infrastructure Planning

8) Drainage plan



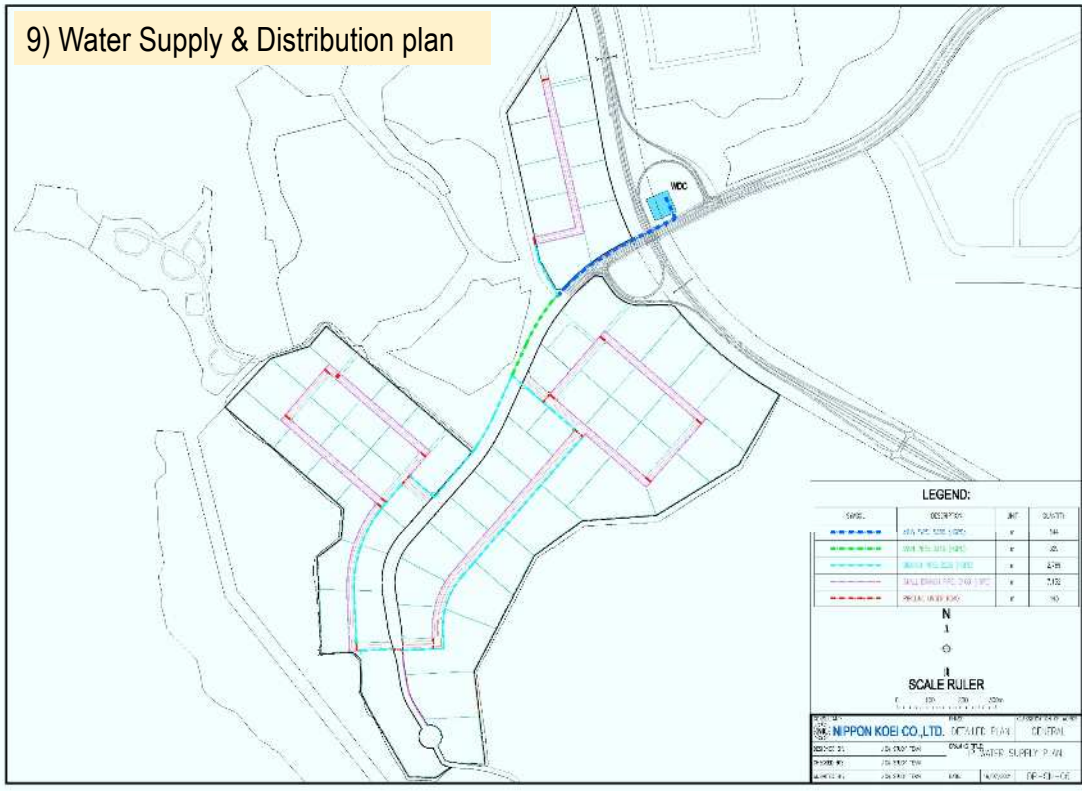
The consideration for stormwater design is based on the maximum monthly rainfall with the return period considered over the last 20 years- from which the planning of the system develops hydraulic loads.

Peak runoff takes into account the road network plan and the road design guidelines for Kenyan Urban Roads. As such, the rainfall intensity, runoff coefficient of various road surfaces and the overall area of stormwater collection informed the drainage network and sizing of U-drains and culvert sections.

The drainage system is designed to work with gravity flow, which requires adjustment to the natural topography in the area and the planned land use and road network. From these considerations, the stormwater drains into existing natural drainage system, ultimately draining directly into the sea.

2.06 IP Infrastructure Planning

9) Water Supply & Distribution plan



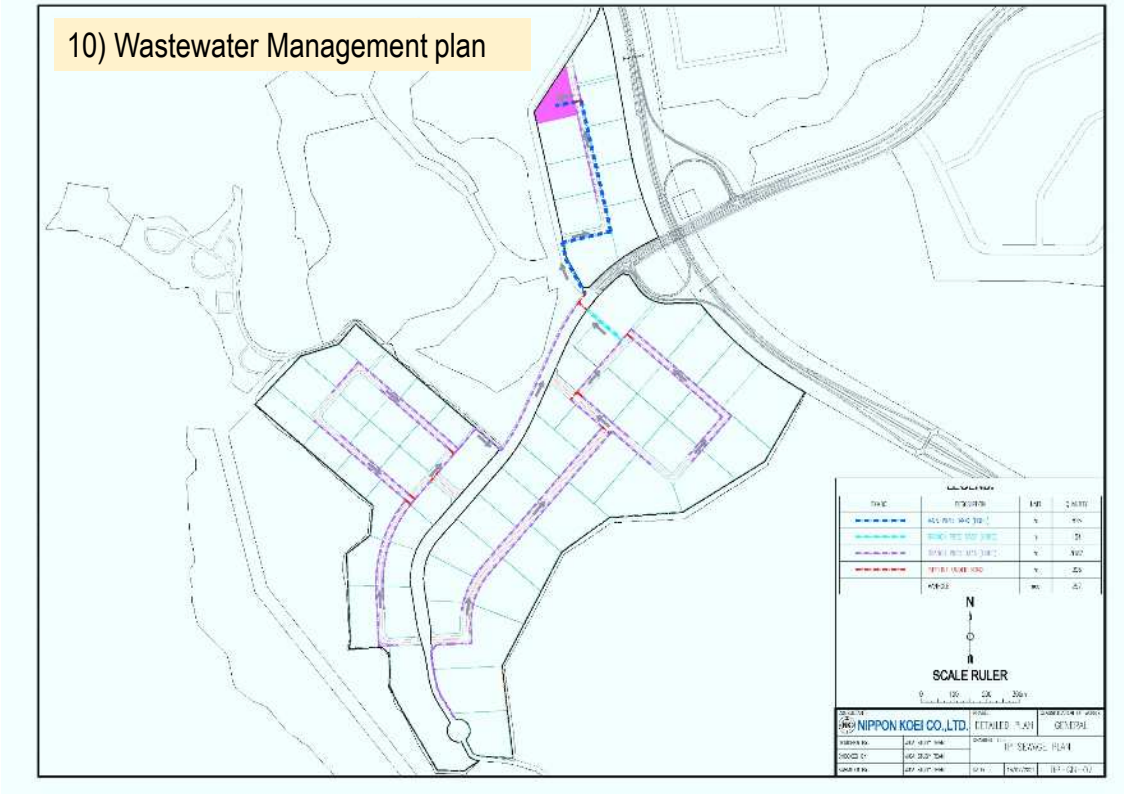
The IP is served by a water reservoir located within one of the MSBR interchange loops, which connects into a distribution line along the Port Access Road. The mains is linked to both the reservoir and the IP distribution system, from which the water supply to consumers is tapped and metered.

Water Supply Demand Projection

Functions	Net Area (ha)	Unit generation	Unit	Demand (m3/day)
Industrial area (Factory lot)	97.9	40	m3/ha/d	3,916
Admin & Commercial	1.0	6	litre/m2/d	130.9
Utility area (STP, S/S)	3.8	200	litre/c/d	4
Road (buffer zone, median, green)	15.3	0.5	litre/m2/d	76.5
Total	118 hectares			4,127 m3/day

