ANNEX 5 SCREENING FOR LONG LIST PROJECTS

ANNEX 5 SCREENING FOR LONG LIST PROJECTS

A5.1 SCREENING METHODS

The Study Team studied the screening items (check list for environmental impacts identification) based on the environmental guidelines of Uganda and JICA, and confirmed that the latter covers a wider scope. The Study Team designed the screening matrix (Initial Environmental Examination in the JICA Guideline) for the assessment of the Pre-FS long list of projects by considering the items to meet the requirements under both guidelines. It is composed of three main items and 38 sub-items in three project phases (pre-construction, construction and post-construction). The three main items are socio-economic environment, natural environment and pollution.

The Study Team conducted screening of the environmental and social considerations in the Pre-FS long list projects revised in the Interim Report II/Draft Final Report in Table 5.1.1. The screening was based on the site reconnaissance survey, preliminary planning and satellite maps to identify environmental and social impacts.

Table A5.1.1 Revised Long List Projects for Screening in the Interim Report II/Draft Final Report

Project No	Project Name	Basic Project Concept			ADT and Traffic Congestion
		Project Length (km)	Viaduct/ Flyover Length (km)	Carriageway & Junction Improvement	
1.1	Yusufu Lule and Mukwano Rds Flyover	1.7	1.5	Dual Carriageway (two-ways 2 lanes)	Jinja Jct ADT: 53,000 - 71,000, Very Severe
1.2	Jinja - Yusufu Lule Rds Flyover (Right-turn) & Mukwano - Jinja Rd Flyover (Right-turn)	2.3	1.9	Single Carriageway	Yusufu Lule Rd ADT: 41,000 , Very Severe
1.3	Mengo Hill - Nsambya / Mukwano Rds Flyover (Right-turn)	0.6	0.5	Single Carriageway	Long Term (2023)
2.3	Makerere Hill Road, including Sir Apollo Kaggwa Rd Jct	1.7	-	Dual Carriageway (Add. 2 lanes) & Junction improvement	ADT: 49,000 Severe
2.4	Mukwano Rd Widening, including Mukwano Rbt and Nsambya Jct Capacity Improvement	1.8	-	Dual Carriageway (Add. 2 lanes) & Mukwano Rbt and Nsambya Jct improvement	ADT: 20,000 - 40,000 Very Severe
2.5	Mutesa Rd - Kaweesa Rd - Kabasu Rd (South Inner Ring Road)	3.2	-	Single Carriageway improvement (from Gravel to Paved Road)	ADT: 5,000 Low
2.6	Widening of Queen's Way and Flyover on Kibuye Rbt	2.5	0.5	Dual Carriageway (Add. 4 lanes) for Queen's Way and Flyover on Kibuye Rbt	ADT: 40,000, Very Severe at Kibuye Rbt
3.1	Hoima Rd - Kimera/MasiroKawaala Rd Jct		-	Roundabout (Large Diameter)	ADT 31,000 Medium
3.2	Kira Road - Acacia/ Babiha Av/Kayunga Rd		-	Signalization	ADT 37,000 Severe
3.3	Kira Rd - Ntinda Rd Jct		-	Signalization	ADT 37,000 Medium
3.4	Port Bell (Nakawa) - Old Port Bell Rd Jct		-	Signalization	ADT 22,000 Severe
3.6	Ben Kiwanuka Rd - Luwum St Jct		-	Signalization	ADT 21,000 Very Severe
3.7	Shoprite & Clock Tower Jcts Traffic Safety Improvement		-	Pedestrian Bridges & Separated Left-turn	ADT 99,000, Very-very Severe (Many Accidents)

The following table shows the screening (assessment) criteria adopted by the Study Team. Both negative and positive impacts were assessed according to four levels.

Negative Impact	Positive Impact	Overall Impact
A- ; Significant	A+ ; Significant	A ; Significant
B- ; Minor	B+ ; Minor	B ; Minor
C- ; Negligible	C+ ; Negligible	C ; Negligible
D- ; Unknown	D+ ; Unknown	D ; Unknown

A5.2 SCREENING RESULTS

Table A5.2.1 shows a summary of environmental and social impacts of the 13 long list projects in the above revised long project lists.

Table A5.2.1 Summary of Environmental and Social Impacts for 13 Long List Projects

Item / Description		Project No												
		Flyover			Road Widening with Junction Improv				Individual Junction Improvement					
		1.1	1.2	1.3	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.6	3.7
Socio-economic Environment														
1	Migration of populations/ involuntary resettlement	B-	B-	B-	A-	B-	C	A-	B-	B-	B-	B-	A-	B-
2	Land acquisition	B-	B-	B-	A-	A-	B-	A-	B-	B-	B-	B-	B-	B-
3	Land use and local resources	B+/B-	B+/B-	B+/B-	C	C	C	C	C	C	C	C	C	C
4	Impact on local economy	A+	B+	B+	A+/A-	A+/B+	B+	A+/A-	B+/B-	C	B+/B-	C	B-	A+/B+
5	Social institutions	C	C	C	C	C	C	C	C	C	C	C	C	B-
6	Existing Social infrastructure and services	B+/B-	B+/B-	B+/B-	B+/B-	B+/B-	C	B+/B-	B+/B-	C	C	C	B-	B+/B-
7	Vulnerable people	B+	B+	B+	B+	B+	C	B+/B-	B+/B-	C	C	C	B-	B+
8	Equality in development process	C	C	C	C	C	C	C	C	C	C	C	C	C
9	Conflict in development process	C	C	C	C	C	C	C	C	C	C	C	C	C
10	Gender	C	C	C	C	C	C	C	C	C	C	C	C	C
11	Children's rights	C	C	C	B-	C	B-	C	C	C	C	C	C	C
12	Cultural heritage	B-	B-	A-	C	C	C	C	C	C	C	C	C	B-
13	Infectious diseases/public health	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-
14	Traffic jam	A+/A-	A+/A-	A+/A-	A+/A-	A+/A+	A+/B-	A+/A-	A-/B+	A-/B+	A-/B+	A-/B+	A-	A+/A-
15	Traffic accident	B+/B-	B+/B-	B+/B-	B+/B-	B+/B-	B-	B+/B-	B-	B+/B-	B+/B-	B+/B-	B+/B-	A+/B-
16	Agriculture	C	C	C	C	C	C	C	C	C	C	C	C	C
17	Livestock	C	C	C	C	C	C	C	C	C	C	C	C	C
Natural Environment														
18	Geography	C	C	C	C	C	C	C	C	C	C	C	C	C
19	Geology	C	C	C	C	C	C	C	C	C	C	C	C	C
20	Soil erosion	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-
21	Fauna	B-	C	C	C	C	C	C	C	C	C	C	C	C
22	Flora	B-	C	C	B-	B-	C	B-	C	C	C	C	C	C
23	Ground water	C	C	C	C	C	C	C	C	C	C	C	C	C
24	Water resources	B-	B-	B-	C	B-	C	C	C	C	C	C	B-	B-
25	Coastal environment (Victoria Lake)	C	C	C	C	C	C	C	C	C	C	C	C	C
26	Oceanographic changes (Victoria Lake)	C	C	C	C	C	C	C	C	C	C	C	C	C
27	Protected areas	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
28	Drainage and flood	C	C	C	C	C	B+	C	C	C	C	C	C	C
29	Localized climatic changes	C	C	C	C	C	C	C	C	C	C	C	C	C
30	Global warming	A+	A+	A+	B+	B+	C	A+	B+	B+	B+	B+	C	B+
Pollution														
31	Air	A+/B-	A+/B-	A+/B-	A+/B-	A+/B-	B-	A+/B-	B+/B-	B+/B-	B+/B-	B+/B-	B-	A+/B-
32	Water	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-
33	Soil	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-
34	Solid waste	A-	A-	A-	A-	A-	A-	A-	B-	B-	B-	B-	B-	B-
35	Noise and vibration	A-	A-	A-	A-	A-	A-	A-	B-	B-	B-	B-	B-	B-
36	Large scale ground settlement	C	C	C	C	C	C	C	C	C	C	C	C	C
37	Emanating odor	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-	B-
38	Water bottom/sludge	C	C	C	C	C	C	C	C	C	C	C	C	C

