

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**MINISTRY OF ROADS AND PUBLIC WORKS  
MINISTRY OF LOCAL GOVERNMENT  
THE REPUBLIC OF KENYA**

**THE STUDY  
ON  
MASTER PLAN  
FOR  
URBAN TRANSPORT  
IN  
THE NAIROBI METROPOLITAN AREA  
IN  
THE REPUBLIC OF KENYA**

**FINAL REPORT**

**APPENDIX**

**(VOLUME II)**

**ADDITIONAL ENVIRONMENT & SOCIAL CONSIDERATIONS SURVEY**

**MARCH 2006**

**KATAHIRA & ENGINEERS INTERNATIONAL  
RECS INTERNATIONAL INC.**

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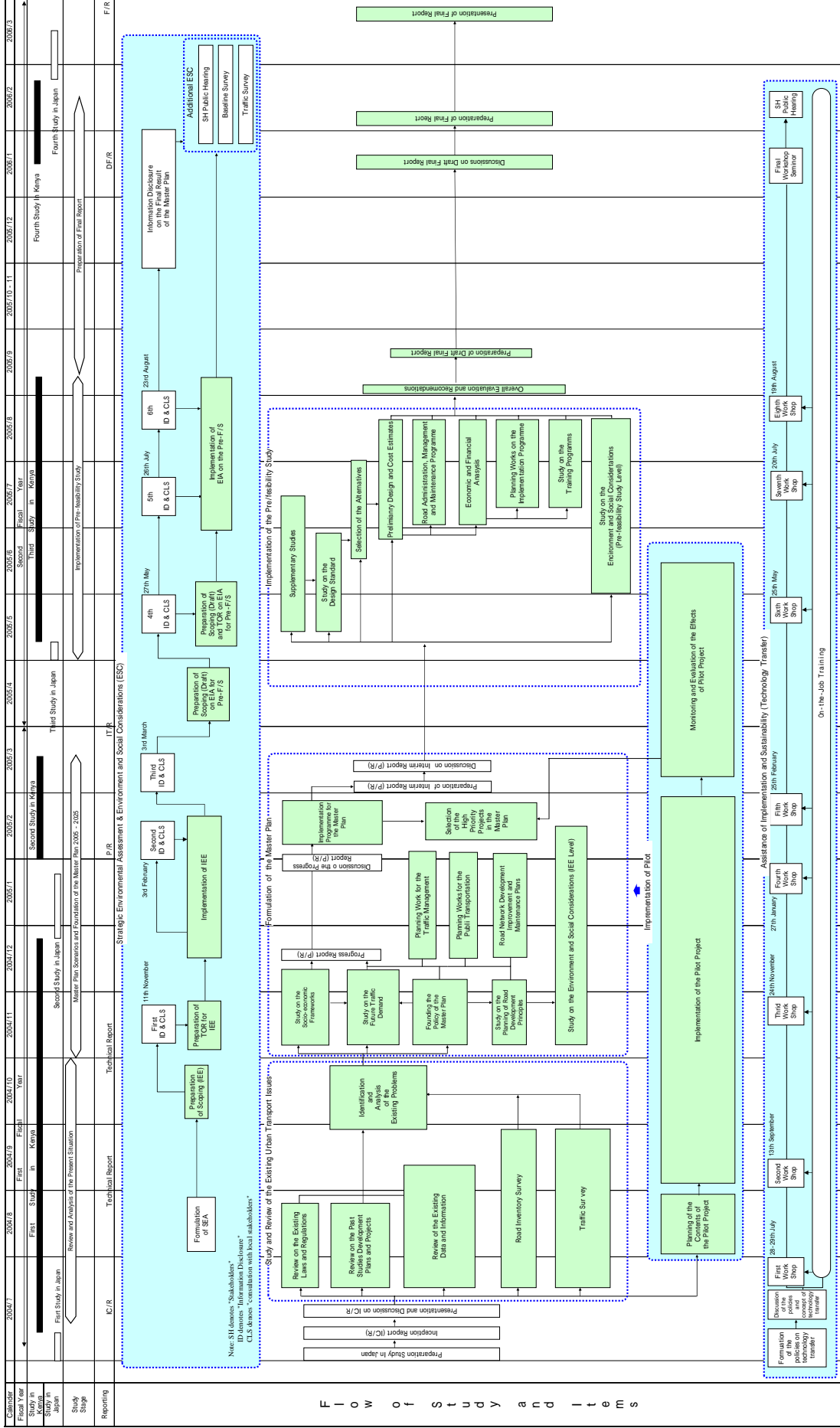
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# Overall Study Flow with Additional ESC

**TERMS OF REFERENCE (TOR)  
FOR  
ADDITIONAL ENVIRONMENT AND SOCIAL CONSIDERATION  
SURVEYS**

The following TORs were undertaken for additional environment and social consideration survey on the project for the construction of Nairobi Missing Links 3, 6 and 7.

**1. Preparation of Scoping of Environment and Social Considerations**

Based on the Pre-EIA during Pre-Feasibility, the JICA Study Team will conduct scoping and prepare the scoping table of the results in accordance with JICA Environmental and Social Considerations Guidelines.

**2. Assistance of Public Hearing Meeting**

The JICA Study Team will assist the Ministry of Local Government (MOLG), the City Council of Nairobi (CCN), any other parties for conducting the Public Hearing with local stakeholders.

**3. Enquete Survey (Questionnaire Survey)**

At the above Public Hearing, the JICA Study Team will prepare, conduct, and report an enquete survey of all attendants. An enquete sheet that the JICA Study Team will have prepared shall be consulted and concurred by the MOLG/CCN prior to the stated survey.

**3.1 Noise Level Measurement**

The JICA Study Team will conduct noise level measurement at one (1) location on No.3, No.6, and No.7 each, in total three (3) locations; and one location where the present traffic volume is approximately same as the estimated one when the Mission Link No.3, No.6, and No.7 is completed.

**3.2 Air Pollutant Measurement**

The JICA Study Team will conduct air pollutant measurement (NO<sub>x</sub> and SO<sub>x</sub>) at the above four (4) points.

**4. Traffic Survey**

The JICA Study Team will conduct the traffic survey of motorized transport (MT) and non-motorized transport as follows.

- One (1) location on No.3, No.6, and No.7 each;  
Total three (3) locations, 24-hour survey on weekday.
- One (1) location at start (or end) point of the stretch of No.3, No.6, and No.7 each;  
Total three (3) locations, 12-hour survey on weekday and on holiday (two days).
- An intersection between No.6 and No.7;  
12-hour survey on weekday and on holiday (two days).

#### **5. Preparation of Additional Report**

The JICA Study Team will prepare an additional report of the survey results in Appendix (Volume II).

## CHAPTER 1 DESCRIPTION OF THE PROJECT

(Extracted from Chapter 28 of Final Report)

### 1. INTRODUCTION

The Master Plan proposes various projects to be executed in order to improve urban transport in the Nairobi Metropolitan Area. The proposed projects will be implemented in three stages or phase; Short-term, mid-term and long-term. One of the projects proposed for the short-term period is the construction of Missing Links Roads Nos. 3, 6 and 7. Missing Links roads are non-existing roads at present that will become the most fundamental components of the road network in the western part of Nairobi City once completed.

The Missing Links No.3, No.6, and No.7 were selected as the highest priority projects out of the 16 main missing links. The project location map is shown in Figure 1-1 and the components of selected Missing Links in Table.1-1.



FIGURE 1-1 LOCATION OF THE MISSING LINKS ROADS NOS. 3, 6 AND 7

**TABLE 1.1-1 MISSING LINKS 3, 6 AND 7**

Section	From	To	Road Condition (Right of way)	Length (Km)
<b>MISSING LINK NO 3</b>				
<b>(Ring Road Kileleshwa / Riverside Drive to Rhapta Road/West Lands)</b>				
1	0+000	0+950	Existing Road to be improved (Ring Road Kileleshwa to Riverside Drive)	0.950
2	0+950	1+760	ROW=30 m. New construction (Riverside Drive to Westlands Roundabout)	0.810
<b>Total Length of Link No. 3</b>				<b>1.760</b>
<b>MISSING LINK NO. 6</b>				
<b>(Argwings Kodhek Road/Oloitoktok Road to Ring Road Kileleshwa)</b>				
1	0+000	0+450	Existing Road to be improved (Oloitoktok Road)	0.450
2	0+450	1+500	ROW=24 m. New construction (Oloitoktok Road to Link No.7)	1.050
3	1+500	2+850	ROW=30 m. New construction (Link No.7 to Ring Road Kileleshwa)	1.350
<b>Total Length of Link No. 6</b>				<b>2.850</b>
<b>MISSING LINK NO 7</b>				
<b>(James Gichuru Rd/Olenguroune AV. to Argwings Kodhek Road /Ngong Road)</b>				
1	0+000	0+750	Existing Road to be improved (James Gichuru Road/Olenguroune Av.)	0.750
2	0+750	2+950	ROW=30 m. New construction (Olenguroune Av. To Argwings Kodhek Road)	2.200
3	2+950	3+750	Existing Road to be improved (Argwings Kodhek Road /Ngong Rd)	0.800
<b>Total Length of Link No.7</b>				<b>3.750</b>
				<b>TOTAL LENGTH</b>
				<b>8.360</b>

Note: A section of Rhapta Road and Westlands RB need widening to 4-lane road.

## 1.1 OBJECTIVES OF THE PROJECT

The following are the objectives of construction of the Missing Links Roads Nos. 3, 6 and 7.

- To formulate a radial and circumferential road network(C-3) in order to provide an effective and economical road transport.
- To encourage non-motorized transport by providing safe and comfortable facilities.
- To promote area development and community cohesion by connecting zones divided by rivers.

## 1.2 EXISTING ROAD CONDITIONS

The Missing Links at the moment are impassable for motor vehicles but used by pedestrians. They are occupied by temporary/informal businesses, informal settlements and crops. They are made up of earth and gravel, and are disconnected by the river and stream crossings. Hence, no vehicle can pass through these roads except for a few sections of these roads approaching the residential apartments. However, the whole of Missing Link No.6 is generally passable by vehicles. Photos 1 – 3 (a-b) depict current states/ conditions of the Missing Links.





1 a)



1 (b)

Photos 1 (a & b): Current states of some sections of the Missing Link No. 3



2(a)



2 (b)

Photos 2 (a & b): Current states of some sections of the Missing Link No. 6



3(a)



3 (b)

Photos 3 (a & b): Current states of some sections of the Missing Link No. 7

### 1.3 TRAFFIC DEMAND

Vehicular traffic cannot use the present Missing Link roads in their current states. Only NMT can pass through these routes by way of pedestrian bridges and/or temporary wooden bridges

at river crossings. Hence, for vehicular traffic forecast the following methodology developed for the Master Plan was adopted.

- Vehicular traffic forecast was carried out based on the road network planned in 2015 with adoption of a two-lane road to Missing Link routes, and using the OD of Master Plan (158 zones).
- For 2025, the traffic volume of the Master Plan Study was used.
- This simulation was conducted by using TRANSCAD software.

### 1.3.1 Congestion Analysis

#### (1) Estimated Traffic Volume

The estimated traffic volume along the Missing Links is summarized in Table 1.3-1. The distribution of traffic flows in 2005, 2010, 2015, and 2025 are presented in Figure 1.3-1, Figure 1.3-2, Figure 1.3-3 and Figure 1.3-4, respectively.

**TABLE 1.3-1 ESTIMATED TRAFFIC VOLUME**

<b>Daily Traffic Demand in PCU by Ln Regression</b>				(unit: pcu's per day)			
No.	Section	From	To	2005	2010	2015	2025
No.3	1	Westlands R/A	Rhapta Road	13,969	20,550	27,430	31,842
	2	Rhapta Road	Nairobi River	13,969	20,550	27,430	34,624
	3	Nairobi River	Riverside Drive	15,179	19,150	23,120	34,238
	4	Riverside Drive	Ring Road Kileleshwa	20,230	27,484	34,738	41,485
No.6	5	Ring Road Kileleshwa	Mandera Road	20,612	24,564	28,515	57,466
	6	Mandera Road	No.7	20,612	24,564	28,515	40,428
	7	No.7	Oloitoktok Road (End)	10,700	12,974	15,248	17,118
	8	Oloitoktok Road (End)	Oloitoktok Road (Beginning)	10,700	12,974	15,248	25,127
No.7	9	James Gichuru Road	No.6	11,608	13,489	15,370	19,283
	10	No.6	Denis Pritt Road	21,083	23,911	26,739	38,154
	11	Denis Pritt Road	Lenana Rd	11,061	13,886	16,711	35,266
	12	Lenana Road	Argwings Kodhek Road	20,956	23,224	25,491	44,235
	13	Argwings Kodhek Road	Chania Avenue	20,387	27,384	34,380	50,963
	14	Chania Avenue	Ngong Road	13,088	18,770	24,452	42,857
				16,011	20,248	24,528	36,649

Note: 2005 traffic is assumed traffic if the road exists. Traffic volumes are aggregated ones in the Sub-Sections.

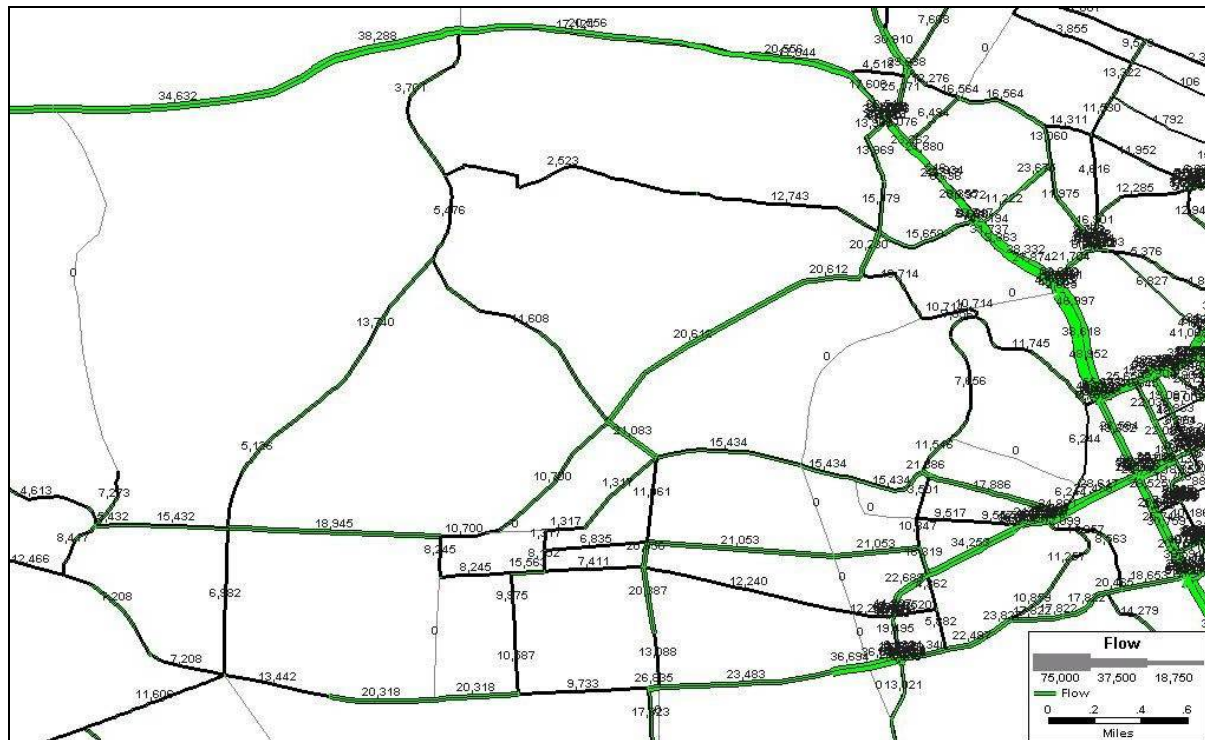


FIGURE 1.3-1 TRAFFIC FLOW IN 2005

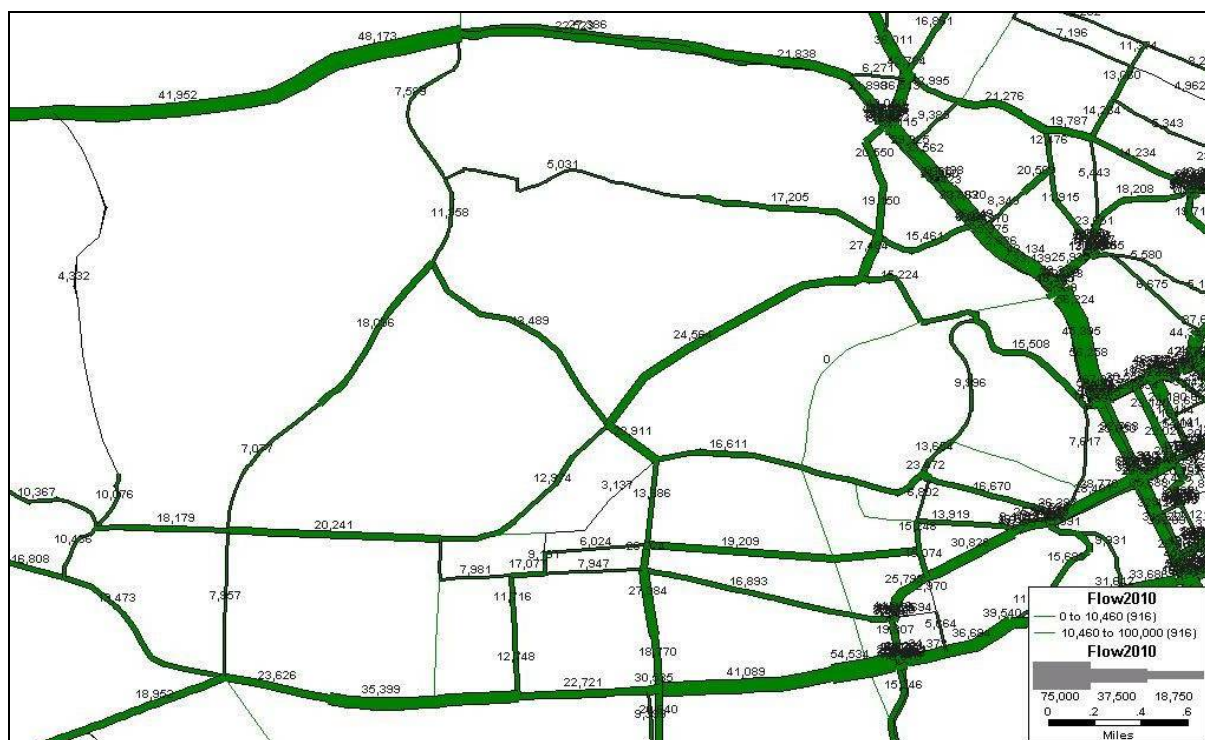


FIGURE 1.3-2 TRAFFIC FLOW IN 2010

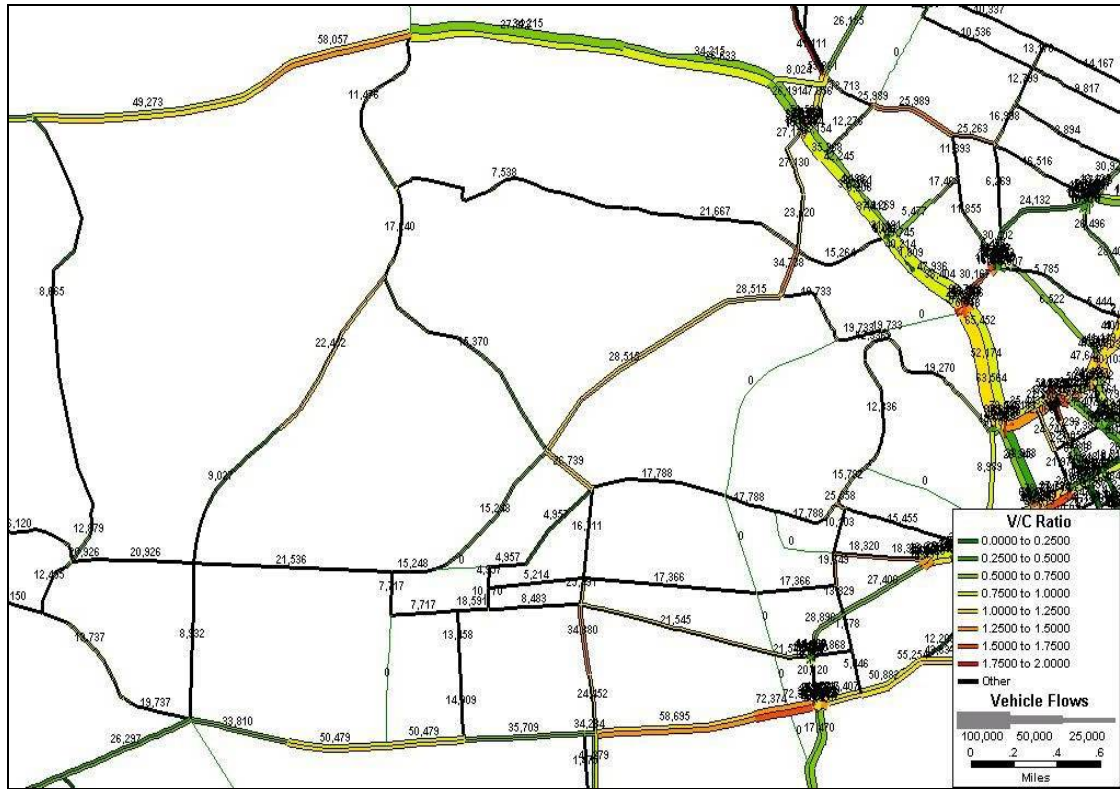


FIGURE 1.3-3 TRAFFIC FLOW IN 2015



FIGURE 1.3-4 TRAFFIC FLOW IN 2020

(2) Vehicle/Capacity Ratio (VCR)

Vehicle/Capacity Ratio (VCR) is calculated and the results are shown in Figure 1.3-5. VCRs in 2-lane and 4-lane cases by section of each Missing Link are presented in the same figure.

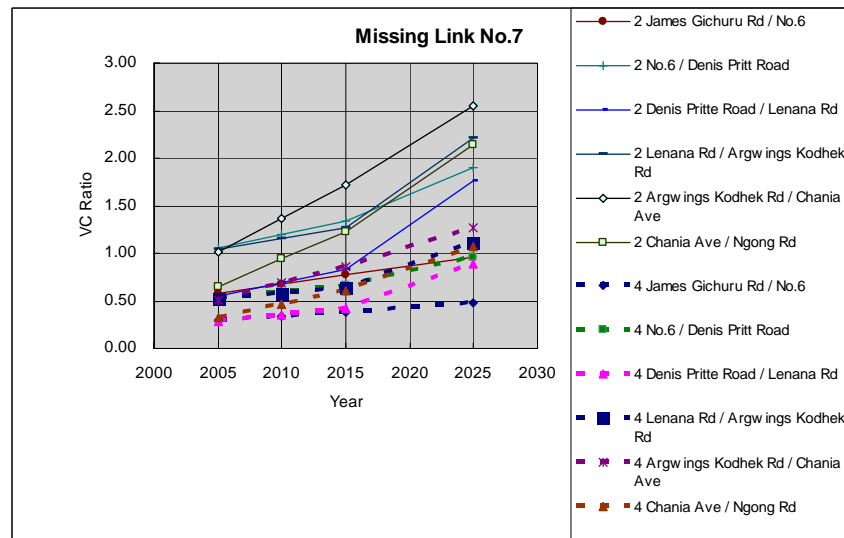
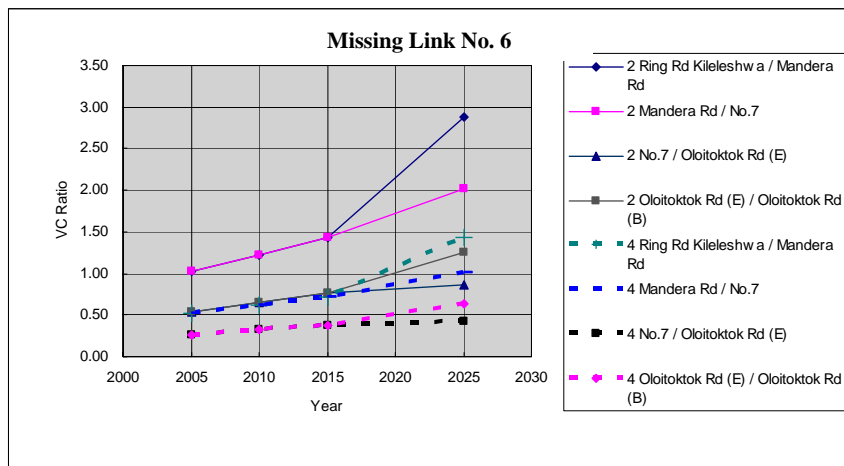
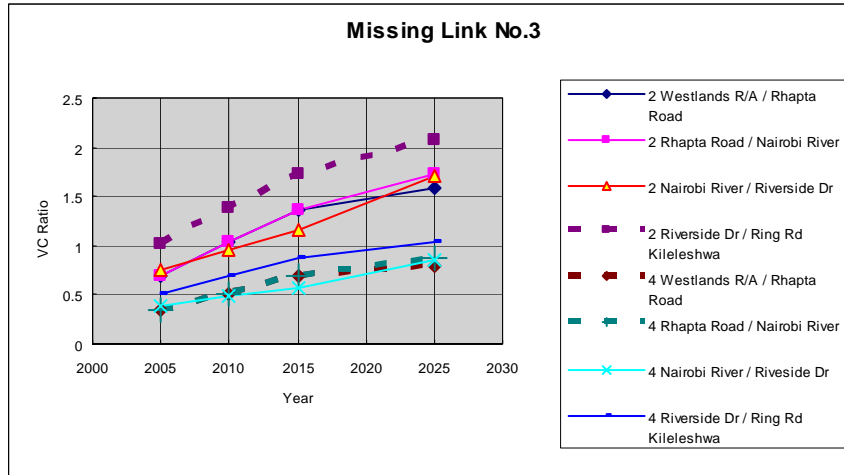


FIGURE 1.3-5 VEHICLE / CAPACITY RATIO (VCR)

### (3) Proposed Number of Lanes

As shown in the V/C Ratio above, a two-lane road will be able to carry the traffic through to 2015 within acceptable congestion levels (1.2) except for some sections depicting V/C Ratios greater than 1.7. A 4-lane road will be required through 2015 to 2025.

At the initial stage, a 2-lane road construction is considered economical that would be expanded to a 4-lane road after 2015. Thus stage construction will be applied to optimize initial investment based on the progress of traffic increase.

- Initial Stage : A two-lane road will be constructed.
- Ultimate Stage: The two-lane road will be widened to a four-lane road by 2025.

## 1.4 PRELIMINARY DESIGN AND COST ESTIMATE

### 1.4.1 Design Policy and Standards

#### (1) Design Policy

The following design policies are adopted;

- Introduction of stage construction;
- Maximum utilization of existing road reserves;
- Provision of Non Motorized Transport (NMT) with walk ways and cycle ways on one side;
- Introduction of barrier-free design for the Physically Challenged People;
- Provision of bus stops to harmonize development with public transport;
- Provision of accesses to the road side residents;
- Provision of mitigation measures against negative environmental impacts; and
- Consideration of open spaces temporarily for relocation and resettlement of the Project Affected People.

#### (2) Design Standards

The preliminary design applied the following design standards in consultation with the Engineers of CCN.

- Road Design Guidelines for Urban Roads (2nd Draft), MOLG, August 2001 (RDUG)
- Road Design Manuals, Road Department, Ministry of Transport and Communication, Kenya, August 1987
- Standard Specifications for Road and Bridge Construction, Roads Department, Ministry of Transport and Communication, Kenya, August 1986
- A Policy on Geometric Design of Highways and Streets, the American Association of State Highway and Transportation Officials (AASHTO), Washington D.C.

- Highway Capacity Manual, Fourth Edition, Transportation Research Board, National Research Council, Washington D.C.
- Guide for Design of Pavement Structures, AASHTO
- Road Structure Guidelines, Japan Association of Road, February 2004
- Guidelines for Pedestrian and Bicycle Traffic in African Cities, version 1.3, World Bank Sub-Saharan Africa Transportation Program (SSATP)
- The Planning and Design of At-Grade Intersections, June 1998, Japan Society of Traffic Engineering
- Guide to Traffic Engineering Practice, PART 6 - Roundabouts, AUSTRROADS, Sydney 1993

## 1.4.2 Road Design

### (1) Design Criteria and Cross Section Dimension

Design criteria and cross section dimensions for roadways and intersections are summarized in Table 1.4-1 and Table 1.4-2, respectively.

**TABLE 1.4-1 DESIGN CRITERIA AND CROSS SECTION DIMENSION (ROADWAY)**

Item	Unit		Design Criteria
Geometrical Standard			
Number of Lanes	No.	2	4 (Final)
Design Speed	km/h	50	
Stopping Sight Distance	m	55	
Passing Sight Distance	m	250	
Minimum Radius	m	80	
Minimum Radius for Normal Cross Slope	m	100	
Grade	%	0.5 – 8	
Minimum Length of Horizontal Curve	m	100	
Minimum Length of Vertical Curve	m	40	
Minimum K for Crest	m	800	
Minimum K for Sag	m	700	
Maximum Superelevation	%	5	
Normal Cross Slope	%	2.5	
Cross Section Element			
Lane Width	m	3.5	
Median	m	-	2.0
NMT	m	3.0 - 5.0	
Walkway	m	2.0 - 3.0	
Cycle Way	m	2.0 - 3.0	
Green Belt	m	1.0 – 2.5	

**TABLE 1.4-2 INTERSECTION DESIGN CRITERIA (INTERSECTION)**

Item	Unit	Design Criteria	
Geometrical Standard		Signalized	One Stop
1. Design Speed	km/h	50	
2. Sight Distance	m	130	80
3. Minimum Radius	m	80 – 100	
4. Maximum Grade	%	2.5	
5. Width of Left Turn Lane	m	3.0 – 3.5	
6. Length of Taper	m	50 - 100	
7. Length of Storage Lane	m	30 – 50	
8. Width of Pedestrian Crossing	m	3	

**(2) Proposed Road Cross Sections**

The proposed road cross sections are summarized in Table 1.4-3. Figure 1.4-1 and 2 show proposed standard cross sections of (1) Final Stage 4-Lane and Initial Stage 2-Lane for a 24m width road, and (2) Final Stage 4-Lane and Initial Stage 2-Lane for 30m width road, respectively.

**TABLE 1.4-3 PROPOSED ROAD CROSS SECTIONS**

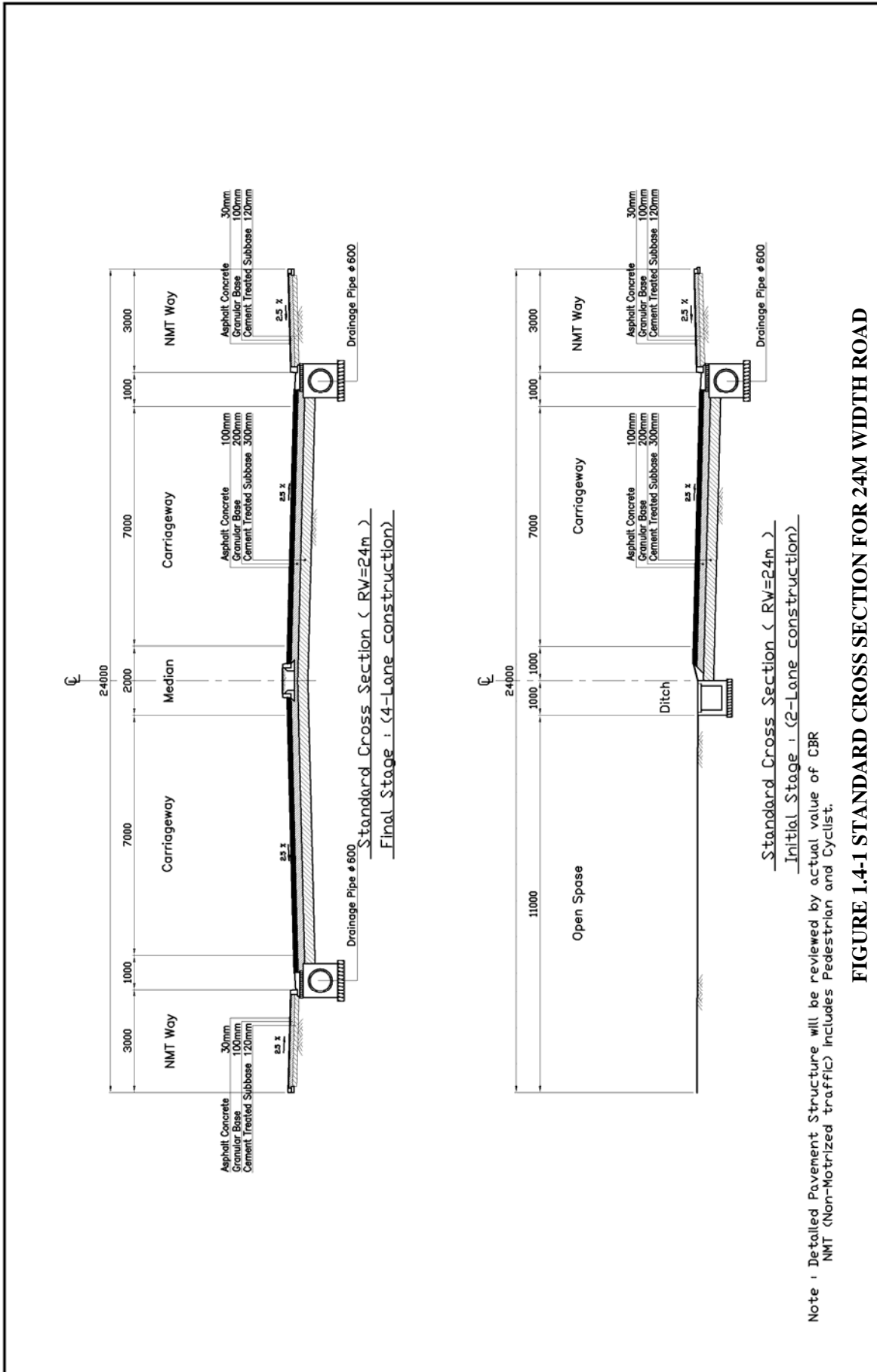
Item	Unit	Cross Section Element	
RR=30m		Initial Stage	Ultimate Stage
Number of Lanes	No.	2	4
Carriageway	m	7.0	7.0 x 2 = 14.0
Lane Wide	m	3.5	
Pavement Type		AC	
Median	m	-	2.0
Shoulder	m	1.0	1.0 x 2 =2.0
Green Belt	m	1.0	1.0 x 2 =2.0
Cycle Way	m	2.0	2.0 x 2= 2.0
Pavement Type		AC	
Walk Way	m	3.0	3.0 X 2 =6.0
Pavement Type		Interlocking having 1-m	AC surfacing
Side Ditch (Open)	m	1.0	-
Surface Drainage (Drainage Pipe)	No.	(0.6 dia.)	(0.6 dia. x 2)
Open Space	m	14.0	-
Street Lamp	No.	1	2
RR=24m		Initial Stage	Ultimate Stage
Number of Lanes	No.	2	4
Carriageway	m	7.0	7.0 x 2 = 14.0
Lane Width	m	3.5	
Pavement Type		AC	
Median	m	-	2.0
Shoulder	m	1.0	1.0 x 2 =2.0
Green Belt	m	-	-
Cycle Way / Walk Way	m	3.0	3.0 x 2 = 6.0
Pavement Type		Interlocking having 1-m	AC surfacing
Side Ditch (Open)	m	1.0	-
Surface Drainage (Drainage Pipe)	No.	(0.6 dia.)	(0.6 dia. x 2)
Open Space	m	11.0	-
Street Lamp	No.	1	2



**(3) Selection of Route Alignment of 2-lane Roads**

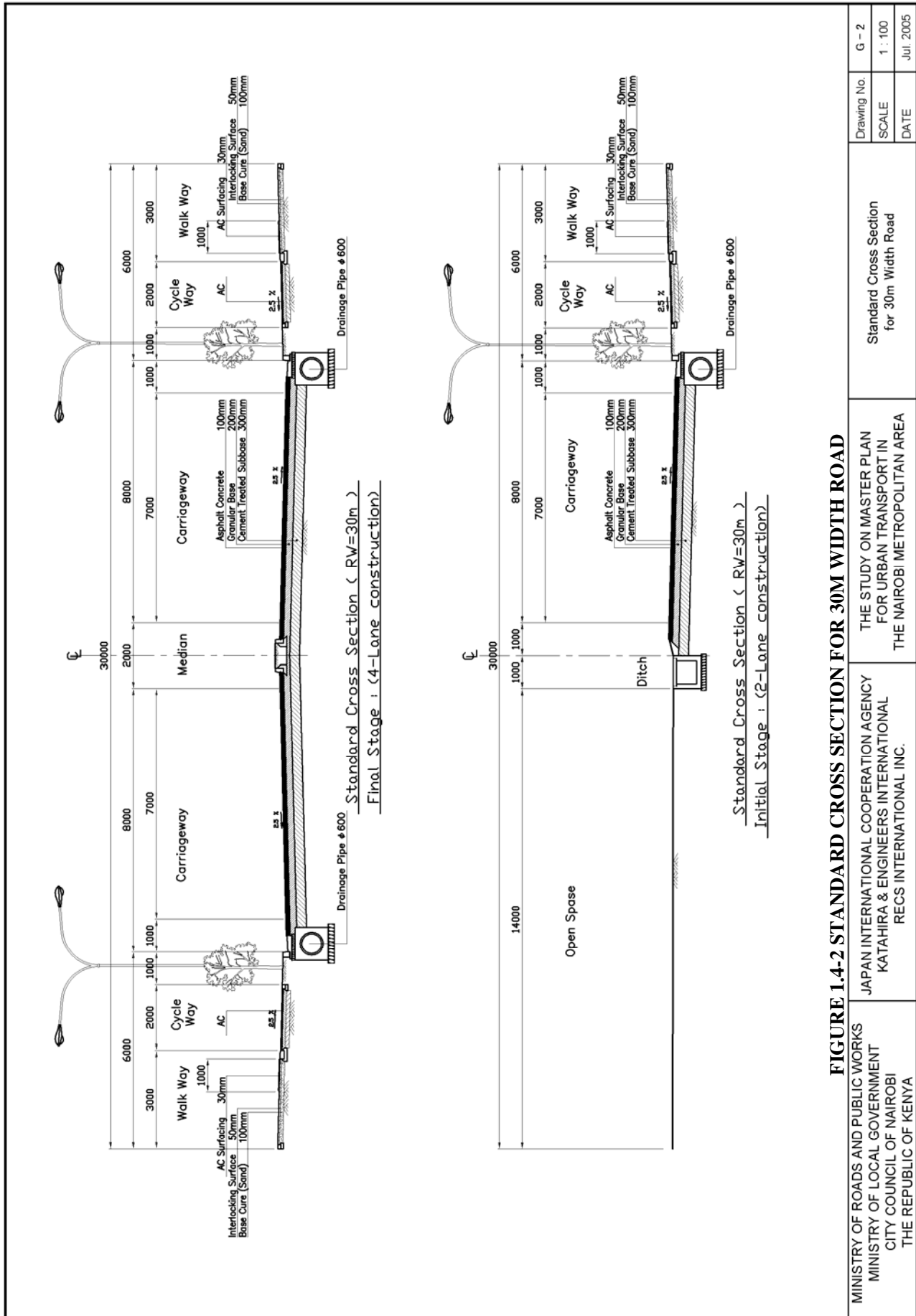
Special consideration for selecting route alignment for 2-lane carriageway roads within Road Reserve (RR) is as follows:

- Generally, the RR is 30m except for part of Missing Link No. 6 (RR=24m). Horizontal alignments and cross sections will be planned within the RR as much as possible in order to avoid new land acquisition.
- The starting points shall be located on the existing roads and/or the existing intersections.
- The end points shall be located on the existing roads
- The control points and constraints in the RR are observed to be as follows:
  - a. High power electric lines and poles
  - b. Main water supply pipes
  - c. River crossings
  - d. Access to entrances of residential areas
  - e. Topographic conditions such as slopes etc.