2.07 IP Infrastructure Planning

10) Wastewater Management plan



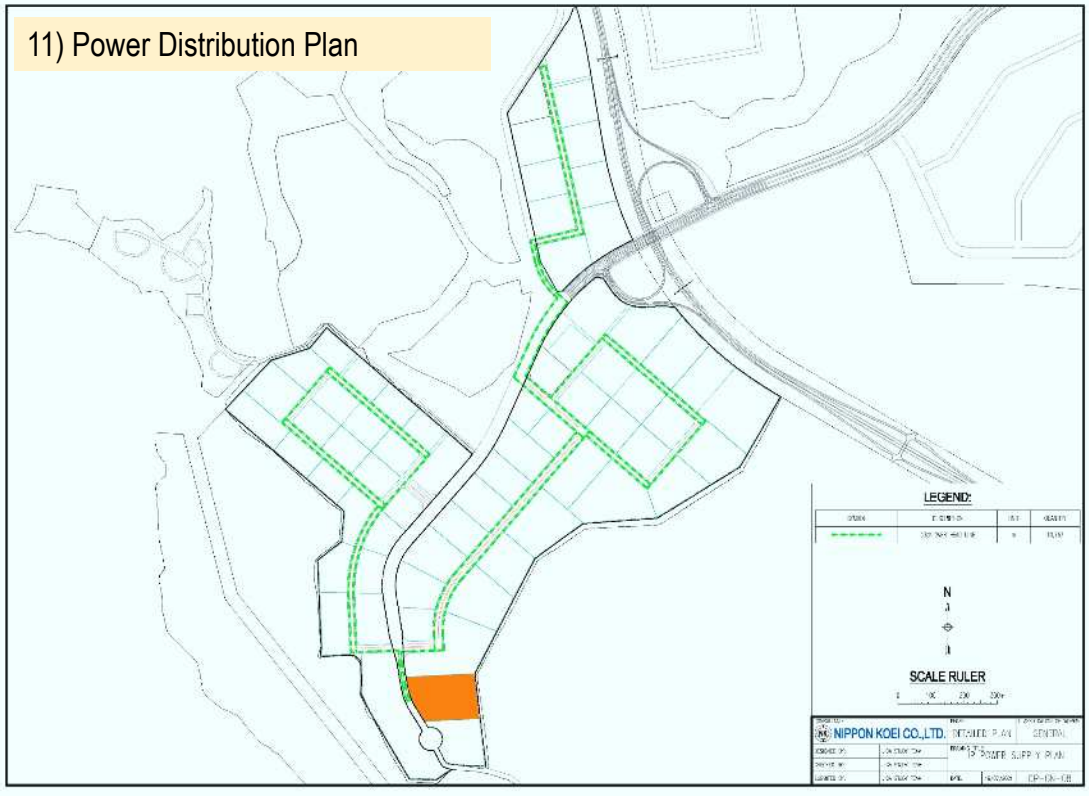
Enterprises operating within the industrial park will be served by a common sewerage treatment facility. From the land use plans, estimates for the wastewater generation can be computed by estimating that 80% of water supplied would result in the sewerage system.

Sewage Output Projection

Functions	Net Area (ha)	Water Supply (m3/day)	80% of water supply
Industrial area (Factory lot)	97.9	3,916	3,133
Admin & Commercial	1.0	130.9	105
Utility area (STP, S/S)	3.8	4	3
Road (buffer zone, median, green)	15.3	76.5	61
Total	118 ha	4,127	3,302 m3/day

2.08 IP Infrastructure Planning

11) Power Distribution Plan



Power demand in the IP was forecasted based on the factory land and other utilities that are anticipated to consume power.

As a result of the calculation, the required total power demand for the IP is estimated at 31 MVA. This demand will be served by the power substation to be located within the IP, as per the power supply plan below, and the substation site location as indicated by KETRACO.

Each of these was compared by the net area usage versus the load identified from similarly operating industrial parks- from which the demand estimate was calculated as below:

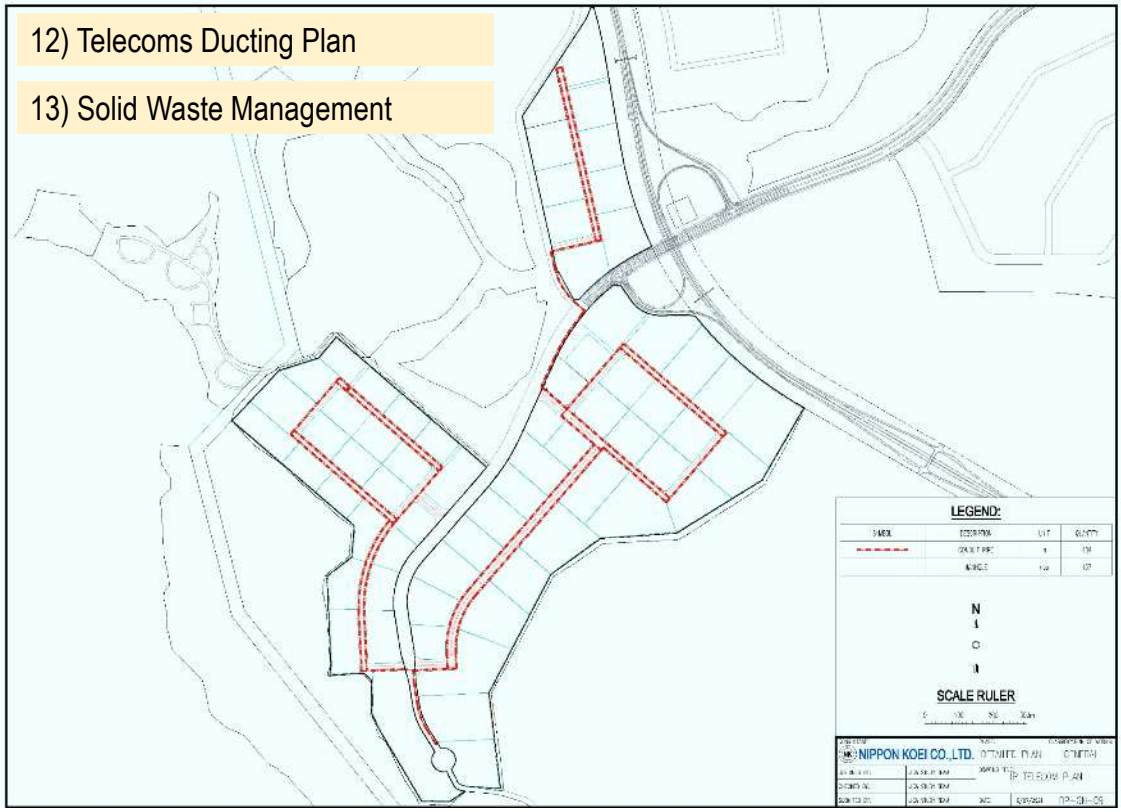
Power Demand Projection

Functions	Net Area (ha)	Unit Generation (kVA/ha)	Demand (MVA)
Industrial area (Factory lot)	97.9	300	29.4
Admin & Commercial	1.0	600	0.6
Utility area (STP, S/S)	3.8	140	0.5
Road (buffer zone, median, green)	15.3	30	0.5
Total	118		31 MVA

2.09 IP Infrastructure Planning

12) Telecoms Ducting Plan

13) Solid Waste Management



Telecommunications Planning

The plan of connection routes and underground ducting for private fibre and telephony service providers was aligned to the road network plans and the allotted factory areas.

Solid Waste Management Planning

The existing waste disposal sites are subject to the monitoring and control of NEMA inspectors in conjunction with the Mombasa County Government that operates these locations.

The IP is located closest to the Shoda Quarry landfill site, which also serves the rest of the Likoni and Mtongwe areas in the Mainland South waste collection zone.

For the industrial park, the generation of solid waste is estimated from the area usage of different elements of the IP, using data from other industrial parks for comparative estimation.

Solid Waste Generation Projection

Functions	Net Area (ha)	Unit generation	Unit	Demand (ton/day)
Industrial area (Factory lot)	97.9	135	ton/ha/y	55.1
Admin & Commercial	1.0	0.6	kg/c/d	0.18
Utility area (STP, S/S)	3.8	0.6	kg/c/d	0.012
Road (buffer zone, median, green)	15.3	30	kg/c/d	-
Total	118 ha			55 ton/day

3.01 IP Infrastructure Quantities & Costing

1) IP Bill of Quantities

No.	Description of work	Unit	Combined Unit price (USD)	Quantities	Total Cost (USD)
1	Land grading work				
	Cutting	m3	6.0	3,034,869	18,209,214
	Land filling	m3	3.0	329,018	987,054
2	Road work				
	Row 34	m	1,772.2	1,143	2,025,623
	Row 24	m	907.1	3,529	3,201,306
3	Drainage work				
	Box culvert	m	796.0	106	84,376
	U-ditch	m	300.0	5,132	1,539,600
	R.C pipe	m	100.0	5,954	595,400
4	Water supply work				
	D355	m	165.0	544	89,760
	D315	m	114.0	309	35,226
	D225	m	71.0	2,769	196,599
	D160	m	61.0	7,132	435,052
	Pipe under road	m	272.0	443	120,496
5	Sewage work				
	D400	m	399.0	875	349,125
	D355	m	244.0	154	37,576
	D315	m	192.0	8,187	1,571,904
	Pipe under road	m	272.0	306	83,232
	Manhole	no's	651.0	297	193,347
	Wastewater treatment plant	m3	500.0	3,274	1,637,000

From the detailed planning, estimates for various works were calculated using existing information on construction standards, assumptions on the requirements of the IP for operational infrastructure and information from similarly planned industrial parks.