Project No: 1.1 Mukwano – Yusufu Lule Rds Flyover (Project length; 1.7km)
(Final Short-List for Pre-F/S)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 1 (1HH)		
2	Land acquisition	Area of land acquisition required (ha)	B-	B-, 0.52 (0.11)		
3	Land use and local resources	Change of land use system and local resources	B+/B-	B-		B+
4	Impact on local economy	Employment, livelihood, income generating activities, etc	A+		B+	A+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, etc.	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	B-		B-	B−
13	Infectious diseases	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	B−
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	B-		B-	
22	Flora	Impact on flora ecology	B-		B-	
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	A+			A+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No:1.2 Jinja-Yusufu Lule Rds and Mukwano – Jinja Rds Flyover (Right-turns), Project length 2.3km
(Final Short-List for Pre-F/S)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 11 (17HH)		
2	Land acquisition	Area of land acquisition required (ha)	B-	B-, 2.50 (0.65)		
3	Land use and local resources	Change of land use system and local resources	B+/B-	B-		B+
4	Impact on local economy	Employment, livelihood, income generating activities, etc	B+		B+	B+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, etc.	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	B-		B-	B-
13	Infectious diseases	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	B-
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	A+			A+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No:1.3 Mengo Hill – Mukwano Rds or Queen's Way– Mukwano Rds Flyover, Project length 0.6 km
(Final Short-List for Pre-F/S)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 4 (4HH)		
2	Land acquisition	Area of land acquisition required (ha)	B-	B-, 0.60 (0)		
3	Land use and local resources	Change of land use system and local resources	B+/B-	B-		B+
4	Impact on local economy	Employment, livelihood, income generating activities, etc	B+		B+	B+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, etc.	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	A-		A-	A−
13	Infectious diseases	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	B−
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	A+			A+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 2.3 Makerere Hill Road Widening, including Sir Apollo Kaggwa Rd Jct, Project length 1.7km

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	A-	A-, 22 (over 50HH)		
2	Land acquisition	Area of land acquisition required (ha)***	A-	A-, 4.00 (3.60)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	A+/A-		A-	A+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	B-		B-	B−
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	B-		B-	
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No 2.4: Mukwano Rd Widening, including Mukwano Rbt and Nsambya Jct Capacity Improvement, Project length 1.8km, Final Short List for Pre-FS

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 9 (15HH)		
2	Land acquisition	Area of land acquisition required (ha)	A-	A-, 3.94 (1.19)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, etc	A+/B+		B+	A+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, etc.	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A+/A+		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	B-		B-	
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 2.5 Mutesa Rd–Kaweesa Rd–Kabasu Rd (South Inner Ring Road), Project length 3.2km (No change from Interim Report I)						
Item		**Description of Possible Impacts**	**Evaluation****			
			Overall	**Pre-c**	**Const**	**Post-c**
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	C	Nil		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.33 (0.03)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	B+		B+	
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	C			
7	Vulnerable people	Impact on vulnerable people (poverty)	C			
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	B-		B-	
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A+/B-		B-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B-		B-	B−
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	B+			B+
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	C			
Pollution						
31	Air	Air pollution	B-		B-	
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 2.6 Widening of Queen's Way and Flyover on Kibuye Rbt, Project Length 2.5 km

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	A-	A-, 15 (over 50HH)		
2	Land acquisition	Area of land acquisition required (ha)***	A-	A-, 5.80 (1.16)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	A+/A-		A-	A+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+/B-		B-	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	B-		B-	
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	A+			A+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	A-		A-	
35	Noise and vibration	Effect of noise and vibration	A-		A-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 3.1 Hoima Rd-Kimera/MasiroKawala Rd Jct (Kasubi Jct) Improvement
(No change from Interim Report I)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 5 (10-20HH)		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.12 (0.10)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	B+/B-		B-	B+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+/B-		B-	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A-/B+		A-	B+
15	Traffic accident	Increase and/or decrease traffic accident	B-		B-	
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	B+/B-		B-	B+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 3.2 Kira Rd-Acacia/Babiha Av/ Kayunga Rd Improvement
(No change from Interim Report I)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 1 (5HH)		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.24 (0.19)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	C			
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	C			
7	Vulnerable people	Impact on vulnerable people (poverty)	C			
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A-/B+		A-	B+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	B+/B-		B-	B+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 3.3 Kira Rd-Ntinda Rd Improvement
(No change from Interim Report I)

Item		Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 2 (10HH)		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.24 (0.19)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	B+/B-		B-	B+
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	C			
7	Vulnerable people	Impact on vulnerable people (poverty)	C			
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A-/B+		A-	B+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	B+/B-		B-	B+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 3.4 Port Bell – Old Port Bell Rd Improvement
(No change from Interim Report I)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 1 (3HH)		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.18 (0.05)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	C			
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	C			
7	Vulnerable people	Impact on vulnerable people (poverty)	C			
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A-/B+		A-	B+
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	C			
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	B+/B-		B-	B+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No: 3.6 Ben Kiwanuka St-Luwum St Improvement
(No change from Interim Report I)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	A-	A-, 1 (20-50HH)		
2	Land acquisition	Area of land acquisition required (ha)***	B-	B-, 0.25 (0.25)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, et	B-		B-	
5	Social institutions	Social capital, local decision-making system, etc.	C			
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, et	B-		B-	
7	Vulnerable people	Impact on vulnerable people (poverty)	B-		B-	
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	C			
13	Infectious diseases/public health	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A-		A-	
15	Traffic accident	Increase and/or decrease traffic accident	B+/B-		B-	B+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	C			
Pollution						
31	Air	Air pollution	B-		B-	
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

Project No.3.7: Shoprite & Clock Tower Jcts Traffic Safety Improvement for Basic Design Level Pre-FS
(No change from Interim Report I)

	Item	Description of Possible Impacts	Evaluation**			
			Overall	Pre-c	Const	Post-c
Socio-economic Environment						
1	Migration of populations/ involuntary resettlement	a) Number of houses/buildings to be moved (no) * b) Number of households to be moved (no)	B-	B-, 4 (4HH)		
2	Land acquisition	Area of land acquisition required (ha)	B-	B-, 1.17 (0.64)		
3	Land use and local resources	Change of land use system and local resources	C			
4	Impact on local economy	Employment, livelihood, income generating activities, etc	A+/B+		B+	A+
5	Social institutions	Social capital, local decision-making system, etc.	B-		B-	
6	Existing Social infrastructure and services	Impact on access to social infrastructure and services, etc.	B+/B-		B-	B+
7	Vulnerable people	Impact on vulnerable people (poverty)	B+		B+	B+
8	Equality in development process	Equality of benefits and losses in development process	C			
9	Conflict in development process	Local conflicts of interests in development process	C			
10	Gender	Impact on gender issues	C			
11	Children's rights	Interruption of children's schooling, increase of traffic accident, etc	C			
12	Cultural heritage	Vulnerability, aesthetic damage, etc	B-		B-	
13	Infectious diseases	Impact on infectious disease, in particular, STD such as HIV/AIDS	B-		B-	
14	Traffic jam	Increase of traffic jams	A+/A-		A-	A+
15	Traffic accident	Increase and/or decrease traffic accident	A+/B-		B-	A+
16	Agriculture	Loss of land, crops, access to markets	C			
17	Livestock	Livestock movement, damage to structures	C			
Natural Environment						
18	Geography	Geographical conditions	C			
19	Geology	Geological conditions	C			
20	Soil erosion	Impact on soil stability	B-		B-	
21	Fauna	Impact on fauna ecology	C			
22	Flora	Impact on flora ecology	C			
23	Ground water	Effect on ground water	C			
24	Water resources	Effect on the surface water including river, lake, etc.	B-		B-	
25	Coastal environment (Victoria Lake)	Effect on the coastal environment	C			
26	Oceanographic changes (Victoria Lake)	Effect on the oceanographic change	C			
27	Protected areas	Effect on natural/ecological reserves and sanctuaries	NA			
28	Drainage and flood	Effect on drainage and flood	C			
29	Localized climatic changes	Effect on local climatic change	C			
30	Global warming	Effect on the Global Warming Issues	B+			B+
Pollution						
31	Air	Air pollution	A+/B-		B-	A+
32	Water	Water pollution	B-		B-	
33	Soil	Soil pollution	B-		B-	
34	Solid waste	Solid waste, industrial discharge management	B-		B-	
35	Noise and vibration	Effect of noise and vibration	B-		B-	
36	Large scale ground settlement	Effect of ground settlement	C			
37	Emanating odor	Offensive odor	B-		B-	
38	Water bottom/sludge	Pollution on the water bottom and sludge and influence	C			