**FIGURE 1.4-1 STANDARD CROSS SECTION FOR 24M WIDTH ROAD**

Drawing No. G - 1	Standard Cross Section for 24m Width Road	THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL RECS INTERNATIONAL INC.	MINISTRY OF ROADS AND PUBLIC WORKS MINISTRY OF LOCAL GOVERNMENT CITY COUNCIL OF NAIROBI THE REPUBLIC OF KENYA
SCALE 1 : 100				DATE Jul. 2005



### 1.4.3 Structure Design

#### (1) Proposed Bridge Cross Section

The proposed details of the bridge cross section are shown in Table 1.4-4.

**TABLE 1.4-4 CROSS SECTION DIMENSIONS OF BRIDGE**

Item	Unit	Cross Section Element	
		Initial Stage	Ultimate Stage
Width of Bridge	m	11.750	23.500
Number of Lanes	No.	2	4
Carriageway	m	7.0	7.0 x 2 = 14.0
Lane Width	m		3.5
Pavement Type			AC surfacing
Bridge Railing	m	W = 0.445 (right)	0.445 x 2
Bridge Railing	m	W = 0.150 (right)	0.150 x 2
Walk Way	m	3.155	3.155 x 2
Pavement Type			AC surfacing
Guard Rail		1 (H = 0.8)	2
Surface Drainage (Drainage Pipe)	No.	(0.6 dia.)	(0.6 dia. x 2)

The vertical clearance of the structure shall be maintained as presented in Table 1.4-5.

**TABLE 1.4-5 VERTICAL CLEARANCE (VR)**

Location	Min. Vertical Clearance (m)	Remarks
River/ Stream crossing freeboard considering debris passage below bridge	2.0	Max. flow water level to lowest structure member
River/ Stream crossing freeboard without considering debris passage below bridge	1.0	-ditto-

The following parameters are considered for bridge planning.

- Design Flood Flow: Discharges of a 50-year return period
- Bridge Length: to be determined by discharge and max. flood water level

The proposed design for each bridge is summarized below.

#### ***Missing Link No. 3: Nairobi River Bridge***

- Bridge Length: L=30.8m
- Bridge Width: W=11.75m
- Superstructure: Pre-cast post tensioned PC girder with cast in place cross beams
- Foundation Type: Spread foundation (4.6m x 12.75m x 1.0m)
- Pavement: Asphalt Concrete, t=50mm
- Interlocking pavement (Cement block h=100mm) will be applied for the approaches to the bridges where the vertical alignment is equal or greater than 6%.

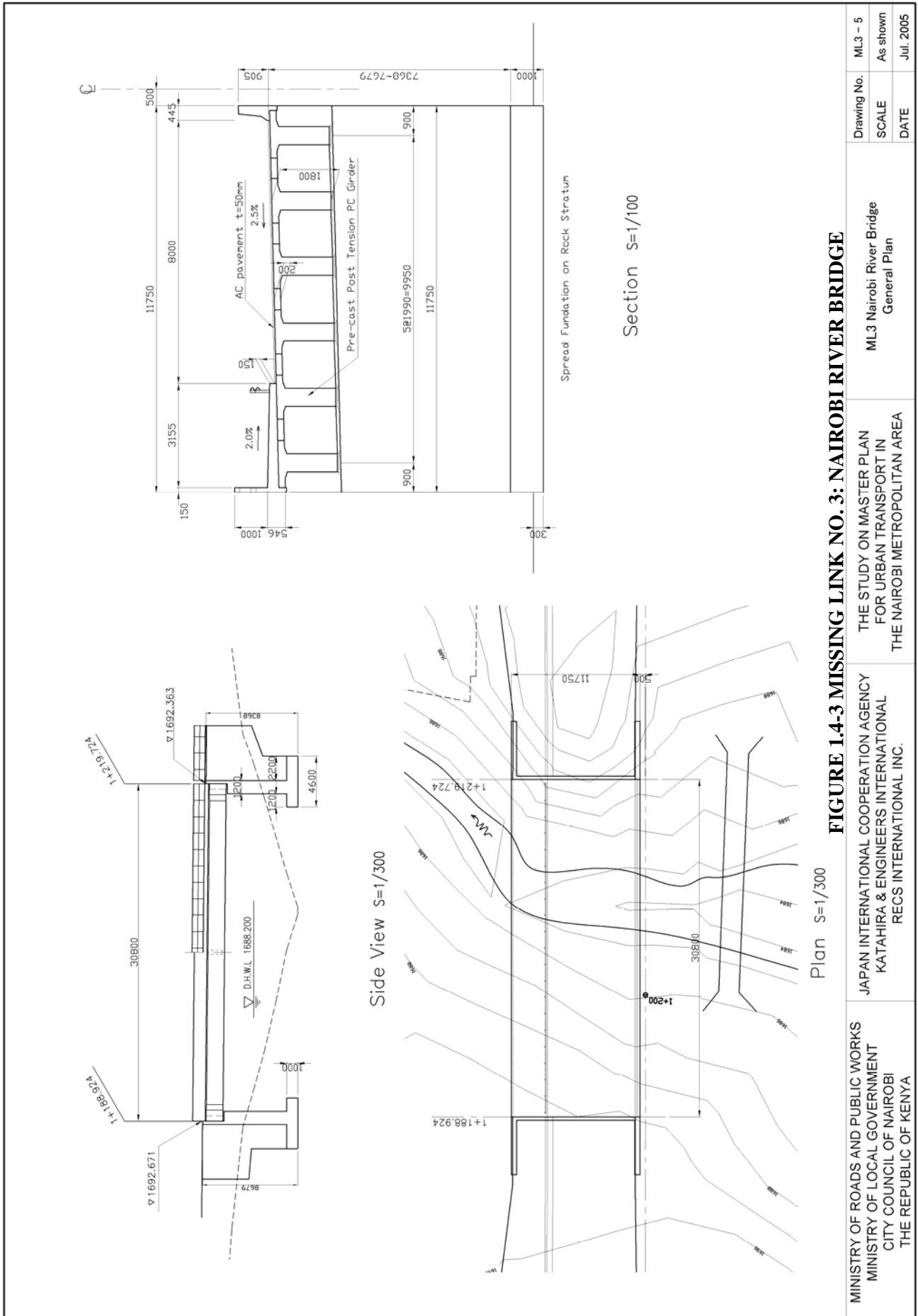
**Missing Link No. 7: Kirichwa Ndogo River Bridge**

- Bridge Length: L=30.8m
- Bridge Width: W=11.75m
- Superstructure: Pre-cast post tensioned PC girder with cast in place cross beams
- Foundation Type: Piled spread foundation (4.6m x 12.75m x1.0m)  
RC pile- 24 Nos (400mm x 400mm), Pile length L=4.5m
- Pavement Asphalt Concrete, t=50mm
- Interlocking pavement (Cement block h=100mm) will be applied for the approaches to the bridges where the vertical alignment is equal or greater than 6%.

**Missing Link No. 7: Kirichwa Kubwa River Bridge**

- Bridge Length: L=30.8m
- Bridge Width: W=11.75m
- Superstructure: Pre-cast post tensioned PC girder with cast in place cross beams
- Foundation Type: Spread foundation (4.6m x 12.75m x1.0m)
- Pavement: Asphalt Concrete, t=50mm.
- Interlocking pavement (Cement block h=100mm) will be applied for the approaches to the bridges where the vertical alignment is equal or greater than 6%.

The Preliminary design of foundation for the above bridges is based on the visual observation of river bed without detailed geological survey. Detailed geological foundation survey including borings is to be undertaken at the detailed design stage. Designs of the three bridges are shown in Figure 1.4-3 to 5.



**FIGURE 1.4-3 MISSING LINK NO. 3: NAIROBI RIVER BRIDGE**

Drawing No. ML3 - 5 SCALE As shown DATE Jul. 2005	THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL RECS INTERNATIONAL INC.	MINISTRY OF ROADS AND PUBLIC WORKS MINISTRY OF LOCAL GOVERNMENT CITY COUNCIL OF NAIROBI THE REPUBLIC OF KENYA
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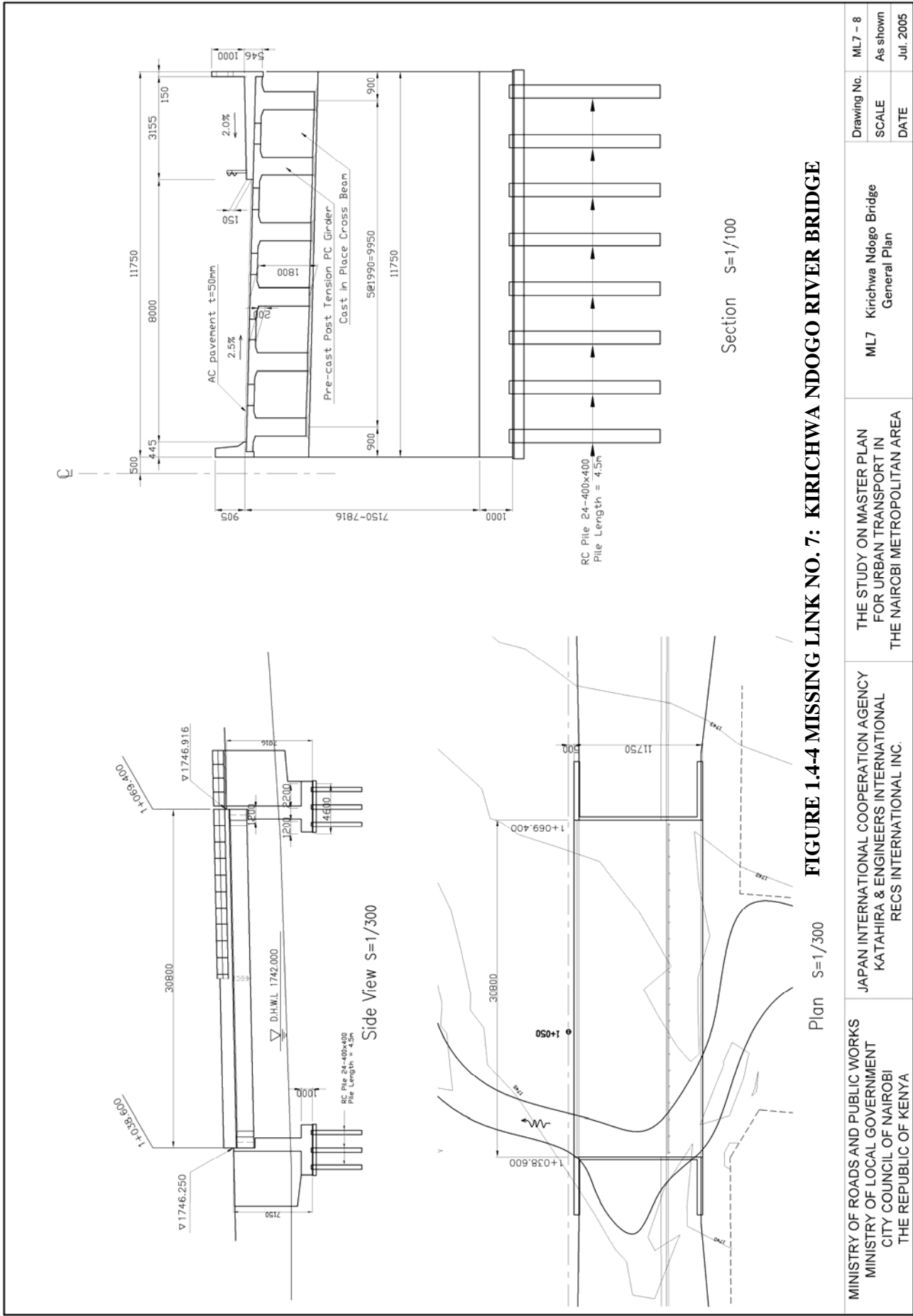


FIGURE 1.4.4 MISSING LINK NO. 7: KIRICHWA NDOGO RIVER BRIDGE

MINISTRY OF ROADS AND PUBLIC WORKS MINISTRY OF LOCAL GOVERNMENT CITY COUNCIL OF NAIROBI THE REPUBLIC OF KENYA	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL RECS INTERNATIONAL INC.	THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA	ML7 Kirichwa Ndogo Bridge General Plan	Drawing No.	ML7 - 8
				SCALE	As shown
				DATE	Jul. 2005

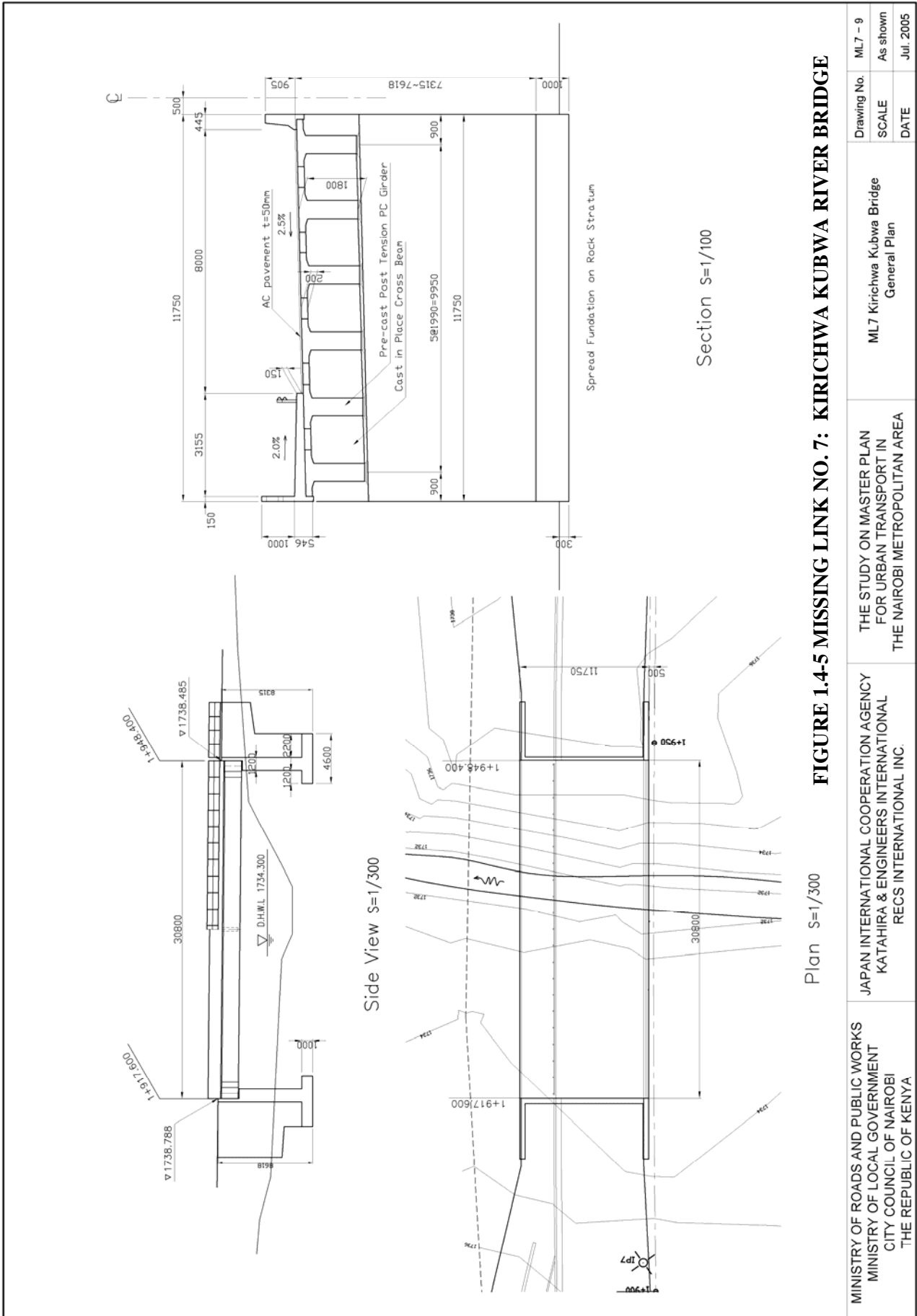


FIGURE 1.4-5 MISSING LINK NO. 7: KIRICHWA KUBWA RIVER BRIDGE

<p>MINISTRY OF ROADS AND PUBLIC WORKS MINISTRY OF LOCAL GOVERNMENT CITY COUNCIL OF NAIROBI THE REPUBLIC OF KENYA</p>	<p>JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA &amp; ENGINEERS INTERNATIONAL RECS INTERNATIONAL INC.</p>	<p>THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA</p>	<p>ML7 Kirichwa Kubwa Bridge General Plan</p>
<p>Drawing No. ML7 - 9 SCALE As shown DATE Jul. 2005</p>			



#### 1.4.4 Pavement Design

##### (1) Carriageway Pavement

###### Design Procedure

The Preliminary Design had to assume a CBR value of the sub-grade by reviewing other material reports, because a detailed sub-grade survey is to be carried out at the detailed design stage. Consequently, the design procedure of the pavement will be compared with various methods including simple table matrix of Kenya and Road Note to the detailed method of AASHTO. The proposed pavement structure will be reviewed based on the results of the geological survey and material tests during the detailed design stage.

###### Initial Performance Period

The average initial performance period is 15 years which is based on the minimum performance period of 10 years and maximum performance period of 20 years. For the Pre-Feasibility Study, this 15-year period is considered as analysis period. In the detailed design stage, using the detailed geological survey and pavement structure design, analysis period (design life) will be determined based on life-cycle costs.

###### Traffic Loading (ESAL)

**TABLE 1.4-6 TRAFFIC COMPOSITION ANTICIPATED (2015)**

No.	Section	From	To	Light Vehicle	Medium Vehicle	Bus	Medium Truck	Large Truck	A-Truck (Trailer/Tank Lorry)	Total
No.3	1	Westlands R/A	Ring Rd Kileleshwa	14,599	6,660	524	401	175	89	22,447
	2	Ring Rd Kileleshwa	Nairobi River	14,599	6,660	524	401	175	89	22,447
	3	Nairobi River	Riverside Dr	12,305	5,613	441	338	148	75	18,920
	4	Riverside Dr	Arboretum Dr	18,488	8,434	663	508	222	112	28,428
No.6	5	Arboretum Dr	Mandera Rd	15,176	6,923	544	417	182	92	23,335
	6	Mandera Rd	Ring Rd Kilimani	15,176	6,923	544	417	182	92	23,335
	7	Ring Rd Kilimani	Denis Pritt Rd	8,115	3,702	291	223	97	49	12,478
	8	Denis Pritt Rd	Ole Odume Rd	8,115	3,702	291	223	97	49	12,478
No.7	9	James Gichuru Rd	Ring Rd Kileleshwa	8,180	3,732	293	225	98	50	12,578
	10	Ring Rd Kileleshwa	Denis Pritt Rd	14,231	6,492	510	391	171	86	21,882
	11	Denis Pritt Rd	Lenana Rd	8,894	4,057	319	244	107	54	13,675
	12	Lenana Rd	Argwings Kodhek Rd	13,567	6,189	487	373	163	82	20,860
	13	Argwings Kodhek Rd	Chania Ave	18,298	8,347	656	503	220	111	28,135
	14	Chania Ave	Ngong Rd	13,014	5,937	467	357	156	79	20,010

### Proposed Pavement Structure

The proposed pavement structure is shown in below.

#### *Carriageway*

The proposed pavement structure of the carriageway is presented as follows.

- |  |           |
|--|-----------|
| • Asphalt Wearing course               | t1 = 3cm  |
| • Asphalt Binder course                | t2 = 7cm  |
| • Base course (Crusher run)            | t3 = 20cm |
| • Sub-base (Lime or Cement Stabilized) | t4 = 30cm |

#### *NMT Pavement*

The width of walkway of NMT is 3.0m, and cycle way is 2.0m. The proposed pavement structure and specification of materials are as follows:

##### Walk Way

- |   |                        |
|---|------------------------|
| • Concrete Interlocking                   | t1 = 50mm              |
| • Asphalt surfacing: AC (for Wheel Chair) | t2 = 30mm, W = 1,000mm |
| • Base course (Sand)                      | t3 = 100mm             |
| • Subgrade treatment (compaction)         | t4 = 300               |

##### Cycle Way

- |   |            |
|---|------------|
| • Asphalt concrete                                  | t1 = 30mm  |
| • Base course (crusher Run)                         | t2 = 100mm |
| • Sub-base (Lime or Cement Stabilized, if required) | t3 = 120mm |

## 1.4.5 Intersection

### (1) Procedure of Selection of the Types of Intersection

Figure 1.4-6 presents a procedure for selection of the types of intersections.

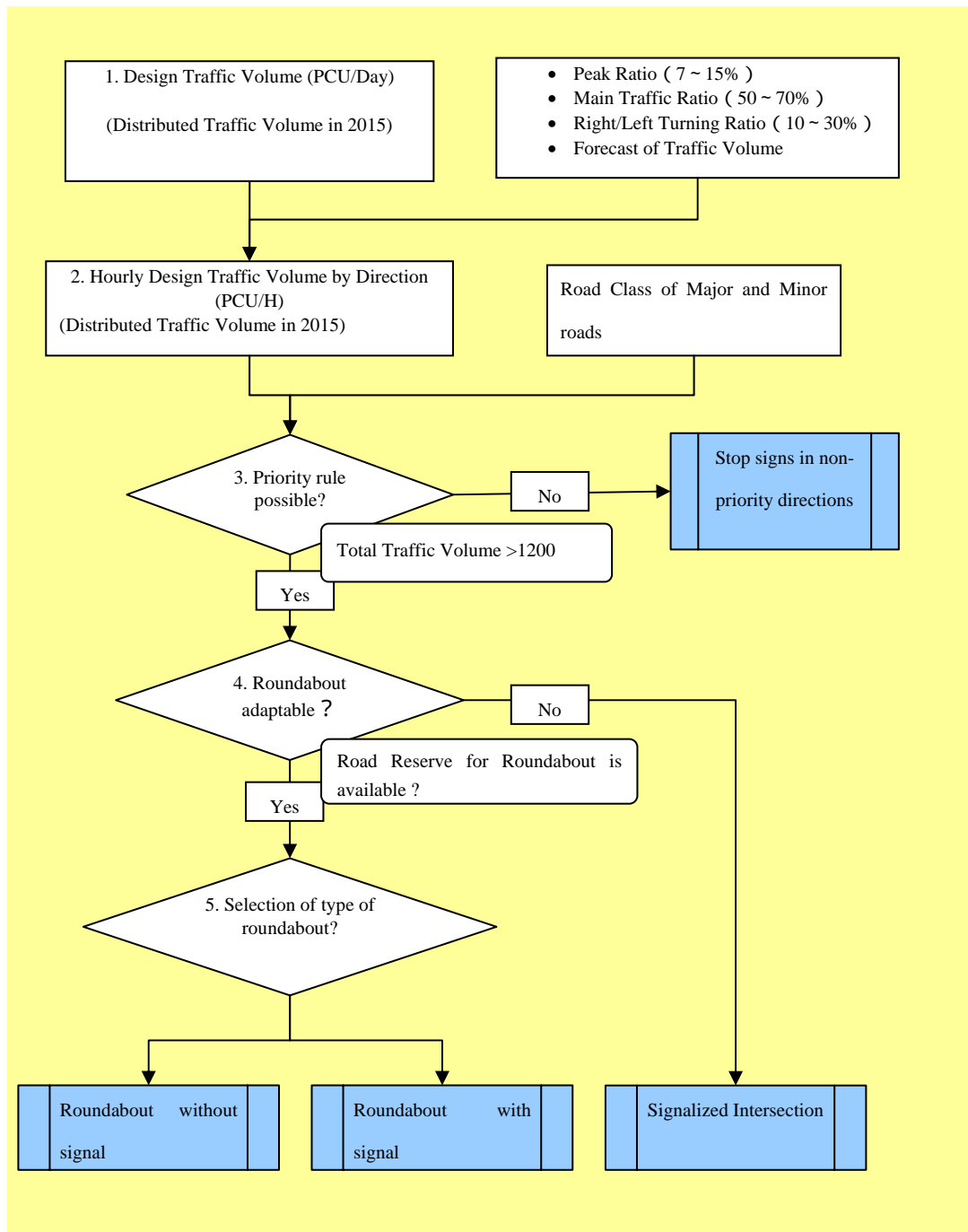


FIGURE 1.4-6 PROCEDURE OF SELECTION OF TYPES OF INTERSECTIONS

**(2) Application of Type of Intersection**

The operation method of intersections can be divided into four major control methods, namely (i) basic rule without traffic signal, (ii) priority rule with stop signs, (iii) rotary traffic with roundabouts and (iv) roundabout with signalization. The Study applied the following types of an intersection at grade.

1. Crossing Intersection

2. Crossing Intersection with Signal
3. Roundabout
4. Roundabout with Signal

The traffic capacity of roundabout is a sum of entry traffic volumes and circulating flow. Table 1.4-10 presents the traffic capacity of roundabouts by size.

**TABLE 1.4-10 TRAFFIC CAPACITY OF ROUNDABOUTS BY SIZE**

Roundabout Inscribed Diameter (m)	Traffic Capacity (vehicle/hour)
20	< 1,500
40	< 3,500
60	< 4,000
80	< 4,500

Note: Edited from *Guide to Traffic Engineering Practice Roundabouts, AUSTRROADS, 1993*

When the road reserves for the above diameter is not available and traffic volumes exceed the traffic capacity, signalization will be required.

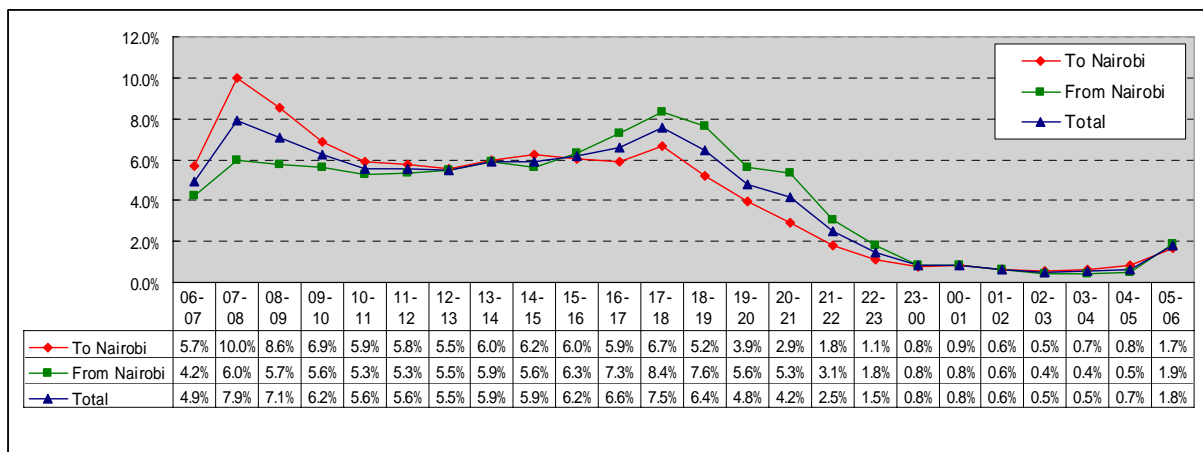
**(3) Evaluation of Type of Intersection**

*Estimated Peak Hour Traffic*

Peak ratio for 24 hours (by Screen Survey) is shown in Figure 1.4-7.

The peak ratio for 24 hours is calculated as follows.

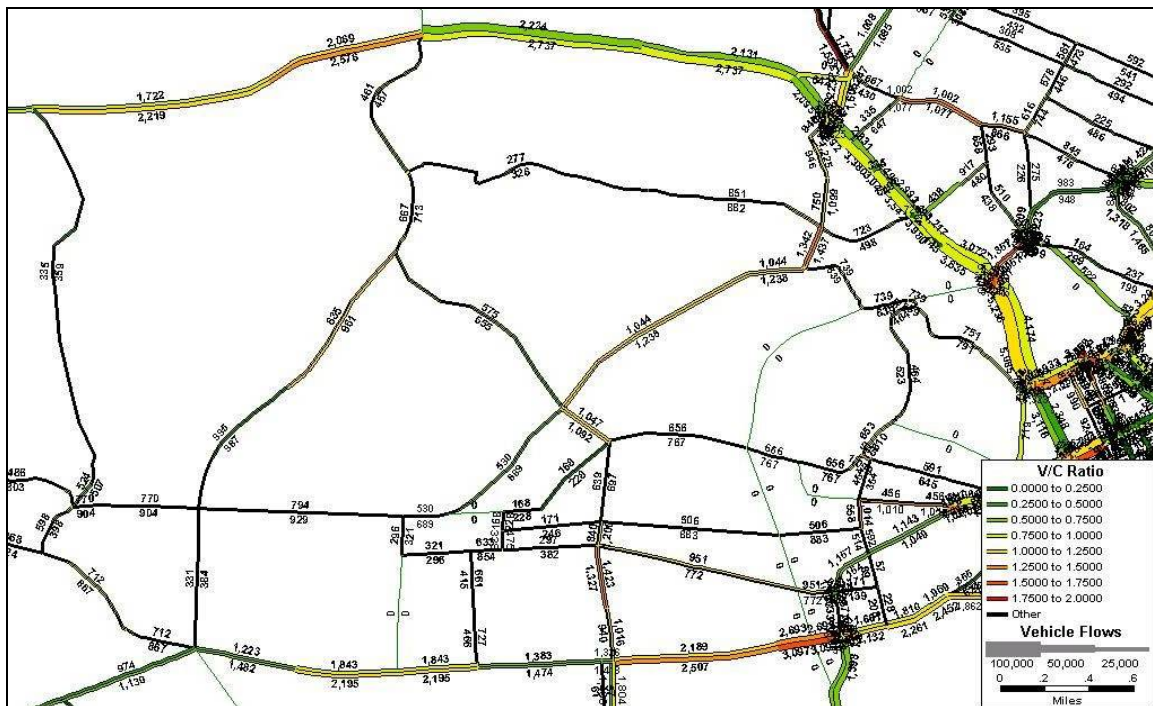
- Morning Peak Hours (7-8): To Nairobi 10.0% From Nairobi 6.0% **Average 7.9%**
- Evening Peak Hours (17-18): To Nairobi 6.7% From Nairobi 8.4% **Average 7.5%**



**FIGURE 1.4-7 PEAK RATIO FOR 24 HOURS**

*Design Volume at Peak Hour*

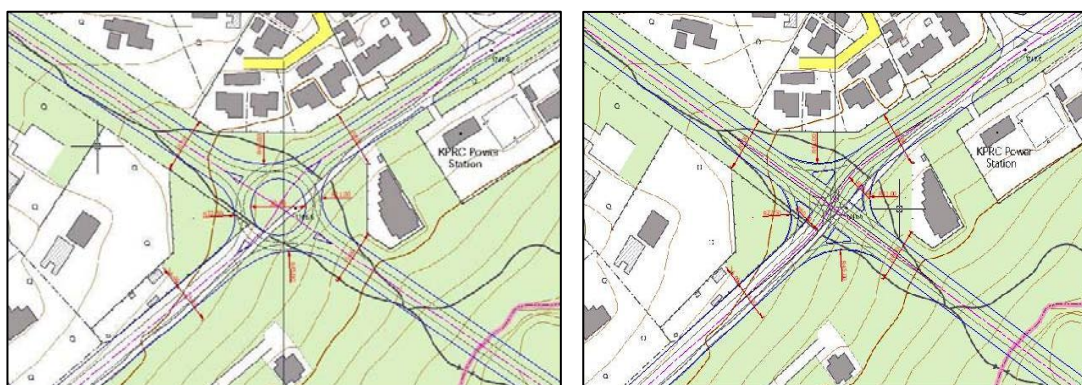
Design volume at peak hour is shown in Figure 1.4-8.



**FIGURE 1.4-8 DESIGN VOLUME AT PEAK HOUR IN 2015 (UNIT PCU/HOUR )**

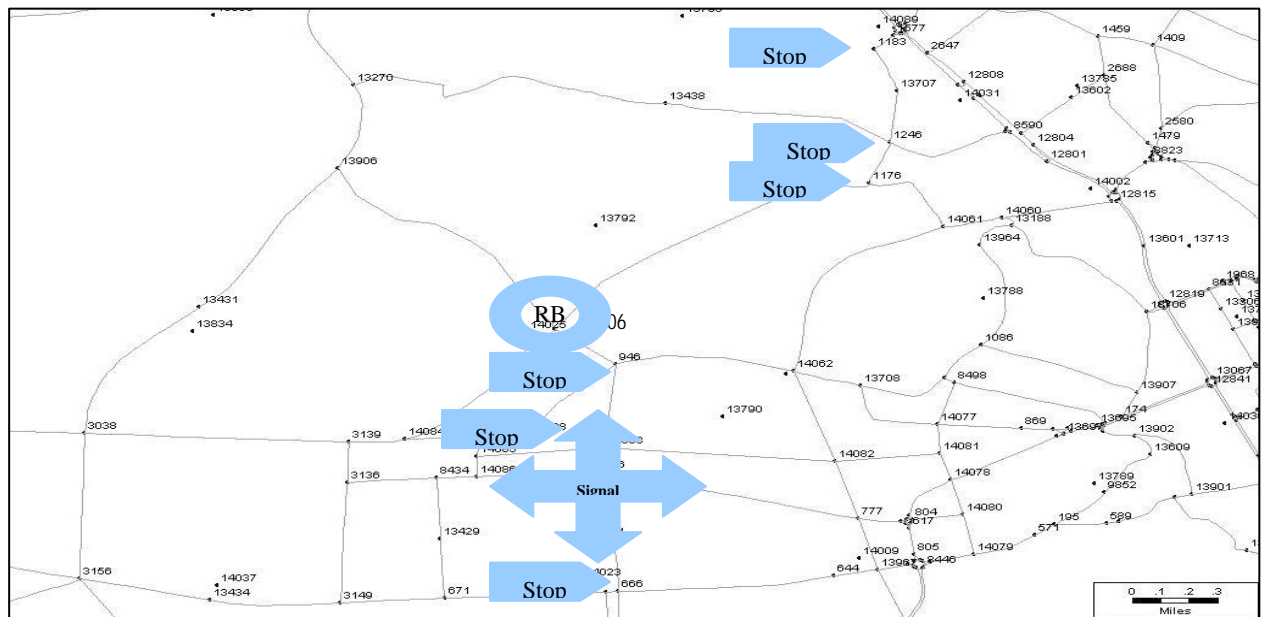
*Evaluation of Type of Intersection*

Figure 1.4-9 depicts alternative designs of roundabout type and conventional type at the intersection of Link No.6 and Link No.7.



