
LAKE TURKANA
WIND POWER
LIMITED



**ADDENDUM ON ROAD RE-ALIGNMENT
TO THE
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE
PROPOSED STRENGTHENING OF LAISAMIS- SOUTH HERR (D371) AND SOUTH
HERR- LOIYANGALANI (C77) ROAD**



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AUTHENTICATON

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	vi
CHAPTER 1: PROJECT BACKGROUND	1
1.1 Introduction	1
1.2 Justification of the re-alignment in the project	1
1.3 Objectives of the ESIA	2
1.4 Re-alignment Location	2
1.5 Terms of Reference (TOR)	3
CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK	4
CHAPTER 3: PROJECT STUDY METHODOLOGY	5
3.1 Screening, Scoping and Study Approach	5
3.2 Study tools and techniques	5
3.2.1 Site visits and Survey	5
3.2.2 Public Consultations	5
3.3 Data analysis and presentation	5
3.4 Management Plans	5
CHAPTER 4: PROJECT BASELINE INFORMATION	6
CHAPTER 5: PROPOSED ROAD RE-ALIGNMENT DESCRIPTION	7
5.1 Project Alternative Routes and Road Re-alignment	7
5.1.1 Namarei to Illaut	7
5.1.2 Illaut –Arge – Kargi junction route	9
CHAPTER 6: PROJECT IMPACTS	15
CHAPTER 7: PUBLIC CONSULTATION	16
7.1 Introduction	16
7.2 Community concerns	18
CHAPTER 8: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	20
CHAPTER 9: SOCIO MANAGEMENT AND MONITORING PLAN	25
9.1 Introduction	25
CHAPTER 10: CONCLUSION AND RECOMMENDATIONS	26
REFERENCES	27
ANNEXES	28

<i>Annex 1 Letter of Authority from Marsabit County Council to carry out studies in the Proposed re-alignment Sections</i>	<i>28</i>
<i>Annex 2 Map of the Laisamis – Loiyangalani road showing the proposed Re-alignment</i>	<i>29</i>
<i>Annex 3 Community Concerns at Namarei and Illaut Centres.....</i>	<i>30</i>

ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
DC	-	District Commissioner
DO	-	District Officer
ESIA	-	Environmental and Social Impact Assessment
ESMP	-	Environmental and Social Management Plan
HIV	-	Human Immuno-deficiency Virus
Hr	-	Hour
IFC	-	International Finance Corporation
IPP	-	Independent Power Producer
KeNHA	-	Kenya National Highways Authority
KeRRA	-	Kenya Rural Roads Authority
Km	-	Kilometres
KRB	-	Kenya Roads Board
LTWP	-	Lake Turkana Wind Power
MoR	-	Ministry of Roads
NEAP	-	National Environment Action Plan
NEMA	-	National Environmental Management Authority
STIs	-	Sexually Transmitted Infections
TOR	-	Terms of Reference

EXECUTIVE SUMMARY

THE PROJECT OVERVIEW

Lake Turkana Wind Power Limited (LTWP) Ltd has been granted permission by the Ministry of Roads to strengthen identified weak sections of the 195 km of the Laisamis- South Horr (D371) and South Horr-Loiyangalani Road (C77). The road is to be strengthened to a standard engineered gravel for the purpose of easing the transportation of materials and equipment to the project staging area during construction of a proposed wind farm at Loiyangalani. According to the existing road classification and the new institutional arrangement in the road sector, the 131 km Laisamis-South Horr (D371) section fall under the jurisdiction of the Kenya Rural Roads Authority (KeRRA) while the 64 km South Horr-Loiyangalani section fall under the Kenya National Highway Authority (KeNHA). Thus administration and execution of the work will be carried out in close collaboration of these statutory bodies and the Ministry of Roads which has granted the authority to LTWP to execute the work.