Notes:
*These numbers have been identified through satellite picture examination and site survey.
** Pre-c: Pre construction, Const: During construction, Post-c: Post construction period
*** Area of land required in ha (ROW area to be acquired in ha)

ANNEX 6 OVERALL IMPLEMENTATION SCHEDULES OF GKMA ROAD NETWORK AND BRT DEVELOPMENTS FOR FUTURE TRAFFIC FLOW FORECASTS

ANNEX 6 OVERALL IMPLEMENTATION SCHEDULE OF GKMA ROAD NETWORK AND BRT DEVELOPMENTS FOR FUTURE TRAFFIC FLOW FORECASTS

A6.1 INTRODUCTION

An overall implementation schedule of the future GKMA road network and Bus Rapid Transit (BRT) is required for ***forecasting future traffic flows and volumes on the Pre-FS road links for preliminary design, intersections, and road widening flyover designs***. It is also required for public transport planning and economic analysis. The Study Team referred to the following plans and data as the basis for the future road network and BRT developments, and of investment cost assumptions:

- Development and Investment Plans in NTMP/GKMA (Final Report), MoWT, May 2009
- Pre-Feasibility Studies for the Development of a Long-Term Integrated Bus Rapid Transit System for GKMA, Final Report, May 2010
- Road Development Projects to be Implemented in FY 2009/10 by UNRA (Table 3.1.12 in Chapter 3 of Main Report)
- Implementation Plan of the shortlisted projects of the Pre-FS in Chapter 12 of Main Report (The Study Team)
- Investment on Public Transport Infrastructures for Large Bus Service introduction in Chapter 9 of Main Report (The Study Team)
- Information on the Kampala – Entebbe International Airport Expresssway Plan

The Study Team assumed **two representative scenarios** of the development investments by 2023, including viaducts/flyovers, dual carriageways, BRT and the Kampala-Entebbe Airport Expressway[1]. **Scenario 1 is a standard development plan** which is approximately a 17% higher investment compared with the NTMP/GKMA plan. **Scenario 2 is an aggressive development plan** which requires a 38% higher investment compared with the NTMP/GKMA plan. Instead of the dual carriageway with railway viaduct in NKMP/GKMA, the Study Team included flyovers at the Jinja Junction and a flyover at Clock Tower Junction. Both plans included construction of Kampala – Entebbe Airport Expressway (US$350 million for 35-km length) which was not in NTMP/GKMA. **The Study Team adopted Scenario 1 as it is more realistic when considering the budget allocation and land acquisition requirements**.

Note: As the Entebbe Road Junction is closed to the general traffic or its passage will be very limited if BRT is introduced in accordance with the Draft Final Report of BRT Pre-FS, the main traffic flow on Jinja Junction would change from the east-west direction to the north-south direction. Yusufu Lule – Mukwano Roads Flyover on the north-south direction would have more traffic than Jinja – Kampala Roads Flyover. Hence, the Study Team recommended Yusufu Lule – Mukwano Roads Flyover instead of Jinja – Kampala Roads Flyover and Kampala Rd – Queen's Way Flyover to reduce traffic congestion on Jinja Junction. It will also support the BRT operation as it would solve a weak point of the BRT for crossing and right-turn traffic (refer to Chapters 6 and 10 for details).

"***With Project Case***" means implementation of ***the Pre-FS projects*** in Figure A6.1.1 (flyovers and two shortlisted projects of Pre-FS) in this Study in Scenarios 1 and 2, including revised

[1] *These scenarios are for forecasting traffic flows and volumes on the Pre-FS projects for preliminary design and economic analysis and it does not mean any change of the investments master plan in NTMP/GKMA.*

flyover configurations with the most desirable route to coordinate with the BRT plan. "***Without Project Case***" means ***without flyover projects and other shortlisted projects of the Study*** for each Scenario 1 and 2 as given in Table A6.1.1. The BRT, some dual carriageways and Kampala – Entebbe Airport Expressway are considered as pre-conditions, or given conditions, which shall be implemented as planned, although timing might differ.