**FIGURE 1.4-9 PROPOSED INTERSECTION ALTERNATIVES FOR MISSING LINK NO. 6 & 7 (ROUNDABOUT AND CONVENTIONAL TYPES)**

Figure 1.4-10 presents the locations of proposed types of intersection.



**FIGURE 1.4-10 TYPE OF INTERSECTION**

**(4) Summary of Proposed Intersection**

From the experience of the pilot project in Westlands Roundabout Improvement, the traffic congestion is likely to occur at the peak hour. Police control is quite efficient during the peak hour traffic. Therefore, in the initial stage, one stop control will be applied with police traffic control at major intersections. At the intersection of No.6 and No.7 where road reserve for a roundabout is available, a roundabout type will be proposed, while at Intersection of No.7 and Argwings Kodhek Road, a signalized conventional type intersection will be proposed.

Proposed intersection types are summarized in Table 1.4-7.

**TABLE 1.4-7 PROPOSED INTERSECTION TYPE**

No.	Intersection	Initial Stage	Ultimate Stage
1	Missing Link 3/Riverside Dr	One Stop Control	Signalization
2	Missing Link 3/Arboretum Dr	One Stop Control	Signalization
3	Missing Link No.6 /No.7	Roundabout	Signalization
4	Missing Link 6/Ole Odume Rd	One Stop Control	Signalization
5	Missing Link 7/James Gichuru Rd	One Stop Control	Signalization
6	Missing Link 7/Denis Pritt Rd	One Stop Control	Signalization
7	Missing Link 7/Lenana Rd	One Stop Control	Signalization
8	Missing Link 7/Argwings Kodhek Rd	Signalized Conventional	-ditto-
9	Missing Link 7/Ngong Rd	One Stop Control	Signalization

### 1.4.6 Drainage Design

During the preliminary design stage, road side ditches of U-shaped concrete drainage (700mm x 700mm) and surface drainages of L-shaped gutter type with collecting pipe (dia. 600mm) are applied. The detailed design for the drainage structure is shown in Preliminary Design Drawings.

## 1.5 PRELIMINARY COST ESTIMATE

### 1.5.1 Construction Quantity

Major work quantities are summarized in Table 1.5-1.

**TABLE 1.5-1 MAJOR WORKS**

Major Works	Unit	No.3	No.6	No.7
1. Road				
(1) Improvement (Overlay +NMT)	km	0.95	0.45	1.55
(2) New Construction 2-lane (RR=30m)	km	0.81	1.35	2.2
(3) New Construction 2-lane (RR=24m)	km	0	1.05	0
Total		1.76	2.85	3.75
2. Bridge	No.	1	0	2
3. Intersection	No.	2	0	2
4. Roundabout	No.	0	0	1
5. Signalized Intersection	No.	0	0	1
6. Road Furniture/Bus Stops	Ls	1	1	1
7. Miscellaneous Works	Ls	1	1	1

### 1.5.2 Preliminary Cost Estimate

The cost of constructing the three Missing Links is estimated at Ksh. 999,000,000. This will cover costs for construction, ROW/Relocation/Administration, Detailed Design and Tender Services and Supervision Service (Table 1.5-2).

**TABLE 1.5-2 SUMMARY OF THE PRELIMINARY COST ESTIMATE**

Item	Amount (Ksh)	Amount (Japanese Yen)
Construction Cost	900,000,000	1,350,000,000
ROW/Relocation/Administration Cost	9,000,000	13,500,000
Detailed Design and Tender Services	36,000,000	54,000,000
Supervision Service	54,000,000	81,000,000
Total	999,000,000	1,498,500,000

Note: 1US\$ = 75Ksh = 112 Japanese Yen. 1Ksh = 1.50Yen

## **CHAPTER 2 ENVIRONMENTAL LEGISLATION OF KENYA**

There are a number of legislations in Kenya which have a bearing on the protection of the environment from the impacts of road construction/rehabilitation exercises. Principal laws among these legislations are the Environment Management and Coordination Act (EMCA) No. 8 of 1999 and the EIA/EA Regulations of 2003. The other relevant pieces of legislations with regard to the implementation of Missing Links Improvement Project are: the Traffic Act (Cap, 403); the Water Act (Cap 372), the Trust Land Act (Cap 28), the Physical Planning Act (Cap 286), the Public Health Act (Cap 242) and Kenya Roads Boards Act of 1999.

### **2.1 ENVIRONMENT MANAGEMENT AND COORDINATION ACT (EMCA) NO. 8 OF 1999**

This Act aims at co-ordinating environmental protection activities in the country. In its preamble, it states that every person in Kenya has a right to a clean and healthy environment. Section 58 (1) of the Act requires that all new development projects should undertake Environmental Impact Assessment (EIA), while section 68 requires all on-going projects to have an environmental audit with a view to finding out if the process and activities have any negative impacts on the environment and to propose mitigation measures to counter such impacts.

### **2.2 OTHER RELEVANT LEGISLATIONS**

- The Traffic Act (Cap 403). This Act prohibits erection of any structure that may interfere with a road reserve. Any structures within the road reserve shall therefore be demolished after notification to the owners without any subsequent compensation.
- The Water Act (Cap 372) states that the off-road drainage system shall be so channelled to blend with the natural watercourses and not interfere with the private water reservoirs.
- The Trust Land Act (Cap 28) and the Physical Planning Act (Cap 286) state that while giving due considerations to the rights and obligations of landowners, there shall be compensation whenever a materials site, diversion or realignment results into relocation of settlement or any change of user whatsoever of privately owned land parcels.
- Physical Planning Act (Cap 286). The planning of human settlements along the road reserves requires enforcement of road reserve standards, especially the width, and



provision of facilities such as Bus parks, open air market, among others. Building encroachment, and design on the road reserves should be as per the provisions of the Act.

- Public Health Act (Cap 242) states that Road rehabilitation and maintenance works are likely to pollute the drinking water sources resulting from any oil spillage. However, the improved road network will facilitate speedy access to health facilities.
- The Kenya Roads Board Act of 1999. This Act encourages participation of all stakeholders in the road sector during the planning, design, construction and maintenance. Once the provisions of the Act are adequately used to create awareness, ownership and sustainability will be ensured. The overall impacts will be shared responsibilities amongst all stakeholders.
- Sections 75, 117 and 118 of the Kenya Constitution, give general guidelines on land acquisition while Chapter 288 and 295 of the Land Acquisition Act, provide detail procedures. Chapter 295, section 6(1) of the Land acquisition Act deals with the acquisition of private land, while Chapter 288 deals with unregistered trust lands. These pieces of legislation are important in the event that land is to be acquired for the implementation of the project.

## CHAPTER 3 STAKEHOLDER MEETINGS SUMMARIES DURING PRE-FEASIBILITY STUDY

Three stakeholder meetings were held during the Pre-feasibility study. Two of these meetings, 4<sup>th</sup> and 6<sup>th</sup> were held at Kenya Science Teachers Collage while the other, the 5<sup>th</sup> was held at Silver Spring Hotel; all of which are located within Nairobi City. The following are the summaries of the three stakeholder meetings:

### 3.1 THE 4<sup>TH</sup> STAKEHOLDER MEETING

The fourth (4<sup>th</sup>) Stakeholder Meeting was held on 27<sup>th</sup> May, 2005 at Kenya Science Teachers College. A total 152 participants (Annex 2) attended the meeting. It was presided over by Eng. Ngare of the Ministry of Roads and Public Works and opened by Mrs. Ngethe, Deputy Town Clerk of Nairobi City Council. It had two sessions, I and II (Annex 1).

#### *Session I*

In this session, two presentations were made, one by Mr. Toda and the other by Mr Minato, both of JICA Study Team. Mr Toda presented the *Outline of the Missing Link Improvement Project* and Mr. Minato presented the *results of Initial Environmental Examination (IEE)*. While chairing the session, Eng. Ngare stated that the purpose of the missing link improvement project was to care for traffic congestion and to identify the missing links, which were discussed during the past three stakeholder meetings held in November 2004, February and March 2005.

#### *Session II*

This was the Plenary session in which the participants raised questions and comments with regard to the two presentations made in Session I. The participants raised questions and made comments which were responded to by the representative from the various ministries involved in the JICA study. Particularly on Missing Links, participants were so much concerned about the consideration of other uses of road reserve such as insertion of fibre optics ducts and the occupants of the Missing Links who will be directly affected by the project.

In response to the concerns raised, the JICA study team said that the Master Plan will take into consideration other interests that have a stake on the road reserve. Concerning the occupiers of the Missing Links, it was reported there is a policy of informing the temporary kiosk operators when to move their units. An appropriate notice will also be served to occupiers of the Missing Links regarding relocation.

Among other issues the participants discussed land acquisition for the project, improvement of traffic between Westland Roundabout and the CBD, safety signs and safe zones, matatu parking areas and land use planning.

The meeting ended with hope that comments made were all going to be included in the study. The missing links between urban planners and road designers which are vital parts of the project was noted.

### **3.2 FIFTH STAKEHOLDER MEETING**

The Fifth Stakeholder Meeting was held at Silver Spring Hotel where a total of 49 participants attended (Annex 3). It was divided into two sessions, I and II. In session I, Mr. Kimura and Mr. Isomoto made presentation on Improvement of Traffic Circulation in the CBD while Mr Koto presented a report on Bus/Matatu Restructuring. Session II was plenary session where comments, remarks, questions were raised regarding session I presentation and responses made.

#### ***Session I***

The presentation on Improvement of Traffic Circulation in the CBD included:

- Traffic flow improvement measures-Overlay, repair of pavement, parking, repair of bus stops, repair of sidewalks, channelisation, pavement markings, installation and repair of traffic control signs, installation and repair of traffic signal, and beautification (flower beds, trees)
- Improvement of intersections-Traffic signal improvement, installation and synchronization of traffic signals, use of area wide controls and the use of state of the art techniques such as CCTV and ITV monitoring systems.
- Master flow of traffic impact assessment
- Parking access route impact assessment
- Arterial and collector roads impact assessment
- Local street motorized traffic impact assessment
- Parking area /traffic flow ratio in the CBD-Conceptual determination
- Improvement of NMT facilities
- Traffic signalization improvement plan
- Necessity to improve development plans

While the presentation on Bus and Matatu restructuring contained:

- Modal selection as an improvement basis
- Enhancement of public transport and improvement of the MIA (Mode Interchange Area)

- Alleviation of congestion by rerouting and public transport corridor management
- Use of shuttles within the CBD
- Improvement of existing major roads
- Allowance of public transport on Missing Links once constructed

### ***Session II***

Following the presentations made during session I, the participants raised questions, comments/remarks which were also responded to by the JICA study team. The discussion generally revolved around the traffic circulation within the CBD. There are various factors contributing to the poor traffic circulation within the CBD. Among them are: presences of matatu terminus within the CBD and high number of private cars entering the CBD. Solutions to these problems may include relocation of the matatu/bus terminus from the CBD and introduction of high capacity buses or rather mass transport systems. In a nutshell, the meeting discussed following issues:

1. NMT issues
  - New designs to include NMT facilities
  - World Bank initiative to provide NMT facilities
  - Westlands R/A improvement
2. Mode transfer from private to public transport
  - Already contained in an earlier report
3. Encroachment
  - MRPW allowed temporary parking on Nakumatt Ngong Road and Baptist Church.
4. Redefining the CBD
  - The CBD has redefined itself and this is being taken into account
  - Study team to consider outlying areas as part of the CBD
5. Alternative transport
  - Covered in earlier meetings
6. Parking issues
  - Short term parking is being overused yet long term parking is underutilized
7. Proposed MIA at Uhuru Park
  - Is a short-term measure until an appropriate area is identified

8. Education and enforcement
  - A study on road safety is underway(GOK/SIDA)
9. Physically challenged people
  - The government involves them in all their studies
10. Security of MIA
  - Police posts, Lighting
11. Use of footbridges
  - Introduce heavy duty guard rails to compel pedestrians to use them
12. Introduction of high capacity buses
  - Operators to be encouraged through education
13. Sourcing for provision of bus shelter
  - Ongoing measure(KRB and other sectors)
14. Standing passengers
  - Necessary measure to be introduced within the CBD as in other countries
15. Prioritization of projects
  - Should be selected on viability criteria in relation to congestion alleviation within the CBD

### 3.3 THE SIXTH STAKEHOLDER MEETING

This meeting was held on 23rd August, 2005 at Kenya Science Teachers College. It was presided over by Eng. Ngare of the Ministry of Roads and Public Works. The meeting was divided into two sessions, I and II.

#### *Session I*

During this session, JICA study team made the following presentations:

- |  |                  |
|--|------------------|
| 1) Missing Link Construction Works                 | - Mr. T. Toda    |
| 2) Traffic Circulation Improvement in the CBD      | - Mr. K. Isomoto |
| 3) Improvement of Bus/Matatu Transportation System | - Mr. M. Koto    |
| 4) Result of IEE                                   | - Mr. S. Minato; |

### ***Session II***

This session was chaired by Mr. Adolwa of the City Council of Nairobi. It was plenary session where participants discussed presentations made during Session I. The participants raised various issues regarding traffic congestion in Nairobi City. Issues related to traffic circulation within the CBD and the improvement of Westlands roundabout featured most. It was not that improvement of Westland roundabout had not made any feasible impact on traffic circulation. The participants also raised the various causes of congestion within the CBD to include, poor designation of layabouts, road bumps, behaviour of the motorised and pedestrians and poor conditions of the roundabouts and intersections. Solutions these problems were suggested and are expected to be factored into the Master Plan Study. Among them are consideration of Nairobi's satellite towns, land-use planning, improvement of the roundabout, introduction of parking tariffs, improvement of interchange with the CBD, enforcement of the traffic rules and regulations.

Additionally it was felt that the plight of the physically challenged persons and the Non-motorised transport (NMT) should be taken to consideration in the preparation of the Master Plan.

Under the chairmanship of Eng Kagamba of the City Council, the meeting wrapped up with the following:

- 1) Based on the experiences of the Pilot Project carried out in the Westlands, roundabout improvement works are implemented within the framework of the Project. It would also be improved as access roads leading to the Westlands roundabout are improved;
- 2) Metropolitan growth strategy is in the process of its final stage. Its contents will be made available shortly and that the hitherto deteriorated land use plan is explicitly clarified. Thereby revitalization of the urban growth is achieved and improvement of the traffic problems we are facing today would therefore be realized in the near future.
- 3) NMT facilities are the important portion of the study and citizens of Nairobi should appreciate it as the project is implemented.
- 4) Improvement of the public transportation system would be the key issue of improving the traffic conditions in Nairobi. Every effort will be made in order to solve the deteriorated traffic conditions of CBD.
- 5) Financing and implementation strategy including improvement of executing organizations would be the success of the project implementation. It would be a continuous debate within the government circle.
- 6) Environmental concern is the last resort for the successful acceptance of the project. Coupled with the land use plan, effective development of road network on which public transportation depends would bring about the fruits of the study.

## CHAPTER 4 SOCIAL IMPACT SURVEY DURING PRE-FEASIBILITY STUDY

### 4.1 ROAD RESERVE AND CONSTRUCTION AREA

Road reserve and construction area are shown in Table 4.1-1 below.

**TABLE 4.1-1 ROAD RESERVE AND CONSTRUCTION AREA**

	Road Reserve (m)	1 <sup>st</sup> Stage		2 <sup>nd</sup> Stage	
		Construction Area (m)	Open Space	Construction Area (m)	Open Space
New Construction (I)	30	16	14	14	0
New Construction (II)	24	13	11	11	0
Improvement (Overlay + NMT)	Existing RR (Approx. 30)	Existing Carriageway + NMT (3 ~ 5)	RR – CA	RR – CA	Mostly no space

### 4.2 IDENTIFICATION OF PAPS<sup>1</sup>

A social impact survey was conducted among the occupiers of the Missing Links 3, 6 and 7. The survey gathered information on the socio-demographic and socio-economic characteristics of the PAPS, project impacts, resettlement areas preferred by the PAPS, and requests of the PAPS regarding resettlement and resettlement areas. The information gathered was meant to understand the social dynamics that are likely to hinder or facilitate the effectiveness of resettlement-related options.

The study collected information from a total of 282 temporary residents/business owners in the three Missing Links. The survey revealed that the proportions of males found on the Missing links are higher than the females. Of the total sample size of 282, the males were 225 (78.8%) while the females were 57 (20.2%). The high number of male respondents is because of the dominance of male-oriented automobile activities, Jua Kali garages, in the MLs. 3 and 7. The population of the PAPS is characteristically youthful, over 70% of those sampled are aged between 15 and 39 years in all the Missing Links. This reflects the youthful population that characterizes Kenya's population. Over 70% of the respondents were married while less than 30% were single. Only 4.8% were divorced in the ML No. 6 (Table 4.2-1). Their parental statuses were that 69% against less than 31% had children (Table 4.2-2). This compared fairly well with their marital status where almost all those who were married had children and almost all the singles did not have children. The number of children of the respondents ranged between 1 and 20. Over 10% of the respondents had children between 1 and 4 while those with more than five children were below 10% (Table 4.2-3).

<sup>1</sup> This identification survey of PAP was conducted by Pre-EIA in end August 2005. The number of PAP changed because of their business nature.

TABLE 4.2-1 MARITAL STATUS OF THE RESPONDENTS

Marital Status	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Single	21	28	5	23.8	30	16.1
Married	53	70.7	15	71.4	156	83.9
Other (Divorced)	0	0	1	4.8	0	0
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100</b>	<b>186</b>	<b>100</b>

TABLE 4.2-2 PARENTAL STATUS OF THE RESPONDENTS

Response	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	52	69.3	17	81.0	168	90.3
No	23	30.7	4	19.0	18	9.7
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100.0</b>	<b>186</b>	<b>100</b>

TABLE 4.2-3 STATISTICS OF THE CHILDREN OF THE RESPONDENTS

No. of Children	Missing Links					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
1	9	12.0	4	19.0	30	16.1
2	8	10.7	1	4.8	55	29.6
3	10	13.3	4	19.0	28	15.1
4	9	12.0	5	23.8	22	11.8
5	7	9.3	2	9.5	15	8.1
6	-	-	1	4.8	8	4.3
7	6	8.0	-	-	4	2.2
8	2	2.7	-	-	2	1.1
10	-	-	-	-	3	1.6
11	-	-	-	-	1	0.5
20	-	1.3	-	-	-	-
NA	23	30.7	4	19.0	18	9.7
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100.0</b>	<b>186</b>	<b>100</b>

Most of the respondents across the Missing Links send their children to schools outside the project area but within Nairobi city with the exception of ML 6 where the majority 33.3% have their children attending schools outside Nairobi City. Less than 10% of the respondents in the three missing links have children attending schools within the project area while less than 17% have children who have either not reached school going age or have completed their education (Table 4.2-4).



**TABLE 4.2-4 LOCATIONS OF SCHOOLS ATTENDED BY THE RESPONDENT'S CHILDREN**

Location of the School (s)	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Within the project area (Lavington-Kileleshwa)	2	2.7	2	9.5	9	4.8
Outside the Project area	35	46.7	6	28.6	83	44.6
Outside Nairobi	11	14.7	7	33.3	39	21.0
Other (Do not go to school / or have not yet gone school)	7	9.3	2	9.5	31	16.7
No response						
<b>Total</b>	<b>55</b>	<b>63.4</b>	<b>17</b>	<b>80.9</b>	<b>162</b>	<b>87.1</b>

Note: Those who have children only.

There are three residential categories of the respondents in all the three Missing Links (Table 4.2-5): those owning residential houses/structures within the project area (see Note); those renting residential house/structures within the project area; and those who have other residential arrangements such as renting or residing with relatives outside the project area. The majority (over 50% in MLs. 6 and 7 and all in ML 3) of the respondents fall in the third category where they have residential arrangements outside the project area. Less than 15% own a residential structure in the project area, while less than 40% in ML 6 and ML 7 and none in ML.3 rent a flat/apartment in the project area. Majority of the respondents against a small proportion of less than 5% have dependants living with them. Less than 25% live with between one (1) and six (6) dependents while less 30% live with more than six dependants (Table 4.2-6).

**TABLE 4.2-5 RESIDENTIAL CATEGORIES OF THE RESPONDENTS**

Residential Category	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
House owner in the project area	0	0	2	9.5	24	12.9
Renting Flat/Apartment in the project area	0	0	8	38.1	44	23.7
Other*	75	100	11	52.4	118	63.4
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100.0</b>	<b>186</b>	<b>100</b>

Note: The project areas are the direct influenced districts; Kilimani, Westlands, Kileleshwa, Lavington and Woodley.

TABLE 4.2-6 NUMBER OF DEPENDANTS LIVING WITH RESPONDENTS

No. of Dependants	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
0	2	2.7	1	4.8	0	0
1	8	10.7	2	9.5	17	9.1
2	18	24.0	2	9.5	17	9.1
3	12	16.0	5	23.8	35	18.8
4	10	13.3	5	23.8	36	19.4
5	10	13.3	2	9.5	29	15.6
More than 6	15	20.0	4	19.0	52	28.0
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100</b>	<b>186</b>	<b>100</b>

The respondents engage in informal employments/businesses. They operate kiosks and engage in other occupations such as street vending, laundry, construction works, hairdressing, mechanics, farming, carpentry, salesmanship, tailoring, shoe-mending and pastoring /preaching among others. Less than 10% of the respondents in MLs. 3 and 7 and 47.6% in ML.6 operate kiosks with daily permit. Those operating kiosks with annual permit were less than 10% in all the Missing Links (Table 4.2.7). Over 50% of the respondents engage in other occupations. The respondents have people depending on their occupations. Majority of the respondents have more than 5 people depending on their occupations and few (less than 10%) have less than 5 dependants (Table 4.2.8).

TABLE 4.2-7 OCCUPATIONS OF THE RESPONDENTS

Occupation	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Kiosk owner (Daily permit)	11	14.4	10	41.6	24	12.6
Kiosk owner (Annual permit)	1	1.3	2	8.3	18	9.4
Shop owner (Permanent permit)	0	0	0	0	0	0
Office worker/Shop keeper	0	0	0	0	0	0
Factory worker	0	0	0	0	0	0
Business owner	6	8.0	1	4.2	17	8.9
Government worker	0	0	0	0	0	0
No occupation	0	0	0	0	6	3.1
Other	58	76.3	11	45.9	126	66
<b>Total</b>	<b>76</b>	<b>100</b>	<b>24</b>	<b>100</b>	<b>191</b>	<b>100</b>

Note: Plural answers by respondent.

**TABLE 4.2-8 DEPENDANTS ON RESPONDENTS' OCCUPATIONS**

No. of Dependants	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Less than 3	5	6.7	2	9.5	9	4.8
Between 3 & 5	6	8.0	2	9.5	24	12.9
More than 5	59	78.7	5	23.8	145	76.9
No Response	5	6.6	1	4.8	8	5.4
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100</b>	<b>186</b>	<b>100</b>

### 4.3 OPINION OF PAPS

The Missing Link Roads Improvement Project is widely accepted by the respondents- over 90% registered acceptance (Table 4.3-1). The few (less than 10%) who do not accept the project. The major reasons of non-acceptance is the fear of losing their source of livelihood including loss of work places, businesses, customers and jobs (Table 4.3-2).

**TABLE 4.3-1 RESPONSES ON ACCEPTANCE/AGREEMENT ABOUT THE MISSING LINKS IMPROVEMENT PROJECT**

Response	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	68	90.7	21	100	175	94.1
No	7	9.3	0	0	11	5.9
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100.0</b>	<b>186</b>	<b>100</b>

**TABLE 4.3-2 RESPONDENTS' REASONS FOR NOT ACCEPTING THE PROJECT**

Reason	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Loss of Livelihood	7	9.3	0	0	8	4.4
Loss of shelter			0	0	1	0.5
Not beneficial			0	0	1	0.5
Priority should be given to existing roads in bad state			0	0	1	0.5
<b>Total</b>	<b>7</b>	<b>9.3</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>5.9</b>

With regard to resettlement options, most respondents across the Missing Links, 41% in ML.3, and more than 75% in ML. 6 and ML.7, prefer to be resettled in a Near-by area within the location. The rest indicated that they will move out of Nairobi City (Table 4.3-3).

**TABLE 4.3-3 AREAS PREFERRED BY THE RESPONDENTS FOR RESETTLEMENT**

Area of Preference	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Near-by area within the location	28	41.2	14	77.8	128	74.5
Anywhere within the district	28	41.2	2	11.1	18	10.6
Near-by area but different location	12	17.6	2	11.1	22	12.9
I will move out of the district	0	0	0	0	1	0.5
Other*	0	0	0	0	2	1.0
No Response	0	0	0	0	1	0.5
<b>Total</b>	<b>68</b>	<b>100</b>	<b>18</b>	<b>100</b>	<b>172</b>	<b>100</b>

A number of incomes increase impacts are expected with the construction of the Missing Link Roads. The majority of respondents except No.7 hopes foresee value contribution to their income (Table 4.3-4).

**TABLE 4.3-4 RESPONSES CONCERNING VALUE CONTRIBUTION OF THE MISSING IMPROVEMENT PROJECT TO THE INCOMES OF THE RESPONDENTS**

Response	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	43	57.3	19	90.5	80	44.0
No	32	42.7	2	9.5	103	56.0
<b>Total</b>	<b>75</b>	<b>100</b>	<b>21</b>	<b>100</b>	<b>183</b>	<b>100</b>

Note: 51% expect to increase their incomes in total.

This will occur because the project will improve comfortable riding of vehicles; lead to faster time for commuting to work, result in reduced dust and exhaust fumes; lead to introduction of bus/matatu to the project area; cause promotion of business; lead to an increase of economic productivity of the society as a whole and lead to increase of employment opportunities for the construction works (Table 4.3-5).

**TABLE 4.3-5 RESPONDENT'S CONCERNS WHY THE PROJECT WILL CONTRIBUTE VALUE TO THEIR INCOME**

Undesirable Development	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Comfortable riding of vehicles	39	19.0	12	14.3	74	14.9
Faster time for commuting to work	40	19.5	13	15.5	73	14.7
Reduced dust and exhaust fumes	19	9.2	12	14.3	73	14.7
Introduction of bus/matatu to this area	34	16.6	12	14.3	71	14.3
Promotion of business	32	15.6	16	19.0	71	14.3
Increase of economic productivity of the society as a whole	18	8.8	7	8.3	63	12.7
Increase of employment opportunities for the construction works	20	9.8	12	14.3	70	14.1
Other	3	1.5	0	0	1	0.3
<b>Total</b>	<b>205</b>	<b>100</b>	<b>84</b>	<b>100</b>	<b>496</b>	<b>100</b>

NB: the number of responses in all the missing links can not compare with the number of respondents, 75 in ML.3, 21 in ML.6 and 186 in ML.7, because some of the respondents gave more than one reasons.

While to the respondents who did not foresee any value contribution of the Project, the 68% replied “no significant impact to raise my incomes” (Table 4.3-6). The 22% answers of other reasons in the below Table 4.3-6 replied “loss of work (46%)” and “eviction/displacement (17%)” were the major concern (Table 4.3-7).

**TABLE 4.3-6 RESPONDENTS’ CONCERNS WHY THEY DO NOT FORESEE THE VALUE CONTRIBUTION OF THE PROJECT TO THEIR INCOME**

Undesirable Development	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Increase of traffic volume	2	5.9	1	25.0	1	0.8
Increase of traffic accident	0	0	0	0	0	0
Increase of vehicles causing air/noise pollution	2	5.9	1	25.0	1	0.8
Increase of spillage of oil, sand and gravels, soils, etc.	0	0	0	0	1	0.8
No significant impact to raise my income	11	32.3	1	25.0	95	80.6
No significant impact to the society as a whole	4	11.8	1	25.0	2	1.6
Other*	15	44.1	1	4.8	18	15.4
<b>Total</b>	<b>34</b>	<b>100</b>	<b>4</b>	<b>100</b>	<b>118</b>	<b>100</b>

\* Refer to table 4.3.7 for other Respondents’ concerns

Note: The 68% replied a “no significant impact to raise my income”.

**TABLE 4.3-7 OTHER RESPONDENTS’ CONCERNS WHY THE DO NOT FORESEE THE VALUE CONTRIBUTION OF THE PROJECT TO THEIR INCOME**

Other Undesirable Development	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Loss of business	1	7.1			1	5.0
Loss of work	8	57.1			8	40.0
Eviction/ Displacement	5	35.8	1	100	5	25.0
Loss of customers					2	10.0
Rise in poverty					2	10.0
Loss of jobs					2	10.0
<b>Total</b>	<b>14</b>	<b>100</b>	<b>1</b>	<b>100</b>	<b>20</b>	<b>100</b>

Approximately 70% of the total answers of 633 show that the project is expected to make positive contributions to the project areas. Most of the reasons are “improvement of economic productivity (22%)”, “comfort of community (35%)”, and “any conveniences with through traffic (12%)”, while many answers expect “direct employment of us for the construction works (26%)” (Table 4.3-8).

Other contributions expected are; ease of traffic jam, availability of short-term jobs, benefits to private vehicle owners (Table 4.3-9).

**TABLE 4.3-8 FACTORS OF DIRECT CONTRIBUTION OF THE PROJECT TO THE PROJECT AREAS**

Factor	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Improved economic productivity	44	30.0	13	28.2	82	18.6
Comfort of commuting	60	40.8	16	34.8	148	33.6
Any conveniences with through traffic	6	4.0	0	0	70	15.9
Direct employment of us for the construction works	30	20.4	15	32.6	117	26.6
Other*	7	4.8	2	4.3	23	5.3
<b>Total</b>	<b>147</b>	<b>100</b>	<b>46</b>	<b>219</b>	<b>440</b>	<b>100</b>

**TABLE 4.3-9 OTHER FACTORS OF DIRECT CONTRIBUTION OF THE PROJECT TO THE PROJECT AREAS**

Factor	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Loss of business in cases of displacement	0	0	1	100	1	14.3
Would benefit private vehicle owners	2	66.7	0	0	0	0
Provide short term employment	1	33.3	0	0	0	0
Will ease traffic Jam	0	0	0	0	6	85.7
<b>Total</b>	<b>3</b>	<b>100</b>	<b>1</b>	<b>100</b>	<b>7</b>	<b>100</b>

Meanwhile 30% of the total answers indicated undesirable development (Table 4.3-10). The major reasons are “eviction / displacement / demolition (34%)” and “loss of job / business / loss of income / loss of customers (27%), and “insecurity (21%)” (Table 4.3-11).

**TABLE 4.3-10 MAJOR UNDESIRABLE DEVELOPMENTS OF THE MISSING IMPROVEMENT PROJECT**

Undesirable Development	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Development of further slum area	0	0	1	4.5	1	0.5
Increase of garbage dump	0	0	1	4.5	2	1.0
No improvement to the near-by narrow road impassable for large trucks	2	2.7	0	0	2	1.0
General traffic congestions	12	16.2	1	4.5	6	3.1
Other*	57	77	19	86.5	182	94.4
Non Response	3	4.1	0	0	0	0
<b>Total</b>	<b>74</b>	<b>100</b>	<b>22</b>	<b>100</b>	<b>193</b>	<b>100</b>

**TABLE 4.3-11 OTHER UNDESIRABLE DEVELOPMENTS OF THE MISSING IMPROVEMENT PROJECT**

Undesirable Development	Missing Link					
	No. 3		No. 6		No. 7	
	Number	Percentage	Number	Percentage	Number	Percentage
Eviction/ Displacement/ Demolition of houses	9	25	5	55.6	53	34.5
Loss of Jobs/ business/ loss income/loss of customers	16	44.4	2	22.2	69	44.9
Insecurity	9	25	1	11.1	11	7.2
Loss of farmland	0	0	1	11.1	2	1.3
Failure to compensate those affected	1	2.8	0	0	0	0
Destruction of Natural environment	1	2.8	0	0	0	0
Pollution increase	0	0	0	0	2	1.3
Increase in Undesirable behaviour-Prostitution	0	0	0	0	2	1.3
Increase in road accidents	0	0	0	0	3	1.9
Pedestrians will not like using it	0	0	0	0	1	0.6
It will take a lot of land	0	0	0	0	1	0.6
Loss of Shelter	0	0	0	0	2	1.3
Increase in Poverty	0	0	0	0	7	4.5
Disturbance due to eviction	0	0	0	0	1	0.6
<b>Total</b>	<b>36</b>	<b>100</b>	<b>9</b>	<b>100</b>	<b>154</b>	<b>100</b>

#### 4.4 MITIGATION MEASURES

##### 4.4.1 Mitigation Measures of the Environmental Impacts

###### (1) Mitigation Measures on the Natural Environment

Trees grown on the road reserve are counted before the construction works begin. The same number of trees is then grown as follows:

- Plant trees on the green belt along the Missing Link road;
- Plant a number of trees elsewhere if the number of trees felled down does not tally whereby the number of trees planted on the green belt along the missing link road are determined to be less.

###### (2) Resettlement Action Plan as Socio-Economic Mitigation Measures

A socio-economic survey of the area affected by the Project was carried out from June – August 2005. This survey investigated the social impacts of the Missing Links Nos. 3, 6 and 7 roads improvement projects in Kileleshwa, Kilimani and Lavington areas of Nairobi City. It is a baseline data of the expected social impacts of the project particularly to the communities and environment directly affected by the Project. Data was collected from temporary residents, temporary/informal business owners, permanent residents, permanent business owners, institutions and key informants using questionnaires and the results are attached in Appendix 29.

### **(3) Stakeholders Consultation and Participation**

There have been a series of stakeholders meetings held in May, July and August 2005. Details of the programs and minutes of discussions including follow-up discussions with individual stakeholder groups are shown in Appendix 29. The following is a summary of the discussions:

- In general any road project implemented in Nairobi is welcomed;
- Kiosks and temporary garages are subject to removal. However, before removal, the City Council of Nairobi should extend their concerns over poor people and find them places to move to; and
- Garages in operation on a section of Missing Link No.7 form a part of “Jua Kali Project” under the jurisdiction of the Ministry of Labour. All of them, including kiosk owners, should be considered to form a part of the Project. Instead of excluding them, a way to include them should be sought at the Master Plan Study level.

#### Discussions on Resettlement

Further discussions on resettlement have been held on site during the socio-economic survey. Details of the discussions are shown in Appendix 29. The following is a summary of the discussions:

- In general, any road project implemented in Nairobi is welcomed. However, poor people should be considered as an integral part of the Project;
- The City Council of Nairobi was requested to discuss with the local residents and kiosk owners for cooperation of the Project; and
- Income generation and shelter provision of garages in operation on a section of Missing Link No.7 form a part of “Jua Kali Project” under the jurisdiction of the Ministry of Labour. MOL will coordinate with them for Project involvement.

#### Gender Distribution of Respondents

The social-demographic results are described in terms of gender, age, marital status, parental status, economic status, and residential status. A total of 282 respondents were interviewed during the survey, out of which 75, 21, and 186 were interviewed in the area along the Missing Links No.3, No.6 and No.7 respectively. In total 225 males and 57 females were interviewed. There are a large number of male respondents because of the dominance of male-oriented automobile garage operation created by “Jua Kali Project” in the middle section of Missing Link No. 7 and a few in No.3.

#### Ages of Respondents

Generally, the respondents can be described as youthful workforce i.e. over 70% fell within the age brackets of 20-29 and 30-39.



### Marital Status

Over 70% of the respondents were married, while only one respondent was divorced.

### Parental Status and the Number of Children of the Respondents

Approximately 70 – 90 % of the respondents have children. This compared fairly well with their marital status where almost all the married respondents had children. More than 10 % of the respondents have between one and four children. This does not, however, mean that they live together. The number of people living together with their families varied across the missing link areas. In Missing Link No.3, more than 56 % of respondents have from four to six or more people living together. In Missing Link No.6, 47 % have three to four people living together, while in Missing Link No. 7, 28% of respondents have more than six people living together. This implies that the local residents leave their own children at Home to some extent, while they share their house with others like sisters and brothers or relatives.

### Residential Status of Respondents

There are a few respondents owning houses in the project area. In the Missing Link No.3, 89.3 % of them live outside the project area. This implies that they commute to run kiosks in the area. In the Missing Link No. 6 and No.7, there are 42.9 % and 61.3 % of them respectively living outside the project area. Compared to this, there are a fraction of the respondents that live in the work place i.e. kiosks.

### Location of Schools Attended by Children

The majority of the respondents across the Missing Links send their children to schools outside the project area but within Nairobi City with the exception of Missing Link No.6 where 33.3 % of them have their children attending schools outside Nairobi City i.e. their homeland area. Less than 10% of the respondents in the three Missing Links have children attending schools within the project area. This implies that they have their children left in the rural area and also that they are not residents of the local areas.

### Occupations of the Respondents

The respondents in the Missing Links engage in informal employments/businesses. They operate kiosks and engage in other occupations such as street vending, laundry, construction works, hairdressing, mechanics, farming, carpentry, marketing, tailoring, shoe-shining, among others. 10 % of the respondents in Missing Links No. 3 and No.7, and 47.6 % in Missing Link No.6 operate kiosks with daily permits. Those operating kiosks with annual

permits were less than 10% across the three Missing Links. Further, there are a few cases where respondents engaged in more than one occupation.

#### Dependants on the Respondent's Occupation

Out of the respondents in all the three Missing Links, 78.7% in Missing Link No.3, 23.8% in Missing Link No.6 and 76.9% in Missing Link No.7 have more than 5 people depending on their occupations. Those with less than 5 dependants were less than 10 % across the Missing Links. This compared fairly well with the respondents living together with people other than their own children.