Such works also included critical facilities for the integration of other utilities and networks to be provided by third party and private service providers within the IP with regard to the local operating standards for water supply, wastewater management, solid waste management, telecommunications and power requirements.

3.02 IP Infrastructure Quantities & Costing

1) IP Bill of Quantities…cont.

6	**Power supply work**				
	33kV over head line	m	49.6	10,767	533,700
	Street lighting pole	no's	509.0	226	114,791
	Lighting under ground cable	m	72.6	11,680	847,810
7	Telecommunication work				
	Conduit pipe	m	60.0	404	24,215
	Manhole	no's	650.0	137	89,079
8	Gate work				
	Gate	no's	55,800.0	4	223,200
9	Fence work				
	Fence	m	246.5	9,836	2,424,082
10	Total Construction cost				35,648,767
	Management cost			20%	7,129,753
	Contingency			10%	3,564,877
	Engineering consultancy fee			5%	1,782,438
	Overall total project cost				46,343,397
	Average cost per m2				**39 USD/m2**

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Cost of construction work in Kenya was developed from various sources including previous research on similar works, ongoing projects in the Mombasa Region, costing standards from the Kenyan government and estimations from professional institutions offering consultancy services.

3.03 Financial Analysis (condition and preliminary result)

1. Financial analysis method:
   - Cash flow analysis (Profit Loss)
   - FIRR
2. Project period:
   - 50 years (typical lease period)
3. Revenue source
   (1) Land lease
   (2) Office rental
   (3) Rental factory
   (4) Management fee
4. Cost:
   - Construction cost
     - 3 years to complete
     - Year 1: A, B1 (48%)
     - Year 2: B2 (20%)
     - Year 3: C (22%)
   - O%M cost: 3% of contraction cost

* The figures shown in the slide are used for capacity building purpose and not reflecting the actual situation.

From the land use and infrastructure plan, the IP has a total area of 118 hectares, with leasable land of 97.9 hectares (17 % of total area is considered non leasable (road, public facility/space, green spaces).

A project period of 50 years was specified to match assumptions for design life, and for ease of comparison for viability of projects with a similar development plan. However, with the size of the industrial park, the construction time was estimated as 3 years, including the preparation of the land and installation of basic infrastructure in readiness for leasing.

3.04 Financial Analysis (Revenue source, Land Lease)

(1) **Land Lease Condition:**

- Total Area: 118 ha, leasable area: 97 ha
- Land price 6,000 USD/ha/year (0.6 USD/m2/year) (from EPZ)
- Sales start from the area developed
- Two plots sales for each zone (A, B, C) per year

IP Leasable Area by Zones

No	Zone	Area (ha)	Revenue (year) (USD)
1	Zone A	14.2	85,142
2	Zone B1	33.2	199,036
3	Zone B2	20.2	121,010
4	Zone C	30.3	182,024
	Total	**97.9**	**587,211**

(2) Management Fee:

- Management fee can be collected for O&M of public facilities/infrastructure
- 0.03 USD/m2/year (5% of land lease)

(3) Expected Revenue:

- 587,211USD/year from land lease
- 29,361 USD/year from management fee

* The figures shown in the slide are used for capacity building purpose and not reflecting the actual situation.

Preparation of the IP area, including land grading, basic infrastructure and utility development is as above, with the total cost of development as 46,343,397 USD.

From the combined estimates for revenue generated from the 50-year project period below, the total is estimated at 29,293,165 USD.

3.05 Financial Analysis (Revenue source, Office Rental)

(1) **Office Rent Condition:**

- Total floor area**: 3,000 m^2**, Rentable floor area: **1,780 m^2**
- Rent: 27USD/m2/year
- Occupancy rate: 70%
- Target: filled in 3 years

Administration Building Layout

No	Floor	Total Office Area (Square Meters)	Rentable Office Area (Square Meters)	70% Occupancy	Floor Use
1	Ground	600	350	-	Use as OSS
2	First	600	600	420	Floor for rent
3	Second	600	480	336	Floor for rent
4	Third	600	350	245	Floor for rent
5	Fourth	600	350	-	Used by SEZA
Total		**3,000**	**2,130**	**1,001**	

(2) Expected Revenue:

- 70% capacity: 27,000USD/year

* The figures shown in the slide are used for capacity building purpose and not reflecting the actual situation.

The administration block, housing the centre of operations for the IP and the rest of the SEZ was proposed to be offered for rent- with the One Stop Shop occupying the ground floor of the four-storey structure, and the administrative functions to be conducted on the top floor.

Estimation of the area was calculated from the tender documents for the SEZA administration building, with the occupancy rate of 70% applied to the rentable spaces.

From the total floor area of 3,000 m2, the rentable floor area was 1,780 m2- and with the assumption of 70% occupancy and rent rate of 27USD/m2/year- the expected revenue was 27,000USD/year.

3.06 Financial Analysis (Profit Loss (PL))

(1) **Revenue (maximum case)**
- Land lease: 587,211 USD/year
- Office rent: 27,027 USD/year
- **Total from lease/rent: 614,238 USD/year**
- Management Fee: 29,361 USD/year
- Total: 643,599 USD/year (including management fee)
- **Total revenue: 29,293,165 USD (50 years)**

(2) **Cost (O&M cost)**
- 3% of construction cost, 1,069,812 USD/year
- 54,740,868 USD (50 years)
- The O&M cost has to be reviewed. May be this amount is too much.

(3) **Profit (Revenue – Cost)**
- -426,214 USD/year full operation (from operation, Not including investment cost recovery)
- Total balance (50 years):
  - Including investment cost: -72,282,530 USD
  - O&M only: -24,806,702 USD

* The figures shown in the slide are used for capacity building purpose and not reflecting the actual situation.

Land prices from nearby industrial estates was used as a reference, in addition to the standard rates as implemented by the Export Processing Zones Authority (EPZA), which operates in similar financial models as industrial parks in SEZs. Comparable lease prices indicate the highest cases to be 17,297 KES/m2 (170 USD), and the average case as 9,390 KES/m2 (93 USD). For reference, the EPZA offers 6,000 USD/ha (60USD/m2).

Operation and management costs were estimated as 3% of construction cost which totals to 1,069,812 USD/year. Therefore, the total for 50 years is 54,740,868 USD

From the operation costs for each year of full operation (not including investment cost recovery) totals -426,214 USD. Cumulative operational and management costs for the 50-year period totals -24,806,702 USD. However, the cumulative operational cost including investment costs is -72,282,530 USD.

3.07 IP Management

Marketing

What is the sales point of IP DK-SEZ? ~ how to attract investment ~

	Items	Remarks
1	Price	▪ Sales price should be set considering the market in Mombasa: "We provide high class infrastructure, that's why land price is high" cannot be a reason. ▪ How do you consider cost recovery: full recovery, partial recovery, development cost. ▪ How much is covered by SEZA and how much is covered by SEZ enterprises.
2	Infrastructure/facilities	▪ Infrastructure and facility should be provided continuously: any stop of service (water, electricity) should be avoided, facility should be well maintained. ▪ Amenity: dormitory, commercial (shops, banks)

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Management of SEZs is under the mandate of SEZA, but the consideration of the process a special purpose vehicle (SPV) to be created as the operator in DK SEZ was evaluated.