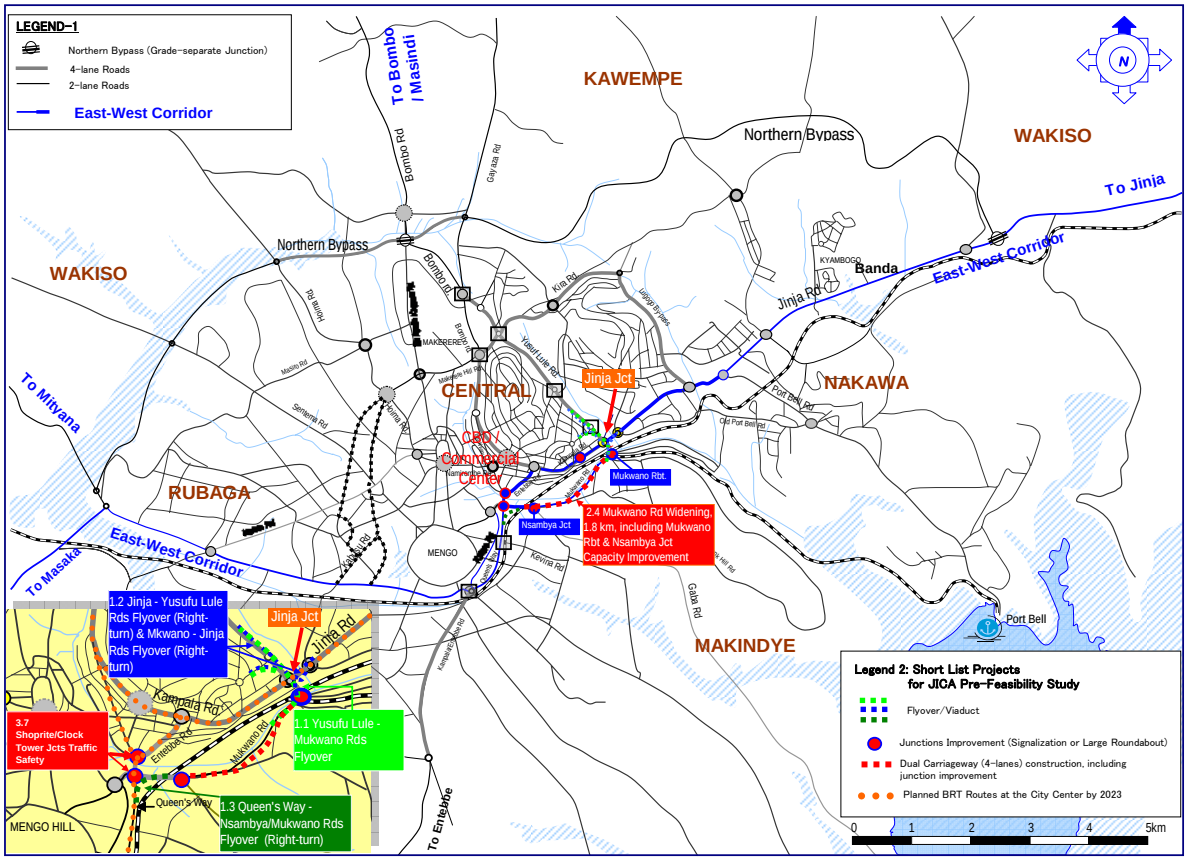


Figure A6.1.1 Shortlisted Projects for Pre-FS

Table A6.1.1 Representative Investment Scenarios With and Without-Project Cases

Plan and Scenario		Short-Term 2008-2013 (2011-2013)	Medium-Term 2013 - 2018	Long-Term 2018 - 2023	Total 2008-2023	Remarks (% to NTMP/ GKMA Plan)
NTMP/GKMA		181.97	508.88	689.57	1,380.42	
Review in the Study						
With-Project Case	Scenario 1*	75.11	731.73	804.11	1,610.94	116.7%
	Scenario 2**	100.50	829.81	970.12	1,900.43	137.7%
Without-Project Case #	For Scenario 1	75.11	586.70	761.71	1,423.52	103.1%
	For Scenario 2	102.50	657.56	937.10	1,697.16	122.9%

Notes: * Scenario 1 with project, standard investments for planned projects a 16.7% more investment cost compared with the NTMP/GKMA plan

** Scenario 2 with project, aggressive investments on planned projects a 37.7% more investment cost compared with the NTMP/GKMA plan

Without flyovers, Mukwano Rd Widening and Clock Tower/Shoprite Jcts Traffic Safety Improvement

Figure A6.1.2 shows a flow of the future traffic flow / volume forecast for "with-project" and "without-project" cases of the Pre-FS in 2013, 2018 and 2023.

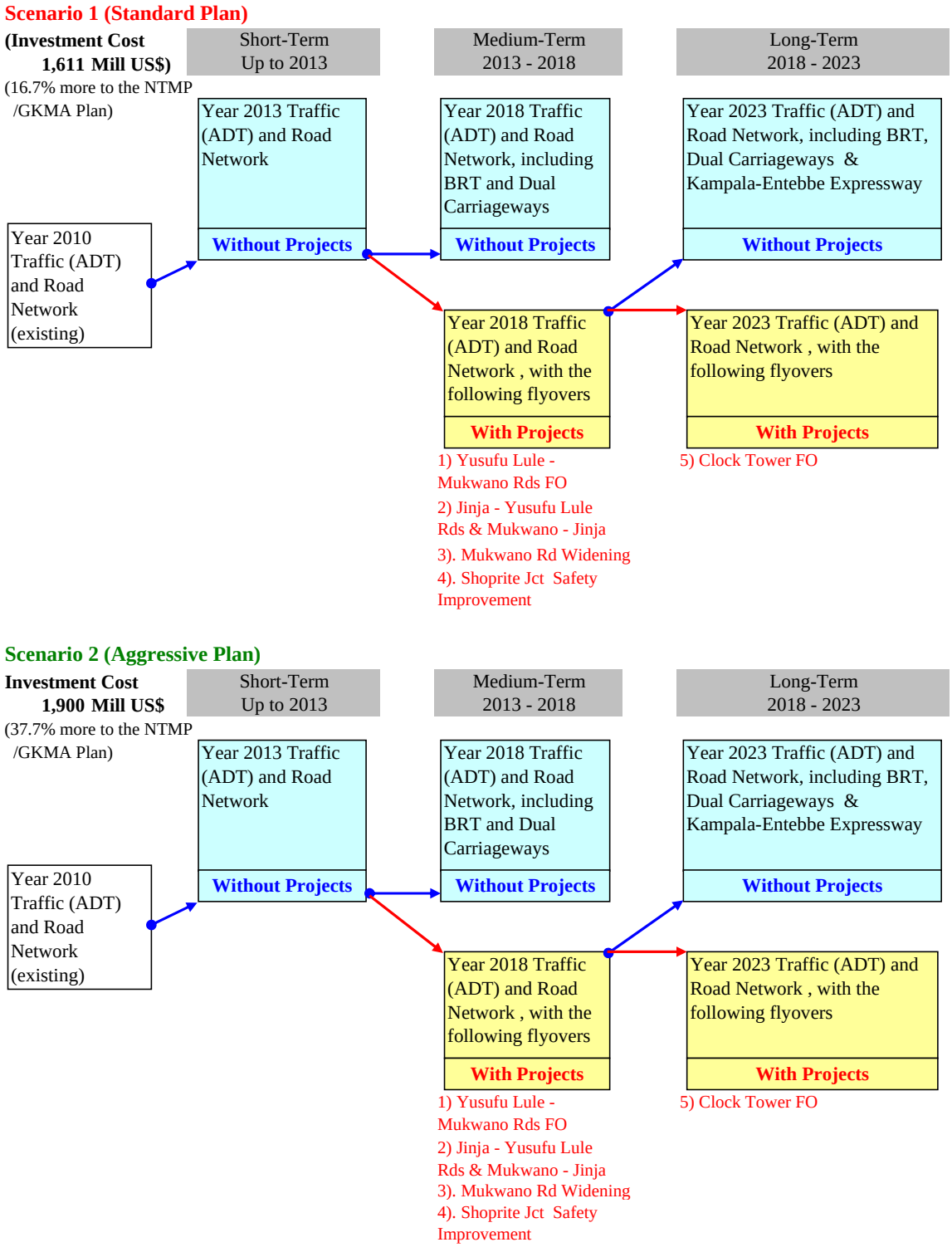


Figure A6.1.2 Traffic Forecast Flow With and Without-Project Cases at Each Five Year Period

Table A6.1.2 shows a summary of the development and investment scenarios assumed in the Study for future traffic flows and traffic volume forecasts in 2013, 2018 and 2023.

Table A6.1.2 Summary of Development and Investment Scenarios

Item	Investment Category	Unit	With-Project Cases				Without-Project Cases				Remarks
			Scenario 1		Scenario 2		Scenario 1		Scenario 2		
			Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	Quantity	Cost (Mill	
I	Roads										
1	Viaducts /Flyovers	km	4.50	139.08	6.50	154.93	0.00	0.00	0.00	0.00	
2	Dual Carriageways	km	40.40	113.65	45.20	127.04	38.60	102.22	43.40	115.61	Part of this item was included in BRT
3	Single Carriageway	km	458.40	380.47	573.00	475.59	458.40	380.47	573.00	475.59	
4	Bus Rapid Transit (BRT) Network	km	54.80	546.26	78.80	711.39	54.80	517.46	78.80	682.59	Length of BRT Roads facility
	(BRT Route Length)	**(km)**	**(64.6)**		**(88.60)**		**(64.6)**		**(88.60)**		Length of BRT operation
	Sub-Total			1,179.45		1,468.94		1,000.15		1,273.79	
II	Safety Improvement	sum	1	81.49	1	81.49	1	73.37	1	73.37	
III	Kampala - Entebbe Expressway	km	35.00	350.00	35.00	350.00	35.00	350.00	35.00	350.00	
	Total			1,610.94		1,900.43		1,423.52		1,697.16	
	(% to the NTMP/GKMA Investment Plan)			116.7%		137.7%		103.1%		122.9%	

Notes: 1 * Scenario 1 with project, limited projects implementation with a 16.7% higher investment cost compared with the NTMP/GKMA plan
* Scenario 2 with project, full projects implementation with a 37.7% investment cost increase compared with the NTMP/GKMA plan
2 Refer to Tables A10.1.3 as to details, including project by category, length, cost and investment requirements for ach case.