#### Vehicle Ownership

A few respondents, 10 – 30 %, in all the three Missing Links own vehicles. Bicycles are a common means of transport compared to cars in the three Missing Link areas.

#### Information on the Missing Link Improvement Project

Approximately 70 % of respondents are aware of the existence of the missing link roads. They also knew very well about the existence of the road reserves. However, more than half of them were not aware of the existence of the Missing Link Improvement Project and a majority of them knew about it by way of rumours. As they responded to the interview survey, they now come to accept the Project.

#### Acceptance of Resettlement

Approximately 90% of the respondents accept resettlement as a result of project implementation. Those who do not accept resettlement stated that:

- They have nowhere else to go;
- The current place is their source of livelihood;
- The new place might not have electricity and water;
- They are used to the current place; and
- They fear losing their work places and customers.

#### Areas Preferred by the Respondents for Resettlement

Most respondents across the three Missing Links prefer to resettle in a near-by area within the location. Very few of them stated that they intend to move out of Nairobi.

### Requests of the Respondents for Resettlement

A majority of respondents requested the government to find a place to resettle them, preferably before the project is implemented, while 30 % of them made other requests such as financial support for resettlement, employment or job opportunity, and provision of permanent trading licences.

### Value of the Existing Road

More than 80% of the respondents stated that they find the existing road useful because these roads provide access to shopping places, provide farmland, promote business, and are residential areas. However, the respondents do not find the existing roads valuable because their conditions are deteriorated; the dusty conditions of the road do not allow bus/matatus to enter; the deteriorated road condition causes low economic productivity; and excessively long time to reach the places of work.

### Contributions of the Existing Roads to Socio-economic Environment

A considerably large number of respondents agreed that the existing roads contribute to the residential, business and sports/educational development of the area. These roads are not considered as boosting tourism, factories and agriculture.

### Social Impacts of the Missing Links Road Improvement Project

Approximately half of respondents on the Missing Links No.3 and No.7 stated that the Project will bring about positive socio-economic impacts to the surrounding areas. A majority of respondents in Missing Link No.6 also stated that there will be positive development with the implementation of the Project. Comfortable ride in buses, faster commuting time, introduction of buses and matatus, promotion of business, and improvement of job opportunities, to name a few, are anticipated developments among others. However, some respondents did not foresee any value contribution of the Project due to resultant increase in traffic volume and air/noise pollution. Some of the respondents stated that the Project would not contribute anything to the local society and even fear that some would lose their jobs.

### Effects of Missing Link Improvement Project

These will be essentially the same as those contributed by the existing roads to the local society. The Project is looked upon as a contributor to residential, business and educational/sport development. Tourism development brought about by the Project is rated slightly higher than the effect of the existing roads. In general, improvement of economic

development, comfort of commuting and direct employment at the time of project implementation are anticipated as reasons of acceptance of the Project.

#### Major Undesirable Development Brought About by the Missing Link Improvement Project

76 % of respondents in the Missing Link No.3 and 94 % of respondents in the Missing Link No.7 stated that they fear loss of shelter, farmland, jobs, business, general insecurity, eviction/displacement of families, increase in road accidents, and increase in poverty and destruction of natural environment.

#### Preferred Type of Road for Positive Development of the Project Area

A majority of respondents stated that a road with sidewalks is a must-development. They do not mind if the road is with or without greenbelts/landscaping areas.

#### Number of Project Affected People (PAP)

The number of PAPs directly affected by the Project is summarized in Table 4.4-1.

**TABLE 4.4-1 NO. OF PAP AFFECTED BY THE PROJECT.**

No.	Descriptions	Area of Missing Link Road			
		No.3	No.6	No.7	Total
01	Kiosks	10	23	101	134
02	Vendors without shelter	5	20	39	64
03	Automobile garages	3	0	21	24
04	Temporary Residents	0	1	3	4
05	Social Facilities	1	0	0	1
06	Gardening areas	2	10	8	20
07	Tree nurseries	2	0	1	3
08	Religious Buildings/Offices	1	0	0	1
09	Car Parks	0	0	3	3
	Total	24	54	176	254

#### Preferred Type of Intersection

While the local residents are positive about a road with sidewalks, their preference on the type of intersection differs from roundabouts with or without signals, or conventional intersections with or without signals. In general, roundabouts with signals are the local preference.

#### Valuation of Losses of PAPs

The approximate costs of kiosks/garages occupying the road reserve is shown in Table 4.4-2 (1) to (4). It is a broad categorization of structures ranging from wooden to iron sheets with or without cemented floors.

**TABLE 4.4-2 (1) ESTIMATED UNIT COST OF KIOSKS/GARAGES**

Category	Size	Cost (Ksh)/unit
1. Small	Up to 16m <sup>2</sup>	58,450
2. Medium	25-100 m <sup>2</sup>	89,660
3. Large	100-225m <sup>2</sup>	365,340

Source: Professional Carpenter. The above is on the higher estimate among the sources.

**TABLE 4.4-2 (2) ESTIMATED COST OF KIOSKS/GARAGES OF LINK NO.3**

No.	Descriptions	Unit Cost (Ksh)	No.	Total (Ksh)
01	Kiosk			
	a. Small (Up to 16m <sup>2</sup> )	58,450	3	175,350
	b. Medium(25-100 m <sup>2</sup> )	89,660	5	448,300
	c. Large(100-225m <sup>2</sup> )	365,340	2	730,680
02	Automobile Garage	365,340	3	1,096,020
03	Social Facilities	365,340	1	365,340
04	Religious Buildings/Offices	365,340	1	365,340
	Total		24	3,181,030

Source: Professional Carpenter. The above is on the higher estimate among the sources.

**TABLE 4.4-2 (3) ESTIMATED COST OF KIOSKS/GARAGES OF LINK NO.6**

No.	Descriptions	Unit Cost (Ksh)	No.	Total (Ksh)
01	Kiosk			
	a. Small (Up to 16m <sup>2</sup> )	58,450	8	467,600
	b. Medium(25-100 m <sup>2</sup> )	89,660	12	1,075,920
	c. Large(100-225m <sup>2</sup> )	365,340	3	1,096,020
	Total		23	2,639,540

Source: Professional Carpenter. The above is on the higher estimate among the sources.

**TABLE 4.4-2 (4) ESTIMATED COST OF KIOSKS/GARAGES OF LINK NO.7**

No.	Descriptions	Unit Cost (Ksh)	No.	Total (Ksh)
01	Kiosk			
	a. Small (Up to 16m <sup>2</sup> )	58,450	79	4,617,550
	b. Medium(25-100 m <sup>2</sup> )	89,660	12	1,075,920
	c. Large(100-225m <sup>2</sup> )	365,340	10	3,653,400
02	Automobile Garage	365,340	21	7,672,140
	Total		23	17,019,010

Source: Professional Carpenter. The above is on the higher estimate among the sources.

From the above mentioned, the grand total of the value of structures directly affected by the Project would be estimated at Ksh 22,839,580 for kiosks, garages and other buildings. However, the unit cost differs from one source to the other. It is subject to official estimation applying official figures for each item subject to compensation that has to be valued, determined and applied at the time of valuation. Owners of gardening areas, farming areas and tree nurseries have agreed to give up their possessions without any compensation.

### Resettlement Policy

The primary objective of the resettlement action plan is to provide policy and procedural guidelines for land acquisition, compensation, resettlement and income and livelihood

restoration for the PAPs. Theoretically, the following are the essential elements for the resettlement policy despite the fact that kiosk owners and garage operators occupying the road reserves in Nairobi are not considered as residents with permanent permits. However, it would be sensible to develop a resettlement policy as follows:

- Clarify the organizational responsibilities related to the Project;
- Encourage community participation and dialogues at stakeholder meetings;
- Implement integration of the PAPs with host populations, if any;
- Carry out in-depth and 100% of sampling of the PAPs in terms of socio-economic survey;
- Clarify the existing legal framework including entitlement for resettlement, mechanisms for resolution of conflicts and appeal procedures of the PAPs who are kiosk owners and Jua Kali Project's garage operators;
- Identify alternative resettlement sites;
- Observation and agreement of the resettlement site by the representatives of PAPs;
- Elaborate the valuation and compensation for lost assets;
- Identify permission of micro-enterprises and classify the PAPs according to their status of permission for the entitlement of resettlement;
- Provide access to training, employment, and credit as appropriate;
- Provide shelter, infrastructure, and social services for the PAPs;
- Review the measures on environmental protection and management;
- Elaborate implementation schedule and budget allocation; and
- Elaborate Monitoring and Evaluation Plan.

#### Entitlement of the PAPs

There are no laws and regulations which explicitly state the entitlement of the PAPs directly affected by the Project. However, appropriate compensation should be paid based on the constitutional rights of PAPs. EIA regulations also state that Kenyan citizens have a right to be given an appropriate environment for living and that they have various properties at present. As such, they are considered to be given resettlement assistance in lieu of compensation for the land they occupy and properties they possess and any other assistance for losses incurred during the resettlement operation. This should only apply to those who occupy the Missing Links prior to the deadline which the GOK is to set out in due course.

The criteria of eligibility may be determined by the loss of property such as business or residential structures, crops, trees, and any other possessions or improvements made on their properties. The following entitlement matrix outlines the types of losses such as land, shelter, and livelihood which may be applied to the PAPs. However, this is subject to further study and survey to be implemented by the GOK in order to reach an agreement between the GOK as the project proponent and the PAPs.

The proposed survey should mainly review documentary evidence such as permits for assets to be lost as a result of implementation of the Project. It is also important to hold stakeholder meeting(s) with the PAPs and review whether the assets are individually owned or belong to a group under the currently valid permit for kiosk or garage operations as well as social and religious organizations. Thereby, both sides should agree to establish a criteria by which the PAPs will be deemed eligible for compensation and other resettlement assistance as Kenyan citizens. The proposed entitlement of the PAPs is shown in Section 28.4 of Appendix 28.

#### Resettlement/ Relocation Sites

Missing Links No. 6 and No.7 would be subject to implementation of half of the width of the existing road reserve at the initial stage. Essentially therefore the other half of the road reserve of approximately 30m, would be allocated as a resettlement site. There is no other available resettlement/relocation site identified at present. Thus, the following suggestions which are subject to further study and mutual agreement arrived at as a result of the stakeholder meetings are proposed:

- Allocation of the designated areas should be determined based on the agreement reached by a series of stakeholder meetings;
- A new licensing system should be elaborated i.e. a limited period of a maximum five years could be an option;
- Licensees should evacuate the designated areas upon expiration of the maximum licensing period without compensation costs for resettlement/relocation;
- Structures built as kiosks or garages should clear the minimum building code requirements of the GOK for temporary structures;
- Uniform design of kiosks may be determined by the City Council of Nairobi based on enhanced aesthetics as a basic criterion.
- Explicit new licensing conditions should be stated in the license; and
- No daily license should be issued.

#### Assistance for Resettlement/Relocation

Assistance for resettlement/relocation could be considered ranging from compensation to the income restoration programme. However, actual assistance for resettlement/ relocation may be limited to the following:

- Dismantling but conserving the materials currently being used to a re-usable state; and
- Transportation of materials from the present location of the structures to the allocated destination.

### Income Restoration Programme

Kiosks and garages to be re-allocated to the un-paved portion of the road reserve of the Missing Link No.6 and No.7, without a particular income restoration programme as they would sustain their current customers to some extent.

On the other hand, if they are moved to other areas, it would be sensible to provide short term and long term income restoration programmes, which are considered necessary to be implemented within the framework of the Project. Details are shown in Appendix 29.

### Grievance Redress Measures

Kiosk owners and garage operators are usually not adequately protected when they are relocated from the location of operating their businesses. As a consequence it would be sensible to establish measures within the framework of the Project as follows:

- The City Council of Nairobi to be responsible to establish a unit of grievance redress within the City Inspectorate or Social Services;
- The unit to be specifically established for receiving complaints related to the resettlement so exercised by the resettlement scheme of the Project; and
- Officers with a background of sociology, human psychology, social anthropology or any background of human oriented activities to be assigned.
- The unit should notify the PAPs that the grievance redress unit is the sole agent of dealing with such matters on behalf of the City Council of Nairobi.

### Cost of Resettlement Action Plan

The overall cost of the resettlement action plan is estimated at Ksh. 35,244,580 as is shown in Table 4.4-3. However, the unit cost differs from one source to the other. It is subject to official estimation applying official figures for each item subject to compensation that has to be valued, determined and applied at the time of valuation.



TABLE 4.4-3 OVERALL COST OF RESETTLEMENT

No.	Item	Unit Cost (Ksh)	No. of Units	Total Cost (Ksh)
01	a. Kiosks-Demolition	75,000	134	10,050,000
	b. Kiosks-Rebuilding*	LS	134	13,340,740
02	Vendors without shelter	LS	-	0
	a. Automobile garages-Demolition	12,500	24	300,000
03	b. Automobile garages-Rebuilding*	LS	24	8,768,160
04	Temporary Residents	LS	-	0
05	a. Social Facilities-Demolition	75,000	1	75,000
	b. Social Facilities-Rebuilding*	LS	-	365,340
06	Gardening areas-demolition	75,000	20	1,500,000
07	Tree nurseries – demolition	50,000	3	150,000
08	a. Religious Buildings-Demolition	75,000	1	75,000
	b. Religious Building-Rebuilding*	LS	-	365,340
09	Car Parks	85,000	3	255,000
	Total			35,244,580
	Saving cost by usable materials for rebuilding		50%	17,622,290
	Actual Cost for 4-lane road			17,622,290
	Actual Cost for Initial Stage (2-lane road)		50%	8,811,145
	Budget for ROW Acquisition Cost			9,000,000

Note: \* - Refer to Table 4.4-2

Demolition includes loading, transportation and off-loading of materials.

#### 4.4.2 Environmental Management and Monitoring Plan

##### Environmental Management Plan

No specific Environmental Management Plan for the natural environment is considered necessary as restoration of the natural environment is embedded in the green belt construction works of the Missing Link Improvement Project. Green belt on the sidewalks, roundabouts and abutment areas of the road bridges constructed as part of the Project are subject to routine maintenance works carried out by the City Council of Nairobi.

For the social consideration, the resettlement Action Plan is considered as an overall environmental management plan.

##### Environmental Monitoring Plan

It is imperative that the internal and external monitoring plans are carried out as follows:

- Internal Monitoring
  - Within the government organization responsible for the implementation of the resettlement action plan as well as the natural environment management plan, a monitoring unit is to undertake the monitoring plan.

- Monitoring Units will look into the conventional indicators such as assistance provided to the PAPs, level of infrastructure facilities allocated, level of the restoration of livelihood and other relevant environmental components directly impacted by the Project.
  - Monitoring Units will also assess the financial aspects, which include payment of compensation, grants, income restoration programme, and other aspects of resettlement including restoration of the natural environment.
  - Regular progress reports shall be prepared and submitted to the implementation organization of the Project on a timely basis.
- External Monitoring
    - In order to verify the results of the internal monitoring carried out by the implementation organization of the Project, it is mandatory that external monitoring works are carried out.
    - NGOs or consulting companies licensed to undertake EIA studies by the GOK to be employed as external monitoring units for periodical monitoring works.
    - External monitoring units will assess whether resettlement objectives have been met. Specifically, whether livelihoods and living standards have been restored or enhanced after every 6 months over a 3 year period as a minimum requirement.
    - External monitoring units will assess the efficiency of the resettlement operation, effectiveness, impact and sustainability, so as to be able to draw lessons for future resettlement activities in terms of whether the resettlement entitlements were appropriate to meet the objectives of the resettlement action plan, and whether the objectives were suitable to the PAPs conditions.
    - External monitoring units to submit reports of the results of the monitoring works and make recommendations on various aspects to the implementation organization of the Project.

## CHAPTER 5 INITIAL ENVIRONMENTAL EXAMINATION

### 5.1 PREPARATION OF SCOPING OF ENVIRONMENT AND SOCIAL CONSIDERATIONS

JICA guidelines for environment and social considerations categorize projects based on the significance of their impacts on the environment and society. In Category A are projects which have significant adverse impact on the environment and society; Category B are projects whose potential adverse impacts on the environment and society are less adverse than those of Category A; and in Category C are projects which have minimal or little adverse impacts on the environment and society. Following these guidelines, the Study Team scoped environment and social considerations for the Missing Links Roads Construction Project. The scoping work is based on the Pre-EIA during Pre-Feasibility Study. Table 5.1-1 below summarises scoping of environment and social consideration.

**TABLE 5.1-1 SCOPING OF ENVIRONMENT AND SOCIAL CONSIDERATION FOR MISSING LINKS ROAD CONSTRUCTION**

Aspect of Environment	With Project		Without Project		
	Rating	Explanation	Rating	Explanation	
Social Environment	1. Relocation	B	Relocate about 120 small squatter shops and other informal businesses who occupy the road reserves.	B	Small squatter shops increase to occupy the road reserve.
	2. Regional economy	B	<ul style="list-style-type: none"> <li>Removal and relocation of the squatter shops will affect the local informal economy – loss of business, loss of income, loss of farm land and loss of jobs.</li> <li>Beautification and MT, NMT &amp; Public Transport Facilities make the clients and the incomes increased.</li> </ul>	B	Contribution to the local economy will continue.  Formal business shops and centres will suffer from insecurity caused by informal sectors.
	3. Transport & life facilities	B	<ul style="list-style-type: none"> <li>Improvement of transport and life facilities due to improve accessibility and vehicular mobility.</li> <li>Increase of risk of traffic accident due to increase of traffic.</li> </ul>	B	No improvement of the present traffic issues.
	4. Regional communities	B	The project is likely to accelerate the influx of new permanent residents in the area due to better service associated with improved road network.  Connection among environmental residential zones will be improved, while the community will be separated by the road traffic.	B	Local communities will continue to grow occupying the available space.  Separation among environmental residential zones will be continued.
	5. Health and sanitation	C	Inflow of construction workers may have negative effects.	B	Increase of informal settlements in the road reserves coupled with absence of sanitary facilities will increase health and sanitation associated hazards.

Aspect of Environment	With Project		Without Project	
	Rating	Explanation	Rating	Explanation
6. Solid waste	C	Construction debris needs to be properly treated.	B	Increase of informal settlements in the road reserves coupled with absence of solid waste management services will increase solid wastes.
	B	Improper design or construction methods may increase the risk of river bank breaking.	D	Not applicable
Natural Environment	B	Minor soil erosions of riversides may occur.	B	Depending on location soil erosion occur particularly on the section of the missing links where farming is carried out.
	C	River crossing will not affect the river flow itself.	B	Increase of un-managed waste may clog the natural drainage system and interfere with the river flow.
	B	Several common trees growing along the road reserves will be removed.	B	No part of it will be affected.
	B	Road and bridge designs need to be appropriate and greenery provided to compensate for removed trees.	B	No part of it is affected i.e. no maintenance works are carried out and the landscape should slowly deteriorate.
Pollution	B	Air pollution will temporarily increase during construction phase and operation phase due to increase in vehicular density and mobility.	B	Uncontrolled air pollution should prevail due to automobile activities and improper burning of wastes.
	B	River water may be temporary contaminated by construction activities.	B	River water may continue to be polluted by wastes from the informal settlement because they act as repository sites.
	B	Noise will increase due to operation construction machinery and increase traffic during operation.	B	Uncontrolled noise and vibration pollution should prevail due to the presence of several automobile garages on ML 3 & 7.
	B	Vehicular emissions will increase offensive odour.	B	Uncontrolled offensive odour should prevail due to emissions from the automobile garages and decomposition of improperly disposed wastes.

**A:** Significant impact expected

**B:** Some impact expected

**C:** Impact unknown

The whole project of constructing the missing links 3, 6 and 7 fall under Category B of the JICA guidelines. This is because cumulatively, less adverse impacts are expected on the environment and society

## 5.2 EVALUATION AND PROPOSED FURTHER STUDY

Evaluation and proposed further study are shown in Table 5.2-1.

TABLE 5.2-1 EVALUATION AND FURTHER STUDY

Aspect of Environment	Rating	Proposed Further Study	Remarks
1. Relocation	B	1. MOLG / CCN market improvement plan 2. Detailed survey of PAP 3. Relocation site survey (temporary and permanent)	Use of open spaces of the road reserves
2. Regional Economy	B	Informal sector projects survey	Review of Jua Kali promotion policy
3. Transport & Life Facilities	B	1. School / Business centres location survey 2. Traffic accident (black spots) survey 3. Bus stops plan and local resident opinions survey	1. Topo survey 2. Traffic safety facilities design 3. Bus stop design
4. Regional Communities	B	1. Local resident opinion survey	Pedestrian crossing design
5. Disaster Risk	B	1. Topographic and geo-technical survey 2. Weather data and survey 3. Flood records survey	These surveys will be included natural conditions survey.
6. Soil Erosion	B	Preventive measure survey against soil erosion	Road design Construction plan for construction method and schedule
7. Fauna and Flora	B	Present vegetation and tress survey	<ul style="list-style-type: none"> <li>• Green-belt design</li> <li>• Road alignment design</li> </ul>
8. Landscape	B	Local resident opinion survey (Approach designate entrance)	Road alignment, geometric and bridge design
9. Air Pollution	B	1. Baseline survey during construction 2. Green-belt plan survey	- ditto -
10. Water Pollution	B	1. Baseline survey river (water quality) 2. Drainage system design survey 3. Construction drainage / sewage water treatment survey	- ditto -
11. Noise and Vibration	B	1. Sensitive facilities (schools, etc.) survey 2. Construction plan survey	Proper road design and construction plan for adjacent areas to schools, etc.
12. Offensive Odour	B	1. Green-belt plan study for counter measures	-

## CHAPTER 6 PUBLIC HEARING

### 6.1 ASSISTANCE OF PUBLIC HEARING MEETING

The preparations of the public hearing meeting involved a number of activities; identification of project persons (PAPs), field visits, design of questionnaire for PAPs, and public announcement of the meeting. Series of preparatory meetings were held together with the JICA Study Team, MOLG, CCN and MRPW. The following are the preparatory meetings held prior to the public hearing:

#### 6.1.1 The Preparatory Meeting of 13<sup>th</sup> January, 2006 at JICA Office, Nairobi

This was the first meeting between the JICA Study Team and the local consultants. The purpose of this meeting was to discuss the TORs for the assignment. The JICA Study Team explained the assignment and the JICA guidelines regarding the same. At this meeting, another meeting was scheduled for 18th January 2006.

#### 6.1.2 The Meeting of 18th January at the Director of Urban Infrastructure Office (MOLG)

This was a meeting between the JICA Study Team, MRPW, MOLG and CCN. The meeting discussed the plight of the PAPs with regard to road construction in the City of Nairobi. Eng Ariga, Director of Urban Infrastructure, informed the meeting that relocation of PAPs on the three Missing Links, 3, 6 and 7 will be done in a manner that less or no problem will be caused. This will be in keeping with the guidelines from World Bank and JICA. In addition, a representative from City Council of Nairobi under which the proposed project falls, reported that the PAPs have temporary status on the Missing Links, and only have temporary licences to operate business. They are therefore not entitled to the land on which their structures are built. He furthered noted that notice will be served to them to vacate the road reserve the moment the project is about to start.

After the meeting, JICA study team led the participants in a visit to the three Missing Links. The participants were shown the road design for the project with detailed work to be done during the construction and how each section of the Missing Links is captured in the design. Some of the works to be done are construction of bridges on sections where roads are crossing the rivers and construction of road intersections. In phase one of the project, a two lane road will be constructed which may be expanded in future.

### **6.1.3 The Meeting of 23rd January, 2006 at JICA Offices**

This meeting took place at the JICA Offices between the JICA Study Team and the local consultants. The agenda of the meeting was to examine a draft questionnaire already designed by consultant and to prepare draft agenda for the Meeting of 24th January, 2006 between the JICA Study Team, the consultant, MOLG, MRPW and CCN.

### **6.1.4 The Meeting of 24th January, 2006 Meeting at Director of Urban Infrastructure Office (MOLG)**

This meeting took place at the Office of the Director of Urban Infrastructure (MOLG). The meeting deliberated on the preparations for the public hearing. In particular, it focused on public announcement of public hearing meeting, proposal of a team for resettlement of PAPs, public hearing program, draft questionnaire and National Environment Management Authority (NEMA) involvement and Modality.

The meeting drafted the program for the public hearing and agreed to make a public announcement the meeting on 27th January, 2006 through print media and distribution of printed notices to the respective stakeholders. With regard to the resettlement of the PAPs, the meeting agreed to get appropriate modalities from the City Council of Nairobi. The meeting discussed the contents of the draft questionnaire prepared by the consultant. The meeting also discussed on NEMA involvement and modality.

### **6.1.5 The Meeting of 31st January, 2006 at Director of Urban Infrastructure Office (MOLG)**

This meeting was between the Consultant, MOLG, CCN, and JICA Study Team (Annex 4). It was a follow-up of the meeting of 24th January 2006. The meeting discussed on the draft questionnaire, number of PAPs with temporary permit or licence, the present status of PAPs and program for preparation of public hearing.

The members discussed the draft questionnaire and agreed that it will seek to cater information on the contacts of the respondent, demographic characteristics of the respondent, status of the respondent with regard to the Missing Links Roads Construction Project, the opinion/support of the respondent for the project, the understanding of the respondent on his/her temporary status, the notice required by the respondents (only those who fall the temporary status category) to relocate from the project site and where the respondent (also those in temporary status category) will relocate to once the Missing Links Road Construction Project begins.

On the number of temporary permit or licence holders of Missing Links (3, 6 and 7) and

present status on site of the temporary occupiers, the meeting agreed that the CCN Mathare-4 team led by Mr. Molinge's Team should be brought on Board. It was also agreed that license data of 2005 were be used to countercheck the list of total number of temporary licences.

With regard to the announcement of the public hearing, it was agreed that JICA study team should assist in distributing the adverts/notices from 8th to 9th February, 2006, two days before the stakeholders meeting / public hearing.

The meeting also discussed the program for the preparation of Public Hearing and the target date. The JICA Study Team suggested that the resettlement policy of ADB would be used as a basis to fulfil JICA conditions. The Team also provided a sample of flowchart having target dates for simple survey. The participants fixed the target data for each task.

#### **6.1.6 Public Hearing Meeting**

The public hearing meeting was announced through print media (Annex 5) and distribution of printed notices (Annex 6) to the respective PAPs. The consultant distributed printed notices to the PAPs in the three Missing Links Road on 8th and 9th February, 2006, two days before the meeting as was agreed in the meeting of 31st January, 2006. The meeting was held on 11th February, 2006 at Kilimani Primary School and was attended by 151 people (Annex 7) out of which 125 were PAPs. The meeting was conducted under chairmanship of Mr Justus Amaya, the director of urban planning (MOLG).

A number of presentations were made in the meeting; Opening speech (Acting Director, MOLG), Opening Address (City Engineer, CCN), Outline of the Project (JICA Study Team), Environmental Legislation in Kenya (the Local Consultant) and Government Policy on Resettlement (Director of the City Planning) (Annex 8). After the presentations, the consultant served the PAPs participants with the questionnaire (Annex 9) for the Enquete Survey. The local consultant went through the questionnaire, question by question, with the PAPs. After plenary discussion, the PAPs filled the questionnaires and returned them to the JICA Study Team (Annex 10).



## CHAPTER 7 PAPs OPINION SURVEY (ENQUETE SURVEY)

The consultant analysed the questionnaires filled out by PAPs during the public hearing meeting. The following are the results and the finding of the survey:

### 7.1 REPRESENTATION OF THE PROJECT AFFECTED PERSONS (PAPS) IN THE MEETING

The Majority (67.2%) of the PAPs in the meeting came from ML No. 7 while from MLs 3 and 6 were 28.8% and 3.2%, respectively (Table 7.1-1). The high number of PAPs from ML 7 in meeting corresponds very well to its size which is the longest of the three MLs, hence have high distribution of PAPs particularly those who engage in automobile/garage business. Though ML6 is longer than ML3, it registered the smallest number of PAPs owing to the absence of automobile garages which seem to pull Male PAPs to ML7 and MIL3.

**TABLE 7.1-1 STATISTICS OF PAPS FROM THE THREE MLs IN THE MEETING**

Missing Link	Frequency	Percent
3	36	28.8
3, 6, 7*	1	.8
6	4	3.2
7	84	67.2
Total	125	100.0

\* Representative of small scale enterprises-Jua Kali

### 7.2 GENDER COMPOSITION OF PAPS

The males dominated the meeting constituting 84% of the PAPs participants, the remaining 16% were females (Table 7.2-1). The high number of males is due to male-dominated automobile garages which are common on the MLs 3 and 7.

**TABLE 7.2-1 GENDER COMPOSITION**

Gender	Frequency	Percent
Male	105	84.0
Female	20	16.0
Total	125	100.0

### 7.3 AGES OF PAPS

The PAPS can generally be described as youthful. Those in the aged bracket of 15 and 39 constitute about 60% while those above 40 years are over 40%. This seems to augur very well with the national population characteristic in which youths constitute 60% of the population. In particular, the highest number (34.4%) fell within the age bracket of 30-39 while the lowest composition (2.4%) is those between 15 and 19 ages (Table 7.3-1).

**TABLE 7.3-1 AGES OF PAPS OF PARTICIPANTS IN THE MEETING**

Age Bracket	Frequency	Percent
15-19	3	2.4
20-29	27	21.6
30-39	43	34.4
40-49	31	24.8
50-59	15	12.0
More than 60	6	4.8
Total	125	100.0

#### 7.4 MARITAL STATUS

Over 80% of the PAPS are married, 14.4% are single and 1.6% falls under other status (Table 7.4-1 and Figure 7.4-1).

**TABLE 7.4-1 MARITAL STATUS OF PAPS**

Status	Frequency	Percent
Single	18	14.4
Married	104	83.2
Other*	2	1.6
Total*	124	100.0

\* "Other status" are widows.

\*\*The total is 124 instead of 125 because 1 respondent failed to indicate her marital status

#### 7.5 STATUS OF THE PAPS IN RESPECT TO THE PROPOSED PROJECT

The statuses of PAPS in relation to the proposed project are viewed in terms of occupation the PAPS engage in on the MLs and the residential category they fall into. PAPS engage in a number of informal businesses that range from operation of kiosks with temporary licenses to operation of car parks. In terms of residential category, PAPS can be classified only as temporary residents (night security guards, etc.). As presented by Table 7.5-1, PAPS mainly operate temporary licensed Kiosks (26.4%) and Automobile garages (37.6%). Very few, less than 10% engage in social facilities operation, gardening, tree nurseries, work in religious building/office and car park operation.

**TABLE 7.5-1 STATUS OF PAPS IN RESPECT TO THE PROPOSED PROJECT**

Status	Frequency	Percentage
Kiosk (Temporary licensed Owner)	33	26.4
Hawker (Vendor without shelter)	17	13.6
Automobile garage (Temporary licensed owner)	47	37.6
Temporary resident	9	7.2
Social facilities operator	3	2.4
Gardener	0	0
Tree Nurseries operator	2	1.6
Religious/Building/Offices	6	4.8
Car Park operator	2	1.6
Other (Unknown)	6	4.8
Total*	125	100.0

## 7.6 SUPPORT OF THE MLS CONSTRUCTION PROJECT

Despite the fact that the project will affect both the livelihood and the residences of the PAPs it has over 70% support of PAPs. However, 12% and 17.6% of the PAPs do not support the project and have no comment, respectively (Table 7.6-1 and Figure 7.6-1).

**TABLE 7.6-1 PERCENTAGES OF PAPs RESPONSES REGARDING THEIR SUPPORT OF MLS CONSTRUCTION PROJECT**

Response	Frequency	Percent
Yes	88	70.4
No	15	12.0
No Comment	22	17.6
Total	125	100.0

## 7.7 UNDERSTANDING OF PAPs WITH REGARD TO THE TEMPORARY STATUS OF THEIR OCCUPATION

Majority 72% against 15.2% of the PAPs understand that they are in temporary occupation (Table 7.7-1). Only 12.8% did not make any response.

**TABLE 7.7-1 RESPONSES OF PAPs ON THEIR UNDERSTANDING OF THE TEMPORARY STATUS OF THEIR OCCUPATION**

Response	Frequency	Percent
Yes	90	72
No	19	15.2
No Response*	16	12.8
Total	125	100.0

*\*this constituted the permanent residents, hence the question was not relevant to them*

## 7.8 AMOUNT OF NOTICE REQUIRED BY THE PAPs TO RELOCATE FROM THE MISSING LINKS

Most PAPs did not indicate the amount of notice they require, however, for those who did so, majority (24%) require a two-month notice; 2.4% require a month-notice; and 5.6% require other amounts (Table 7.8-1). Other amounts of notices are; 1 year, 1 1/2 years, 2 years, 3 years 6 months, more than 1 year, more than 3 years and until the project starts.

**TABLE 7.8-1 AMOUNT OF NOTICE REQUIRED BY PAPs TO RELOCATE FROM THE PROJECT SITE**

Notice	Frequency	Percent
One Month	3	2.4
Two Months	30	24
Other	7	5.6
No Response	85	68
Total	125	100.0

## 7.9 PROBABLE SITES OF RELOCATION

The PAPs generally do not have probable sites to relocate to. As presented by Table 7.9-1 and

Figure 7.9-1, majority, 24% of the PAPs expect the government to show them where to move to and will not move to anywhere. About 18.4% did not provide any response while 8.8% do not know where to move to.. Some few will relocate to such places such as Mwanzi Road/Lane (3.2%), within Westland (0.8%), Mararo Road (0.8%) and Squatter Village (0.8%). Others will move to any available space; within Nairobi; will remain in the same place; any place offered; and still looking for a place.

**TABLE 7.9-1 WHERE TO MOVE/RELOCATE TO**

<b>Response Code</b>	<b>Response</b>	<b>Frequency</b>	<b>Percent</b>
0	Did not provide any answer	23	18.4
1	To be shown by the government	30	24.0
10	Anywhere within Nairobi	1	0.8
11	Request for space	2	1.6
12	Somewhere near the project site	1	0.8
13	No answer	1	0.8
14	Any available space	1	0.8
15	Mwanzi Road/Lane	4	3.2
16	Within Westland	1	0.8
17	Mararo Road	1	0.8
18	Squatter Area	1	0.8
19	N/A (Not applicable)	4	3.2
2	No where	30	24.0
4	In appropriate answer provided	8	6.4
5	Do not know	11	8.8
6	where can serve clients	1	0.8
7	the same place	1	0.8
8	Any place offered	3	2.4
9	Currently looking for one	1	0.8
Total		125	100.0

## 7.10 FINDINGS AND RECOMMENDATIONS

### a) Findings

The study found the following, that;

1. The majority of the PAPs came from the ML 7 (67.2%), ML 3 (28.8%) and ML 6 (3.2%) respectively.
2. The males dominated the PAPs (84%) and followed by females (16%), as a result of a male-dominated field of auto / mechanic/ welding jua kali business.
3. The youth 30-39, and 20-29, age bracket constituted (56%) demonstrating, that ML, PAPs are mainly youths.
4. The status of the PAPs (Kiosks, automobile garage and temporary residence (67.2%) make up the total number of occupiers of the ML.
5. The majority of PAPs (70.4%) support the project that the project should proceed.
6. The majority (72%) of the PAPs understands and, know that they are temporary in the MLs.

7. Some 24% of the PAPs would require two months notice to leave the project area to pave way for the project to start.
8. Some 24 % of the PAPs would appreciate it if the Kenya Government would direct them to where they can relocate

#### **b) Recommendations**

The MLOG and the CCN can establish ways and means within their policies to:

1. Take appropriate humane actions to address all the issues affecting the PAPs in the ML 3, 6, and 7.
2. Establish a grievance committee to address all the issues affecting the PAPs, with inclusion in the committee of members/ representatives of the PAPs (based on the preliminary sessions- discussions / questions and answers at the public hearing / stakeholder meeting).
3. Consider relocating them not too far from their customers, if the government policy / laws cater for the temporary occupiers of the road reserves.
4. Construct ultra modern markets in any appropriate area and relocate the PAPs to these markets.

### **7.11 DISSEMINATION OF PAPS OPINION SURVEY FINDINGS**

A meeting between the consultant, MOLG, CCN and JICA Study Team (Annex 11 and 12) was held on 16 February 2006 at the Director of Urban Development Office (MOLG). In this meeting the consultant presented the summary findings (section 7.10 (a) above) of the survey. Informed by the survey findings, the meeting deliberated on the issues pertaining to the PAPs particularly notice to be served to them and relocation. The meeting agreed that though the PAPs had requested notices between 1 month and 2 years, it was, however, prudent to start serving them with notices now since the construction is targeted to start in June 2007. The notice will be served together with the concise program of works for the project to enable the PAPS get prepared both psychologically and physically to relocate from the road reserves. Regarding the relocation site for the PAPs, specific place was, however, not hinted but the CCN reported that they have a policy and plan which involves the private sector participation in the design and the construction of Public Markets. A market is earmarked for Westland where PAPs in the three Missing Links 3, 6 and 7 will be relocated.

## CHAPTER 8 ENVIRONMENTAL BASELINE SURVEY

### 8.1 GENERAL

Following four (4) stations are selected for the baseline survey.