The fundamental of whether SEZA aims to become operator, the enough staff and experts are necessary. On the other hand, if SEZA aims to introduce SPV, the strong points will change. Such direction needed to be decided at policy level.

The issue is on the career burden of SEZA and it's not in SEZA level but national level. In terms of management, appeal point of SEZ services could be weak point if the management is not enough. It was necessary to consider the possible management structure.

3.8 IP Management

Finance (revenue/cost)

Main revenue source is land sales and rent (if there is rental factory, CFS, office). Additional revenue is possible from service provision.

i. Revenue

	Items	Remarks
1	Land sale	Land sales is recorded when there is payment ▪ Types of payment ▪ One time payment (at time of contract, sometimes 2 or 3 payment is allowed) ▪ Periodical payment (annual)
2	Rental factor/CFS/office rent (if any)	Rental fee: Monthly payment
3	Management fee	▪ Fixed amount to be used for O&M of facility and infrastructure (cleaning, repair, change material) ▪ Monthly payment
4	Service fee	For providing additional service: documentation, support recruitment Fee is charged based on the price list of the services provided by management body

Since government has limited resources- private companies can be involved for direct management.

Specifically for DK SEZ management, there're a several zones which different organizations doing activities in DK SEZ. SEZA can be open to all options and those are provided to the right entities. Options for management, therefore, may include a PPP if SEZA finds a suitable private company to lease.

Through such options, government and private companies may cooperate for the development in Industrial Park (IP). Such decisions depend on whether SEZA wants to have strong control or not, and the consideration of human resource and budget aspects.

From the analysis, it is planned that SEZA will propose 60 USD/m2 for land leasing. For strategic development, SEZA would like to make DK SEZ competitive and facilitate service delivery. The competitive price should be set to attract investors and to cover the expense of construction cost.

3.9 IP Management

Finance (revenue/cost)

Cost includes O&M of infrastructure and facility, and administration. Loan payment may be included depending on IP management and cost recovery policy.

ii. Cost

	Items	Remarks
1	Operation and Maintenance	▪ Facility and infrastructure maintenance (road, street lights, green area, other public space) ▪ Facility and infrastructure repair ▪ Major repair in a few years
2	Administration	▪ Office maintenance ▪ Utility ▪ Personnel

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SEZ is not goal but a tool for accelerating the industry in the country. Some conditions in SEZ Act/ Law and incentives developed in those countries are basically same. The point is besides the regulations, what kind of services are provided. It is crucial how you can attract the investors with the good management

The key is to make financial plan in initial stage

3.10 IP Management

Customer service

Customer service is a best marketing method: Good reputation will bring more customers.

Service

	Items	Remarks
1	Services	▪ Support process of license and permit necessary for license ▪ Provide service for the benefit of tenant: training to labor, information related to business ▪ There are always request from tenant, and prompt response is mandate: problem with utility, problem of business operation, request to cut grass in front of their land.

	Items	Remarks
1	Before operation by SEZ enterprise	▪ Support process of license and permit necessary for license ▪ Respond to inquiry from candidate tenants: provide information ▪ Transparent contract negotiation:
2	During operation by SEZ enterprise	▪ Staff training ▪ Recruitment ▪ Respond to request from tenant: ▪ *Request or Complain?*

The role of County government was established to be mainly zoning regarding physical planning. This is a one-time activity. When SEZ or special planning area is developed, SEZA needs to involve County government so that they include those plans in their County plans for their development.

When it comes to environment issues, NEMA is in charge of management and coordination work for all environmental issues under the ECMA (Environmental Management and Co-ordination Act), and it is applied both County government and private parties.

In case of the solid waste management, County government is licensed by NEMA. Any private entity doing solid waste collection needs to get business permit like any other business, when they set up a business.

3.11 IP Management

Points of SEZ management

- SEZA manages SEZs to enhance development which contributes to industrial development. Goal should be clear:
  - ➢ financial independence is important, but priority should be industrial development. Government support maybe needed during the initial stage of operation since revenue (management fee) from operation is still small.
- SEZA is responsible for managing/controlling SEZ in Kenya (9 SEZs are approved?) and more SEZs are expected.
- Continuous customer support is essential: affect customer satisfaction and land price.
- Each SEZ should be managed separately for quick decision making and quick action (headquarter function and branch function):
  - ➢ **Decision making authority**: a quick action is must.
  - ➢ **Financial authority**:
    - ✓ in order to take a quick action, financial authority has to be given to a site office.
    - ✓ Annual and mid term plan has to be prepared to secure budget: ac hoc expense should be avoided.
    - ✓ Burden on O&M cost is high during initial stage of operation when a number of tenants is small.

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When County government makes zoning, for example when SEZA will make special planning area, there will be a stakeholders involvement.

In the Gazette Notice for special planning area for Mombasa, the radius was not mentioned so Department of Physical Planning will involve the County government and other stakeholders will discuss and agree what parts of the special planning area will be. Then, the result will be gazette. This is a consensus process, but not approval.

Regarding the environment, mainly NEMA will be the leading agency to manage and controls all the environmental control, management and solid waste.

Annex 7
Promotional material for Industrial Park

Powering Growth

KENYA VISION 2030
FLAGSHIP PROJECT

DONGO KUNDU SPECIAL ECONOMIC ZONE IN KENYA

Welcome Message

Special Economic Zones are customs-controlled areas within an independent sovereign state in which governments facilitate industrial activity through fiscal and regulatory incentives and world-class infrastructure support. They are widely and increasingly considered an important policy tool for economic development. They have been instrumental in multiple industrial successes in most developing and many developed economies.

The Kenyan Government is keen to ensure sustainable industrial growth with manufacturing as a crucial pillar of the Big Four Agenda, targeted at increasing wealth and creating job opportunities. The Ministry for Industrialization, through the SEZ Authority has prioritized several critical sectors for this, including Textiles and Apparels, Leather products, Agro-processing, MSME development, and Research and Innovation, among others. Dongo Kundu (DK) SEZ in Mombasa County is located on a vast 3000 acres with very good topography, proximity to the ocean and access to the port facilities. The DK SEZ is highly competitive in terms of logistics, highways, railways, and an international airport and as one of the Vision 2030 flagship projects under manufacturing, the SEZ Program is strategically designed to improve Kenya's competitiveness as an investment destination through infrastructure provision, facilitation of the investment process for both local and foreign investors, value chain integration and expanded market access for goods and services in the region.

Japanese support through JICA has been significant and our continued close partnership will make DK fully operational.

It is my pleasure to welcome investors, both domestic and foreign, to take advantage of the various incentives the government support in various issues pertaining to setting up of investment in the zone and move Kenya towards becoming the next big industrial hub in Africa.

Dr. Meshack Kimeu, PhD
CEO
Special Economic Zones Authority (Kenya)

Aerial view of Dongo Kundu Special Economic Zone

The Dongo Kundu Special Economic Zone is located in Mombasa, along the East African coastline, occupying approx. 1,200 hectares (3,000 acres).
It is adjacent to Mombasa Port Southern Bypass Road, Standard Gauge Railway and the Moi International Airport.