Outline of each scenario is as follows:

Scenario	Investment Cost for 2011 - 2023	Flyovers	Dual Carriageways	BRT	Kampala – Entebbe Airport Expressway
1 (with Project)	17% higher than NTMP/GKMP plan	● Yusufu Lule/Nile Ave - Mukwano Rd FO ● Jinja – Yusufu Lule Rd/Nine Ave FO(Right-turn) & Mukwano Rd – Jinja Rd FO (Right-turn) ● Mengo Hill - Clock Tower - Mukwano Rd FO	Total length 31.0 km	BRT route length of 64.6 km	To be constructed (length 35 km)
2 (with Project)	38% higher than NTMP/GKMP plan	● Yusufu Lule/Nile Ave - Mukwano Rd FO ● Jinja – Yusufu Lule Rd/Nile Ave FO (Right-turn) & Mukwano Rd – Jinja Rd FO (Right-turn) ● Mengo Hill - Clock Tower - Mukwano Rd FO ● Makerere Rbt FO and Kibuye Rbt FO ● Other Flyovers	As planned in NTMP/GKMA (total length of 45.2 km) and some additional road sections. Some Dual Carriageways will be constructed together with or under BRT facilities	BRT route length of 88.6 km	To be constructed (length 35 km)
Without project for Scenarios 1 and 2		● No flyovers	Total length 43.4 km for Scenario 1 and 29.2 km for Scenario 2, without short listed projects (Mukwano Rd Widening)	BRT route length of 64.6 km for Scenario 1 and 88.6 km for Scenario 2	To be constructed (length 35 km)

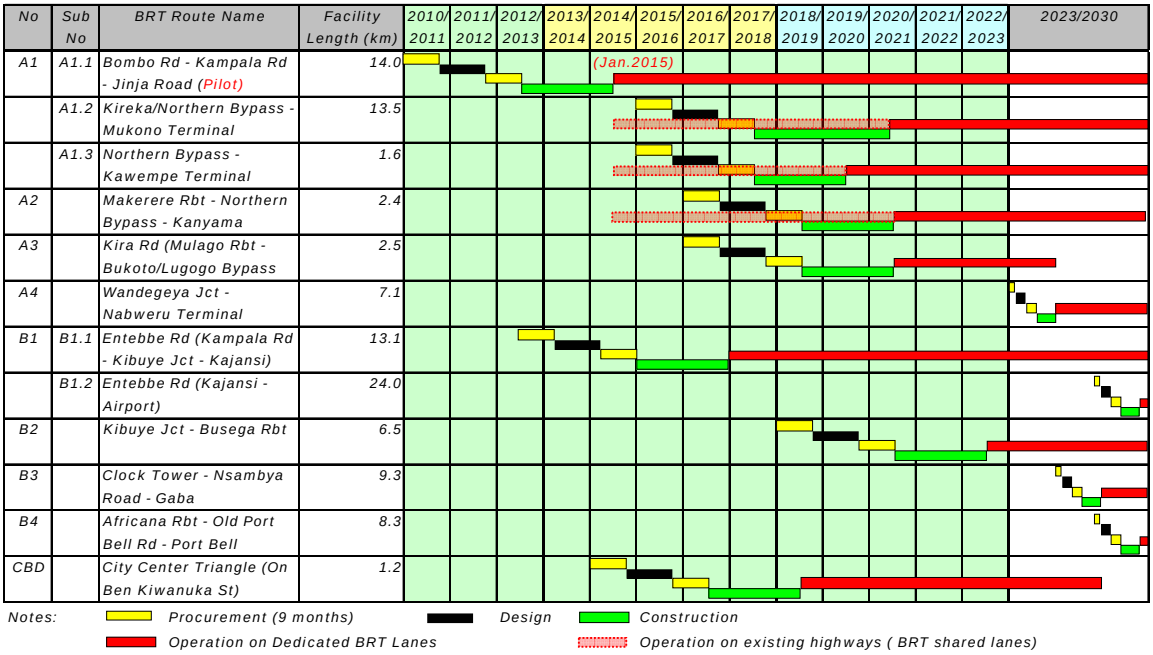
Table A6.1.3 Comparison of Road Network and BRT Development and Investments Plan, Year 2011-2023 between NTMP/GKMA Plan and JICA Study

No.	Investment Category	NTMP/GKMA (May 2009)*			JICA Study Review (May 2010)					Difference between NTMP/GKMA and JICA Study Review				Remarks
		Unit	Quantity	Cost (Mill US$)	Unit	Scenario 1**		Scenario 2**		Scenario 1**		Scenario 2**		
						Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	
I	**Roads**													
1.	Dual Carriageways with Railway Viaduct	km	4.74	50.80	km	4.50	139.08	6.50	154.93	-0.24	88.28	1.76	104.13	Viaducts/ Flyovers
2.	Other Dual Carriageways	km	122.85	300.73	km	40.40	113.65	45.20	127.04	-82.45	-187.08	-77.65	-173.69	Part of this item was included in BRT
3.	Single Carriageway	km	572.93	473.37	km	458.40	380.47	573.00	475.59	-114.53	-92.90	0.07	2.22	
4.	Bus Rapid Transit (BRT) Network ***	route	4	431.00	km	64.60	546.26	88.60	711.39		115.26		280.39	
	Sub-Total			1,255.90			1,179.45		1,468.94		-76.45		213.04	
II	**Safety Improvement**													
1.	Junction Improvement Projects (Signalization &	location	62	81.60	location	30	37.12	30	37.12	-32	-44.48	-32	-44.48	Part of this item was included in flyovers
2.	Railway Crossings	location	27	12.65	location	27	12.69	27	12.69	0	0.04	0	0.04	
3.	Pedestrian Pavements and Crossings	km	1,053	30.26	km	1,056	31.68	1,056	31.68	3	1.42	3	1.42	
	Sub-Total			124.51		1,113.00	81.49		81.49	-29.00	-43.02		-43.02	
III	**Kampala - Entebbe Expressway**	km		0.00	km	35.00	350.00	35.00	350.00	35.00	350.00	35.00	350.00	
	Total			1,380.41			1,610.94		1,900.43		230.53		520.02	
	(comparison to NTMP/GKMA)			100%			116.7%		137.7%		16.7%		37.7%	

Notes: * from NTMP/GKMA, MOWT, May 2009
** Scenario 1 with project, full projects implementation with a 35.6% investment cost increase compared with the NTMP/GKMA plan
** Scenario 2 with project, limited projects implementation with a 10.4% investment cost increase compared with the NTMP/GKMA plan
** including public transport infrastructures for large bus service introduction recommended by the Study Team