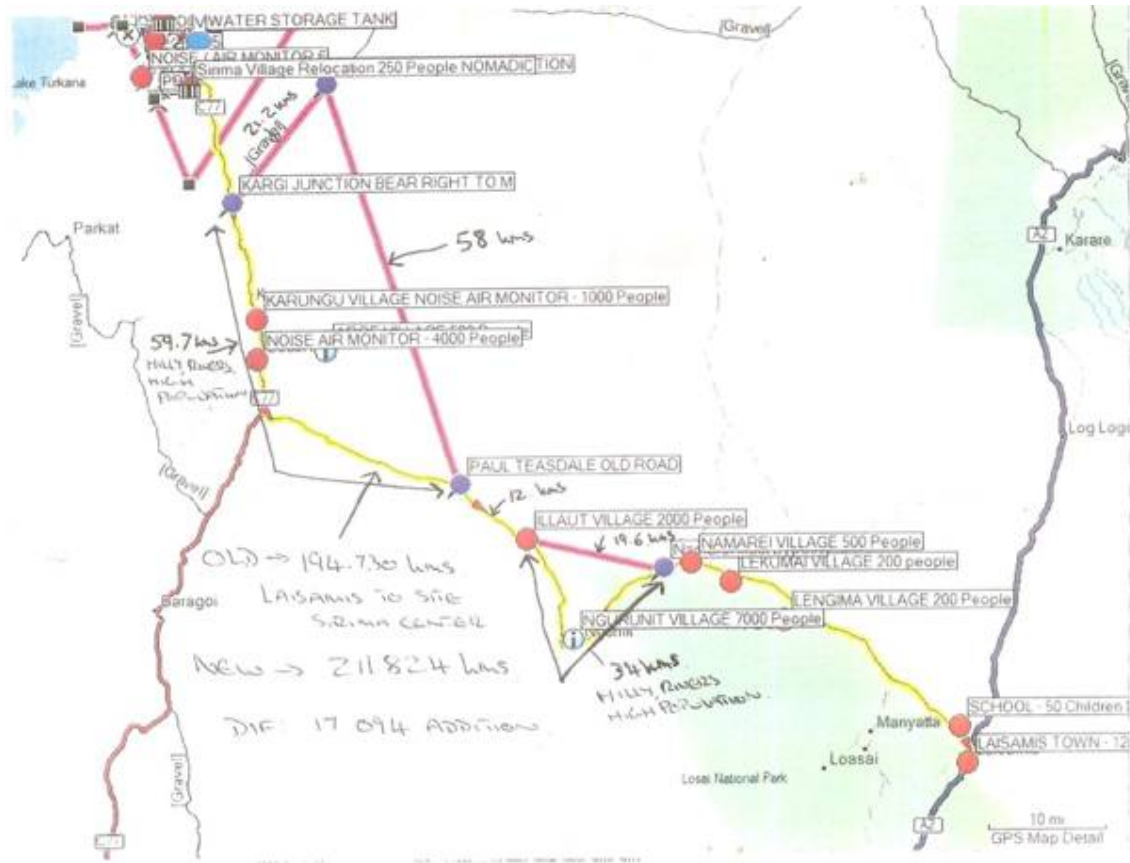
In order to contribute towards sustainable development, an Environmental and Social Impact Assessment (ESIA) was necessary for the proposed road construction. Consequently, Lake Turkana Wind Power Limited (LTWP) contracted Eng. Prof. B. N. K. Njoroge, a registered EIA/EA lead expert to carry out an Environmental and Social Impact Assessment (ESIA) on the proposed strengthening/rehabilitation of Laisamis – South Horr - Loiyangalani road in accordance with NEMA regulation and the IFC guidelines. The report had been prepared, approved by NEMA and License issued (Application No. PR/7445 and Reg. No. 0008064 of 26th Jan, 2011). But then it was felt that re-alignment and re-routing of some sections was necessary to avoid; some heavy settlement areas, rough terrain with sharp bends, steep slopes, rocky terrain among others. Thus, it was important to visit the site between 12th and 19th February, 2011 for route re-alignment identification, confirmation and conduct baseline studies. This was followed by detailed site investigation for social and environmental studies carried out from 27th April to 3rd May, 2011.