1. Nairobi River, between Ring Road Westlands and Riverside Drive in Westland,
2. Kirichwa Dogo River, between Olenguruone Avenue and Gatundu Road in Lavington,
3. Junction of Argwings Kodhek Road and Ring Road Kilimani, near Yaya Centre in Kilimani, and
4. Proposed junction of Missing Link No.6 and No.7, near Kirichwa Kubwa River in Kileleshwa

At these stations, the following three (3) environmental indicators were measured for 24 hours continuously from 07:00 a.m. to 07:00 p.m. as indicated below;

- i. Air Pollutants (SO<sub>2</sub>; Sulphur Dioxide, NO; Nitric Oxide, and NO<sub>2</sub>; Nitrogen Dioxide),
- ii. Suspended Particular Matters (SPM, Fine; PM<sub>2.5</sub>, and Coarse; PM<sub>2.5-10</sub>), and
- iii. Noise Level

Station	Date of Survey	Duration	Interval
1. Westland	07~08 February 2006 (Tuesday ~ Wednesday)		
2. Lavington	09~10 February 2006 (Thursday ~ Friday)	24 hours	15 minutes for Air Pollutants & Noise,
3. Kilimani	14~15 February 2006 (Tuesday ~ Wednesday)	(07:00~07:00)	3 hours for SPM
4. Kileleshwa	16~17 February 2006 (Thursday ~ Friday)		

Meanwhile the following five (5) environmental parameters were collected every one hour throughout the survey periods from Weather Station under Kenya Meteorological Department that was located near Dagoretti Corner, about 3 to 5 kilometres southwest of the above survey stations.

- (a) Temperature, (b) Humidity, (c) Pressure Gradient, (d) Wind Velocity, and (e) Wind Direction

The detailed results will be shown in Annex 13.

## 8.2 WESTLAND STATION

### (1) Weather

Followings are summary of weather indicators of the day of survey (07~08 February 2006);

Indicators	Unit	Max.	Min.	Median
a. Temperature	°C	27.0	15.0	20.0
b. Humidity	%	84	36	67
c. Pressure Gradient	H. Pa.			
d. Wind Velocity	knot	10	0	6
e. Wind Direction	Degree	100	40	70

### (2) Air Pollutants

Followings are summary of the air pollutants measurement;

Indicators	Unit	Max.	Min.	Median
a. Sulphur Dioxide (SO <sub>2</sub> )	ppm	0.2	Less than 0.1	Less than 0.1
b. Nitric Oxide (NO)	ppm	8.4	Less than 0.5	1.2
c. Nitrogen Dioxide (NO <sub>2</sub> )	ppm	0.4	Less than 0.1	Less than 0.1

Note; Resolution of SO<sub>2</sub> & NO<sub>2</sub> is 0.1 ppm, and NO is 0.5 ppm

### (3) Suspended Particular Matters (SPM)

Followings are summary of the suspended particular matters measurement;

Indicators	Unit	Max.	Min.	Median
a. Fine (<2.5µm)	µg/m <sup>3</sup>	161	45	100
b. Course (2.5~10µm)	µg/m <sup>3</sup>	200	45	120
Total	µg/m <sup>3</sup>	329	89	220

### (4) Noise Level

Followings are summary of the noise level measurement;

Indicators	Unit	Max.	Min.	Median
a. North Side	dB	82.1	35.5	55.1
b. South Side	dB	80.0	33.0	55.5
c. East Side	dB	77.7	35.7	54.6
d. West Side	dB	74.6	35.8	55.5
Average	dB	67.2	37.4	55.2

### 8.3 LAVINGTON STATION

#### (1) Weather

Followings are summary of weather indicators of the day of survey (09~10 February 2006);

Indicators	Unit	Max.	Min.	Median
a. Temperature	°C	24.8	12.0	17.0
b. Humidity	%	92	36	81
c. Pressure	H. Pa.			
d. Wind Velocity	knot	12	0	5
e. Wind Direction	Degree	80	30	60

#### (2) Air Pollutants

Followings are summary of the air pollutants measurement;

Indicators	Unit	Max.	Min.	Median
a. Sulphur Dioxide (SO <sub>2</sub> )	ppm	1.2	Less than 0.1	Less than 0.1
b. Nitric Oxide (NO)	ppm	7.6	Less than 0.5	1.2
c. Nitrogen Dioxide (NO <sub>2</sub> )	ppm	0.3	Less than 0.1	Less than 0.1

Note; Resolution of SO<sub>2</sub> & NO<sub>2</sub> is 0.1 ppm, and NO is 0.5 ppm

#### (3) Suspended Particular Matters (SPM)

Followings are summary of the suspended particular matters measurement;

Indicators	Unit	Max.	Min.	Median
a. Fine (<2.5µm)	µg/m <sup>3</sup>	350	82	158
b. Course (2.5~10µm)	µg/m <sup>3</sup>	390	39	144
Total	µg/m <sup>3</sup>	510	137	303

#### (4) Noise Level

Followings are summary of the noise level measurement;

Indicators	Unit	Max.	Min.	Median
a. North Side	dB	76.2	37.2	54.2
b. South Side	dB	74.3	30.1	54.0
c. East Side	dB	68.5	40.9	54.3
d. West Side	dB	71.4	30.0	53.1
Average	dB	68.2	42.7	53.9



## 8.4 KILIMANI STATION

### (1) Weather

Followings are summary of weather indicators of the day of survey (14~15 February 2006);

Indicators	Unit	Max.	Min.	Median
a. Temperature	°C	28.3	16.7	21.0
b. Humidity	%	85	28	59
c. Pressure	H. Pa.			
d. Wind Velocity	knot	10	0	5
e. Wind Direction	Degree	90	30	60

### (2) Air Pollutants

Followings are summary of the air pollutants measurement;

Indicators	Unit	Max.	Min.	Median
a. Sulphur Dioxide (SO <sub>2</sub> )	ppm	0.3	Less than 0.1	Less than 0.1
b. Nitric Oxide (NO)	ppm	10.1	Less than 0.5	1.5
c. Nitrogen Dioxide (NO <sub>2</sub> )	ppm	0.5	Less than 0.1	0.1

Note; Resolution of SO<sub>2</sub> & NO<sub>2</sub> is 0.1 ppm, and NO is 0.5 ppm

### (3) Suspended Particular Matters (SPM)

Followings are summary of the suspended particular matters measurement;

Indicators	Unit	Max.	Min.	Median
a. Fine (<2.5µm)	µg/m <sup>3</sup>	161	15	81
b. Course (2.5~10µm)	µg/m <sup>3</sup>	267	41	132
Total	µg/m <sup>3</sup>	366	104	212

### (4) Noise Level

Followings are summary of the noise level measurement;

Indicators	Unit	Max.	Min.	Median
a. North Side	dB	74.6	47.7	63.0
b. South Side	dB	76.5	48.3	62.3
c. East Side	dB	78.6	47.5	63.0
d. West Side	dB	77.0	41.2	62.5
Average	dB	72.8	47.7	62.7

## 8.5 KILELESHWA STATION

### (1) Weather

Followings are summary of weather indicators of the day of survey (16~17 February 2006);

Indicators	Unit	Max.	Min.	Median
a. Temperature	°C	14.0	26.0	21.0
b. Humidity	%	91	41	67
c. Pressure	H. Pa.			
d. Wind Velocity	knot	11	0	5
e. Wind Direction	Degree	90	20	70

### (2) Air Pollutants

Followings are summary of the air pollutants measurement;

Indicators	Unit	Max.	Min.	Median
a. Sulphur Dioxide (SO <sub>2</sub> )	ppm	0.1	Less than 0.1	Less than 0.1
b. Nitric Oxide (NO)	ppm	6.9	Less than 0.5	1.1
c. Nitrogen Dioxide (NO <sub>2</sub> )	ppm	0.4	Less than 0.1	0.1

Note; Resolution of SO<sub>2</sub> & NO<sub>2</sub> is 0.1 ppm, and NO is 0.5 ppm

### (3) Suspended Particular Matters (SPM)

Followings are summary of the suspended particular matters measurement;

Indicators	Unit	Max.	Min.	Median
a. Fine (<2.5µm)	µg/m <sup>3</sup>	146	20	78
b. Course (2.5~10µm)	µg/m <sup>3</sup>	337	30	156
Total	µg/m <sup>3</sup>	404	72	234

### (4) Noise Level

Followings are summary of the noise level measurement;

Indicators	Unit	Max.	Min.	Median
a. North Side	dB	64.2	38.8	49.6
b. South Side	dB	68.7	40.1	51.0
c. East Side	dB	65.2	40.2	49.9
d. West Side	dB	69.4	40.4	50.8
Average	dB	59.8	41.2	50.3

## CHAPTER 9 TRAFFIC SURVEY

### 9.1 OUTLINE OF THE SURVEY

The purpose of this survey is to conduct present traffic count data collection and analysis in order to obtain baseline data for monitoring and evaluation of the project impacts.

The survey was undertaken along following three (3) missing links in Nairobi

- (1) Missing Link No.3 (Ring Road Westlands, between Rhapta Road and Riverside Drive)
- (2) Missing Link No.6 (Ring Road Kileleshwa between Mander Road and Mazerras Road)
- (3) Missing Link No.7 (Ring Road Kilimani between Olenguruone Avenue and Argwing Kodhek Road)

The location map of the traffic count survey is illustrated in Figure 9.1-1.

The survey was conducted during 24/12 hours in the months of January and February 2006. The collected data includes MT (Motorized traffic) turning movements by direction and type of vehicles (light / medium / heavy vehicles and motorcycles), and NMT (Non Motorized Traffic) crossing movements by directions and type of modes (pedestrian, bicycle and hand cart users), for ordinary intersections and entering and leaving each approach as well as for each weaving sections for the roundabout type intersections. The classified vehicles counting was recorded for each 15 minutes intervals.

#### Survey Stations

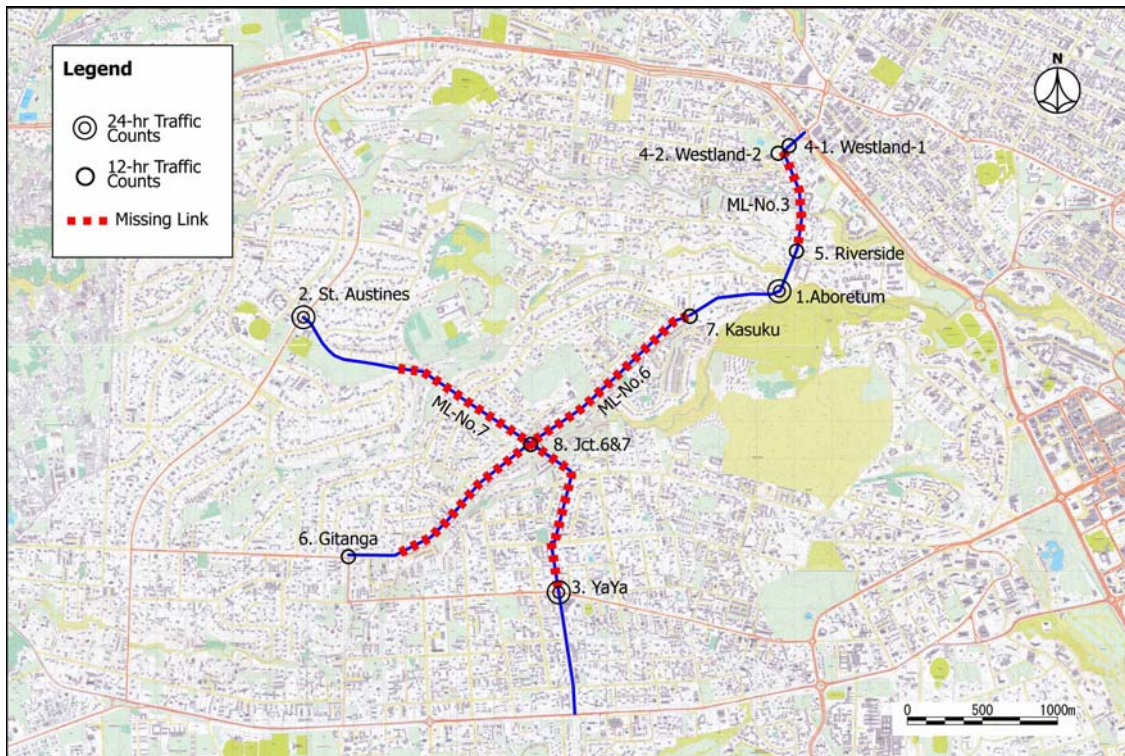
- (1) 24-hour Intersection traffic counts (3 stations, Weekday Only)
- (2) 12-hour Intersection traffic counts (5 stations, Weekday and Sunday)

#### Vehicle Classifications

The vehicles are classified shown in Table 9.1-1.

**TABLE 9.1-1 VEHICLE CLASSIFICATION IN THE SURVEY**

MT(Motorized Traffic)			NMT(Non Motorized Traffic)		
Category	Vehicle Type	PCU	Category	Vehicle Type	PCU
LV	Sedan, Wagon, Pickup	1.0	BY	Bicycle	2.0
MV	Light Truck, Minibus, Matatu	1.5	CT	Hand Cart	3.0
HV	Large Bus, Heavy & Articulated Truck	2.5	PD	Pedestrian	1.0
2W	Motorcycle, Tuktuk	0.5			



**FIGURER 9.1-1 LOCATION MAP OF TRAFFIC COUNT SURVEY**

**9.2 RESULT OF TRAFFIC COUNT SURVEY**

The results of traffic survey are summarized in Table 9.2-1.

**TABLE 9.2-1 MT AND NMT TRAFFIC VOLUME AT INTERSECTIONS**

Unit: Passenger Car Unit

No.	Intersection	No. of Leg	Survey Duration Hrs.	Weekday		Sunday	
				MT	NMT	MT	NMT
1	Aboretum	3	24 (12)	21,292 (17,260)	7,066 (5,662)	-	-
2	St. Austines	4	24 (12)	24,374 (20,144)	8,677 (6,572)	-	-
3	YaYa	4	24 (12)	34,193 (25,369)	30,183 (23,904)	-	-
4-1	Westland-1	3	12	9,558	11,047	7,505	11,154
4-2	Westland-2	3	12	8,986	10,449	5,915	6,710
5	Riverside	4	12	19,362	8,668	8,692	3,154
6	Gitanga	3	12	20,865	7,503	13,370	4,892
7	Kasuku	5	12	11,419	8,084	7,396	4,411
8	Jct. No.6 & 7	4	12	-	6,901	-	6,001

The following observations can be deduced from traffic survey results;

- YaYa intersection has the heaviest MT and NMT traffic volume among 8 intersections, having 25,000 and 24,000 vehicles on weekday because there is a shopping center and commercial area.

- Gitanga intersection having a 3 leg intersection was observed more than 20,000 vehicles. The traffic was concentrated at this intersection specially at the morning and evening peak hours because it is sole connection where the traffic can go through residential area to the town.
- As for NMT at Westland-1, Weekday and Sunday of traffic volume were almost same. It found that there was a church of entrance and people gathered to pray on Sunday.

The turning movements at the intersections having MT & NMT's traffic flows are given in illustrated Figure 9.2-1(1)-(4).

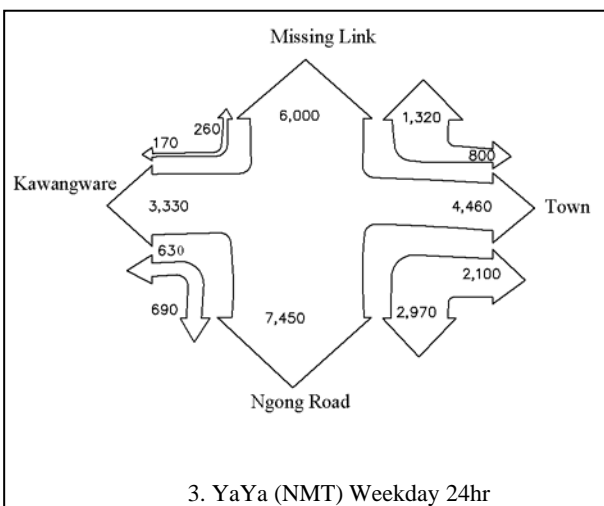
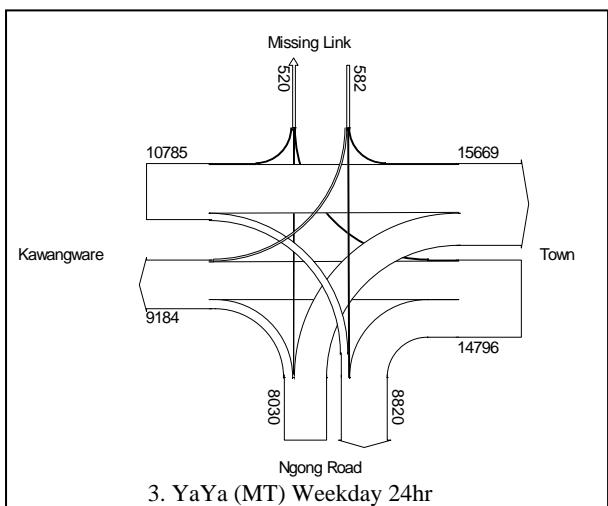
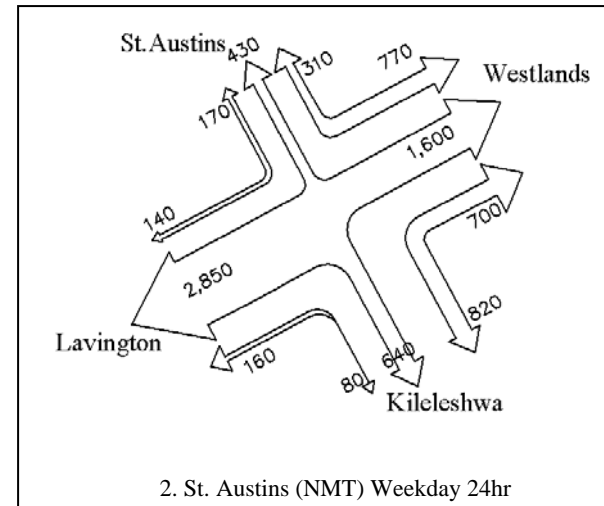
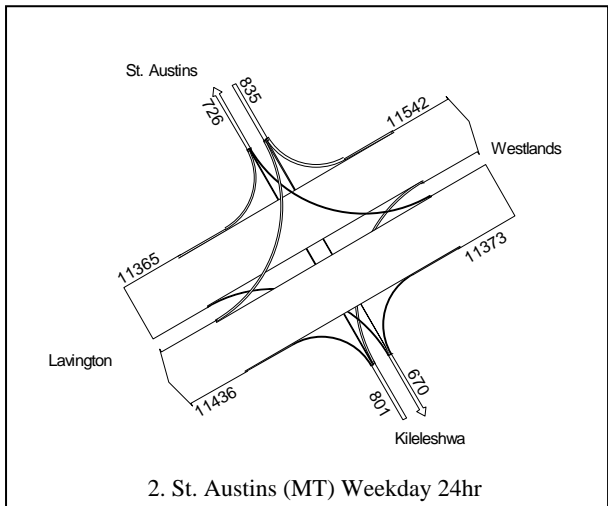
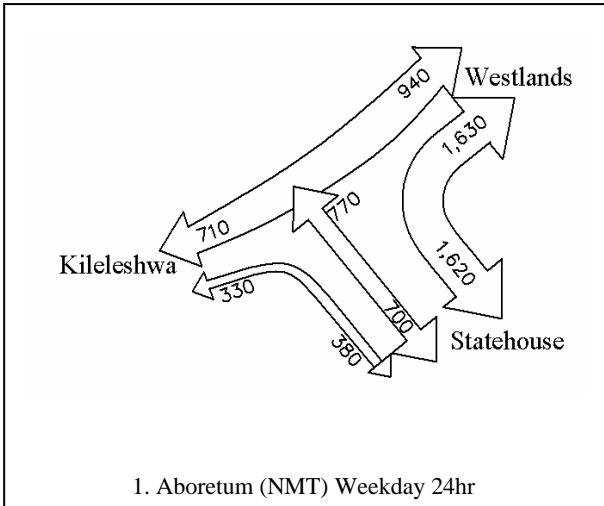
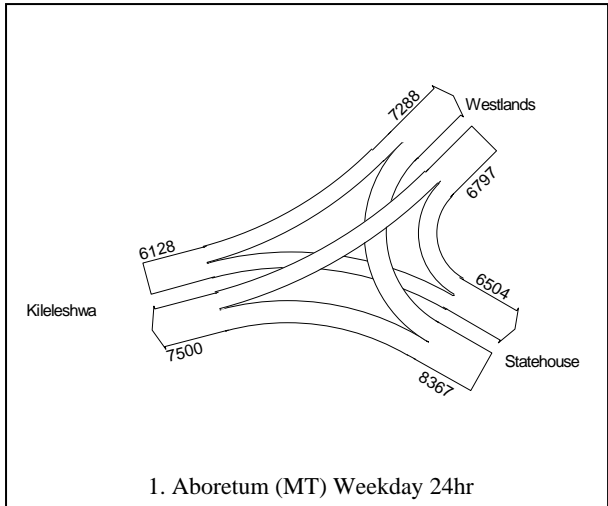


FIGURE 9.2-1 (1) TURNING MOVEMENTS OF MT AND NMT

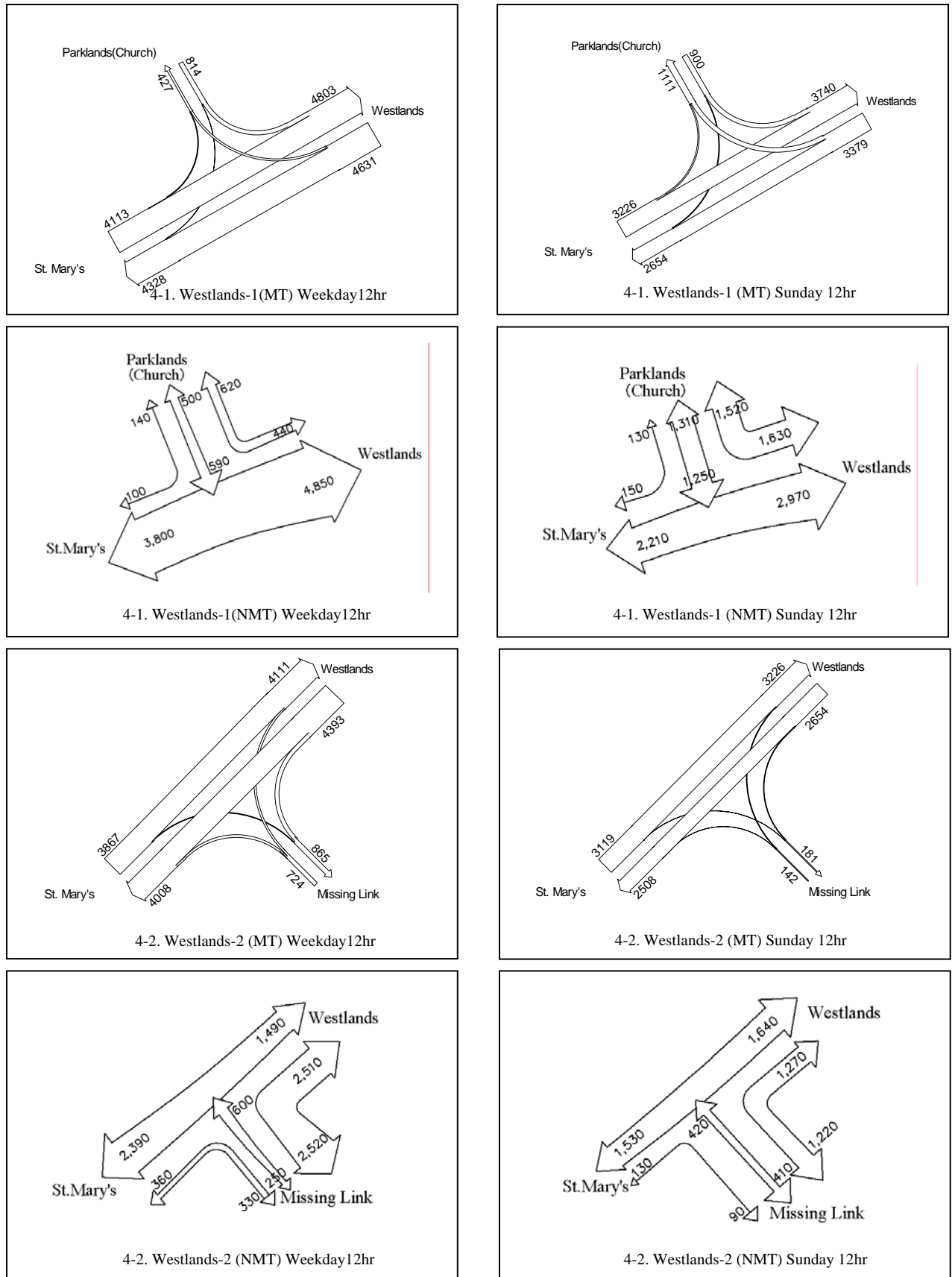


FIGURE 9.2-1 (2) TURNING MOVEMENTS OF MT AND NMT

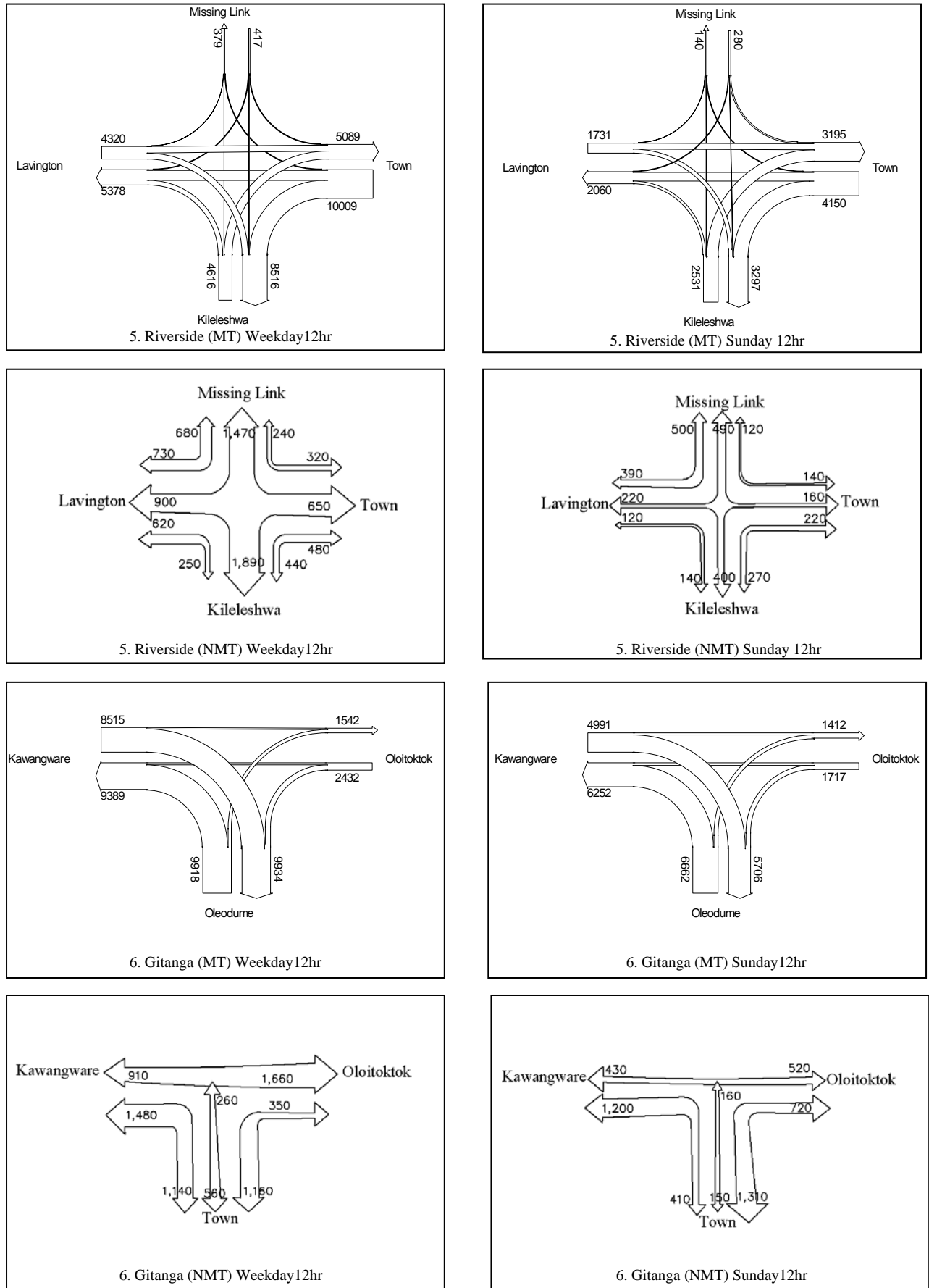


FIGURE 9.2-2 (3) TURNING MOVEMENTS OF MT AND NMT



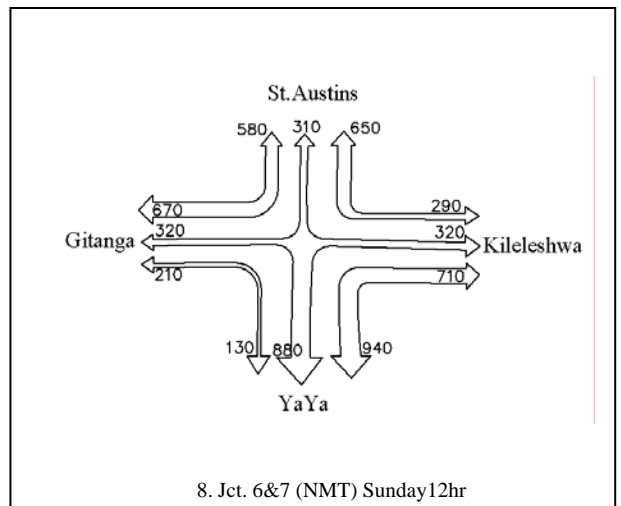
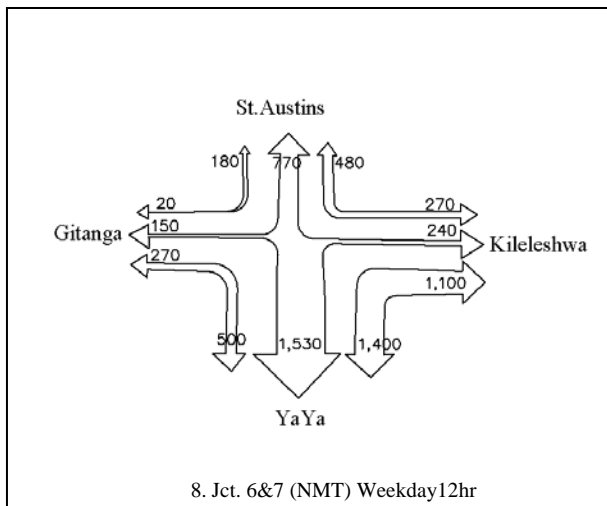
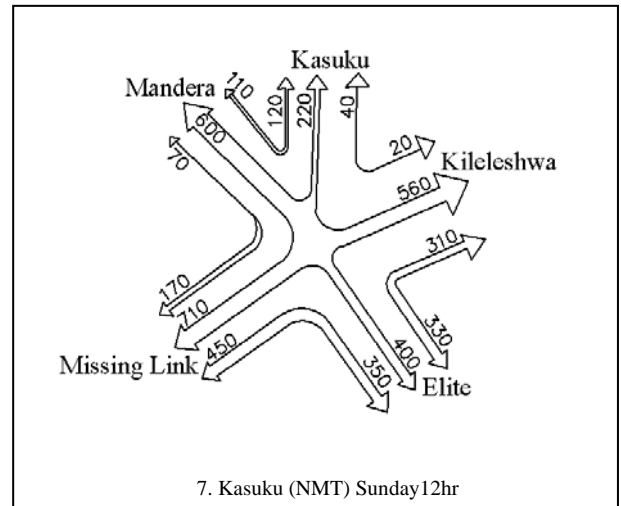
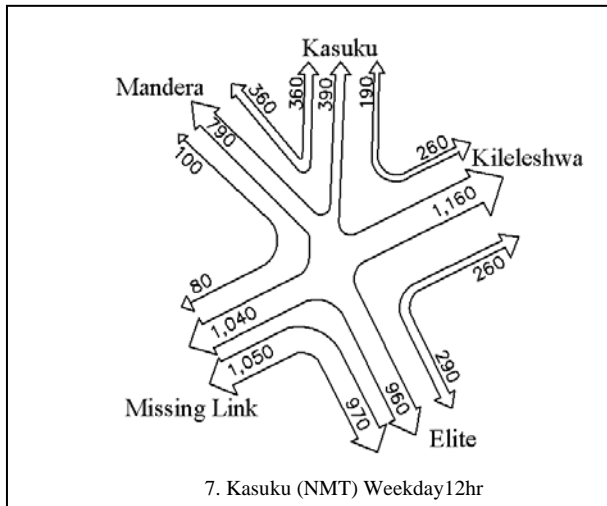
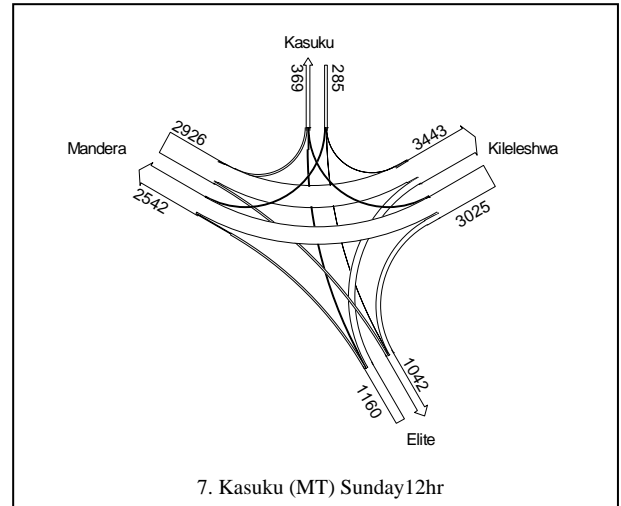
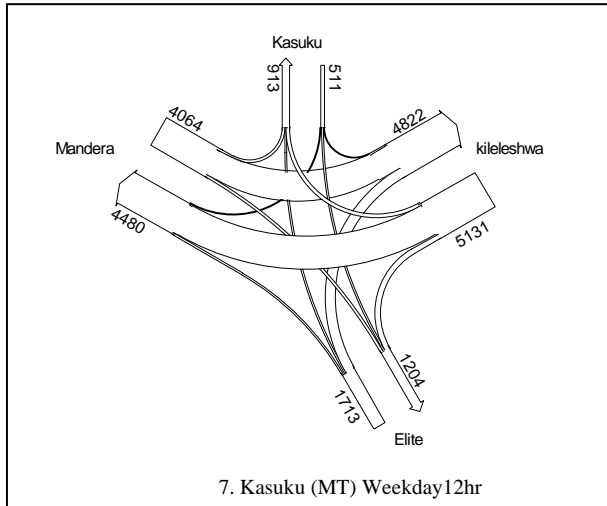


FIGURE 9.2-1 (4) TURNING MOVEMENTS OF MT AND NMT

## **CHAPTER 10 GOVERNMENT POLICY AND RELOCATION**

### **10.1 ENTITLEMENT POLICY**

Kenya have no resettlement or relocation policy that can be adopted in this Project. However, there exist legislations governing expropriation of land for development, which have been used in similar projects in the past. These legislations are: sections 75, 117 and 118 of the Constitution, which give general guidelines and Chapter 288 and 295 of the Land Acquisition Act, which provide detail procedures. Chapter 295, section 6(1) of the Land acquisition Act deals with the acquisition of private land, while Chapter 288 deals with unregistered trust lands. With regard to the Missing Link Improvement Project, none of the above legislations may be invoked in the relocation process. This is because the occupiers (PAPs) who are squatters (Missing Link No. 7, section 5) and the rest who are operating informal businesses do not have any legal title to the Missing Links Land; it land belongs to the government.

### **10.2 COMPENSATION POLICY**

Land Acquisition Act, Chapter 295 of the laws of Kenya, stipulates procedures to be followed when acquiring a private land for a public project. Section 9 of the same Act deals with the inspection of land for compensation by the Valuation Officer/Collector of compensation who will award value to land according to his assessment. The award is issued in a prescribed form, together with a statement form. The former indicates the amount of compensation awarded while the latter gives the landowners option of acceptance or rejection of the award. If the landowner accepts the award, the collector will issue a cheque in settlement together with a formal “Notice of Taking Possession and Vesting” (Section 19). The notice gives instructions to the landowner to take his title for amendment or cancellation. In case the landowner rejects the value award, the collector deposits the money in court pending the former’s appeal. Compensation is based on open market value (Section 9 (3) and 23(2)).

Compensation for other properties such residential structures, business structures and other property that are in the possession of the PAPs can be done in accordance with the relevant legislations and policy of the Government of Kenya. The Kenya Law recognizes compensation for loss of property due to implementation of development projects (Republic of Kenya, 2003). The law includes houses, crops and trees.

### **10.3 RELOCATION SITE**

The key informants in this study made suggestions on the possible relocation sites during the social impact survey and among them are: Kitengela, Mulolongo and Athi River. Other

options available to the government should be considered together with these two.

### 10.3.1 Method of Site Selection and Site Alternatives

The best option for the relocation should be determined by:

- Conducting detailed studies for relocation plan
- Consider building codes and Public Health Regulations
- Carry out a detailed EIA

### 10.3.2 Location, Layout, and Design of Relocation Site

The location, layout and design of relocation site for this study are still pending because none has already been identified.