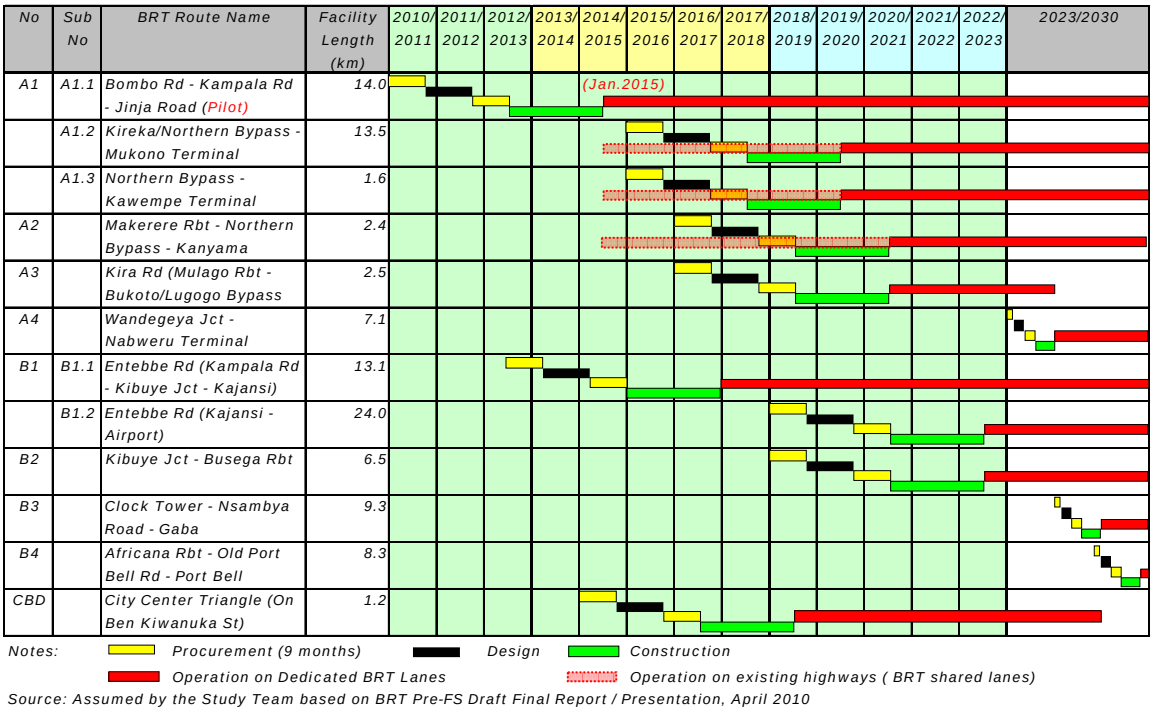
A6.2 ASSUMPTION OF BRT DEVELOPMENT

As for the BRT route length, some of its configurations, including location of bus stations, implementation schedule and costs, are unclear in the BRT Pre-FS Draft Final Report except the pilot project. The Study Team assumed two implementation scenarios of the BRT development to estimate the traffic flow and volume on the trunk road network, flyovers, short-listed road projects and junctions for the Pre-FS projects in 2013, 2018 and 2023, as in the following figures.



Source: Assumed by the Study Team based on BRT Pre-FS Draft Final Report / Presentation, April 2010

Figure A6.2.1 Planned or Anticipated BRT Implementation Schedule (Scenario 1)



Source: Assumed by the Study Team based on BRT Pre-FS Draft Final Report / Presentation, April 2010

Figure A6.2.2 Planned or Anticipated BRT Implementation Schedule (Scenario 2)

The major difference between the two scenarios is that the start of operation of B1.2 Kajansi – Entebbe Airport Section (24 km in length) on Entebbe Airport Road is after year 2023 in Scenario 1 and before 2023 in Scenario 2. Likewise, if the planned expressway between Kampala – Entebbe Airport is opened by 2023 and an interchange is constructed at Kajansi, the BRT dedicated lanes on Entebbe Road may not be necessary after Kajansi as substantial traffic will be diverted to the expressway.

Table A6.2.1 Summary of BRT Operation Length (Assumption)

Scenario 1: BRT Operation of 64.6 km by 2023 Unit: km

Operation Type	Up to 2012/13	Up to 2017/18	Up to 2022/23	Up to 2029/30
On BRT Dedicated Lanes	0.0	14.0	50.6	54.0
On existing highways (BRT shared lanes)*	0.0	20.9	-20.9	0.0
Total	0.0	34.9	29.7	54.0
Operation Length	0.0	34.9	**64.6**	118.6

Scenario 2: BRT Operation of 88.6 km by 2023 Unit: km

Operation Type	Up to 2012/13	Up to 2017/18	Up to 2022/23	Up to 2029/30
On BRT Dedicated Lanes	0.0	14.0	74.6	30.0
On existing highways (BRT shared lanes)*	0.0	20.9	-20.9	0.0
Total	0.0	34.9	53.7	30.0
Operation Length	0.0	34.9	**88.6**	118.6

Notes: * 1. Operation of A1 on the existing highway between Kireka (Northern Bypass) and Mukono on Jinja Road, and Bwaise (Northern Bypass) and Kawempe on Bombo Road
2. Operation of A2 on the existing highway between Makerere Rbt - Kyebando (Northern Bypass) on Gayaza Road

Table A6.2.2 shows estimated BRT operation (route) length, road facility requirements (two BRT lanes and four general traffic lanes), City Center Interchange, BRT Terminals/Depot and BRT Stations. The total BRT operation length and dedicated lanes are estimated at 118.6 km and 103.5 km, respectively, at the completion stage as shown in Table A6.2.2.

Table A6.2.2 Summary of BRT Length and Facilities (Assumption)

Route No.	BRT Route	Route Length (km)	Road Length* (km)	City Center IC (No.)	BRT Terminals (No.)	BRT Stations** (No.)
A1	Jinja Rd - Kampala Rd - Bombo Rd	29.10	29.10	1	3	36
A2	City Center IC - Makerere Rbt - Northern Bypass - Kanyama Terminal (Gayaza Rd)	5.80	2.40		1	7
A3	City Center IC Kira Rd (Mulago Rbt - Bukoto/Lugogo Bypass Jct)	4.90	2.50		1	6
A4	City Center IC - Wandegeya Jct - Nabweru Terminal (Hoima Rd)	9.00	7.10		1	11
B.1	City Center IC - Entebbe Rd - Queen's Way/(Katwe Rd) - Entebbe Airport Rd	37.60	37.10		2	47
B.2	City Center IC - Kibuye Rbt - Busega Rbt	10.00	6.50		1	13
B.3	City Center IC Clock - Tower - Nsambya Road - Gaba	10.60	9.30		1	13
B.4	Africana Rbt - Old Port Bell Rd - Port Bell	10.40	8.30		1	13
CBD	CBD Triangle (Ben Kiwanuka St)	1.20	1.20			2
Total		118.60	103.50	1	11	148

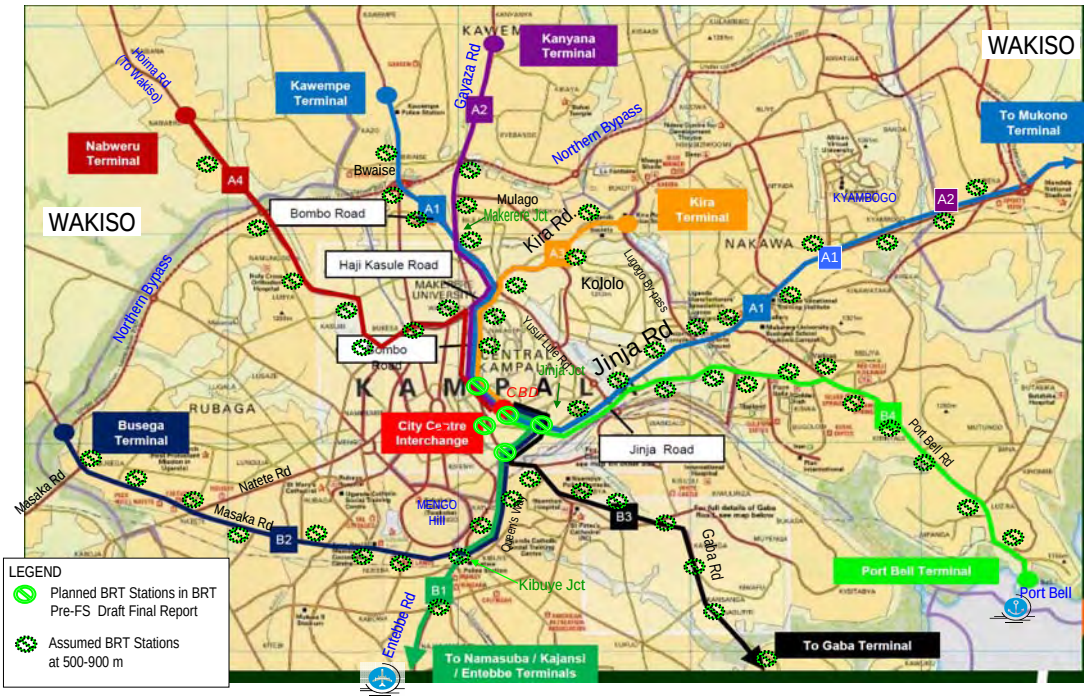
Notes: * Construction length of the BRT facilities, including BRT stations, but not counting the section length duplicated by routes.