Dongo Kundu SEZ is served by:

- The Southern Bypass road
- A dedicated 220KV power substation
- A 10,000m3/day water reservoir
- A state of the art fibre-optic connection
- A dedicated SEZ port and free trade zone also support the custom-controlled functionality of the entire zone


Mombasa Southern Bypass

Dongo Kundu Industrial Park


Large Factory Plot

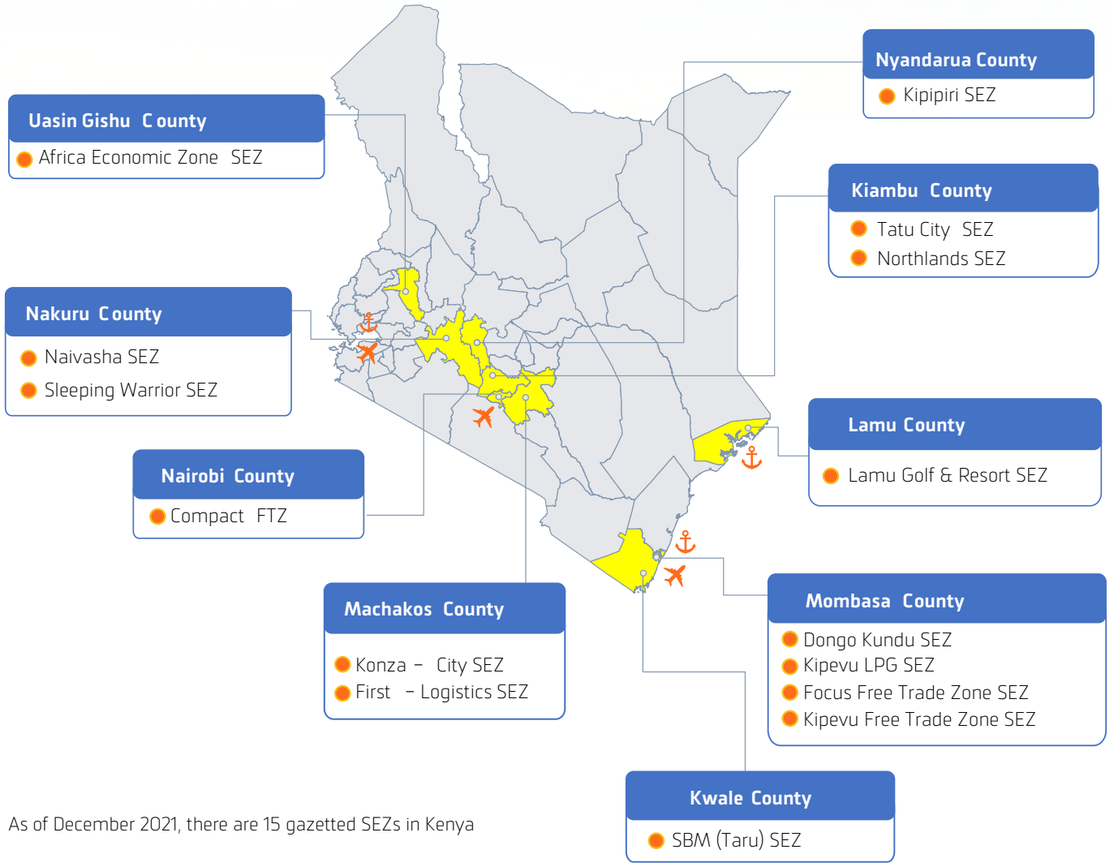
Special Economic Zones in Kenya

Special Economic Zones (SEZs) are part of the flagship projects under the Economic Pillar of the Kenya Vision 2030. The SEZs are geared towards improve Kenya's competitiveness as an investment destination.

SEZs are a vital tool to accelerate the manufacturing sector by ensuring regulatory and administrative predictability, quality industrial infrastructure and market access.

As a collective, SEZs serve:

i. To attract both local and foreign investments
ii. To expand and diversify production for domestic and export markets
iii. To promote value addition
iv. To promote local entrepreneurship
v. To enhance technology development and innovation
vi. To promote industrialization using local resources



As of December 2021, there are 15 gazetted SEZs in Kenya

KEY

Counties with SEZs
International airports
Inland and Coastal ports

Advantages of investing in Kenya

Through government support and incentives, Kenya has created an attractive business environment for various sectors

Diverse Private Sector

Kenya is a net exporter to all East African Community (EAC) Countries due to a robust private sector.

Agricultural Potential

The diverse agricultural sector contributes to 31.5% of Kenya's GDP and supports other sectors.

Growing Manufacturing Sector

The manufacturing sector has grown over the last two decades- boasting the assembly of motor vehicles, construction materials, plastics, textiles and chemical production.

Skilled labour

Skilled labour is available in Kenya, with a rich variety of training offered in the world-class universities. Kenya has local experts in various industrial and service sectors.

Governmental backup

Incentive policy for SEZs

Exemptions and zero-rating of taxes, preferential rates for duty apply to the SEZ territory for investors.

Support for MSMEs

A holistic demand-driven support structure has been set up for Micro, Small and Medium Enterprises (MSMEs) through targeted capacity building programs.

Wide Market Access

Kenya offers direct access to regional and international markets through partnerships such as the EAC, COMESA, AGOA, and AfCFTA.

ICT Industry

Kenya is a regional leader in ICT through its cutting edge connectivity hardware across the country, supported by a growing information technology business platform.

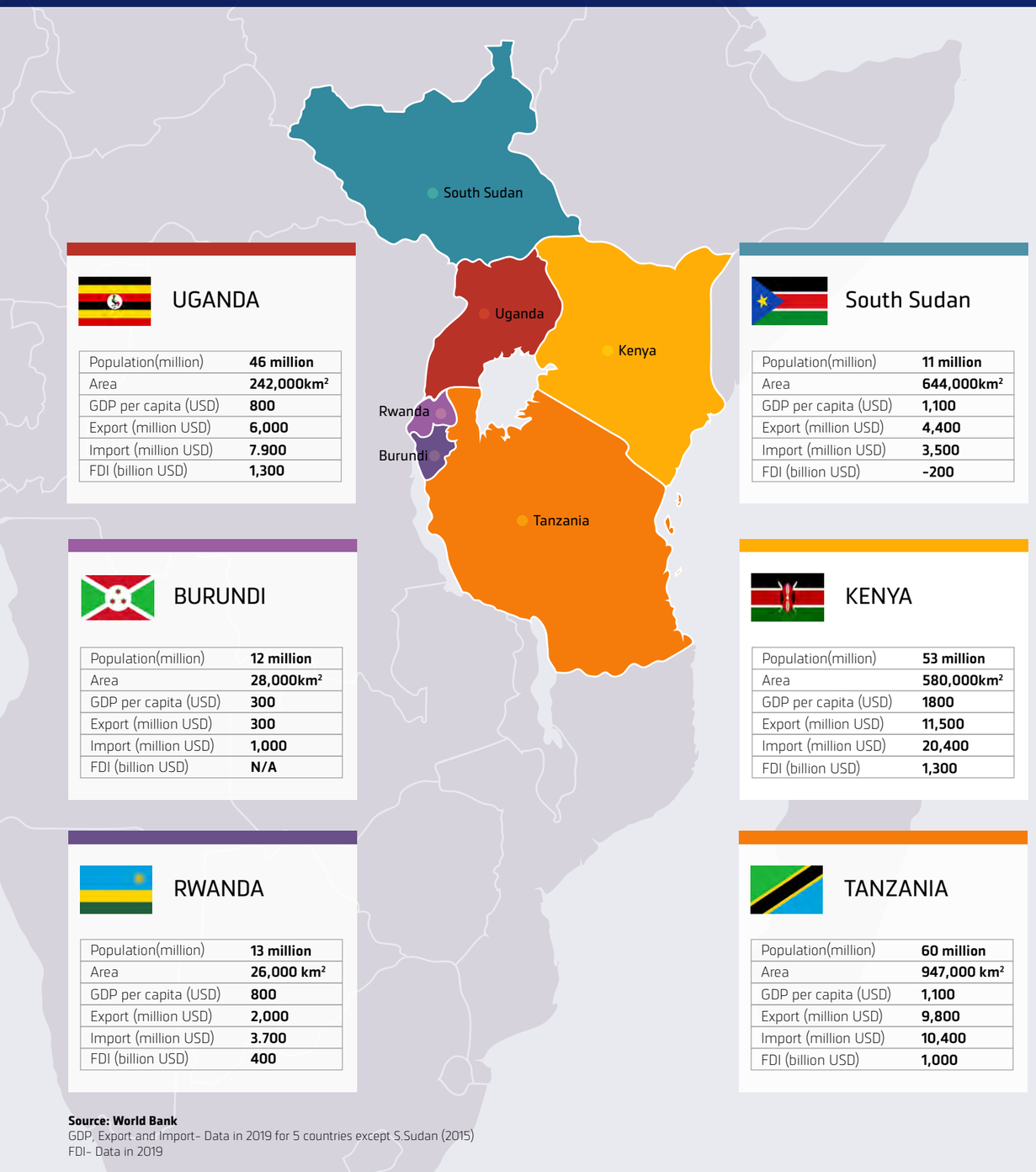
Developing Infrastructure

By investing heavily into infrastructure, the government has connected industrial centers across the country via rail, road and air. International travel and cargo handling is easy and efficient.