### 10.3.3 Relocation Site

Relocation site is very critical if the statuses of PAPs are not to be worse off at the implementation of the Project. The suggestions made by the PAPs should be considered in the development of the relocation site.

## 10.4 COMMUNITY PARTICIPATION AND GRIEVANCE RESOLUTION

Involvement of the community in the relocation process is very crucial. This ensures that the opinions and suggestions of the community are put into consideration thus gathering for the interests of both the affected and the interested parties. The Grievance that may arise during the implementation of the RAP, can be dealt with by incorporating a grievance redressal process within Relocation Unit (RU) and with involvement of PAPs representative committee to hear the complaints and provide solutions, and reduce unnecessary litigation by resolving disputes through mediation.

**PAPs' Representative Committee:** The committee headed by a chairman elected by the PAPs shall carry out following as regard to redressing grievances:

- (a) Hear the grievances of the PAPs, and provide an early solution to those they are able to.
- (b) Immediately bring any serious matters to the attention of the RU
- (c) Inform the aggrieved parties about the progress of their grievances and the decisions of the RU.

**RU Grievance Redress Committee:** Grievance Redress Committee within RU needs to be constituted to:

- (a) Register the grievance raised by the PAPs; and

- (b) Address the grievance forwarded by the PAPs' representative committee.

RU Grievance Redress Committee should try as much as possible to arrive at a compromise for complains raised. This may be obtained through series of conciliation, mediation and negotiation exercises conducted with the PAPs. If PAPs accept the recommendations made by the committee, the committee along with PAPs who are willing to take part in these proceedings may hold mediations at the appointed places. In situations where PAPs are not satisfied with the decision of RUs' Grievance Redress Committee, the PAPs can approach the court of law.

The response time for cases handled in both committees will depend on the issues addressed but it should be as short as it is possible.

## **10.5 MONITORING, EVALUATION AND REPORTING**

A monitoring and evaluation (M&E) program is required to be developed to provide feedback to Project management which will help keep the programs on schedule and successful. Monitoring provides both a working system for effective implementation of the Relocation Action Plan (RAP) by the Project managers, and an information channel for the PAPs to assess how their needs are being met.

Monitoring should be conducted in two ways: by external agency and internally by RU.

### *(i) External monitoring*

An independent agency/specialist should be hired to carry out monitoring and evaluation of RAP implementation. The agency/specialist should begin the work right from the implementation of RAP and should meaningfully and realistically monitor and evaluate the RAP programs on a periodic basis so that all the vital activities are successfully implemented. External monitoring and evaluation is useful in formulation of corrective measures by identifying the problems and difficulties faced by the PAPs and bringing them to the notice of the RU. The agency has to:

- Verify results of internal monitoring.
- Assess whether relocation objectives have been met; specifically, whether business activities have been restored or enhanced.
- Assess the relocation efficiency, effectiveness, impact and sustainability, drawing lessons for future relocation activities and recommending corrections in the implementation process.
- Ascertain whether the relocation entitlements were appropriate to meeting the objectives, and whether the objectives were suited to PAPs conditions.

***Methodology for External Monitoring:*** The external agency/specialist should develop detailed indicators that may include the following:

a) Administrative monitoring

Administrative monitoring should be carried out periodically, depending on the gravity of issues and their requirements. It might require two types of information. (i) Individual files on each PAP and (ii) action plan and progress reports. This will help ensure timely implementation of the RAP and proper and quick solution of problems.

b) Socio-economic monitoring

The purpose of socio-economic monitoring is to ensure that PAPs are compensated and recovering on time. It should go on during and after the relocation process, to assess whether the compensation paid, income restored and resettlement objectives were appropriate and met by the Project.

c) Impact evaluation

It should be carried out after the implementation of RAP is over. The objective is that the income and standard of living of the PAPs has at least been restored and has not declined.

*(ii) Internal Monitoring*

This should be the responsibility of the RU. It will look into the conventional indicators viz. assistance provided to continuous business at the relocation site. It will also monitor the financial aspects, which include payment of compensation and grants if any, income restoration, etc. Regular progress reports shall be prepared and submitted to the MOLG in a timely manner.

## CHAPTER 11 PROCEDURES ON RELOCATION

### 11.1 PUBLIC ANNOUNCEMENT AND SETTING OF CUT-OFF DATE

The Cut-off date for PAPs without legal titles should be the date of the proposed socio-economic survey. The Study adopted the cut-off date on 11 February 2006, when the public hearing was held. While for the PAPs who have legal titles of land is the date of notification of acquisition under Section 6 (2) of Land Acquisition Act, Chapter 295 of the laws of the Republic of Kenya. However, there is no PAP who have legal titles of land under this Project.

### 11.2 DETAILED PROPERTY SURVEY

Detailed property survey was not conducted on the temporary occupiers of the Missing Links since they have no legal entitlement to any compensation. However, the project will affect the business activities on project site such as kiosk, motor garages, religious building, car parks, and social facilities that are all temporary and movable facilities built-up by only wooden plates and tinplates, gardens and tree nurseries. Table 11.2-1 summarises the temporary business activities to be affected in each of the three Missing Links.

**TABLE 11.2-1 TEMPORARY BUSINESS ACTIVITIES OF THREE MISSING LINKS**

Item No.	Descriptions	Number in each Missing Link			
		3	6	7	Total
1	Kiosks	8	3	22	33
2	Vendors without shelter	7	0	10	17
3	Motor garages	14	0	33	47
4	Temporary Residence	1	0	8	9
5	Social Facilities	0	0	3	3
6	Gardening	0	0	0	0
7	Tree nurseries	0	0	2	2
8	Religious Buildings/Offices	4	0	2	6
9	Car Parks	1	0	1	2
10	Other (Unknown)	2	1	2	5(1)
	<b>Total</b>	<b>37</b>	<b>4</b>	<b>83</b>	<b>124+(1)=125</b>

Note: 11 February 2006, the 125 included one respondent who showed no location.

### 11.3 CONCLUSION

According to the Pre-EIA and the Enquete Survey, no permanent resident and building exist on the road reserves of the three Missing Links. Only there found about 125 temporary business activities with or without the temporary business licences issued by CCN. They will be affected and relocated by the project. All of their shops and facilities are temporary and movable buildings. If CCN and MOLG allow them to move their shop at the open spaces on

and near the road reserves, their relocation will be easily and quickly carried out by their hands without loss of their business. Under the proposed stage construction, approximately 14m of the open space will be provided after the 2-lane road completion during about 10 to 15 years. This seems to be enough time for CCN and the PAP themselves to plan and find the suitable business site taking future economic development and new land use plan in Nairobi into consideration.

## ANNEXES

## ANNEX 1: PROGRAMME OF THE FOURTH STAKEHOLDERS MEETING

**MASTER PLAN STUDY  
FOR URBAN TRANSPORT  
IN THE NAIROBI METROPOLITAN AREA**

**PROGRAMME OF THE STAKEHOLDER MEETING ON MISSING LINKS NO.3, NO. 6 AND NO.7**

<b>Time and Date:</b>	<b>27th May, 2005</b>
<b>Venue:</b>	<b>Kenya Science Teachers College</b>

**Agenda**

8:30 – 9:00	Registration	
9:00 – 9:45	Opening Ceremony	
	Master of Ceremony:	Eng. B. G. Ariga, MOLG
	Introduction of Participants	
	Opening remarks	Mr. J. Gakuo, Town Clerk, NCC

**Session I**

9:45 – 09:50	Purpose of the Missing Link Improvement Project	MORPW
09:50 – 10:30	1) Outline of the Missing Link Improvement Works	Mr. T. Toda
	2) Result of IEE and Affected Areas	Mr. S. Minato

<b>10:30 – 11:00</b>	<b>Tea Break</b>
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**Session II**

11:00 – 12:00	Plenary Discussions:Expected Issues on Project Implementation	
12:00 – 12:30	Wrap-up of Plenary Discussions	
12:30 – 13:00	Closing Remarks	Mr. L. Mbwaga, Director of Physical Planning, MOLH

<b>13:00 – 14:00</b>	<b>Lunch Break</b>
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## ANNEX 2: PARTICIPANTS OF THE FOURTH STAKEHOLDERS MEETING

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101	CG	District Officer, Kibera	Provincial Administration	M	Administrators			
102	CG	District Officer, Kasarani	Provincial Administration	M	Administrators			
103	CG	District Officer, Dagoretti	Provincial Administration	M	Administrators			
104	CG	District Officer, Embakasi	Provincial Administration	M	Administrators			
105	CG	District Officer, Westlands	Provincial Administration	M	Administrators			
106	CG	District Officer, Makadara	Provincial Administration	M	Administrators			
107	PI	Thomas Ngumi		M	Sociologist			
108-152	PI	Local Residents	Letters distributed by hand for 45 locations of the local residents along the Missing Link No.3, No.6 and No.7	-	-	-		

CG/Central Government, LG/Local Government, PA/Parastatal, INS/Institute, IO/International Organization, NGO/Non Governmental Organization, PC/Private Company, PI/Private Individual

## ANNEX 3: PARTICIPANTS OF THE FIFTH STAKEHOLDERS MEETING

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3	Mrs. C. Mibey	MORPW
4	Ms. Elizabeth Thumbi	MORPW
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6	Eng. J. W. Theuri	MOLG
7	Eng. E. H. M. Kagamba	CCN
8	Mr. S. M. Muthama	CCN
9	Eng. J. K. Mwangi	CCN
10	Eng. Christine A. Ogut	CCN
11	Mr. John K. Barreh	CCN
12	Mr. P. S. Adolwa	CCN
13	Eng. S. K. Kamau	KRB
14	Mr. Hudson M. Mukanga	NEMA
15	Ms Jane Nyandika	NEMA
16	Mr. Philip J. Mainga	Kenya Railways
17	Ins. Joshua Momanyi	Traffic Police
18	Mr. T. Kanenawa	JICA Kenya Office
19	Mr. J. Inamura	JICA Kenya Office
20	Mr. Felix M'mboyi	JICA Kenya Office
21	Mr. Kaneko	JICA Expert (MOLH)
22	Eng. Adrew Gitonga	European Union
23	Dr. Josphat K. Z. Mwatelah	JKUAT/AICAD
24	Prof. R. N. Mutuku	JKUAT
25	Dr. P. K. Kamau	Kenyatta University
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30	Dr. C. M. Aligula	KIPPRA
31	Mr. Samuel Muthui Ikima	German Dev. Service
32	Mr. John Kibui	Matatu Ownners Asso
33	Ms Lynet Kaloo	Commuters W. Association
34	Judy Thuo	Citi Hoppa
35	Mrs. Mary W. Mwangi	Double 'M'
36	Mrs. Betty Robin	Muthaiga Res. Association
37	Mrs. Ruberti	"
38	Mr. Peter Muindi	Kenya Disabled Association
39	Mr. Stephen Asumo	"
40	Mr. T.Toda	JICA Study Team
41	Mr. T. Kimura	"
42	Mr. K. Isomoto	"
43	Mr. M. Koto	"
44	Mr. T. Otake	"
45	Dr. J.N Mukabi	"
46	Mr.C.Chepyegon	"
47	Mr. M. Okwiri	"
48	Mr.S Mwangi	"
49	Mr. S. C Kiplagat	"

**ANNEX 4: PARTICIPANTS OF MEETING OF 31<sup>ST</sup> JANUARY, 2006 AT THE DIRECTOR OF URBAN INFRASTRUCTURE OFFICE (MoLG)**


NO.	NAME OF PARTICIPANT	ORGANIZATION	TITLE/DESIGNATION
1.	Eng. B.B Ariga	MoLG	Director Urban Planning
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4.	Eng. J.W. Theuri	MoLG	Ag. CSE
5.	Eng. J.K. Mwangi	CCN	Ag. C.A.E. (T.V)
6.	Eng. T. Toda	JICA Study Team	Deputy Team Leader
7.	Prof. Michael Koech	JICA Study Team	EIA Expert
8.	Ms. Mary Kinoti	JICA Study Team	EIA Expert
9.	Dr. Eng. Monda	JICA Study Team	Local Coordinator
10.	Mr Moses Okwiri	JICA Study Team	Staff Member

**ANNEX 5: PUBLIC HEARING NOTICE PLACED ON THE STANDARD NEWSPAPER**

Friday, January 27, 2006

**THE STANDARD**

REPUBLIC OF KENYA



**MINISTRY OF LOCAL GOVERNMENT**  
*In Collaboration with*  
**CITY COUNCIL OF NAIROBI**

**PUBLIC NOTICE**

PUBLIC HEARING/STAKEHOLDERS MEETING ON THE PROJECT FOR THE CONSTRUCTION OF NAIROBI MISSING LINKS 3, 6, AND 7 (No.3&6: Corridor from Westlands to Ngong Road through Dennis Pritt and Yaya Centre. No 7: From Olenguruone to Argwings Kodhek through Kirichwa Ndogo) ON THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA

This is to inform you that in preparation of implementing the Project for the Construction of Nairobi Missing Links 3,6 and 7, the Ministry of Local Government (MoLG) will conduct a Public Hearing/Stakeholders Meeting as part of a Social Impact Survey on the Project Affected Persons (PAPs).

Interested persons/parties who wish to attend the Public Hearing/ Stakeholders Meeting are requested to come to ***Kilimani Primary School along Argwings Kodhek Road from 8.30 am to 2.00pm on Saturday 11<sup>th</sup> February, 2006.***

**Contact:**

1. Eng. J.W. Theuri/Eng. R. Murimi Ministry of Local Government E-mail: <a href="mailto:bgariga@africaonline.co.ke">bgariga@africaonline.co.ke</a> Tel: 311931 Fax: 243067	2. Mr. J.K. Mwangi City Council of Nairobi E-mail: <a href="mailto:ndifakamande@yahoo.com">ndifakamande@yahoo.com</a> Tel: 0720 856126
3. Ms. Jane Wamuguru City Council of Nairobi Tel: 0720 846722	

**ENG. B. G. ARIGA**  
DIRECTOR URBAN DEVELOPMENT DEPARTMENT  
FOR PERMANENT SECRETARY (MOLG)

## ANNEX 6: SAMPLE OF PUBLIC NOTICE DISTRIBUTED TO PAPs

## REPUBLIC OF KENYA



## MINISTRY OF LOCAL GOVERNMENT

In Collaboration with

## CITY COUNCIL OF NAIROBI

## PUBLIC NOTICE

**PUBLIC HEARING/STAKEHOLDERS MEETING ON THE PROJECT FOR THE CONSTRUCTION OF NAIROBI MISSING LINKS 3, 6, AND 7 (No.3&6: Corridor from Westlands to Ngong Road through Dennis Pritt and Yaya Centre. No 7: From Olenguruone to Argwings Kodhek through Kirichwa Ndogo) ON THE STUDY ON MASTER PLAN FOR URBAN TRANSPORT IN THE NAIROBI METROPOLITAN AREA**

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## Contact:

- |   |  |  |
|---|--|--|
| 1. Eng.J.W. Theuri/Eng.R.Murimi<br>Ministry of Local Government<br>E-mail: <a href="mailto:bqariga@africaonline.co.ke">bqariga@africaonline.co.ke</a><br>Tel:311931<br>Fax:243067 | 2. Mr. J.K. Mwangi<br>City Council of Nairobi<br>E-mail: <a href="mailto:ndifakamande@yahoo.com">ndifakamande@yahoo.com</a><br>Tel:0720 856126 | 3. Ms. Jane Wamuguru<br>City Council of Nairobi<br>Tel.0720 846722 |
|---|--|--|

  
ENG. B. G. ARIGA  
DIRECTOR URBAN DEVELOPMENT DEPARTMENT  
FOR PERMANENT SECRETARY (MOLG)

**DIRECTOR**  
DEPARTMENT OF URBAN DEVELOPMENT  
MINISTRY OF LOCAL GOVERNMENT  
P. O. Box 30004  
NAIROBI



**ANNEX 7: PARTICIPANTS OF THE PUBLIC HEARING MEETING OF 11/02/2006  
AT KILIMANI PRIMARY SCHOOL, NAIROBI**

No.	Name of Participant	Organization	Contact
1.	Eng. Christine Ogut	Assistant City Engineer/CCN	
2.	P. Adolwa	Director City Planning/CCN	
3.	Mulwa Kithunga	CCN	0721 660474
4.	Stephen M. Mwangi	CCN Decentralization	0721 202073
5.	Eng. K. Wamugunda	CCN	0722 786145
6.	Eng. Chiuri	CCN	0722 360470
7.	J.K. Mwangi	CCN	0720 856126
8.	Jane Wamuguru	CCN	0720 846722
9.	Eng. Murimi	M0lg/Udd	0722 71 0228/020-340972
10.	Eng. Theuri	M0lg	0722 805948
11.	Justus Amuko Amaya	Director Urban Development M0lg	340972
12.	Mr. Kanenawa	JICA Kenya Office	2724121
13.	Mr. M. Takeuchi	JICA Expert	
14.	Mr. K. Ogiwara	JICA Expert	
15.	Mr. I. Toda	Deputy Team Leader JST	2735543, Nbi
16.	Mr. K. Isomoto	JST	2735543
17.	Mr. Yashiro	JST	2735543
18.	Prof. M.K. Koech	JST	020-600520, P.O. Box 30943
19.	Dr. Monda	JST	
20.	Ms Mary Kinoti	JST	
21.	Wilfred K. Koech	JST	0722690119, P.O. Box 30197
22.	Isaiah Bii Kegora	JST	020600520
23.	Ms Risper	JST	2735543
24.	Moses Okwiri	JST	2735543
25.	Ida Muteru	JST	2735543
26.	Mr. Iwamoto	Afrospace	
27.	George Jaoko	UON	0720 719335
28.	Teresia A. Onyango	Oloitoktok Rd.	0725 429891
29.	Joseph Muriuki	Dennis Pritt Road	
30.	George O. Opondo	Urwo Auto Garage	0734-528830
31.	Jackson K. Kiige	Ring Road (Kilimani)	0722-859863
32.	Christopher Adem Oloo	Ring Road (Kilimani)	0723972454
33.	Henry Mudogo	Westlands Open Market	0722702612
34.	Bishop Musa Kisanya	Ring Road Jua Kali	0721282428
35.	Ann Nziuri	Ring Road Kiosk	07229996108
36.	Petronilla Nafula	Westlands Association, Westlands C.D.F	0723-437278
37.	Henry Kiambi M'mbii	Kayawe	0722883521
38.	Robert Ouma		0720851641
40.	Kennedy Ochieng	Kangemi	0724484475
41.	Muga James Odhiambo	Mathare North	0722851822
42.	Jane Waithera	Dennis Pritt Road	
43.	Peter K. Ameyo	Hurlngam Auto Garage	
44.	George Onyango	Ring Road	0720987811
45.	Margret Mugure	Dennis Pritt Road	
46.	Martin Aluvitsa	Ring Road	0722813265
47.	Daniel Abich	Ring Road	0724333030
48.	Mary J. Ombuya	Ring Road	0725897277

No.	Name of Participant	Organization	Contact
49.	Hellen Achieng	Dennis Pritt Road	
50.	James Maingi	Dennis Pritt Road	
51.	Tobias Odongo	Ring Road	0721692449
52.	Samuel Barasa	Ring Road	0733756806
53.	Otieno Kulasu	Pato Nairobi	0721929715
54.	Collins Otieno	Public Transport Consumer Association	
55.	Stephen Onyango Juma	Ring Road-Westland	0722892260
56.	Jackson Wachira	Dennis Pritt Road	0722418728
57.	Japheth Ajega Ayuya	Dennis Pritt Road	
58.	R.V. Mugo	Ring Road - Kilimani	0720-566815
59.	Jacinta Nduku Ndivo	Mapera Slums	
60.	Nancy Wambui	Mapera Slums	
61.	Obed Anjele. O	Manager Westlands Constituency/P.A.Mp.	
62.	Bernard Mwangi	Dennis Pritt Road	
63.	Bernard Kiragu	Dennis Pritt Road	
64.	Patrick Gathua	Dennis Pritt Road	
65.	Limo Taboi	Githunguri Road	0722457518
66.	Jacob O. Wadawe	Ring Road- (Jua Kali)	0723896731
67.	Boniface N. Thuo	Ring Road – (Westland)	0724980032
68.	Alex Kidura	Ring Road – (Westland)	0722890575
69.	Peter O Inyanbukho	Capstone Management	0722640138
70.	Samuel K. Njoroge	Dennis Pritt Road	0735939334
71.	Tobias Odhiambo Otuge	Ring Road (Westland)	072272311
72.	Alphonse Otieno Kapere	Ring Road (Westland)	0721352590
73.	Joshua Markennie	Westlands (Ring Road)	
74.	Joel Omutenyu	Westlands (Ring Road)	
75.	Simon G. Kamau	Ring Road (Jua Kali)	0722702041
76.	Charles O. Odhiambo	Mapera Village	0725478019
77.	Maurice Singa Were	Ring Road	0720785917
78.	Gabriel Ndunigo Khipi	Dennis Pritt Road	
79.	Joseph Kioko	Dennis Pritt Road	
80.	Muyoma Patrick	Dennis Pritt Road	
81.	Elizabeth Wambui	Dennis Pritt Road	
82.	Waititu Njoroge	Dennis Pritt Road	
83.	Daniel K. Munene	Dennis Pritt Road	
84.	Elizabeth Wangeci Nyaga	Dennis Pritt Road	
85.	Thomas Osoi	Ring Road	
86.	Zadock Nzangari	Ring Road	
87.	Derrick Munovi	Ring Road	
89.	Gakuo Roko	Ring Road	
90.	Joseph Maina	Serena	
91.	Domenic Mugendi	Dennis Pritt Road	
92.	James Njojo	City Hoppa	0720-377291
93.	Gabriel Okoth	Ring Road	0720483219
94.	Marcus Mwanzia Kutema	Dennis Pritt Road	0735792911
95.	Teresia Nzuki	CDF Westlands	0722274947
96.	Catherine Wachu	Dennis Pritt Road	
97.	Willie Mwangi	Dennis Pritt Road	
98.	Sarah Wnjiru	Dennis Pritt Road	0723803734
99.	Winfred Nzilani Bonface	Dennis Pritt Road	0721806694
100.	Easther Kanario Ikiao	Dennis Pritt Road	0721407599
101.	John O. Echenje	Ring Road	072375292

No.	Name of Participant	Organization	Contact
102.	Francis Gichuki Njau	Westlands	0720334882
103.	Charles Kamau Chege	Dennis Pritt Road	0734822783
104.	S. Sargent	Yaya	2713360
105.	Meshack Kingo'ri	Ring Road	
106.	Winfred N. Boniface	Kilimani	0721806694
107.	Morris K. Mailo	Westlands	0734639092
108.	Kennedy Kubow	Yaya	0722714363
109.	Charles Mboroki	Dennis Pritt Road	0723659092
110.	Francis Kariuki	Dennis Pritt Road	0722418728
111.	Festus D. Omusilu	Westlands	0734588342
112.	Robert Kimani	Ring Road C. Market	0722930599
113.	Jack Machika	Ring Road– Jua Kali Ass.	0733-529021
114.	Leonard Mbithi Maluta	Ring Road (Westlands)	7336847
115.	Joseph Mathenge	Ring Road (Westlands)	0733590917
116.	Regina Nduku	Dennis Pritt Road	0734822783
117.	Mary Ngokonyo	Dennis Pritt Road	0734822783
118.	Basian Mbugua	Ring Road (Jua Kali Ass.)	0720590443
119.	Peter Omondi Apiyo	Ring Road (Jua Kali Ass.)	0733884973
120.	Samson Alumasa Amboga	Ring Road (Westlands)	0721248677
121.	James S. Ambuchi	Ring Road (Westlands)	0733985877
122.	Silvanus Inyangala Jeremiah	Ring Road (Westlands)	0735970152
123.	Philip Kaloki Muluwa	Dennis Pritt Road	
124.	Pravin Kerai	Ring Road (Outer)	0720331366
125.	Pauline Kariuki	Dennis Pritt Road	
126.	Francis Onyango	Oloitoktok	
127.	Alexander Kiluva	Ring Road (Westlands)	
128.	Joseph Kinuthia	Dennis Pritt Road	
129.	Jonathan Kisusa	Dennis Pritt Road	
130.	Vincezo Njeru	Dennis Pritt Road	0722304160
131.	Robert Nzoki	Commuters Welfare Association	0722807092/077595171
132.	Partick S. Wambulwa	Tertiary Consulting Engineers	2727904/07222646056
133.	Ernest Otieno Sande	Ring Road	0721704338
134.	James M. Mungai	Ring Road	0721704338
135.	Julius Otieno	Ring Road (Dajas Garage)	0720918019
136.	William Okech Alala	Ring Road	0735539572
137.	Waithaka Njoroge	Dennis Pritt Road	
138.	Mulungye Munyao	Dennis Pritt Road	0721238204
139.	Vitalis Ondoo	Dennis Pritt Road	0721848069
140.	Joseph Muse	Dennis Pritt Road	0720729090
141.	Nicholas Rabango	Ring Road (Kilimani)	0720765101
142.	Nickson Chumo	Ring Road (Kilimani)	0722402903
143.	David Njoroge	Ring Road	
144.	Petronilla Musumba	Ring Road (Kiosk)	
145.	Henry Mucangi	Ring Road (Kilimani)	0722432942
146.	Mwangi Ndigirigi	Ring Road (Kilimani)	0724524330
147.	Mathew Matheka	Public Transport C.A	0720826284
148.	Tagib Omar	Ring Road (Yaya)	9929921
149.	Reuben O. Oyando	Ring Road (Kilimani)	0721563571
150.	Bernard M. Alukwe	Ring Road (Kilimani)	0722359979
151.	John Kimani Thiongo	Ring Road (Kilimani)	0724766949

**PROCEEDINGS OF THE PUBLIC HEARING /  
STAKEHOLDERS MEETING ON THE PROJECT FOR  
THE CONSTRUCTION OF MISSING LINKS 3, 6 AND 7**

**TIME: 8.30 TO 15.00**

**VENUE: KILIMANI PRIMARY SCHOOL**

**IN ATTENDANCE**

**NAME**

**ORGANIZATION**

***i. Government of Kenya***

- |     |                   |  |
|-----|-------------------|--|
| 1.  | Mr. J. Amaya      | Ag. Director of Urban Development/MoLG |
| 2.  | Mr. P. Adolwa     | Director of city Planning/CCN          |
| 3.  | Eng. C. M. Chiuri | City Engineer/CCN                      |
| 4.  | Eng. J. W. Theuri | Ag. Chief Superintending Engineer      |
| 5.  | Eng. C. Ogut      | Assistant City Engineer/CCN            |
| 6.  | Eng. R. Murimi    | MOLG                                   |
| 7.  | Eng. J. K. Mwangi | CCN                                    |
| 8.  | Eng. K. Wamugunda | CCN                                    |
| 9.  | Ms. J. Wamuguru   | CCN                                    |
| 10. | Mr. M. Kithunga   | CCN                                    |
| 11. | S. M. Mwangi      | CCN                                    |

***ii. JICA Study Team***

- |     |                   |                                    |
|-----|-------------------|------------------------------------|
| 1.  | Mr. T. Toda       | Deputy Team Leader JICA Study Team |
| 2.  | Mr. K. Isomoto    | JICA Study Team                    |
| 3.  | Mr. K. Yashiro    | JICA Study Team                    |
| 4.  | Prof. M. K. Koech | JICA Study Team                    |
| 5.  | Dr. A. Monda      | JICA Study Team                    |
| 6.  | Mrs. M. Kinoti    | JICA Study Team                    |
| 7.  | Mr. W. K. Koech   | JICA Study Team                    |
| 8.  | Mr. I. B. Kegora  | JICA Study Team                    |
| 9.  | Mr. M. Okwiri     | JICA Study Team                    |
| 10. | Ms. Risper Aremo  | JICA Study Team                    |
| 11. | Ms. Ida Muteru    | JICA Study Team                    |

**iii. JICA (Observer)**

- |    |                 |                   |
|----|-----------------|-------------------|
| 1. | Mr. T. Kanenawa | JICA Kenya Office |
| 2. | Mr. M. Takeuchi | JICA Expert       |
| 3. | Mr. K. Ogiwara  | JICA Expert       |

**iv. PAPS (See the attached attendants list)****Proceeding****1. Opening of Hearing**

Meeting was opened by Eng. Murimi at 10 am and began with a word of prayer. Eng. Murimi outlined the program for the day, emphasizing speedy adherence to the contents in light of the one and half (1.5hr) hour delay encountered waiting for all PAPS to arrive.

In the interests of getting to know all present, and their roles, introductions were made of all people in attendance including Name and Occupations.

**2. Opening Remarks by Eng. Theuri**

Eng. Theuri introduced the principal conveners of the forum/Implementation Team, Eng. Mwangi-CCN, Mr. Amaya-MOLG, Eng. Chiuri-City Engineer CCN, Mr. Adolwa Director City Planning-CCN.

He outlined the history of the project, and the development consultative and implementation process carried out by the Team involved.

**In brief:**

- 2004- Arrival of Study team from Japan
- February 2004, Memorandum of Understanding, (MOU) between the Government of Kenya and Government of Japan signed.
- February 2004 to November 2005 the study on the Master Plan for Urban Transport was done. He noted that the plan covered not only City Council of Nairobi but also Limuru, Kiambu, Ruiru, Thika, Kangundo, Ngong, Ongata Rongai i.e. the Nairobi Metropolitan Area.

He explained the main aims of the study and outlined its fundamental recommendations – where Missing Links 3, 6 and 7 emerged as a most pressing Project Priority. He recalled the Stakeholder Meetings and Consultations that had taken place, where views of participants were recorded and incorporated in development of the Plan.

He reminded the participants of the purpose of the gathering, to hear views from PAPs to develop an all-inclusive planning process with their support, and to further understand how they will be affected by the Project both in the short and long term, so this may be addressed in the project execution.

### **3. *Opening address by Director Urban Development MOLG. Mr. Amaya***

Eng. Murimi invited the Director of Urban Development Mr. Amaya, to give his opening remarks. Mr. Amaya thanked the CCN, MOLG, MORPW and PAPs for their active participation to date.

He explained the purpose of the gathering, to enumerate further the new Missing Link project. He explained the Memorandum of Understanding (M.O.U) signed between the Governments of Kenya and Japan on the project, and the framework for signing such an agreement, where the participation of the local community and affected people is a critical plank in the process.

- ***Need to alleviate Crowding and Congestion on Nairobi's Roads***

He examined the problem of crowding and congestion in Nairobi, noting that it is bad for business, annoying and a hindrance to development. He explained that one of the reasons for this congestion is the Missing Links not existing.

He emphasized that to link the city and reduce these problems, an all-inclusive process of research/development was required. He emphasized the need for adoption of new technologies to facilitate this and further enhance development.

He recalled the Westlands Roundabout Pilot Project, where initially public resentment changed after completion, noting public perceptions can be rigid in the initial project phases.

He explained the numerous Missing Links that are still not in existence. They are many and a hindrance to unfettered movement. He explained that the Westlands-Ngong road Area where Missing Links 3, 6 and 7 will traverse was lucky to have the first Missing Links Projects done. He appealed to the participants to assist in the development of this program. The short term programs are due to rollout up to the year 2010, and thus the need for this first Missing Links Project to succeed is critical.

He described the route that the Missing Links would take, and closed his remarks with an appeal to work together.

#### **4. *Opening address by Director of City Planning, Mr. Adolwa***

He started by reminding participants that Nairobi, as the Capital City and a large metropolis, must have a Development Plan to develop and expand the City. He noted that Nairobi has a Metropolitan Growth strategy/plan made in as far back as 1973, and the time has come to execute them. It is therefore not a surprise, as the plan has been in existence for all these years. The aforementioned Metropolitan plan was for 1973 to 2000, thus the need for a fresh Metropolitan strategy for the future, which for urban transport, in conjunction with the JICA Team, has now been developed. The City Council of Nairobi is in the process of preparing the Metropolitan strategy covering other aspects of development.

Mr. Adolwa stated that fundings of this forum would be incorporated in the Proposed Plan, especially in relation to the Missing Links 3, 6 and 7, and his engineering colleagues will outline the proposed developments and their effects on the PAPs.

He explained the other Development Plans in the pipeline including proposed Market Developments that will be built in Westlands, Buru Buru among others, which the participants will also benefit from.

He explained that the temporary occupation licenses are only that, *temporary*, and when developments have to be executed then the license must surely expire. He emphasized that the license conditions clearly explain this. Notwithstanding, he closed by emphasizing the need to involve the PAPs in the relocation development process.

#### **5. *Opening address by City Engineer CCN. Eng. Chiuri***

He started by thanking the Director of City Planning and Eng. Toda and the JICA Team, for the good work done in producing a concrete, good document. He noted that there have been numerous meetings of stakeholders and that at every stage of the study, their views have been incorporated.

Notwithstanding, this forum is still important to open a communication channel between the Developers on the one hand and PAPs on the other. He explained the main objectives of the Missing Links, mainly to ease congestion by linking roads and creating alternative communication paths.

Though 20 Missing Links have been identified, the three (3) shall be the first to be constructed. They will greatly ease communication between Westlands and the rest of the City.

He outlined the routes the links will take, noting that though the Road Reserve is 30 meters wide, initially only half will be used on all 3 links. One bridge is to be built on Missing Link 3 and 2 bridges on Missing Link 7.

He explained the difference between *missing links* and *ring roads*, noting they will simultaneously reduce traffic congestion.

- ***Pedestrian to be covered***

He emphasized that pedestrians will be considered very highly in the designs to be done, which will also include cycle lanes. He noted a previous meeting to assess the proposed Missing Link Developments that addressed how they affected PAPs, and the importance of this forum to involve PAPs and consider the impact on them. He closed by thanking all for coming to participate.

#### ***6. Outline of Project by JICA Study Team: Project Outline done with the aid of a Power Point Presentation projected on a Big Screen and visible to All***

Eng. Toda introduced the team who participated, and started by explaining that there were a total of 16 Missing Links. He noted that the Routes have been planned over 30 years ago, where road corridors were reserved and clearly defined.

Using the *PowerPoint* presentation, he explained the Missing Links 3, 6 and 7, and outlined their routes in detail. Using photos he showed the current status of the Road Reserves, with temporary occupants such as Kiosks and mechanic Garages occupying several sections of the Road Reserve.

He noted that Missing Link 7 has a significant Pedestrian Traffic, with a temporary Bridge Structure crossing a River Point. On this Link also there is significant encroachment of the Road Reserve. In this regard, the Yaya center junction is currently in bad shape.

He explained that the area the links are to connect is fundamentally zoned and separated by existing rivers, which define the Lavington and Westlands etc, with no direct connection between, forcing the circuitous routes in existence now. He took the forum through the present existing conditions where inaccessibility and traffic congestion is the norm.



He further outlined the objectives of the Missing Links noting that they will greatly reduce congestion in the City itself, by giving commuters alternative routes to exit/enter the city without going through its center.

He showed the Projected Traffic demand including the years 2020 to 2050, noting that 2 lane roads will initially cope with the demand, but from 2015, the Links must be converted to 4 lane carriageways to cope with increased demand.

He illustrated the 2-lane and 4-lane concepts, and how the 2-lane will be built first, with open space on one side, before 2015 when traffic demand will require the 4-lane Road expansion.

He illustrated:

- The *bridges* to be built
- *Junction designs*
- The *Implementation Program* for the Missing Link Projects: 2006- fund preparation and design stage, construction and total cost.
- *Expected benefits*: time saved, better traffic, good connections, NMT facility, New public transport route.
- *Expected problems*: additional noise along the route.

He finished by outlining the proposed Mitigation measures to be taken, including a *green belt area, noise barriers, shopping area and harmonization of transport*.

### **7. Outline of Environmental Legislation by Professor Koech**

He opened by thanking all participants. He noted that Kenya has not had an Environmental policy before 1999, but from 1993 after the Rio di Janeiro Global talks, resolutions were made that all countries shall create an environmental policy. Then from 1993 to 1999, Kenya finally started the process.

Legislation is a most important plank in policy formulation, and in 1999, the president accented to a law governing this. From then, any project MUST have an Environmental Impact Assessment (EIA), that enumerates benefits, problems and mitigations.

Thus for this project, the said EIA was mandatory, which he and his team have completed, with invaluable help and advise from the PAPs. Part of this process is why this forum has been called.

The study must be reviewed by NEMA and passed by them. The report has been sent to NEMA for this.

He reminded participants that NEMA will publish in the daily papers/newspapers where and when the EIA can be studied, and thus there will be further opportunity for the PAPs to air their views. He emphasized that environmental protection is critical to any project development.

He closed by thanking all in attendance.

#### **8. Outline of Questionnaire by Professor Koech**

Eng. Murimi noted that the Planning context and policy had been covered by Mr. Adolwa, so it was skipped. After confirming from participants that ALL had the Questionnaire, Eng. Murimi requested Professor Koech to take the forum through it after which all would break for tea.

#### ***Professor Koech:***

After confirming all had the complete questionnaire and pens and pencils, he took the participants through it using a PowerPoint screen presentation to explain and illustrate.

Points he emphasized must be clearly and concisely filled, included:-

- Correct date and complete full name of individual.
- Which Missing Link 3, 6 or 7, is the participant close to, MUST be clearly indicated.
- Gender, age group (as per the groups set out) by clearly ticking
- Marital status, clearly tick in space provided.
- Status in respect to proposed project, as per the groupings set out in the chart in the questionnaire.
- The understanding that the occupation is temporary.
- How much time/notice to vacate needed.
- Where does the PAP intend to move to?