** The number of estimated BRT stations at a average interval of 800 m, including these duplicated by route

Source: Assumption by the Study Team based on BRT Pre-FS Draft Final Report (Apr.2010)

Refer to Tables A6.2.3 and A6.2.4 as to the BRT section length and BRT stations assumed by the Study Team based on BRT Pre-FS Draft Final Report (April 2010). The Study Team also referred to the BRTs having been operated worldwide (refer to Table A6.2.5) for concerned assumptions.

Table A6.2.3 Operation Route Length of BRT (Assumption)

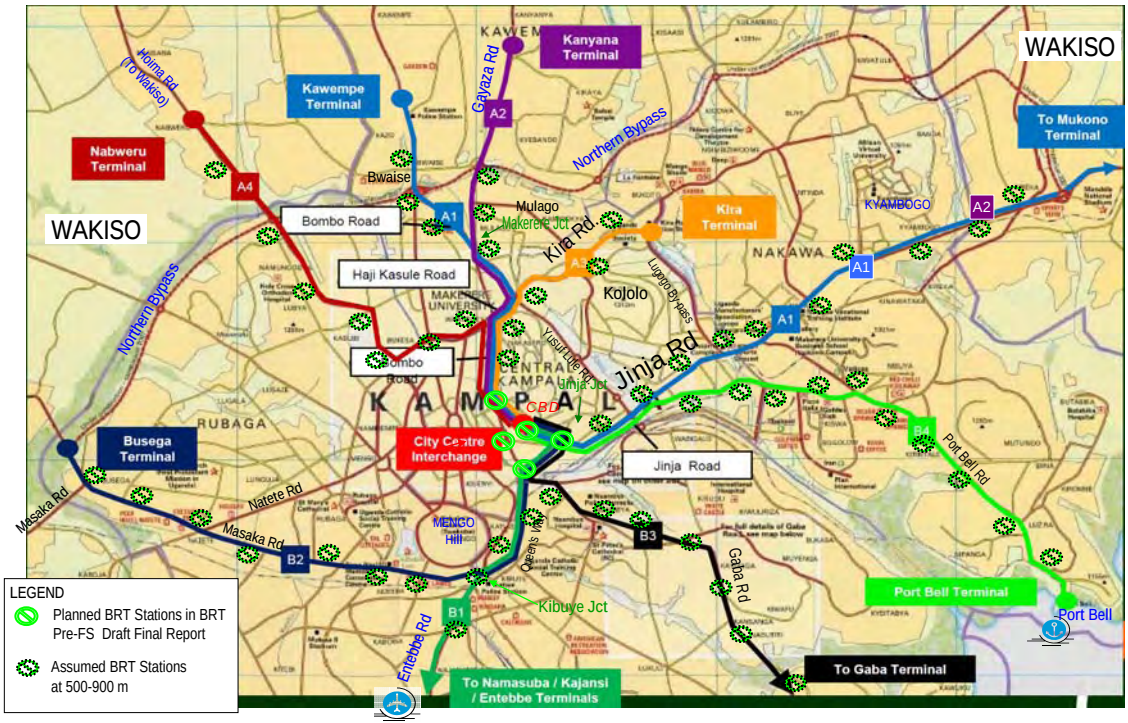


Route Length of BRT Unit: km

Route No	BRT Route and Section			A1.P	A1	A2	A3	A4	B1	B2	B3	B4	C	Total
A1.P (Pilot)	Jinja Rd - Kampala Rd - Bombo Rd			14.00										14.00
	A1.P.1	E/B	City Center IC - Kireka/ N.B.Terminal	9.40										
			City Center IC - Entebbe Jct	0.50										
			Entebbe Jct - Africana Rbt	1.60										
			Africana Rbt - Lugogo Bypass Jct	1.50										
			Lugogo Bypass Jct - Port Bell Jct	0.60										
			Port Bell Jct - Ntinda Jct	1.00										
			Ntinda Jct - Kyambogo Jct	1.00										
			Kyambogo Jct - Kireka/N. Bypass Terminal	3.20										
	A1.P.2	N/B	City Center IC - Northern Bypass	4.60										
			City Center IC - Equatoria Jct	0.60										
			Equatoria Jct - Wandegeya Jct	1.30										
			Wandegeya Jct - Mulago Rbt	0.50										
			Mulago Rbt - Makerere Rbt	1.00										
			Makerere Rbt - Northern Bypass	1.20										
A1	A1.1	E/B	Kireka/Northern Bypass - Mukono Terminal		13.50									13.50
			Kireka/Northern Bypass - Mukono		12.00									
			Mukono - Mukono East (Terminal)		1.50									
	A1.2.	N/B	Northern Bypass - Kawempe Terminal		1.60									1.60
			Northern Bypass - Bwaise		0.30									
			Bwaise - Kawempe Terminal		1.30									
A2	City Center IC - Makerere Rbt - Northern Bypass - Kanyama Terminal (Gayaza Rd)					5.80								5.80
	A2.0	N/B	City Center IC - Makerere Rbt			3.40								
	A2.1		Makerere Rbt - Northern Bypass			1.30								
			Northern Bypass - Kanyama Terminal			1.10								
A3	City Center IC Kira Rd (Mulago Rbt - Bukoto/Lugogo Bypass Jct)						4.90							4.90
	A3.0	NE/B	City Center IC - Mulago Rbt				2.40							
	A3.1		Mulago Rbt - Kira Terminal				2.50							
A4	City Center IC - Wandegeya Jct - Nabweru Terminal (Hoima Rd)							9.00						9.00
	A4.0	N/B	City Center IC - Wandegeya Jct					1.90						
	A4.1		Wandegeya Jct - Nakulabye Jct					1.70						
	A4.2		Nakulabye Jct - Kasubi Jct					1.10						
	A4.3		Kasubi Jct - Northern Bypass					2.30						
	A4.4		Northern Bypass - Nabweru Terminal					2.00						
B1	City Center IC - Entebbe Rd - Queen's Way/(Katwe Rd) - Entebbe Airport Rd								37.60					37.60
	B1.0	S/B	City Center IC - Entebbe Jct						0.50					
	B1.1		Entebbe Jct - Shoprite Jct						0.60					
	B1.2		Shoprite Jct - Kibuye Rbt						2.40					
	B1.3		Kibuye - Namasuba						4.90					
	B1.4		Namasuba - Kajansi						5.20					
	B1.5		Kajansi - Entebbe Airport						24.00					
B2	City Center IC - Kibuye Rbt - Busega Rbt									10.00				10.00
	B2.0	S/B&W/B	City Center IC - Kibuye Rbt							3.50				
	B2.1		Kibuye Rbt - Busega Rbt							6.50				
B3	City Center IC Clock - Tower - Nsambya Road - Gaba										10.60			10.60
	B3.0	SE/B	City Center IC - Clock Tower Jct								1.30			
	B3.1		Clock Tower - Nsambya Rd/Kibuli Rd Jct								0.60			
	B3.2		Kibuli Jct - Gaba Rd Jct								0.40			
	B3.3		Gaba Rd Jct - Tank Hill Rd Jct								1.80			
	B3.4		Tank Hill Rd Jct - Gaba								6.50			
B4	Africana Rbt - Old Port Bell Rd - Port Bell											10.40		10.40
	B4.0	SE/B	City Center IC - Africana Rbt									2.10		
	B4.1	SE/B	Africana Rbt - Port Bell Rd Jct									3.50		
	B4.2		Port Bell Jct - Port Bell									4.80		
C1	C1.1		CBD Triangle (Ben Kiwanuka St)										1.20	1.20
				14.00	15.10	5.80	4.90	9.00	37.60	10.00	10.60	10.40	1.20	118.60

