

Land Use Analysis Report

Report Prepared for

Gulf Power Ltd.

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1 Introduction

This brief presents a land use analysis for the proposed power plant project. It begins with background information on Mavoko Municipal Council and discusses the past, current and future land use development frameworks operating in the area. A description of the current and recent past land uses on the site and on adjacent and nearby lands is provided. A suitability and land use compatibility analysis for the proposed project is also presented.

1.1 History of Mavoko Municipal Council

Mavoko town is one of the oldest towns in the Kenya. The Town came into existence through trading with the main business activity being centred at the old town area next to the railway station. It began as a Local Native Council (LNC) in 1940 then became an African District Council (ADC). In 1974 it was carved from the County Council of Masaku and became an Urban Council. It was upgraded to a Town Council in 1987 and to a Municipal Council status in 1993. The Council being a service provider operates under the Local Government Act. The Council has core functions of planning all development activities within its area of jurisdiction.

1.2 Location

Mavoko Municipality covers an area of 693 km². It borders Nairobi City Council to the west and covers Katani and Ruai on Kangundo road. It extends to Muthwani-Lukenya and Makutano (Kyumbi) to the east where it borders Machakos Municipal Council. It covers Kapiti plains to the south west towards Kitengela area where it borders Olkejado County Council and to Embakasi at the Nairobi City Council border.

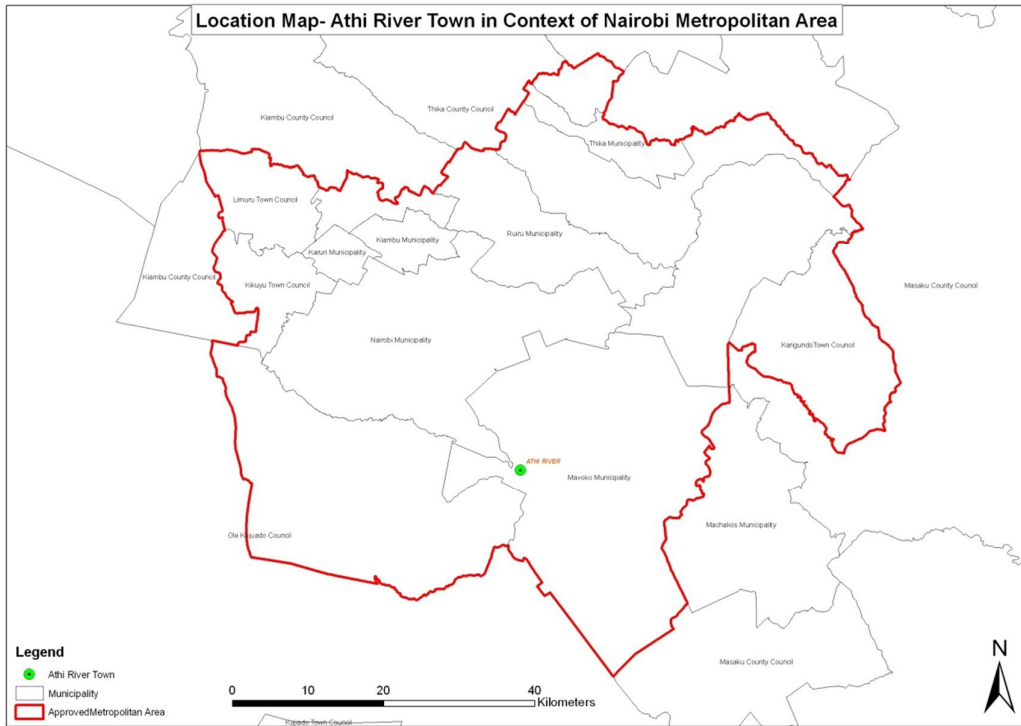


Figure 1: Location map of Athi River in the context of Nairobi Metropolitan Area

1.3 Population

According to the 1999 population census, the population within Mavoko Municipal Council was 47,971 people while according to a physical development research project of 2004 the total population was 61,809 people. Today the population of the town is estimated to be 80,000 persons. The population growth rate for the municipality is 1.7% and for Athi River Township is 5.2%. It is observed that the population grows in the evening because of workers from Nairobi and other surrounding areas who reside within the town. Most of the population is hosted at the Municipality's satellite towns of Mlolongu, Athi River and Kyumvi.

2 Land use analysis by activities

Land use within the Municipality is divided into nine categories namely residential, commercial, industrial, recreational, educational, public purpose and public utility. The allocation and character of land use in the town is explained below. The land use as per the Athi River Development Plan prepared in 1970 is captured in a map attached as annex 1 of this report. Table 2.1 below provides a quantified summary of the land use analysis.

2.1 Residential

The Municipality acts as a dormitory town for Nairobi city, other nearby growing centres and also provides housing for the local industrial workers. According to the 1970 land use plan residential use was divided into three sub-categorises namely low, medium and high density and allocated approximately 2722 Ha of land comprising approximately 27% of total land area. There has been a lot of development since 1970 that did not entirely conform to the planned land use.