Opportunity will be given to ask any questions in the course of the talk.

In response to some objections from the floor to handing in the questionnaires immediately, Eng. Murimi reminded the participants that there will be an ample opportunity to ask questions after tea during the Plenary Session.

Sentiments that the questionnaire should only be returned after the plenary session was noted and Eng. Murimi agreed to alter the program and go straight into the plenary session after Tea Break.

Eng. Murimi called the meeting to order at 12.15 pm.

Three (3) representatives were requested to make presentations on behalf of the PAPs. They were:

- Mr. Otieno Kula, *Provincial Applied Technology (Jua Kali) Officer*
- Benson Mbogua, Chairman, Ring Road Jua Kali
- Joshua Markinie, Representative

***Mr. Otieno Kula: Provincial Applied Technology (Jua Kali) Officer***

Noted the presence of Director of City Planning and the temporary occupiers, PAPs. He felt that the temporary occupation meant that the Government would assist find a permanent place for relocated PAPs such as market spaces should be found for the temporary occupants. He noted that frequent evictions have been happening. He requested the Director of City Planning to inform the forum on the plan to resettle the PAPs before the questionnaire was returned.

***Benson Mbogua, Chairman Ring Road Jua Kali***

He noted that meeting is to agree on the way forward, and appreciated this. Recalled the Kenya Science Teachers College Stakeholder meeting organized by the JICA Study Team, where he requested that Jua Kali be taken care of and considered in any plans for the city, to prevent job destruction.

Noting that the Jua Kali sector creates a lot of jobs, relocation means a lot of hardships. He requested that as there is plenty of space around the proposed Road, consideration should be given to allocate them some space.

He noted that the Ministry of Labour does not seem to be involved in the affair of the City, stating that if it was involved, then it would have been easier, with them being considered in relocation plans. He stated that their options are few right now.

***Joshua Markinie, Representative***

He stated that Notices to move are given too short a time before demolition, and felt demolitions are done with interest of a few in mind where only the better off in society benefiting.

He feared Jua Kali zones were being faced out and requested assistance. He asked the Government to take the message that Jua Kali should be supported to create employment. Plan to cater for the common people, before the project starts.

*9. (The forum was opened to questions from the PAPs to the Conveners. Eng. Murimi explained questionnaire was for gathering information. Requested solutions be suggested.)*

***Petronila Nafula, Chairperson Westlands Constituency Development fund and Director, Westlands Association-Security Task Group Convener***

She asks: How much time will PAPs be given to relocate? Notice should be given early. The Government, before asking where PAPs will move, should offer an alternative place.

A Modern Market should be constructed as part of this process to relocate the PAPs to. A request should be made to JICA on this.

The Westlands market plan that has been mooted, is awaited, and requested that the plans for the market be availed. She noted that the PAPs supported the Projects, however they would want a market built before the relocation.

***In Reply: Eng. Murimi and Mr. Adolwa***

***Mr. Adolwa***

Mr. Adolwa, Director City Planning explained that assigning of a new area was a policy decision that could only be made by the leadership cadre, and requested PAPs to pressure their council or parliamentary representatives to push for this.

He reminded participants that as Civil Servants they could only implement the set Policy.

***Eng. Murimi***

He emphasized that the construction is not starting immediately and the questionnaire information was urgently required as part of the planning process.

***Prof. Koech***

He noted that the Government wants an all-inclusive process and suggested that PAPs suggestions and concerns ALL be written on the questionnaire forms, even using additional paper, and handed back for review and analysis.

***Eng. Ogut***

She asked the PAPs to remember why the forum was called, i.e. to ensure this is the very first all-inclusive consultative project of its kind. She noted that all can never be fully satisfied due to divergent views on developmental matters.

She requested that the PAPs choose a committee of three (3) PAPs to meet the Implementation Team (MOLG/CCN) to discuss way forward and asked as Professor Koech had, that additional sentiments, based on PAPs experiences, be written on the questionnaire form clearly.

***PAPs Questions:******Joshua Markinie, businessman and Bishop Musa Kisanya, Businessman***

Requested that PAPs be given more time till Monday to understand and return the questionnaire.

***Tobius Odongo:*** Was uncomfortable with the question No. 8 on questionnaire asking how much notice the PAPs needed yet some of the PAPs had already been evicted last year 2005.

***James Ambuchi:*** Felt it was a good opportunity to pass the PAPs sentiments to the Government through the Implementation Team (MOLG/CCN).

***In Reply******Eng. Theuri***

Emphasized that the questionnaire form is very important for information asked that any additional issues by PAPs be noted on them. He noted the PAPs concerns and said the Implementation Team (MOLG/CCN) was eager to analyse the questionnaire information and communicate the results to the relevant Authorities.

***Questionnaire***

All questionnaires were returned by the PAPs, dully filled. A committee of three (3) PAPs Representatives was chosen by them (PAPs to meet with the Implementation Team (MOLG/CCN) to address the PAPs concerns; they are Joshua Markinie, Otieno Kula and Benson Mbogua. The Implementation Team (MOLG/CCN) agreed to meet them at a date to be set.

***Eng. Murimi***

Closed meeting and thanked all participants.

## ANNEX 9: SAMPLE QUESTIONNAIRE FOR ENQUETE SURVEY

### SOCIAL IMPACT SURVEY QUESTIONNAIRE FOR THE PROJECT AFFECTED PERSONS OF MISSING LINK ROADS OF THE CITY COUNCIL OF NAIROBI

**Instructions:** Please answer all questions as complete as possible. We appreciate your support and cooperation.

Date of Interview/Completion of Questionnaire \_\_\_\_\_

Missing Link Road No./Name \_\_\_\_\_

1). Name of Respondent: \_\_\_\_\_

2). Gender: Male  Female

3). Age: a. 15 –19  b. 20 –29  c. 30–39  d. 40 -49   
e. 50 –59  f. More than 60

4).

5). Marital Status: Single  Married  Other (specify) \_\_\_\_\_

6). What is your status in respect to the proposed project? (tick the appropriate)

No	Status	Location on/along the Missing Links		
		Missing Link No.3 (Ring Road Westland)	Missing Link No. 6 (Oloitoktok Rd)	Missing Link No. 7 (Ring Road, Kilimani, Olenguruone Av)
1	Kiosk (temporary) Licensed/owner			
2	Hawker (Vendor without shelter)			
3	Automobile garage (temporary) licensed owner			
4	Temporary Resident			
5	Social facilities operator			
6	Gardener			
7	Tree nurseries operator			
8	Religious Buildings/Offices			
9	Car Park operator			
10	Permanent Resident			

- 6). The proposed project is to construct roads to link Ngong Road and Westlands to decongest traffic.  
Do you support this Project to improve traffic in Nairobi?

Yes  No  No Comment

*(The following questions are answered by the Temporary Occupiers of the Missing Links)*

- 7). Do you understand the legal contents of your temporary occupation?

Yes  No

- 8). How much Notice (time/period) do you require?

a. Two Weeks

b. One Month

c. Two Months

- 9). Since you are a temporary occupier of the Missing Links Roads, where do you intend to move to?

---

**Name of respondent:** \_\_\_\_\_

**Contact details: Tel. No.** \_\_\_\_\_ **Fax.** \_\_\_\_\_

**Address** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**We thank you most sincerely for your valuable input to this survey.**

**END**

## SUMMARY OF ANSWERS

		OPINION						Remarks
CATEGORY	YES/NO.	Question No. 6	Question No.7	Question No.8	Question No.9	Others	Remarks	
1	Yes	Subject to Provision of assistance to the Jua Kali (M.S.Es) informal traders in the project	No	We cannot allow some people/residents of the city to enjoy occupation permanently while others are allowed temporary	Planning of MSE activities with the Project areas	It is important to integrate the micro and small enterprises /Jua Kali activities planned and developed together		
2	Yes	Yes	No. What I know I am a Kenyan	Give one year. This is too short	First of all tell JICA to build markets for wananchi	Westlands Permanent Market has no water		
3	Yes	Yes		More time than that	Anywhere the Govt. would approve	The Govt. should suggest where to resettle people. City planners no more.		
4	Yes	Yes	No	Two Months	I need your support to make me go some where. I am looking forward.			
5	Yes	Yes	Yes	I don't know where to go	I have nowhere to go to. Govt to show me			
6		Yes	Yes	One month	I am waiting the Govt. to show me.			
7	Yes	Yes	Yes	As long as I get an alternative	Any Land where I can do my business			
8	Yes	Yes	Yes	Plan from the Govt to settle the occupants	Don't have a place	(i) look forward for settlement of people by the road planners. (ii) Follow JICA to benefit the settled. (iii). After completion make sure that everyone is there in that road reserve.		
9	Yes	Yes	Yes		Show me where to go.			
10	Yes	Yes	Yes					
11	Yes	Yes	Yes	Two months	A place that can help me get my dairy bread			
12	Yes	Yes		Plan from the Government to settle the occupants first.	I have no where to go.			
13	Yes	Yes	Yes	Show me where to go.	Any where within Nairobi			



14	4	Yes	Yes	Yes	Yes	The Government should plan for its people	I am waiting for the Government to show me		
15	4	Yes	Yes	Yes	Yes	3 years	No where to go		
16	1	Yes	Yes	Yes	Yes	2 years	The Govt. to show me where to go.		
17	1	Yes	Yes	Yes	Yes	Two months	I am a student and have nowhere to go		
18	3	Yes	Yes	Yes	Yes	2 months	No where to go		
19	2	Yes	Yes	Yes	Yes	Two months	I have nowhere to go to.		
20	2	Yes	Yes	Yes	Yes	No where to go with my 4 kids	Please show me where to go.		
21	2	Yes	Yes	Yes	Yes	A notice is ok. But have nowhere to go	I don't have a place to move to.		
22	1	Yes	Yes	No	No	None of the above	To remain		
23	3	Yes	Yes	No	No	Two months	No where to go		
24	3	Yes	Yes	Yes	Yes	2 months after resettling me	No where to go		
25	7	Yes	Yes	Yes	Yes	Two months	Provide me with an alternative		
26	3	Yes	Yes	Yes	Yes	Two months	I have nowhere to go		
27	3	Yes	Yes	Yes	Yes	Two months			
28	3	Yes	Yes	Yes	Yes	We need a place for Jua Kali	We need our place for garages		
29	1	Yes	Yes	Yes	Yes	3 to 6 months only if there is a proposed site for us to move to	Would like to be relocated to a place just near where I am.	I would like to thank you most sincerely for your most organised forum and would like to be informed of your latest development.	
30	5	Yes	Yes- include many bus stops and lay-by to ease congestion	N/A	N/A	N/A	N/A		
31	8	Yes	Yes	N/A	N/A	N/A	N/A	Carry out a special study on how to take care of resettlement in human way	
32	1	Yes	Yes	Yes	Yes	Until the project starts	I don't have a place to move to.		
33	1	Yes	Yes	Yes	Yes	2 years	Request for re-location		

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34	3	Yes	Yes	Yes	At least an year	Request for relocation	
35	3	Yes	Yes	Yes	At least an year	I don't have a place to move to.	
36	3	Yes	Yes	Yes	At least an year	The Govt. to show me where to go.	
37	1 and 8	Yes	Yes	Yes	2 years	Mwanzi Road	
38	8 and 10	Yes	Yes	N/A	N/A		
39	3	Yes	Yes	Yes	Two months	Show me where to go near the place.	
40	1	Yes	Yes	Yes	One month	Provide land to put permanent licensed business	A permanent licensed building to keep on running business
41	8	Yes	Yes	No	1 year	Assist me to get another place	
42	8	Yes	Yes	Yes	2 years	Mwanzi Road	
43	10	Yes	Yes				
44	10	Yes	Yes				
45	1	Yes	Yes	Yes	2 months	I need assistance from N.C.C.	The project is good but JICA and Govt. should take care of us.
46	3	Yes	Yes	Yes	Two months	Assist me to get another place	
47	1	Yes	Yes	Yes	Two years	Assistance from the city council	The project is good but JICA and Govt. should consider the common wananchi.
48	3	Yes	Yes	Yes	More than 20 years		
49	1 and 4	Yes	Yes	Yes	Dennis Pritt was demolished 5 months ago		
50	N/A	Yes	Yes	N/A	N/A	N/A	Involve Stakeholders while making any policy
51	1	Yes	Yes	Yes	Already demolished five months ago without any notice	Compensated/should be shown where to go	
52	1	Yes	Yes	Yes	Two months	I have nowhere to go	
53	1	Yes	Yes	Yes	Two months	I need assistance otherwise I don't know where to go	
54	10	Yes	Yes				
55	Furniture	Yes	Yes	Yes	Two months	Maram Road	

56	3	Yes	Yes	Yes	At least 1 year	To be shown where to go.	
57	3	YES	YES	YES	1 YEAR		
58	3	Yes	Yes	No	1 year		
59	3	Yes	Yes	Yes	About 2 years notice	You first tell us where to go	
60	3	YES	YES	YES	IMPOSSIBLE TO TELL	NOWHERE TO GO	
61	2	Yes	Yes	Yes	3 years	Squatter area	
62	2	Yes	Yes	Yes	2 months	Please give us alternative. We have nowhere to go.	
63	3	Yes	Yes	Yes	N/A	N/A	
64	1	Yes	Yes	Yes	Until the project organisers direct me	Where seen necessary by Government and the Authority	
65	3	Yes	Yes	Yes	Govt. to give direction	No where to go	
66	1	Yes	Yes	Yes	Two Months	I don't know where to go unless assisted	
67	3	Yes	Yes- But remember its Kenya and we will be in it.	Yes	Please compensate. We are Kenyans. You can also give us alternative location.	Take us where you have planned.	We support the Project but we also need to live. Get us a place where we can pay even if it takes 10 years.
68	1	Yes	Yes	Yes	We need a place		
69	2	Yes	Yes	Yes	Six months	Where seen necessary or compensate	
70	8	Yes	Yes	Yes		Hope Govt. will relocate the chiefs office	
71	4	Yes	Yes	No.	Already displaced from Dennis Pritt. No notice was given.	Nowhere to move to	
72	2	Yes	Yes	Yes	Two months	I don't have a place to move to.	
73	3	Yes	Yes	Yes	2 months	No where to go	
74	3	Yes	Yes	Yes	Please allocate us to that we are able to answer this question	The city Planners should re-locate us.	
75	3	Yes	Yes	Yes	Atleast six months	The question is not clear.	The Government should set aside a place for us. It should not demolish the structures before they show us where to go.
76	3	Yes	Yes-We have children to take care of.please consider us	Its not temporary because we are paying the City Council Kshs 25 everyday.			

77	1	Yes	Yes	No	Two months	I have nowhere to go but I am still looking	
78	4	Yes	Yes	Yes	6 months	Any other available space	
79	1 and 4	Yes	Yes	Yes	6 months	No where to go	
80	2	Yes	Yes	Yes	6 months	No where to go	
81	5 and 10	Yes	Yes	Yes	Give us time and alternative	I don't have a place to move to.	
82	3	Yes	Yes	Yes	More than 3 years	Responsible arms should show me where to go.	
83	1	Yes	Yes	Yes	2 years	No where to go	
84	3	Yes	Yes	Yes	Two months	I don't have anywhere specific to move to.	
85	1	Yes	Yes	Yes	Until the project organisers direct me	Where seen necessary by Government and the Authority	
86	1	Yes	Yes	Yes	Until I find an alternative place and get authority from the CCN	No where to go	
87	1	Yes	Yes	Yes	Two months	Any of the markets around Nairobi- Westlands	
88	3	Yes	Yes but an alternative place must be there for the people to do business	Yes	When you give us an alternative site to carry on with our businesses	Nowhere to go. Give us space.	We want an Alternative and also involve the Ministry of Labour

**ANNEX 11: PARTICIPANTS OF THE MEETING OF 16<sup>TH</sup> FEBRUARY 2006**

<b>NO.</b>	<b>NAME OF PARTICIPANT</b>	<b>ORGANIZATION</b>	<b>TITLE/DESIGNATION</b>
1.	Mr. J. Amaya	MoLG	Ag. Director Urban Development
2	Eng. J.W. Theuri	MoLG	Ag. CSE
3.	Eng. J.K. Mwangi	CCN	Ag. C.A.E. (T.V)
4.	Ms. J. Wamuguru	CCN	Community Development
5.	Eng. T. Toda	JICA Study Team	Deputy Team Leader
6.	Prof. Michael Koech	JICA Study Team	EIA Expert
7.	Dr. Eng. Monda	JICA Study Team	Local Coordinator
8.	Mr Moses Okwiri	JICA Study Team	Staff Member

**ANNEX 12****MINUTES OF THE MEETING HELD ON 16<sup>TH</sup> FEBRUARY, 2006****TIME:** 3.00pm to 4.30 pm**VENUE:** Ag. Directors Office (Urban Development)  
Ministry of Local Government (MOLG)**In Attendance**

1 Mr. J. Amaya	MOLG Ag. Director (Urban Development)
2 Eng. J. W. Theuri	MOLG Ag. CSE, UDD/MOLG
3 Mr. J. K. Mwangi	CCN Ag. Chief Assistant Eng. (T.V.)
4 Ms. J. Wamuguru	CCN Community Development
5 Eng. T. Toda	JST Deputy Team Leader
6 Prof. M. K. Koech	JST EIA Expert
7 Dr. Eng. Monda	JST Local Coordinator
8 Mr. M. Okwiri	JST Staff Member

**Absent with Apologies**

1. Eng. C. M. Chiuri	CCN	City Engineer
2. P. S. Adolwa	CCN	Director of City Planning
3. Ms M. Kinoti	JST	EIA Expert

**Meeting convened**

The meeting started with the proceedings of the Public hearing being distributed by Eng Toda. He informed the members that a Japan Government representative, Mr. Imai, would be touring the country from the 9<sup>th</sup> of March 2006 to examine the Missing Links projects.

**Questionnaire results**

Professor Koech took the Team through the results of the Questionnaire:

1. Majority (67.7%) came from Missing Link (ML) 7, 28.3% came from Missing Links (ML) 3 and only 3.1% came from Missing Link (ML) 6 ; 0.8% came from the three Missing Links
2. Majority of the Missing Link Occupant (MLO) participants were males (83.5%), while the females were 16.5%.

3. About 60% of the Missing Link Occupants (MLO) participants who were youthful fell between age bracket of 15 and 39 years. Those aged more than 60 years were 4.7%.
4. About 68% of Missing Link Occupants (MLO) are temporary licensed Automobile garage and Kiosks operators. Very few, 0.8% are gardeners and car park operators, respectively. Less than 5% were permanent residents.
5. Majority (70.4%) of the Missing Links Occupants (MLO) support the project, 11.8% do not, 11.5% have no comments while 3.1% did not provide any opinion.
6. More than 72% of Missing Link Occupants (MLO) understand that they are in temporary occupation, 15% do not while 12.6% did not respond.
7. Most Missing Link Occupants (MLO) did not indicate the amount of notice they require, however, for those who did, majority (23.6%) require a two-month notice, 2.4% require a month-notice while 6.3% require other amounts. Other amounts of notices are; one (1) year, one and a half (1<sup>1/2</sup>) years, two (2) years, three (3) years, six (6) months, more than one (1) year, more than three (3) years and until the project starts.
8. Majority (24%) want to be shown where to move to and do not have any place to move to, respectively. Some provided specific places such as Mwanzi Road/Lane (3.1%), within Westland (0.8%), Mararo Road (0.8%) and Squatter Village (0.8%).

He reported that 125 questionnaire's were returned with 88 PAPs supporting the Project, 15 opposing it and 18 with no comment. Professor Koech will summarize key issues raised by the PAPs and pass them over to Eng Amayo for further action from the Government end.

#### **Notice to Move to PAPs from CCN**

Eng. Toda noted that CCN, during the Public Hearing, indicated to the PAPs that adequate notice would be given before Construction starts. He also noted that the projects will also benefit PAPs by creating pedestrian and cycle lanes, easing their communications.

Eng. Mwangi noted that most PAPs requested a notice of between 1 month to 2 years, however with a construction start target of June 2007, it would be prudent to start action on giving Notice now.

Eng. Toda supported this point, emphasizing that as soon as the Government of Japan gives the official go ahead for the project, the process of notification to move should start.

Eng. Chiuri however cautioned that too long a notice is counterproductive, such as 1 or 2 years, and also not practical. Prof. Koech said that the land act of the laws of Kenya covers *only* the compulsory purchase of land by the government and even then, defines a time of 6 months notice with compensation. Thus the CCN is at liberty to deal with the Notice issue in accordance with its By-laws, as it deems fit.

Eng. Chiuri proposed that a clear and concise Program of Works for the Project, from Design, Survey to Construction start, be handed to all PAPs so the schedule is clear in their minds, and they can start preparing to move both mentally and physically. When Construction is ready to start, he suggested they then be given a decent period of notice in light of the program having been given to them well before.

Eng Toda reminded that this program was already outlined during the public hearing, but agreed a concise one be prepared and given to PAPs again.

This position was unanimously adopted by the Team.

### **Relocation Policy for PAPs**

Eng Toda reminded the meeting that the Japan Government would wish to hear the government policy on relocation of the PAPs. Though Eng Toda proposed that spaces for PAPs be specifically demarcated along the Missing Links at the design stage, the members felt that this is only a short-term solution that is not sustainable in the long term.

Eng Chiuri brought to attention the policy and current plan for private sector participation in the Design and construction of **Public Markets**, which the CCN is currently embarking on. He noted that the market earmarked for Westlands has the relocation of the hawkers and Jua Kali in Westlands in mind, and it is CCN policy that the Jua Kali including Missing Links 3, 6, 7 PAPs, will be included in this relocation plan to the Westland's Market.

Eng Toda noted that an industrialization mission to assist the Government further formulate an industrialization policy, with Jua Kali in mind, will arrive in March 2006, from Japan, and expressed hope this process of policy formulation will be strengthened.

### **AOB**

Eng Toda was pleased to note that a grievance committee of 3 had been formed by the PAPs to engage the government on their issues. He requested proceedings of the public hearing be read carefully by all and comments passed to him so he could prepare the final draft for forwarding as official proceeding to JICA.

He requested that a team be set to receive Mr. Imai including Director City Planning, Mr. Adolwa of CCN. He mentioned that he will be in Japan from Wednesday 22<sup>nd</sup> February 2006, but hoped to return when all project execution plans are complete.

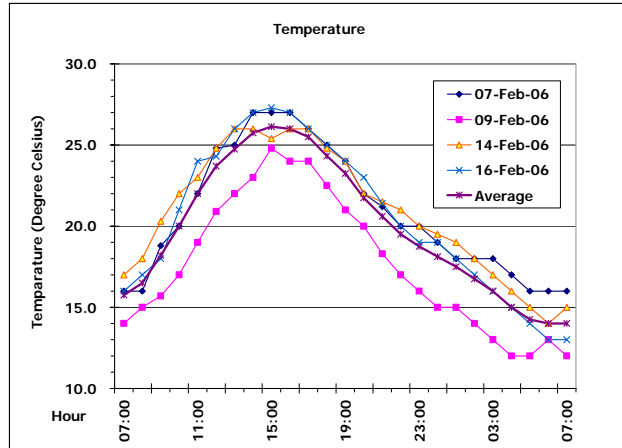
Eng Chiuri thanked Eng. Toda for the good work done and closed the meeting.



ANNEX 13: DETAILS RESULTS OF ENVIRONMENTAL BASELINE SURVEY

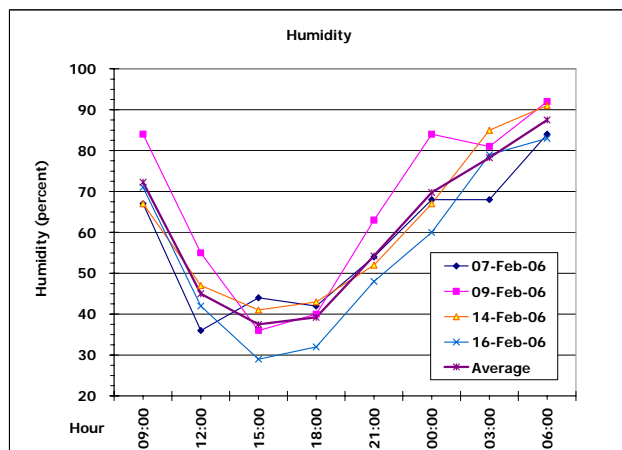
Temperature Unit: Degree Celsius

Station		Riverside	Lavington	Kilimani	Kileleshwa	Average
Z-Time	L-Time	07-Feb-06	09-Feb-06	14-Feb-06	16-Feb-06	
04:00	07:00	16.0	14.0	17.0	16.0	15.8
05:00	08:00	16.0	15.0	18.0	17.0	16.5
06:00	09:00	18.8	15.7	20.3	18.0	18.2
07:00	10:00	20.0	17.0	22.0	21.0	20.0
08:00	11:00	22.0	19.0	23.0	24.0	22.0
09:00	12:00	24.8	20.9	24.8	24.3	23.7
10:00	13:00	25.0	22.0	26.0	26.0	24.8
11:00	14:00	27.0	23.0	26.0	27.0	25.8
12:00	15:00	27.0	24.8	25.4	27.3	26.1
13:00	16:00	27.0	24.0	26.0	27.0	26.0
14:00	17:00	26.0	24.0	26.0	26.0	25.5
15:00	18:00	25.0	22.5	24.8	25.0	24.3
16:00	19:00	24.0	21.0	24.0	24.0	23.3
17:00	20:00	22.0	20.0	22.0	23.0	21.8
18:00	21:00	21.2	18.3	21.5	21.4	20.6
19:00	22:00	20.0	17.0	21.0	20.0	19.5
20:00	23:00	20.0	16.0	20.0	19.0	18.8
21:00	00:00	19.0	15.0	19.5	19.0	18.1
22:00	01:00	18.0	15.0	19.0	18.0	17.5
23:00	02:00	18.0	14.0	18.0	17.0	16.8
00:00	03:00	18.0	13.0	17.0	16.0	16.0
01:00	04:00	17.0	12.0	16.0	15.0	15.0
02:00	05:00	16.0	12.0	15.0	14.0	14.3
03:00	06:00	16.0	13.0	14.0	13.0	14.0
04:00	07:00	16.0	12.0	15.0	13.0	14.0
Quantile	0	16.0	12.0	14.0	13.0	14.0
	1	18.0	14.0	18.0	17.0	16.5
	2	20.0	17.0	21.0	20.0	19.5
	3	24.8	21.0	24.8	24.3	23.7
	4	27.0	24.8	26.0	27.3	26.1
Average		20.8	17.6	20.9	20.4	19.9
Standard Deviation		3.9	4.2	3.9	4.7	4.1
Kurt		(1.33)	(1.30)	(1.23)	(1.32)	(1.38)
Skew		0.32	0.28	(0.15)	(0.02)	0.12

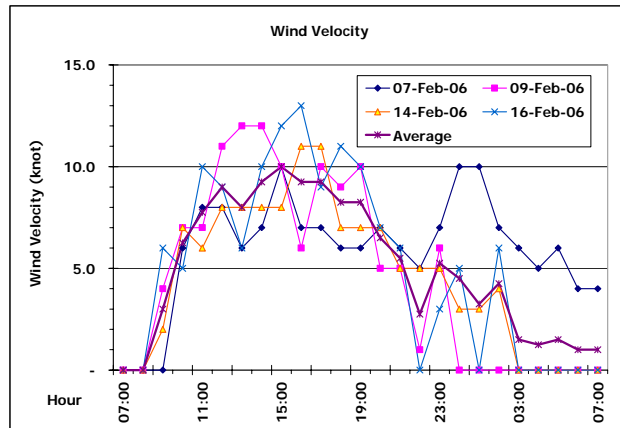


Humidity Unit: %

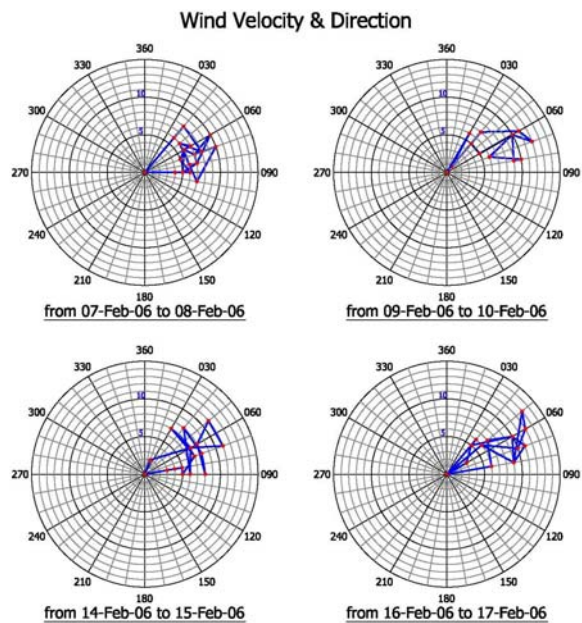
Station		Riverside	Lavington	Kilimani	Kileleshwa	Average
Z-Time	L-Time	07-Feb-06	09-Feb-06	14-Feb-06	16-Feb-06	
06:00	09:00	67	84	67	71	72
09:00	12:00	36	55	47	42	45
12:00	15:00	44	36	41	29	38
15:00	18:00	42	40	43	32	39
18:00	21:00	54	63	52	48	54
21:00	00:00	68	84	67	60	70
00:00	03:00	68	81	85	79	78
03:00	06:00	84	92	91	83	88
Quantile	0	36	36	41	29	38
	1	44	51	46	40	44
	2	61	72	60	54	62
	3	68	84	72	73	74
	4	84	92	91	83	88
Average		58	67	62	56	60
Standard Deviation		16.5	21.5	19.1	20.9	19.0
Kurt		(1.10)	(1.62)	(1.27)	(1.73)	(1.74)
Skew		0.15	(0.42)	0.53	0.06	0.06



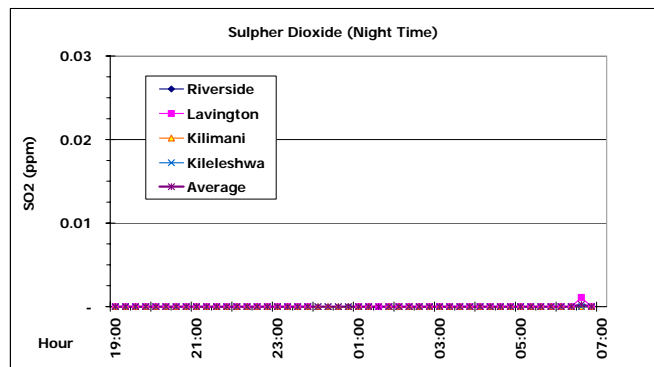
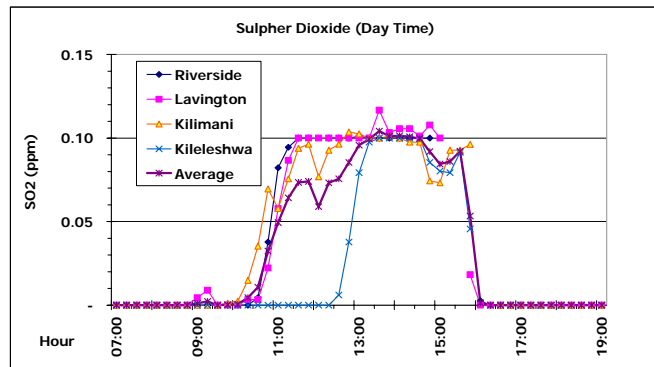
Wind Velocity						Unit: knot
Station		Riverside	Lawington	Kilimani	Kileleshwa	Average
Z-Time	L-Time	07-Feb-06	09-Feb-06	14-Feb-06	16-Feb-06	
04:00	07:00	-	-	-	-	-
05:00	08:00	-	-	-	-	-
06:00	09:00	-	4	2	6	3
07:00	10:00	6	7	7	5	6
08:00	11:00	8	7	6	10	8
09:00	12:00	8	11	8	9	9
10:00	13:00	6	12	8	6	8
11:00	14:00	7	12	8	10	9
12:00	15:00	10	10	8	12	10
13:00	16:00	7	6	11	13	9
14:00	17:00	7	10	11	9	9
15:00	18:00	6	9	7	11	8
16:00	19:00	6	10	7	10	8
17:00	20:00	7	5	7	7	7
18:00	21:00	6	5	5	6	6
19:00	22:00	5	1	5	-	3
20:00	23:00	7	6	5	3	5
21:00	00:00	10	-	3	5	5
22:00	01:00	10	-	3	-	3
23:00	02:00	7	-	4	6	4
00:00	03:00	6	-	-	-	2
01:00	04:00	5	-	-	-	1
02:00	05:00	6	-	-	-	2
03:00	06:00	4	-	-	-	1
04:00	07:00	4	-	-	-	1
0		-	-	-	-	-
1		5.0	-	-	-	1.5
2		6.0	5.0	5.0	6.0	5.3
3		7.0	9.0	7.0	9.0	8.3
4		10.0	12.0	11.0	13.0	10.0
Average		5.9	4.6	4.6	5.1	5.1
Standard Deviation		2.7	4.6	3.6	4.5	3.4
Kurt		0.96	(1.51)	(1.16)	(1.42)	(1.50)
Skew		(0.90)	0.31	0.03	0.13	(0.06)



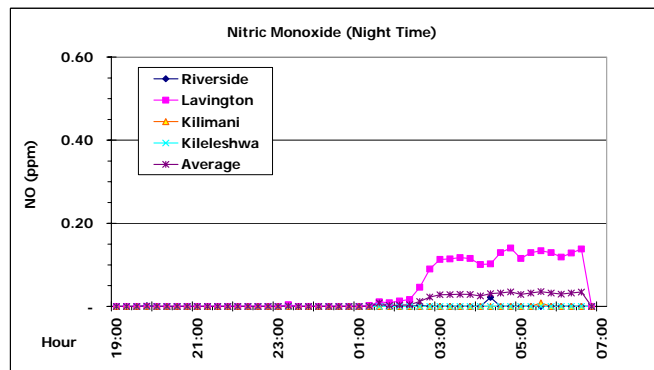
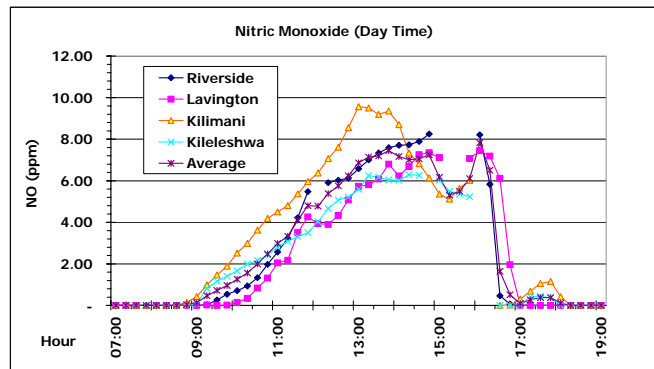
Wind Direction						Unit: degree
Station		Riverside	Lawington	Kilimani	Kileleshwa	Average
Z-Time	L-Time	07-Feb-06	09-Feb-06	14-Feb-06	16-Feb-06	
04:00	07:00					
05:00	08:00					
06:00	09:00		40	20	40	33
07:00	10:00	40	40	60	40	45
08:00	11:00	40	40	90	60	58
09:00	12:00	70	60	40	80	63
10:00	13:00	50	70	70	50	60
11:00	14:00	100	70	90	70	83
12:00	15:00	70	60	60	60	63
13:00	16:00	70	70	50	50	60
14:00	17:00	80	80	70	80	78
15:00	18:00	80	80	60	70	73
16:00	19:00	50	60	30	60	50
17:00	20:00	60	60	70	50	60
18:00	21:00	60	40	90	80	68
19:00	22:00	90	40	80	70	70
20:00	23:00	80	30	80	60	63
21:00	00:00	60	-	80	40	60
22:00	01:00	60	-	80	70	70
23:00	02:00	70	-	80	50	67
00:00	03:00	60	-	-	-	60
01:00	04:00	70	-	-	-	70
02:00	05:00	90	-	-	-	90
03:00	06:00	90	-	-	-	90
04:00	07:00	80	-	-	-	80
0		40	30	20	40	33
1		60	40	60	50	60
2		70	60	70	60	63
3		80	70	80	70	71
4		100	80	90	80	90
Average		69	56	67	59	66
Standard Deviation		16.3	16.4	20.6	14.1	13.3
Kurt		(0.54)	(1.39)	0.21	(1.08)	0.72
Skew		(0.06)	(0.04)	(0.95)	0.25	(0.19)