Repatriation of Profits

Full repatriation of profits is allowed for foreign investors to their countries of origin.

Comparison of Investment Environment in East African Community Countries



UGANDA

Population(million)	**46 million**
Area	**242,000km²**
GDP per capita (USD)	**800**
Export (million USD)	**6,000**
Import (million USD)	**7.900**
FDI (billion USD)	**1,300**

South Sudan

Population(million)	**11 million**
Area	**644,000km²**
GDP per capita (USD)	**1,100**
Export (million USD)	**4,400**
Import (million USD)	**3,500**
FDI (billion USD)	**-200**

BURUNDI

Population(million)	**12 million**
Area	**28,000km²**
GDP per capita (USD)	**300**
Export (million USD)	**300**
Import (million USD)	**1,000**
FDI (billion USD)	**N/A**

KENYA

Population(million)	**53 million**
Area	**580,000km²**
GDP per capita (USD)	**1800**
Export (million USD)	**11,500**
Import (million USD)	**20,400**
FDI (billion USD)	**1,300**

RWANDA

Population(million)	**13 million**
Area	**26,000 km²**
GDP per capita (USD)	**800**
Export (million USD)	**2,000**
Import (million USD)	**3.700**
FDI (billion USD)	**400**

TANZANIA

Population(million)	**60 million**
Area	**947,000 km²**
GDP per capita (USD)	**1,100**
Export (million USD)	**9,800**
Import (million USD)	**10,400**
FDI (billion USD)	**1,000**

Source: World Bank
GDP, Export and Import- Data in 2019 for 5 countries except S.Sudan (2015)
FDI- Data in 2019

Business Environment in East African Community Countries

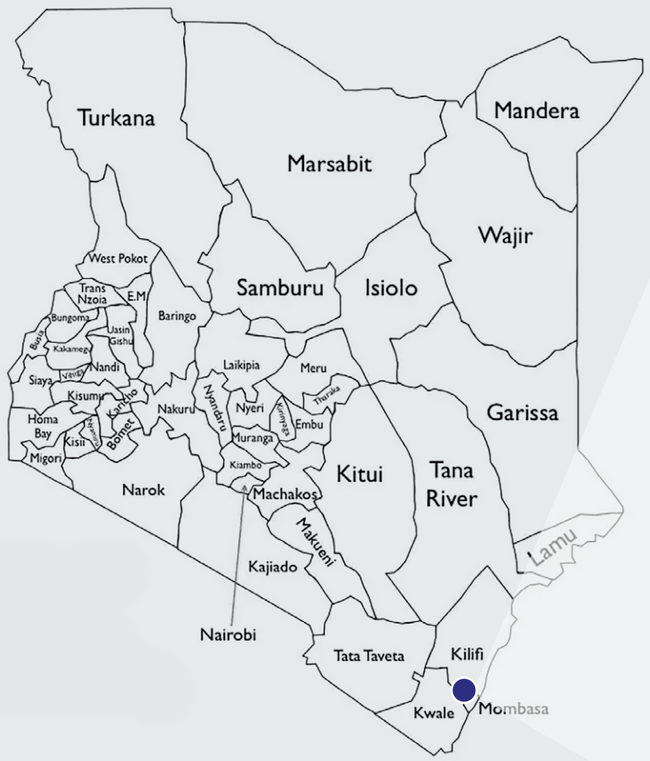
Country	Kenya	Burundi	Rwanda	South Sudan	Tanzania	Uganda
Labour Environment						
Literacy Rate	82%	68%	73%	81%	78%	77%
Working age population rate	70%	91%	74%	81%	86%	92%
Electrification Rate						
Percentage of population	70%	11%	38%	_	38%	41%
Annual Freshwater Withdrawals						
Annual freshwater withdrawals (Billion m3)	4	0.3	0.2	0.7	5.2	0.6

Strategic Location of the Dongo Kundu Special Economic Zone

Dongo Kundu SEZ is a public Special economic zone, enjoying preferential customs rules and reduced taxation standards.

The Special Economic Zone features:

- Industrial Park
- Port
- Free Port/Free Trade Zone
- Residential and Commercial Areas
- MICE (Meetings, Incentives, Conferences and Exhibitions) facilities



Strategic Location

The Dongo Kundu area is served by local government from the Mombasa County, an enterprising workforce and an array of manufacturing industries in the coastal region, complimented by a world-renowned service industry and tourism sector.

The Dongo Kundu Special Economic Zone is proximate to major transport networks ,including:

1. An international port that serves the East African Region
2. The Moi international airport flying to major international destinations
3. The Standard Railway Gauge network connecting the region
4. The Mombasa Southern Bypass for access to the entire Kenyan Mainland

Dongo Kundu and the East African Community Logistic Network

Costs from Dongo Kundu SEZ to cities in EAC countries with 3 types of transportation

Cities	Truck of 20/40ft container on road	Railway	Air transport
Nairobi (Kenya)	9 hours USD 900	8 hours (SGR) USD 500	1 hours USD 0.35 /kg
Bujumbura (Burundi)	28 hours USD 5900	Not available	5.5 hours USD 2.26 /kg
Kigali (Rwanda)	28 hours USD 3800		3.5 hours USD 2.26 /kg
Juba (South Sudan)	27 hours USD 4500		4.5 hours USD 2.26 /kg
Dar es Salaam (Tanzania)	8.5 hours USD 900		4.5 hours USD 1.7 /kg
Kampala (Uganda)	22 hours USD 2500		2 hours USD 1.7 /kg

PORT

AIR TRANSPORT

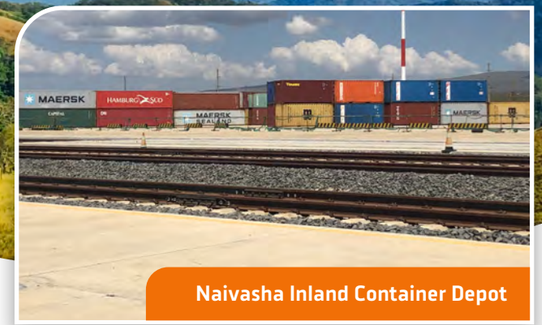
ROAD TRANSPORT

RAILWAY TRANSPORT

Dongo Kundu Special Economic Zone and Logistic Network in Kenya

A dense network of rail and road networks exists- connecting the Dongo Kundu Special Economic Zone to the rest of the country