2.2 Industrial

The area is primarily industrial in character with factories employing three quarters of the town's residents. There are many factories such as Kenya Meat Commission, E A Portland Cement, Bamburi Cement, Kapa Oil Refinery, E P Z A, Nation Media, Mabati Rolling Mills, Devki Steel Works Company, Athi River steel rolling plant, Sun-Rose and Primarosa flower companies among others. In total there are over sixty factories. The factories are mainly steel, cement manufacturing, flower farms and textile manufacturers. The Export Processing Zone employs a majority of the women population.

According to the 1970 land use plan Industrial use was allocated approximately 2007 Ha covering 20% of the total land area. The development since 1970 did not conform to the plan.

2.3 Commercial

The area is characterised by a number of whole sale and retail businesses, small and medium scale enterprises and commercial service providers. According to the 1970 land use plan, commercial use was allocated approximately 102 Ha comprising 1% of the total land area.

2.4 Educational

The area is served with nursery, primary, secondary and tertiary educational services. There also exists training institutions. According to the 1970 land use plan, educational use was allocated approximately 348 Ha comprising 3% of total land area.

2.5 Recreational

Recreational land use was allocated approximately 818 Ha according to the 1970 plan, this comprised 8% of total planned area. The recreational activities provided according to this plan were parks, playing fields, public open spaces and a proposed stadium.

2.6 Public purpose

The 1970 plan provided for public purpose activities such as a social hall, Ministry of Works land, churches, land for administration and a proposed cemetery. The plan allocated approximately 250 Ha comprising 2% of total land area.

2.7 Public utilities

Public utilities consisting of water, sanitation and waste facilities had an allocation of approximately 76 Ha comprising 1% of total land area according to the 1970 land use plan.

2.8 Transportation

Approximately 510 Ha of land comprising 5% of total land area was provided for transportation according to the 1970 plan. This included land set aside for roads, railway, petrol services stations, lorry parks and car parks.

2.9 Deferred land

Deferred land was allocated approximately 3230 Ha comprising approximately 32 % of total planned area.

Table 1: Summary of land use analysis

Land use	Allocation in 1970 plan (Ha)	% total area
Residential	2722	27
Industrial	2007	20
Educational	348	3
Recreational	818	8
Public purpose	250	2

Commercial	102	1
Public utilities	76	1
Transportation	510	6
Deferred land	3230	32
TOTAL	10067	100

An analysis of the current land use indicates the developments since 1970 did not conform to the plan.

3 Site analysis

The proposed site is located along Mombasa Road in an area characterised by industrial development, see the land use plan (annex 1). The site is outside the extent covered by the Athi River development plan of 1970.

3.1 Current and past land use and development on the site

The site is located in an area that Mavoko Municipal council currently intends to promote as an industrial corridor. The current land use of the property is light industry (inoffensive). It currently comprises undisturbed grassland, shrubs and bush. Past development on the site includes the old Mombasa Road which is since disused. Figure 1 below is an aerial image depicting the proposed site and the neighboring developments. It gives a reasonable picture of the existing situation.



Figure 2: Aerial Image

The current site characteristics are captured in figures 3 and 4 below.

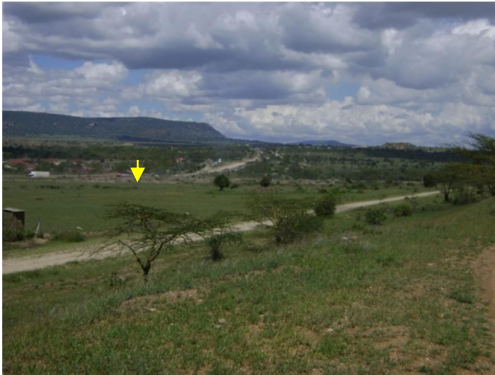


Figure 4: The yellow arrow marks the site, also in this picture can be seen the 15m access road



Figure 3: Depicts the existing site characteristics, Mombasa Road to the left and old Mombasa Road to the right

3.2 Current and past land use and development on adjacent and nearby lands

The adjacent land parcels comprise undisturbed grassland, shrubs and bush. They have not been developed previously. The land uses within a 1Km radius of the proposed site are also vacant. The following land uses are to be found beyond a 1Km radius of the site:-

- Industrial – Athi River Steel Plant, proposed factory and warehouse for Tile & Carpet Center and Kenya Meat Commission
- Residential – Green Park Estate (approximately 0.6km from site)
- Quarry
- Vacant land – undeveloped grassland and Stony Athi River.

Figures 5 – 7 below show the nearby developments.