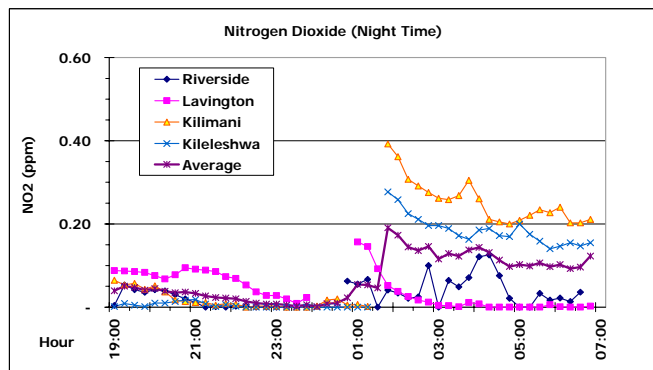
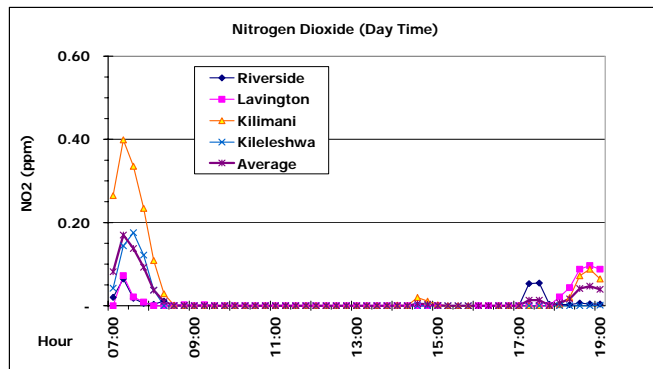
Sulphur Dioxide						Unit: ppm
Station	Riverside	Lavington	Kilimani	Kileleshwa	Average	
07:00	07:00	-	-	-	-	-
	07:15	-	-	-	-	-
	07:30	-	-	-	-	-
	07:45	-	-	-	-	-
08:00	08:00	-	-	-	-	-
	08:15	-	-	-	-	-
	08:30	-	-	-	-	-
	08:45	-	-	-	-	-
09:00	09:00	-	0.00	-	-	0.00
	09:15	-	0.01	-	-	0.00
	09:30	-	-	-	-	-
	09:45	-	-	0.00	-	0.00
10:00	10:00	-	-	0.00	-	0.00
	10:15	-	0.00	0.01	-	0.00
	10:30	0.00	0.00	0.04	-	0.01
	10:45	0.04	0.02	0.07	-	0.03
11:00	11:00	0.08	0.06	0.06	-	0.05
	11:15	0.09	0.09	0.08	-	0.06
	11:30	0.10	0.10	0.09	-	0.07
	11:45	0.10	0.10	0.10	-	0.07
12:00	12:00	-	0.10	0.08	-	0.06
	12:15	0.10	0.10	0.09	-	0.07
	12:30	0.10	0.10	0.10	0.01	0.08
	12:45	0.10	0.10	0.10	0.04	0.09
13:00	13:00	0.10	0.10	0.10	0.08	0.10
	13:15	0.10	0.10	0.10	0.10	0.10
	13:30	0.10	0.12	0.10	0.10	0.10
	13:45	0.10	0.10	0.10	0.10	0.10
14:00	14:00	0.10	0.11	0.10	0.10	0.10
	14:15	0.10	0.11	0.10	0.10	0.10
	14:30	0.10	0.10	0.10	0.10	0.10
	14:45	0.10	0.11	0.07	0.09	0.09
15:00	15:00	-	0.10	0.07	0.08	0.08
	15:15	-	-	0.09	0.08	0.09
	15:30	-	-	0.09	0.09	0.09
	15:45	-	0.02	0.10	0.05	0.05
16:00	16:00	0.00	-	-	-	0.00
	16:15	-	-	-	-	-
	16:30	-	-	-	-	-
	16:45	-	-	-	-	-
17:00	17:00	-	-	-	-	-
	17:15	-	-	-	-	-
	17:30	-	-	-	-	-
	17:45	-	-	-	-	-
18:00	18:00	-	-	-	-	-
	18:15	-	-	-	-	-
	18:30	-	-	-	-	-
	18:45	-	-	-	-	-
19:00	19:00	-	-	-	-	-
	19:15	-	-	-	-	-
	19:30	-	-	-	-	-
	19:45	-	-	-	-	-
20:00	20:00	-	-	-	-	-
	20:15	-	-	-	-	-
	20:30	-	-	-	-	-
	20:45	-	-	-	-	-
21:00	21:00	-	-	-	-	-
	21:15	-	-	-	-	-
	21:30	-	-	-	-	-
	21:45	-	-	-	-	-
22:00	22:00	-	-	-	-	-
	22:15	-	-	-	-	-
	22:30	-	-	-	-	-
	22:45	-	-	-	-	-
23:00	23:00	-	-	-	-	-
	23:15	-	-	-	-	-
	23:30	-	-	-	-	-
	23:45	-	-	-	-	-
00:00	00:00	-	-	-	-	-
	00:15	-	-	-	-	-
	00:30	-	-	-	-	-
	00:45	-	-	-	-	-
01:00	01:00	-	-	-	-	-
	01:15	-	-	-	-	-
	01:30	-	-	-	-	-
	01:45	-	-	-	-	-
02:00	02:00	-	-	-	-	-
	02:15	-	-	-	-	-
	02:30	-	-	-	-	-
	02:45	-	-	-	-	-
03:00	03:00	-	-	-	-	-
	03:15	-	-	-	-	-
	03:30	-	-	-	-	-
	03:45	-	-	-	-	-
04:00	04:00	-	-	-	-	-
	04:15	-	-	-	-	-
	04:30	-	-	-	-	-
	04:45	-	-	-	-	-
05:00	05:00	-	-	-	-	-
	05:15	-	-	-	-	-
	05:30	-	-	-	-	-
	05:45	-	-	-	-	-
06:00	06:00	-	-	-	-	-
	06:15	-	-	-	-	-
	06:30	-	0.00	-	-	0.00
	06:45	-	-	-	-	-
Quartile	0	-	-	-	-	-
	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	0.00	0.00	-	0.00
	4	0.10	0.12	0.10	0.10	0.10
Average	0.02	0.02	0.02	0.01	0.02	
Standard Deviation	0.04	0.04	0.04	0.03	0.03	
Kurt	1.10	0.77	0.05	3.64	0.79	
Skew	1.74	1.63	1.38	2.31	1.59	



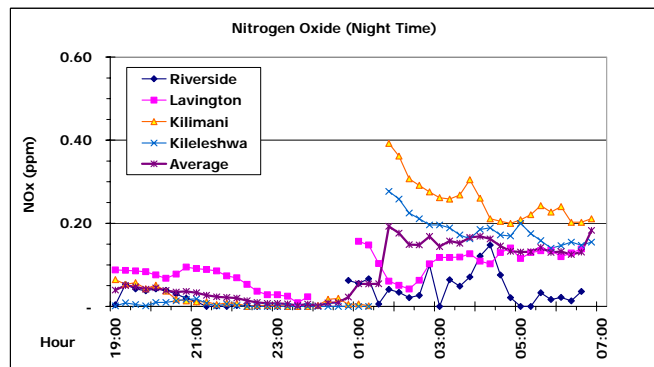
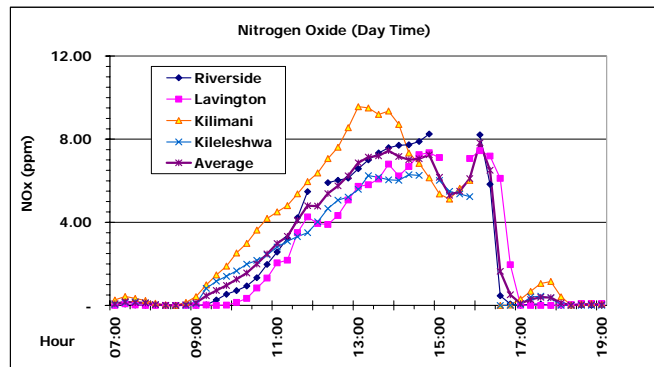
Nitric Monoxide						Unit: ppm
Station	Riverside	Lavington	Kilimani	Kileleshwa	Average	
07:00	07:00	0.00	-	-	-	0.00
	07:15	-	-	0.03	-	0.01
	07:30	-	-	-	-	-
	07:45	-	-	-	-	-
08:00	08:00	-	-	-	-	-
	08:15	-	-	-	-	-
	08:30	-	-	0.01	-	0.00
	08:45	-	-	0.15	-	0.04
09:00	09:00	-	-	0.42	0.09	0.13
	09:15	0.03	0.02	0.99	0.82	0.47
	09:30	0.26	-	1.47	1.16	0.72
	09:45	0.54	0.02	1.89	1.40	0.96
10:00	10:00	0.72	0.14	2.52	1.66	1.26
	10:15	0.94	0.34	2.99	1.99	1.56
	10:30	1.34	0.84	3.62	2.17	1.99
	10:45	1.97	1.31	4.18	2.43	2.48
11:00	11:00	2.57	2.04	4.50	2.81	2.98
	11:15	3.23	2.17	4.81	3.09	3.32
	11:30	4.22	3.50	5.37	3.31	4.10
	11:45	5.48	4.26	5.96	3.50	4.80
12:00	12:00	-	3.94	6.38	4.03	4.78
	12:15	5.91	3.90	7.06	4.66	5.38
	12:30	6.02	4.33	7.61	5.06	5.76
	12:45	6.12	5.07	8.55	5.21	6.24
13:00	13:00	6.58	5.73	9.57	5.59	6.87
	13:15	7.01	5.81	9.50	6.25	7.14
	13:30	7.33	6.09	9.19	6.16	7.19
	13:45	7.59	6.80	9.35	6.05	7.45
14:00	14:00	7.71	6.23	8.70	6.01	7.16
	14:15	7.73	6.69	7.33	6.29	7.01
	14:30	7.89	7.25	6.82	6.26	7.06
	14:45	8.25	7.35	6.14	-	7.24
15:00	15:00	-	7.11	5.36	6.02	6.16
	15:15	-	-	5.11	5.49	5.30
	15:30	-	-	5.63	5.36	5.50
	15:45	-	7.07	6.02	5.24	6.11
16:00	16:00	8.21	7.44	-	-	7.83
	16:15	5.83	7.19	-	-	6.51
	16:30	0.46	6.11	-	-	1.64
	16:45	0.07	1.96	0.02	-	0.51
17:00	17:00	0.01	0.01	0.30	0.05	0.09
	17:15	0.01	-	0.68	0.41	0.27
	17:30	0.00	-	1.06	0.45	0.38
	17:45	-	-	1.15	0.36	0.38
18:00	18:00	-	-	0.42	0.01	0.11
	18:15	-	-	-	-	-
	18:30	-	-	-	-	-
	18:45	-	-	-	-	-
19:00	19:00	-	-	-	-	-
	19:15	-	-	-	-	-
	19:30	-	-	-	-	-
	19:45	0.00	-	-	-	0.00
20:00	20:00	-	-	-	-	-
	20:15	-	-	-	-	-
	20:30	-	-	-	-	-
	20:45	-	-	-	-	-
21:00	21:00	-	-	-	-	-
	21:15	-	-	-	-	-
	21:30	-	-	-	-	-
	21:45	-	-	-	-	-
22:00	22:00	-	-	-	-	-
	22:15	-	-	-	-	-
	22:30	-	-	-	-	-
	22:45	-	-	-	-	-
23:00	23:00	-	-	-	-	-
	23:15	-	0.00	-	-	0.00
	23:30	-	-	-	-	-
	23:45	-	-	-	-	-
00:00	00:00	-	-	-	-	-
	00:15	-	-	-	-	-
	00:30	-	-	-	-	-
	00:45	-	-	-	-	-
01:00	01:00	-	-	-	-	-
	01:15	-	0.00	-	-	0.00
	01:30	0.01	0.01	-	-	0.01
	01:45	-	0.01	-	-	0.00
02:00	02:00	-	0.01	-	-	0.00
	02:15	-	0.02	-	-	0.00
	02:30	0.00	0.05	-	-	0.01
	02:45	-	0.09	-	-	0.02
03:00	03:00	-	0.11	-	-	0.03
	03:15	-	0.11	-	-	0.03
	03:30	-	0.12	-	-	0.03
	03:45	-	0.12	-	-	0.03
04:00	04:00	-	0.10	-	-	0.03
	04:15	0.02	0.10	-	-	0.03
	04:30	-	0.13	-	-	0.03
	04:45	-	0.14	-	-	0.04
05:00	05:00	-	0.12	-	-	0.03
	05:15	-	0.13	-	-	0.03
	05:30	-	0.13	0.01	-	0.04
	05:45	-	0.13	-	-	0.03
06:00	06:00	-	0.12	-	-	0.03
	06:15	-	0.13	-	-	0.03
	06:30	-	0.14	-	-	0.03
	06:45	-	-	-	-	-
Quartile	0	-	-	-	-	-
	1	-	-	-	-	-
	2	-	0.02	-	-	0.03
	3	0.50	1.48	2.52	1.46	1.73
	4	8.25	7.44	9.57	6.29	7.83
Average	1.31	1.39	1.73	1.19	1.51	
Standard Deviation	2.61	2.48	2.94	2.11	2.57	
Kurt	1.45	0.66	0.77	0.70	0.31	
Skew	1.76	1.52	1.49	1.53	1.42	



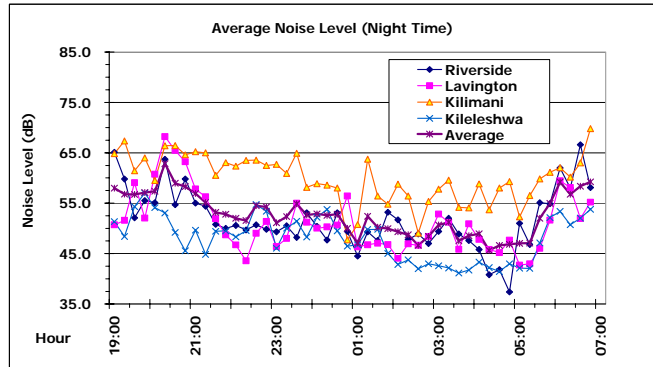
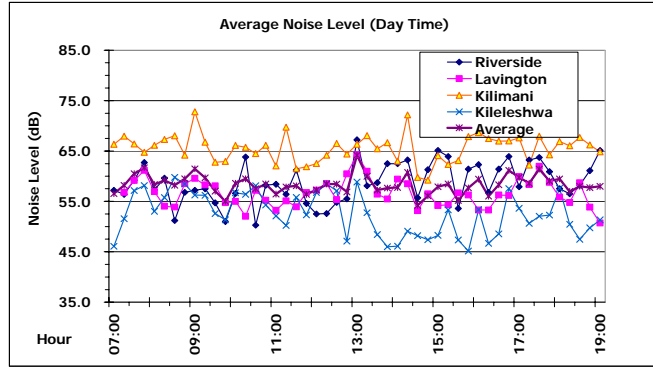
Nitrogen Dioxide		Unit: ppm				
Station		Riverside	Lavington	Kilimani	Kileleshwa	Average
07:00	07:00	0.02	-	0.26	0.04	0.08
	07:15	0.06	0.07	0.40	0.14	0.17
	07:30	0.02	0.02	0.34	0.18	0.14
	07:45	0.01	0.01	0.23	0.12	0.09
08:00	08:00	0.00	-	0.11	0.04	0.04
	08:15	0.01	-	0.03	-	0.01
	08:30	-	-	0.00	-	0.00
	08:45	-	0.00	-	-	0.00
09:00	09:00	-	-	-	-	-
	09:15	-	0.00	-	-	0.00
	09:30	-	-	-	-	-
	09:45	-	-	-	-	-
10:00	10:00	-	-	-	-	-
	10:15	-	-	-	-	-
	10:30	-	-	-	-	-
	10:45	-	-	-	-	-
11:00	11:00	-	-	-	-	-
	11:15	-	-	-	-	-
	11:30	-	-	-	-	-
	11:45	-	-	-	-	-
12:00	12:00	-	-	-	-	-
	12:15	-	-	-	-	-
	12:30	-	-	-	-	-
	12:45	-	-	-	-	-
13:00	13:00	-	-	-	-	-
	13:15	-	-	-	-	-
	13:30	-	-	-	-	-
	13:45	-	-	-	-	-
14:00	14:00	-	-	0.00	-	0.00
	14:15	-	-	-	-	-
	14:30	-	-	0.02	-	0.00
	14:45	-	-	0.01	-	0.00
15:00	15:00	-	-	0.00	-	0.00
	15:15	-	-	-	-	-
	15:30	-	-	-	-	-
	15:45	-	-	-	-	-
16:00	16:00	-	-	-	-	-
	16:15	-	-	-	-	-
	16:30	-	-	-	-	-
	16:45	-	-	-	-	-
17:00	17:00	-	-	-	-	-
	17:15	0.05	-	-	-	0.01
	17:30	0.05	-	-	-	0.01
	17:45	0.00	-	-	-	0.00
18:00	18:00	0.00	0.02	0.00	-	0.01
	18:15	0.00	0.04	0.02	-	0.02
	18:30	0.01	0.09	0.07	-	0.04
	18:45	0.00	0.10	0.09	-	0.05
19:00	19:00	0.00	0.09	0.06	0.00	0.04
	19:15	0.05	0.09	0.05	0.01	0.05
	19:30	0.04	0.09	0.06	0.00	0.05
	19:45	0.04	0.08	0.04	0.00	0.04
20:00	20:00	0.04	0.08	0.05	0.01	0.04
	20:15	0.04	0.07	0.04	0.01	0.04
	20:30	0.03	0.08	0.02	0.01	0.03
	20:45	0.02	0.09	0.01	0.02	0.04
21:00	21:00	0.01	0.09	0.01	0.02	0.03
	21:15	-	0.09	0.01	0.01	0.03
	21:30	0.00	0.09	0.00	0.00	0.02
	21:45	-	0.07	0.01	0.01	0.02
22:00	22:00	0.00	0.07	0.01	0.00	0.02
	22:15	0.00	0.05	-	-	0.01
	22:30	-	0.04	0.00	-	0.01
	22:45	-	0.03	0.00	-	0.01
23:00	23:00	-	0.03	0.00	-	0.01
	23:15	-	0.02	-	-	0.01
	23:30	-	0.01	-	-	0.00
	23:45	-	0.02	-	-	0.01
00:00	00:00	-	-	0.00	-	0.00
	00:15	-	-	0.02	-	0.01
	00:30	-	-	0.02	-	0.01
	00:45	0.06	-	0.00	-	0.02
01:00	01:00	0.06	0.16	0.01	-	0.05
	01:15	0.07	0.15	0.00	-	0.05
	01:30	-	0.09	-	-	0.05
	01:45	0.04	0.05	0.39	0.28	0.19
02:00	02:00	0.03	0.04	0.36	0.26	0.17
	02:15	0.02	0.03	0.31	0.22	0.14
	02:30	0.02	0.02	0.29	0.21	0.14
	02:45	0.10	0.01	0.28	0.20	0.15
03:00	03:00	-	0.00	0.26	0.20	0.12
	03:15	0.06	0.00	0.26	0.19	0.13
	03:30	0.05	0.00	0.27	0.17	0.12
	03:45	0.07	0.01	0.30	0.16	0.14
04:00	04:00	0.12	0.01	0.26	0.19	0.14
	04:15	0.13	-	0.21	0.19	0.13
	04:30	0.08	-	0.20	0.17	0.11
	04:45	0.02	-	0.20	0.17	0.10
05:00	05:00	-	-	0.21	0.20	0.10
	05:15	-	-	0.22	0.18	0.10
	05:30	0.03	-	0.23	0.16	0.11
	05:45	0.02	0.01	0.23	0.14	0.10
06:00	06:00	0.02	0.00	0.24	0.15	0.10
	06:15	0.01	-	0.20	0.15	0.09
	06:30	0.04	-	0.20	0.15	0.10
	06:45	-	0.00	0.21	0.15	0.12
Quartile	0	-	-	-	-	-
	1	-	-	-	-	-
	2	0.00	0.00	0.01	-	0.01
	3	0.03	0.04	0.20	0.13	0.08
	4	0.13	0.16	0.40	0.28	0.19
Average	0.02	0.02	0.08	0.05	0.04	
Standard Deviation	0.03	0.04	0.12	0.08	0.05	
Kurt	3.40	1.44	0.03	0.03	(0.02)	
Skew	1.86	1.51	1.23	1.28	1.13	



Nitrogen Oxide		Unit: ppm				
Station		Riverside	Lavington	Kilimani	Kileleshwa	Average
07:00	07:00	0.02	-	0.26	0.04	0.08
	07:15	0.06	0.07	0.43	0.14	0.18
	07:30	0.02	0.02	0.34	0.18	0.14
	07:45	0.01	-	0.23	0.12	0.12
08:00	08:00	0.00	-	0.11	0.04	0.04
	08:15	0.01	-	0.03	-	0.01
	08:30	-	-	0.01	-	0.00
	08:45	-	0.00	0.15	-	0.04
09:00	09:00	-	-	0.42	0.09	0.13
	09:15	0.03	0.02	0.99	0.82	0.47
	09:30	0.26	-	1.47	1.16	0.72
	09:45	0.54	0.02	1.89	1.40	0.96
10:00	10:00	0.72	0.14	2.52	1.66	1.26
	10:15	0.94	0.34	2.99	1.99	1.56
	10:30	1.34	0.84	3.62	2.17	1.99
	10:45	1.97	1.31	4.18	2.43	2.48
11:00	11:00	2.57	2.04	4.50	2.81	2.98
	11:15	3.23	2.17	4.81	3.09	3.32
	11:30	4.22	3.50	5.37	3.31	4.10
	11:45	5.48	4.26	5.96	3.50	4.80
12:00	12:00	-	3.94	6.38	4.03	4.78
	12:15	5.91	3.90	7.06	4.66	5.38
	12:30	6.02	4.33	7.61	5.06	5.76
	12:45	6.12	5.07	8.55	5.21	6.24
13:00	13:00	6.58	5.73	9.57	5.59	6.87
	13:15	7.01	5.81	9.50	6.25	7.14
	13:30	7.33	6.09	9.19	6.16	7.19
	13:45	7.59	6.80	9.35	6.05	7.45
14:00	14:00	7.71	6.23	8.71	6.01	7.17
	14:15	7.73	6.69	7.33	6.29	7.01
	14:30	7.89	7.25	6.84	6.26	7.06
	14:45	8.25	7.35	6.15	-	7.25
15:00	15:00	-	7.11	5.36	6.02	6.16
	15:15	-	-	5.11	5.49	5.30
	15:30	-	-	5.63	5.36	5.50
	15:45	-	7.07	6.02	5.24	6.11
16:00	16:00	8.21	7.44	-	-	7.83
	16:15	5.83	7.19	-	-	6.51
	16:30	0.46	6.11	-	-	1.64
	16:45	0.07	1.96	0.02	-	0.51
17:00	17:00	0.01	0.01	0.30	0.05	0.09
	17:15	0.06	-	0.68	0.41	0.29
	17:30	0.06	-	1.06	0.45	0.39
	17:45	0.00	-	1.15	0.36	0.38
18:00	18:00	0.00	0.02	0.42	0.01	0.11
	18:15	0.00	0.04	0.02	-	0.02
	18:30	0.01	0.09	0.07	-	0.04
	18:45	0.00	0.10	0.09	-	0.05
19:00	19:00	0.00	0.09	0.06	0.00	0.04
	19:15	0.05	0.09	0.05	0.01	0.05
	19:30	0.04	0.09	0.06	0.00	0.05
	19:45	0.04	0.08	0.04	0.00	0.04
20:00	20:00	0.04	0.08	0.05	0.01	0.04
	20:15	0.04	0.07	0.04	0.01	0.04
	20:30	0.03	0.08	0.02	0.01	0.03
	20:45	0.02	0.09	0.01	0.02	0.04
21:00	21:00	0.01	0.09	0.01	0.02	0.03
	21:15	-	0.09	0.01	0.01	0.03
	21:30	0.00	0.09	0.00	0.00	0.02
	21:45	-	0.07	0.01	0.01	0.02
22:00	22:00	0.00	0.07	0.01	0.00	0.02
	22:15	0.00	0.05	-	-	0.01
	22:30	-	0.04	0.00	-	0.01
	22:45	-	0.03	0.00	-	0.01
23:00	23:00	-	0.03	0.00	-	0.01
	23:15	-	0.02	-	-	0.01
	23:30	-	0.01	-	-	0.00
	23:45	-	0.02	-	-	0.01
00:00	00:00	-	-	0.00	-	0.00
	00:15	-	-	0.02	-	0.01
	00:30	-	-	0.02	-	0.01
	00:45	0.06	-	0.00	-	0.02
01:00	01:00	0.06	0.16	0.01	-	0.05
	01:15	0.07	0.15	0.00	-	0.05
	01:30	0.01	0.10	-	-	0.05
	01:45	0.04	0.06	0.39	0.28	0.19
02:00	02:00	0.03	0.05	0.36	0.26	0.18
	02:15	0.02	0.04	0.31	0.22	0.15
	02:30	0.03	0.06	0.29	0.21	0.15
	02:45	0.10	0.10	0.28	0.20	0.17
03:00	03:00	-	0.12	0.26	0.20	0.14
	03:15	0.06	0.12	0.26	0.19	0.16
	03:30	0.05	0.12	0.27	0.17	0.15
	03:45	0.07	0.13	0.30	0.16	0.17
04:00	04:00	0.12	0.11	0.26	0.19	0.17
	04:15	0.15	0.10	0.21	0.19	0.16
	04:30	0.08	0.13	0.20	0.17	0.15
	04:45	0.02	0.14	0.20	0.17	0.13
05:00	05:00	-	0.12	0.21	0.20	0.13
	05:15	-	0.13	0.22	0.18	0.13
	05:30	0.03	0.13	0.24	0.16	0.14
	05:45	0.02	0.14	0.23	0.14	0.13
06:00	06:00	0.02	0.12	0.24	0.15	0.13
	06:15	0.01	0.13	0.20	0.15	0.12
	06:30	0.04	0.14	0.20	0.15	0.13
	06:45	-	-	0.21	0.15	0.18
Quantile	0	-	-	-	-	0.00
	1	0.00	0.04	0.02	0.00	0.04
	2	0.04	0.10	0.24	0.16	0.14
	3	0.50	1.48	2.52	1.46	1.73
	4	8.25	7.44	9.57	6.29	7.83
Average		1.33	1.42	1.81	1.24	1.56
Standard Deviation		2.60	2.47	2.90	2.08	2.55
Kurt		1.46	0.67	0.82	0.73	0.33
Skew		1.77	1.53	1.50	1.53	1.42

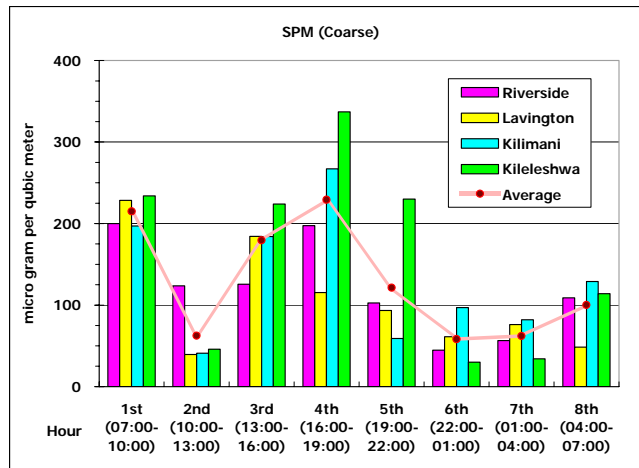


Noise Level						Unit: dB	
Station		Riverside	Lavington	Kilimani	Kileleshwa	Average	
07:00	07:00	57.2		66.3	46.1	56.5	
	07:15	56.4	56.8	67.9	51.6	58.2	
	07:30	59.2	59.2	66.4	57.2	60.5	
	07:45	62.7	61.2	64.7	58.2	61.7	
	08:00	57.3	56.9	66.1	53.1	58.4	
08:00	08:15	59.6	54.1	67.3	55.8	59.2	
	08:30	51.2	53.9	68.0	59.8	58.2	
	08:45	56.8	58.5	64.2	58.5	59.5	
	09:00	57.2	59.6	72.8	56.3	61.5	
	09:15	57.5	58.3	66.8	56.2	59.7	
09:00	09:30	54.7	58.1	62.8	52.6	57.0	
	09:45	51.0	54.7	62.9	51.4	55.0	
	10:00	56.6	55.0	66.1	56.7	58.6	
	10:15	63.8	52.0	65.8	56.4	59.5	
	10:30	50.3	57.2	64.5	58.1	57.5	
10:00	10:45	58.2	55.2	66.1	54.3	58.5	
	11:00	58.4	53.2	62.1	52.1	56.5	
	11:15	56.4	55.1	69.7	50.2	57.9	
	11:30	61.2	53.9	61.5	55.8	58.1	
	11:45	54.6	56.8	61.9	52.3	56.4	
12:00	12:00	52.5	57.2	62.5	56.8	57.3	
	12:15	52.6	58.6	64.2	58.5	58.4	
	12:30	54.8	55.4	66.5	57.1	58.4	
	12:45	55.5	60.5	64.4	47.1	56.9	
	13:00	67.2	64.3	66.3	58.9	64.2	
13:00	13:15	58.1	61.0	68.1	52.8	60.0	
	13:30	58.7	56.4	65.4	48.4	57.2	
	13:45	62.5	55.5	66.7	46.0	57.7	
	14:00	62.5	59.4	63.0	46.1	57.8	
	14:15	63.2	58.5	72.2	49.1	60.7	
14:00	14:30	55.7	53.2	59.8	48.2	54.2	
	14:45	61.3	56.5	59.2	47.4	56.1	
	15:00	65.1	54.2	64.1	48.3	57.9	
	15:15	63.9	54.3	62.3	53.3	58.5	
	15:30	53.6	56.7	63.1	47.4	55.2	
15:00	15:45	61.4	56.3	67.9	45.2	57.7	
	16:00	62.3	53.3	68.7	53.4	59.4	
	16:15	56.8	53.3	67.5	46.7	56.1	
	16:30	61.4	56.3	67.0	48.6	58.3	
	16:45	63.9	56.2	67.0	57.6	61.2	
16:00	17:00	57.9	59.9	67.6	53.6	59.8	
	17:15	63.2	58.3	62.2	50.7	58.6	
	17:30	63.7	62.0	67.9	52.1	61.4	
	17:45	60.9	58.8	64.2	52.3	59.0	
	18:00	57.5	55.9	66.9	57.6	59.5	
18:00	18:15	56.5	54.8	66.1	50.5	57.0	
	18:30	58.2	58.7	67.7	47.5	58.0	
	18:45	61.1	53.9	66.2	49.8	57.7	
	19:00	65.1	50.7	64.8	51.4	58.0	
	19:15	59.8	51.6	67.4	48.4	56.8	
19:00	19:30	52.1	59.1	61.4	54.3	56.7	
	19:45	55.5	52.1	64.0	57.0	57.1	
	20:00	55.1	60.8	59.5	54.1	57.4	
	20:15	63.7	68.2	66.4	53.1	62.8	
	20:30	54.7	65.5	66.4	49.2	59.0	
20:00	20:45	59.8	63.2	64.6	45.6	58.3	
	21:00	55.0	57.8	65.2	49.7	56.9	
	21:15	54.4	56.3	65.0	44.9	55.1	
	21:30	50.8	51.9	60.5	49.4	53.2	
	21:45	50.0	48.7	63.1	49.5	52.8	
22:00	22:00	50.6	46.7	62.4	48.3	52.0	
	22:15	49.7	43.6	63.5	49.6	51.6	
	22:30	50.7	49.0	63.6	54.7	54.5	
	22:45	49.8	51.4	62.5	53.4	54.3	
	23:00	49.3	46.4	62.7	46.1	51.1	
23:00	23:15	50.5	48.0	60.9	50.0	52.4	
	23:30	48.2	55.0	64.9	51.4	54.9	
	23:45	53.1	51.2	58.2	48.3	52.7	
	00:00	50.4	50.1	58.9	52.2	52.9	
	00:15	47.7	50.3	58.6	53.8	52.6	
00:00	00:30	53.1	50.7	58.0	49.5	52.8	
	00:45	49.4	56.4	47.7	46.5	50.0	
	01:00	44.5	46.4	50.8	46.8	47.1	
	01:15	49.3	46.8	63.8	49.8	52.4	
	01:30	47.6	47.1	56.4	49.8	50.2	
01:00	01:45	53.2	46.8	54.8	45.0	49.9	
	02:00	51.7	44.1	58.8	42.8	49.3	
	02:15	47.8	46.9	56.4	43.8	48.7	
	02:30	48.9	46.7	49.1	42.0	46.7	
	02:45	47.0	48.4	55.4	43.0	48.4	
03:00	03:00	49.4	52.9	57.8	42.6	50.7	
	03:15	52.0	51.2	59.6	42.2	51.2	
	03:30	48.9	45.9	54.2	41.2	47.5	
	03:45	47.6	50.9	54.1	41.7	48.6	
	04:00	45.8	47.8	58.8	43.3	48.9	
04:00	04:15	40.8	45.9	53.7	42.2	45.6	
	04:30	41.8	45.2	58.0	41.5	46.6	
	04:45	37.4	47.7	59.3	43.0	46.8	
	05:00	51.0	42.7	52.3	42.1	47.0	
	05:15	46.8	43.0	56.5	42.1	47.1	
05:00	05:30	55.1	46.0	59.8	47.1	52.0	
	05:45	54.9	51.6	61.1	52.2	55.0	
	06:00	62.0	59.5	62.1	53.4	59.2	
	06:15	58.0	58.1	60.2	50.7	56.8	
	06:30	66.6	52.0	63.0	52.0	58.4	
06:00	06:45	58.1	55.2	69.8	53.8	59.2	
	07:00						
	Quartile	0	37.4	42.7	47.7	41.2	45.6
		1	50.6	50.5	59.7	46.7	52.5
		2	55.3	54.7	63.5	50.1	56.9
	3	59.7	58.0	66.3	53.7	58.4	
	4	67.2	68.2	72.8	59.8	64.2	
Average		55.2	53.9	62.7	50.3	55.5	
Standard Deviation		6.1	5.4	4.8	4.9	4.3	
Kurt		(0.189)	(0.377)	0.691	(0.864)	(0.492)	
Skew		(0.271)	(0.066)	(0.805)	(0.074)	(0.632)	



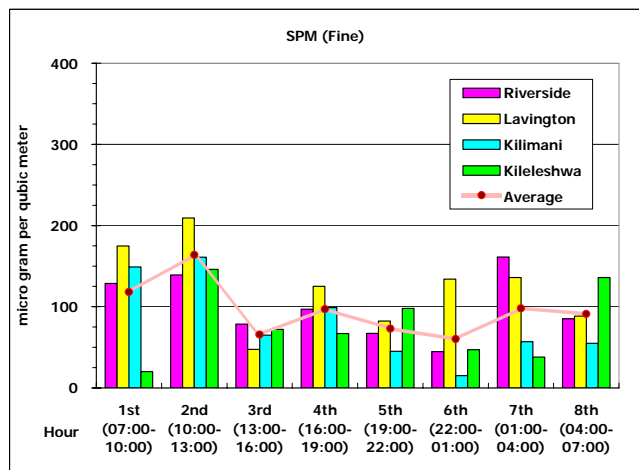
Suspended Particle Matters (Coarse)

Location	Riverside	Lavington	Kilimani	Kileleshwa	Average	
1st (07:00-10:00)	200	229	197	234	215	
2nd (10:00-13:00)	124	39	41	46	63	
3rd (13:00-16:00)	126	184	184	224	179	
4th (16:00-19:00)	198	115	267	337	229	
5th (19:00-22:00)	103	93	59	230	121	
6th (22:00-01:00)	45	61	97	30	58	
7th (01:00-04:00)	56	76	82	34	62	
8th (04:00-07:00)	109	48	129	114	100	
Quartile	0	45	39	41	30	58
	1	91	58	76	43	62
	2	116	85	113	169	111
	3	144	133	187	231	188
	4	200	229	267	337	229
Average	120	106	132	156	128	
Standard Deviation	57	68	78	116	70	
Kurt	(0.760)	0.000	(0.602)	(1.477)	(1.719)	
Skew	0.302	1.064	0.630	0.230	0.463	



Suspended Particle Matters (Fine)

Location	Riverside	Lavington	Kilimani	Kileleshwa	Average	
1st (07:00-10:00)	129	175	149	20	118	
2nd (10:00-13:00)	139	209	161	146	164	
3rd (13:00-16:00)	78	47	65	72	66	
4th (16:00-19:00)	97	125	99	67	97	
5th (19:00-22:00)	67	82	45	98	73	
6th (22:00-01:00)	45	134	15	47	60	
7th (01:00-04:00)	161	136	57	38	98	
8th (04:00-07:00)	85	89	55	136	91	
Quartile	0	45	47	15	20	60
	1	76	87	53	45	71
	2	91	129	61	70	94
	3	131	146	112	108	103
	4	161	209	161	146	164
Average	100	125	81	78	96	
Standard Deviation	40	52	51	45	33	
Kurt	(0.989)	(0.308)	(0.759)	(1.075)	1.734	
Skew	0.278	0.201	0.668	0.460	1.217	



Total Suspended Particle Matters

Location	Riverside	Lavington	Kilimani	Kileleshwa	Average	
1st (07:00-10:00)	329	403	346	254	333	
2nd (10:00-13:00)	263	249	202	192	226	
3rd (13:00-16:00)	204	232	249	296	245	
4th (16:00-19:00)	294	240	366	404	326	
5th (19:00-22:00)	170	176	104	328	194	
6th (22:00-01:00)	89	195	112	77	118	
7th (01:00-04:00)	218	212	139	72	160	
8th (04:00-07:00)	194	137	184	250	191	
Quartile	0	89	137	104	72	118
	1	188	190	132	163	184
	2	211	222	193	252	210
	3	271	242	273	304	265
	4	329	403	366	404	333
Average	220	231	213	234	224	
Standard Deviation	75	79	101	116	76	
Kurt	0.132	3.739	(1.086)	(0.742)	(0.774)	
Skew	(0.277)	1.599	0.612	(0.270)	0.366	