Hence this addendum gives details of the re-alignment. However the re-alignment does not alter the course of the initial report and basically avoids some mitigation measures that would have accrued if the original route was followed.

PROJECT ROUTE RE-LOCATION AND SCOPE

The proposed work is located in Marsabit South District which was hived out of the bigger Marsabit district in 2008. The road is an existing road and branches off from the main A2 Isiolo-Moyale road at Laisamis as D371 in Northerly direction and passes through various centres which include Namarei and Illaut. From Namarei to Illaut the road avoids Ngurunit settlement centre as shown on Figure 1 as a straight through 19.6 km stretch. Twelve (12) km from Illaut centre the proposed re-alignment passes through Arge upto Kargi junction (58 km) as D371. From Kargi junction the route assumes the Kargi – Marsabit 21.2 km as E671 to the original route to Selima – Loiyangalani. The entire stretch is a murrum road that is marked by low lying terrain lying between numerous hills and dry sand river beds. In general the road is motorable under improvement over the sparsely populated thickets. Again, sections of the road cut across the dry sand river beds and are extensively damaged and are unstable for heavy vehicular loading.

The rehabilitation work entails light and heavy excavation, gravelling, reconstruction of some sections, light grading and improvement of drainage structures. The main output of the work is a motorable standard engineered gravel road with a gravel running surface, road cross drains comprising of culverts and perforated drifts. The geometrics of the existing road will also be improved by widening of existing horizontal curves and improvement of vertical curves. The road strengthening project is estimated to cost about KShs1.2 billion putting the average cost to be KShs 6.2 million per kilometre. The actual construction is expected to take one year.



- Key**
- Yellow line shows the original route
 - Pink line shows the sections proposed for re-alignment

Figure 1: Laisamis – Loiyangalani road showing the proposed Re-alignment in pink

ANALYSIS OF ALTERNATIVE ROUTE

As indicated in the main report, the alternative to the proposed Laisamis -Ngurunit- Ilaut-South Horr - Loiyangalani road is Marsabit – Kargi – Loiyangalani road. The Marsabit – Kargi – Loiyangalani route branches off from the main Isiolo – Marsabit 10 km from Marsabit town and runs 218 km in a westerly direction. The road has reasonable horizontal geometrics with long straight sections and curves with large radii. The road however has unfavourable vertical curves, is poorly drained although in most sections the alignment is free draining. There are a few drifts located at seasonal river beds. In addition, there is no guarantee for the availability of adequate construction materials since the alignment soils are mostly loamy sands. Strengthening of this route will be more expensive than the proposed Laisamis – South Horr – Loiyangalani. The Kargi route would also lengthen the haulage distance of the wind farm

equipment by an additional 50 kilometres, the distance to the takeoff point from Isiolo on the Isiolo-Marsabit road. The Kargi route in addition did not show evidence of availability of adequate water needed during construction stage.

Thus, the Laisamis-Ngurunit-Illaut-South Horr-Loiyangalani was selected for strengthening. However, within this route some variations were thought pertinent to ease equipment transportation, cost of re-location and other environmental considerations.

Hence, there are two sections that require re-alignment namely;

❖ **Namarei to Illaut**

The 19.6 km stretch from Namarei to Illaut has flat and rolling terrain making it a viable route to use. Again one avoids the 34.0 km stretch through Ngurunit hence;

- saving on distance (14.4 km),
- reduce dust, noise and air pollution through Ngurunit market centre
- avoid the Ngurunit settlement area with a population of about 3, 000 persons thus removing need for resettlement and
- avoid transportation over hilly undulating terrain which have bends and rocky terrain

The 19.6 km stretch is an old disused road which will require drainage to be improved and be rehabilitated. There are 2 laggas in the route.

❖ **Illaut –Arge – Kargi junction route**

This route comprising of Illaut to Arge 33 km and Arge to Kargi Junction 25 km has a total of 58 km. Then use a 21.2 km from the Kargi junction through Marsabit road-E671 (which is a fairly good route) back to the originally identified route to Selima - Loiyangalani. The 21.2 km stretch is already in use and has flat and rolling terrain. But the junctions should be curved to allow enough space for long (50 m) turning heavy loaded vehicles.