Figure 7: Quarry



Figure 6: Factory and warehouse for Tile and Carpet Centre



Figure 5: Athi river steel rolling plant

3.3 Land requirements for various categories of industries

The categories of industries are heavy, medium, light, small and medium and special industries. They are determined by the type of technology used, type of by products produced and the workforce. Land requirements for the different types of industries are shown in table 2 below.

Table 2: Land requirements for industries

Type of Industry	Land Requirements in ha.	Catchment Population	Min Land Size in Ha.
Light	4	30,000	0.05
medium	10	100,000 to 500,000	2
Heavy	none	Over 1 million	20

The specific land requirement for heavy industries is not indicated in table 3.1 above because it may transcend one town and will depend on the type of technology and the level of services available.

3.4 Project compatibility with adjacent and nearby land uses

A suitability analysis shows that the site is suitable for the proposed project. The project is compatible with adjacent and nearby uses. Criteria for suitability and compatibility analysis are shown in table 3 below.

Table 3: Suitability analysis table

Factors/constraints	Suitable	Not
1. Soil	√	
2. Topography	√	
3. Vegetation	√	
4. Wind direction	√	
5. Land use zoning	√	
6. Distance to main road	√	
7. Distance to rail way	√	
8. Distance from incompatible land uses	√	
9. Distance from river and riparian reserve	√	
10. Distance to and availability of fire fighting		√
11. Distance to and availability of labour	√	
12. Neighbouring users	√	
13. Land size	√	

3.5 Transport and Accessibility

The property is accessible via a 15m wide access road that connects to Mombasa Road at a distance of approximately 900m. It lies at a distance of approximately 4km from the railway line and 10km from the train station.

Vehicles accessing the site might interfere with traffic along Mombasa Road. Sufficient parking facilities will need to be provided on site to cater for both small and heavy vehicles. Similarly, sufficient space should be provided on site for loading and offloading.

3.6 Services: electricity, water and sanitation

The property is served with electricity, there are power lines on the back along Mombasa Road. Currently the site is not connected to any water supply lines. There are no sewerage services available.

3.7 Plot coverage and building lines

The project will occupy two parcels of land each having an area of 2 hectares. The plot coverage of the proposed development should not exceed 75 per cent to allow for sufficient scope for circulation, utilities, services and facilities.

The building lines for the proposed development should be 25 to 31m from the centreline of Mombasa road and 12 to 15m from the centreline of the access road.

3.8 Legal and Institutional framework

The proposed project will be guided by various laws, and regulations related to land use planning. These are listed below:-

- Physical Planning Act (cap 286)
- Environmental Management and Coordination Act (EMCA) 1999
- Building code 2000
- Local Government Act (cap 265)
- Land Titles Act (cap 282)
- Way Leaves Act (cap 292)
- Registration of Titles Act (cap 281)
- Factories and other places of work Act (cap 514)
- Mavoko Municipal Council by laws
- The Zoning guidelines for the area

The main institutions with which the proposed project should maintain contact with in regards to land use planning include the Mavoko Municipal council, the Machakos/Athi River District Physical Planning Office, the District Environmental Office and the District Land Administration Office.

3.9 Approvals and planning permission

The current use of the property is light industry (in offensive). Consideration should be made for application of a change of use or extension of use to include heavy industrial.

4 Planning issues

1. Municipal Council of Mavoko lacks a frame work to guide and control development within it area of jurisdiction save for the old town area whose development plan is already obsolete having been prepared in 1974.
2. Pressure from rapid expansion of Nairobi City towards Mavoko and rapid urbanization in the district has stretched the council's ability to deliver services.
3. The old Mombasa road cuts across the property. Survey plans do not indicate such a road.
4. The means of transmitting generated power from the site to the intended consumer might raise issues relating to way leave.
5. Lack of sufficient fire-fighting services in the area.

5 Conclusions and recommendations

Based on the foregoing analysis of land use and the emerging planning issues, the following conclusions and recommendations are provided.

5.1 Conclusion

The proposed project satisfies majority of the land use planning regulations and guidelines. It is compatible with neighbouring users and suitable for the proposed site given the industrial character. However, in order to ensure fulfilment of the planning standards, the recommendations provided below should be considered.

5.2 Recommendations

- The project should adhere to land use zoning regulations.
- An application for change of land use from light industrial to heavy industrial should be undertaken.
- The project should implement current state of art technology and best practice to mitigate against environmental impacts.
- Movoko Municipal Council should prepare a land use plan to guide and control development in light of the existing land use.
- The industrial corridor along Mombasa Road should be zoned for heavy industrial use.
- Accessibility to the site should not be directly from Mombasa Road. The traffic generated due to the project should ensure minimum interference with traffic along Mombasa.
- Further analysis of the effect radius of environmental impacts of the proposed project should be considered together with this report.
- Confirmation should be made that the old Mombasa Road was degazetted.
- The means of transmitting power from the site to the intended consumer should adhere to the relevant land use planning framework.

Annex 1: Athi River Land use based on Development plan for 1970