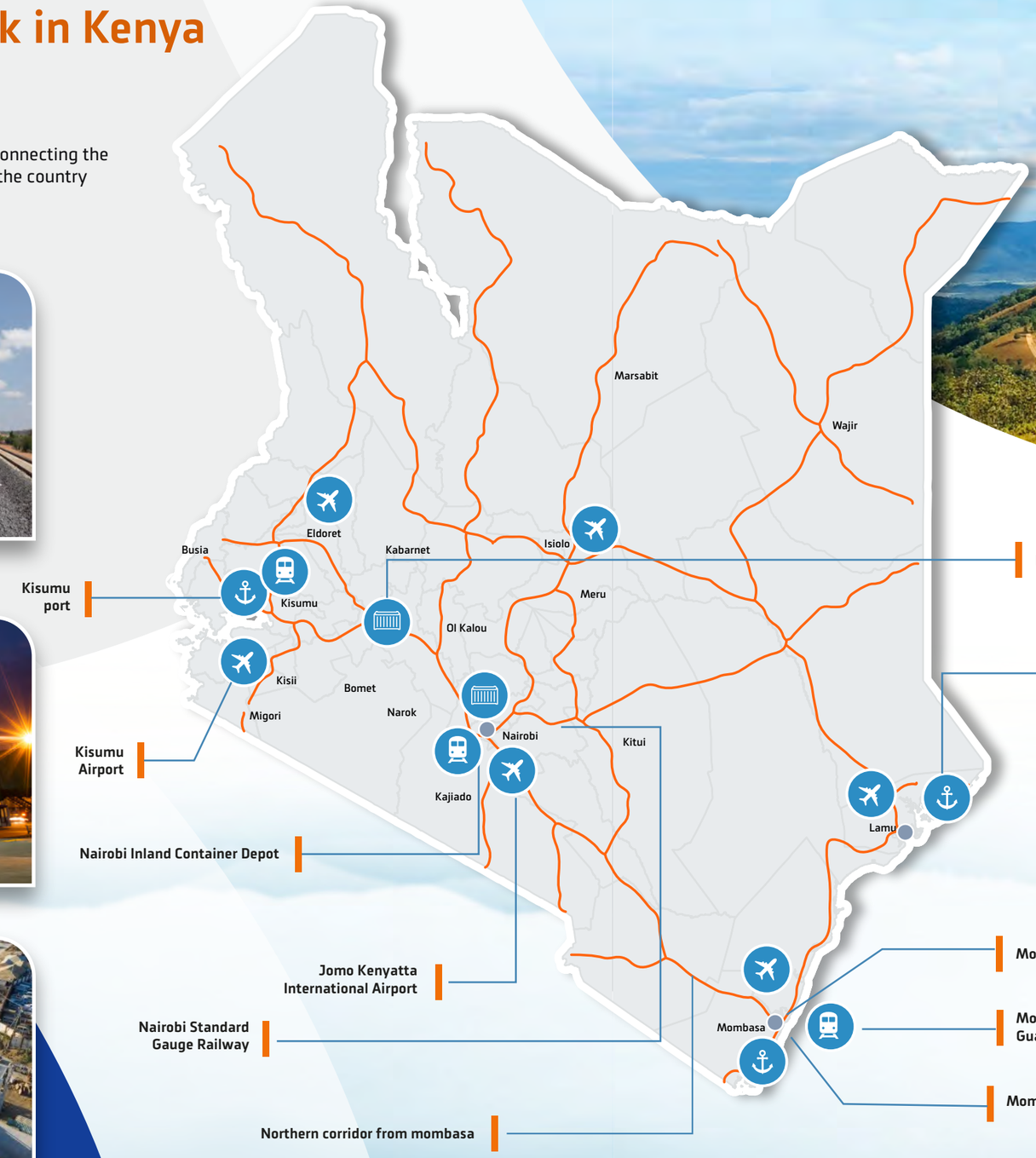
Standard Gauge Railway Line



Naivasha Inland Container Depot

Jomo Kenyatta International Airport

The Northern Corridor Road



Naivasha Inland Container Depot

Kisumu port

Kisumu Airport

Nairobi Inland Container Depot

Jomo Kenyatta International Airport

Nairobi Standard Gauge Railway

Northern corridor from mombasa

Lamu Port and New Transport Corridor Development to South Sudan and Ethiopia (LAPSSET)

Mombasa Port

Mombasa Standard Guage Railway

Mombasa Airport

Mombasa Standard Guage Railway

Mombasa Port

One Stop Shop at Dongo Kundu Special Economic Zone

The One Stop Shop (OSS) is formed in cooperation with various agencies & stakeholders for services to be offered under one roof under the Special Economic Zones Authority.

Services offered by OSS:

- Application of import export code
- Tax registration
- Application of Visa/Work permit
- Application of SEZ Enterprise License
- Investment Project Proposal Form
- Operation and Maintenance of infrastructure
- Registration for water services
- Registration for electricity connection
- Registration for waste collection services

Administration Building in Dongo Kundu SEZ

Web Services by the Special Economic Zones Authority

The SEZ Authority has established a web platform for information sharing, transparency and service delivery.
It offers the following information:

i. Opportunities and incentives
ii. Investor road maps and facilities,
iii. Available investment schemes and sectors,
iv. Updated administrative and tax incentives

SEZ Authority offers various application services online:

i. Gazettement of SEZ Land

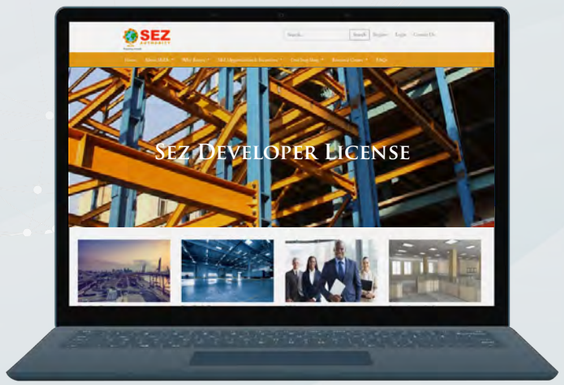
ii. Developer License

iii. Operator License

iv. Enterprise License

For more information, access the Special Economic Zones Authority Website

www.sezauthority.go.ke



Fiscal Incentives for Investors in Dongo Kundu SEZ

Incentives for enterprises
Incentives are provided to enterprises in the Dongo Kundu SEZ following Kenyan SEZ laws and acts as follows:

Imported Goods	**Fully Exempt** ✓ Value Added Tax (VAT) ✓ Excise Duty ✓ Import Duty ✓ Import declaration fee
Local Supplies	**Zero-Rated** ✓ Value Added Tax (VAT)
Corporate Tax	**Preferential Rates** ✓ First 10 years– 10% ✓ Next 10 years– 15% ✓ Subsequent years – 30%
Withholding Tax	**Preferential Rates** ✓ Interest– 5% ✓ Management– 5% ✓ Royalty – 5%
Stamp Duty	**Exempt**
Investment Deduction Allowance	**100% allowance** on capital expenditure on building and machinery
Local Government fees	**Exempt** ✓ Advertisement fees ✓ Business service permit fees

For detailed data on incentives refer to the SEZA Investment Guide at www.sezauthority.go.ke

Mombasa Port

Railway Terminus in Mombasa

Mombasa Moi Airport


Mombasa Island

Dongo Kundu Industrial Park

The industrial park occupies 117 hectares (290 acres) in the SEZ

There are 63 plots available for leasing, totalling 100 hectares (250 acres)
Various plot sizes are available 1-4 hectares (2.5-10 acres).

Planned infrastructure

Sewerage Treatment Plant
3,300m3/day capacity

Water Distribution Center
4,200m3/day capacity

Power Substation
220/33kV

Power network
53km transmission
+ 10km distribution network

Internal Roads
4.6km network
linked to the highway

Mombasa Southern Bypass

Power Substation

Water Reservoir

Small Factory Lot (1ha)

Admin Building & OSS

Industrial Park Main Gate

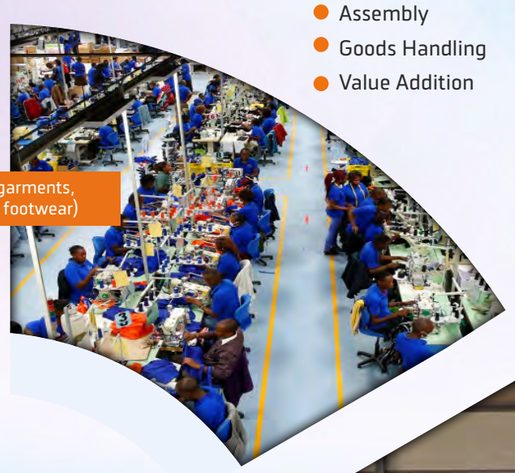
Large Factory Lot (3ha)

Proposed Sectors in the Dongo Kundu Industrial Park

Dongo Kundu SEZ is suited for a variety of industries, and its planning has zoned areas for industrial activity, enterprise and trade, tourism, and port services

The industrial park can accommodate a variety of sectors including;

- Processing
- Manufacturing
- Assembly
- Goods Handling
- Value Addition



Textiles (garments, leather & footwear)