The 58 km stretch from 'Paul Teasdale' old road (12 km from Illaut) through Arge and Kargi junction has flat and rolling terrain making it a viable route to use. This road was developed in 1970s but later abandoned as the communities moved towards the hills for water and pasture. Again one avoids the 59.7 km stretch through South Horr and Kurungu hence;

- reduce dust, noise and air pollution through South Horr and Kurungu market centres
- avoid the South Horr and Kurungu settlements towns with populations of 1,500 and 1,200 persons respectively hence avoid need for resettlement and
- avoid transportation over hilly undulating terrain which have bends and rocky terrain
- passing through numerous borrow areas
- coming close to the hilly sections which are potential sources of water

The 58 km stretch, will require rehabilitation and drainage be improved. Between the Illaut to Kargi junction, there are 5 laggas namely; Loiya, Moran, Polo, Argae and lagu.

Air and railway transportation were not found feasible alternatives as the area is not served by railway line or large cargo airports.

PUBLIC CONSULTATION

Public Consultation of the project is a requirement for an environmental assessment process. The aims of public consultation are disclosure of planned activities of the proposed project and impacts identified through the Environmental and Social Impact Assessment; identification of concerns and grievances from interested and affected people; harnessing of local expertise, needs and knowledge from interested and affected people and response to grievances and enquiries of affected people.

However since the re-alignment route did not have human settlement and sensitive receptors or ecosystem there was no need to conduct public meetings and administration of questionnaires. But discussions were held with the key stakeholders where the re-alignment passes through their area of jurisdiction.

The key stakeholders identified in the project were;

1. Area sub chief, chief, District Officer and District Commissioner Laisamis
2. Town clerk Marsabit County Council
3. Regional manager from Kenya Rural Roads Authority (KeRRA)
4. An engineer from Kenya National Highway Authority(KeNHA)
5. Neighbouring communities to the road re-alignment.

Through the public consultation, some of the key concerns raised were;

- The contractor should make use of locally available resources such as; casual labourers, construction materials as well as hired vehicles.
- The contractor should work closely with the local communities', local provincial administration, village elders, area leaders like chiefs, sub chiefs and other community opinion leaders.
- The Contractor should find technical solutions for preserving the available water facilities and sources especially the ones found very close to the road.
- The contractor should consider sinking bore holes which will be handed over to the communities' ones the road construction is over.
- Cutting down of trees should be avoided as much as possible to avoid destruction of indigenous trees as well as habitats. The Contractor should also plant trees after construction works.
- During upgrading, clearing of vegetation on borrow pits will be kept to a minimum to avoid interfering with livestock and communal pastoralists way of life.

It is imperative to note that some of these stakeholders had also been consulted earlier and similar concerns had been raised as indicated in the main report.

PROJECT IMPACTS

The impacts (positive and negative) during Construction, Operation and De-commissioning phases of the re-alignment are similar to the ones in the main report except here there is no re-location of communities from Ngurunit, South Horr and Kurungu settlements hence no compensation and avoid transportation over hilly undulating terrain which have bends and rocky terrain.

Again the Proposed Mitigation Measures as also similar to the ones in the main report and again vegetation destruction will be kept to a minimum.

CONCLUSIONS AND RECOMMENDATIONS

The addendum gives details of the re-alignment. However the re-alignment does not alter the course of the initial report and basically avoids some mitigation measures that would have accrued if the original route was followed like re-location of communities and transportation over hilly undulating terrain which have bends and rocky terrain. .

Thus, no objections were received from the communities adjacent to the re-alignment route. The proposed project does not pose adverse socio-economic impacts and is an initiative towards improving accessibility in the area.

Thus, the study recommends timely implementation of the project (under the current re-alignment) with strict adherence to the proposed Environmental Management and Social Management Plans. The project benefits have been identified to far outweigh the negative impacts for which a mitigation plan was prepared.