Agriculture, Food & Textile

Agro-inputs and machinery

Food & Beverage processing

Fresh produce handling and processing

Petroleum and Petro-chemical products

Chemicals & Plastics

Plastic Goods

Pharmaceuticals

Automobile assembly

Construction materials

Mineral resource processing

Construction Materials & Minerals/petroleum

Electrical appliances & equipment

Lifestyle in Mombasa and Costal Region

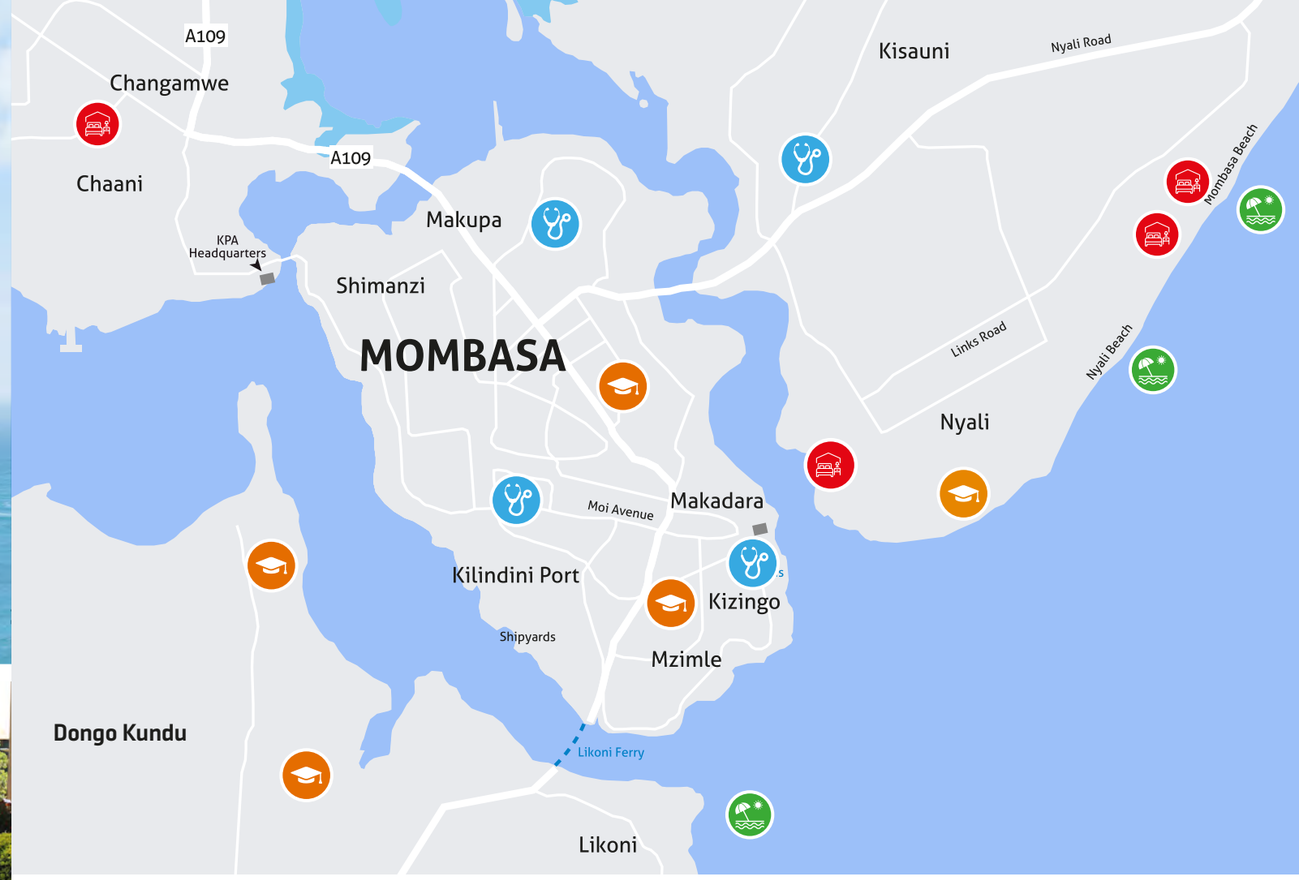
Mombasa is world-renowned for its culture and sandy beaches.
The city and its environs offers its residents facilities, services and opportunity to live out their best lifestyles

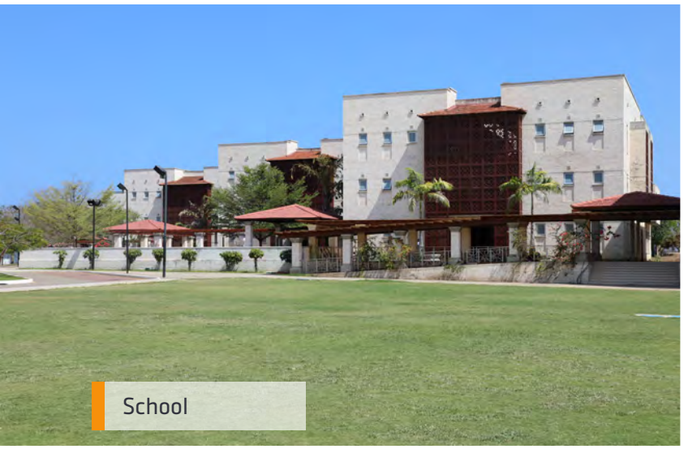
Education (international schools)

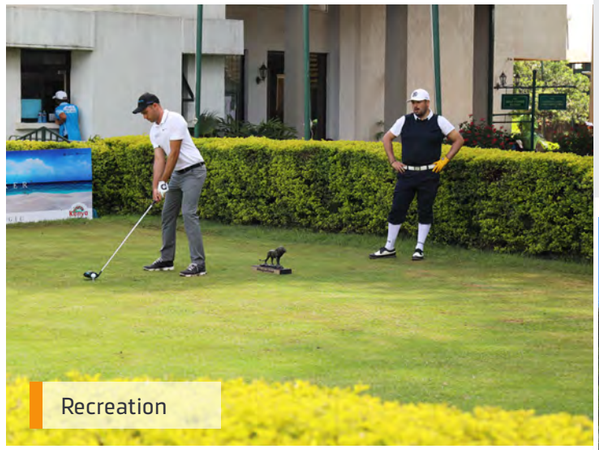
- 7 All-through school from Kindergarten to A level
- 1 All-through school from primary school to A level
- 1 School Grade from 1 to 6
- 1 school from high school to A level

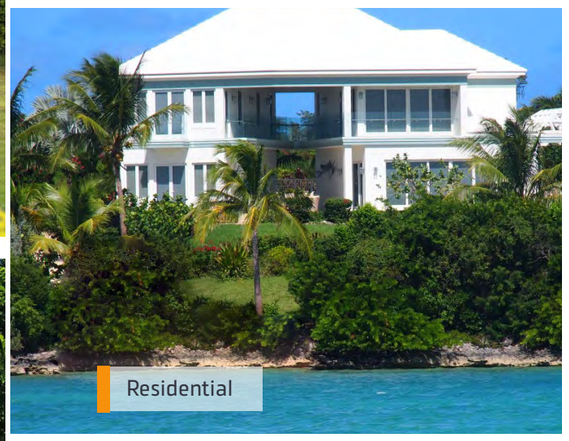
Residential areas near the Dongo Kundu Area

- Nyali (Mombasa county)
- Kizingo (Mombasa Island)
- Mtwapa (Kilifi county)
- Diani (Kwale county)




School


Recreation


Residential

Recreational sites in Mombasa and Costal Region

- Mamba VILLAGE - Lunar PARK
- Haller Park
- Mombasa Marine Park
- Old Town
- Nyali Beach
- Mama Ngina Drive
- Fort Jesus Museum
- Nguuni Nature Sanctuary
- Diani Beach


Beach


Restaurant


Mombasa Old town


UNESCO World Heritage

SEZ AUTHORITY

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See the SEZA Investment Guide for detailed info on investing in Kenya and the Dongo Kundu SEZ at www.sezauthority.go.ke

KENYA VISION 2030 FLAGSHIP PROJECT

THE BIG 4