Note: Measurement of length from the satellite photos (estimate)
Source: Assumption by the Study Team based on BRT Pre-FS Draft Final Report (Apr.2010)

Table A6.2.4 Length of BRT Roads (Construction), Including the Existing Road Widening (Assumption)



Required Length of BRT Roads (BRT Road Construction), including the existing road widening

Unit: km

Route No	BRT Route and Section			A1.P	A1	A2	A3	A4	B1	B2	B3	B4	C	Total
A1.P (Pilot)	Jinja Rd - Kampala Rd - Bombo Rd			14.00										14.00
	A1.P.1	E/B	City Center IC - Kireka/ N.B.Terminal	9.40										
			City Center IC - Entebbe Jct	0.50										
			Entebbe Jct - Africana Rbt	1.60										
			Africana Rbt - Lugogo Bypass Jct	1.50										
			Lugogo Bypass Jct - Port Bell Jct	0.60										
			Port Bell Jct - Ntinda Jct	1.00										
			Ntinda Jct - Kyambogo Jct	1.00										
			Kyambogo Jct - Kireka/N. Bypass Terminal	3.20										
	A1.P.2	N/B	City Center IC - Northern Bypass	4.60										
			City Center IC - Equatoria Jct	0.60										
			Equatoria Jct - Wandegeya Jct	1.30										
			Wandegeya Jct - Mulago Rbt	0.50										
			Mulago Rbt - Makerere Rbt	1.00										
			Makerere Rbt - Northern Bypass	1.20										
A1	A1.1	E/B	Kireka/Northern Bypass - Mukono Terminal		13.50									13.50
			Kireka/Northern Bypass - Mukono		12.00									
			Mukono - Mukono East (Terminal)		1.50									
	A1.2.	N/B	Northern Bypass - Kawempe Terminal		1.60									1.60
			Northern Bypass - Bwaise		0.30									
			Bwaise - Kawempe Terminal		1.30									
A.2	Makerere Rbt - Northern Bypass - Kanyama Terminal (Gayaza Rd)					2.40								2.40
	A2.1	N/B	Makerere Rbt - Northern Bypass			1.30								
			Northern Bypass - Kanyama Terminal			1.10								
A3	Kira Rd (Mulago Rbt - Bukoto/Lugogo Bypass Jct)						2.50							2.50
		NE/B	Mulago Rbt - Kira Terminal											
A4	Wandegeya Jct - Nabweru Terminal (Hoima Rd)							7.10						7.10
	A4.1	N/B	Wandegeya Jct - Nakulabye Jct					1.70						
	A4.2		Nakulabye Jct - Kasubi Jct					1.10						
	A4.3		Kasubi Jct - Northern Bypass					2.30						
	A4.4		Northern Bypass - Nabweru Terminal					2.00						
B1	Entebbe Rd - Queen's Way/(Katwe Rd) - Entebbe Airport Rd								37.10					37.10
	B1.1	S/B	Entebbe Jct - Shoprite Jct						0.60					
	B1.2		Shoprite Jct - Kibuye Rbt						2.40					
	B1.3		Kibuye - Namasuba						4.90					
	B1.4		Namasuba - Kajansi						5.20					
	B1.5		Kajansi - Entebbe Airport						24.00					
B2	B2.1	S/B&W/B	Kibuye Jct - Busega Rbt							6.50				6.50
B3	Clock Tower - Nsambya Road - Gaba										9.30			9.30
	B3.1	SE/B	Clock Tower - Nsambya Rd/Kibuli RdJct								0.60			
	B3.2		Kibuli Jct - Gaba Rd Jct								0.40			
	B3.3		Gaba Rd Jct - Tank Hill Rd Jct								1.80			
	B3.4		Tank Hill Rd Jct - Gaba								6.50			
B4	Africana Rbt - Old Port Bell Rd - Port Bell											8.30		8.30
	B4.1	SE/B	Africana Rbt - Port Bell Rd Jct									3.50		
	B4.2		Port Bell Jct - Port Bell									4.80		
C1	C1.1		CBD Triangle (Ben Kiwanuka St)										1.20	1.20
				14.00	15.10	2.40	2.50	7.10	37.10	6.50	9.30	8.30	1.20	103.50

Note: Measurement of length from the satellite photos (estimate)
Source: Assumption by the Study Team based on BRT Pre-FS Draft Final Report (Apr.2010)

Table A6.2.5 Comparison of Bus Rapid Transits (BRTs) in the World

Item		Netherlands	Australia	Korea	India	Thailand	Indonesia	Colombia	Mexico	Ecuador	China											Nigeria	Uganda
		Amsterdam	Brisbane	Seoul	Ahmedabad	Bangkok	Jakarta	Bogota	Mexico City	Quito	Beijing (北京市)	Changzhou (常州市)	Chongqing (重慶市)	Dalian (大連市)	Guangzhou (広州市)	Hangzhou (杭州市)	Hefei (合肥市)	Jinan (済南市)	Kunming (昆明市)	Xiamen (厦門市)	Zhengzhou (鄭州市)	Lagos	Kampala
BRT Name		*Zuidtangent*	*Busway*	*Korean BRT*	*Janmarg*	*Bangkok BRT*	*Transjakarta Busway*	*Trans-Milenio*	*MetroBus*	-	*Beijing BRT*	*Changzhou BRT*	*Chongqing BRT*	*Dalian BRT*	*Guangzhou BRT*	*Hangzhou BRT*	-	*Jinan BRT*	-	*Xiamen BRT*	*Zhengzhou BRT*	Lagos BRT**	**(Pre-FS Plan)**
Population (Metropolitan Area)		*2.2 Mill (2008)*	*1.8 Mill (2006)*	*10.0 Mill (2008)*	*4.5 Mill (2001)*	*10.0 Mill (2007)*	*24.0 Mill (2005)*	*7.9 Mill (2005)*	*20.0 Mill (2008)*	*2.1 Mill (2008)*	*16.0 Mill (2007)*	*3.5 Mill (2006)*	*4.0 Mill (2008)*	*6.1 Mill (2008)*	*10.0 Mill (2007)*	*8.0 Mill (2008)*	*4.5 Mill (2004)*	*5.7 Mill (2005)*	*6.0 Mill (2008)*	*2.4 Mill (2007)*	*7.0 Mill (2004)*	*16 Mill (2006)*	*2.5 Mill (2008)*
1	Commencement of Services	-	2001	Jul 2004	Oct 2009	May 2010	2004	2000	2005	-	2004	Jan 2008	2008	Jan 2008	Feb 2010	2006	2010	Apr 2008	1999	Sep 2008	May 2008	Mar 2008	Jan 2015
2	System passenger-trips per day	-	100,000	-	35,000	-	230,000	1,450,000	260,000	-	120,000	-	2,000	-	800,000	-	-	-	156,000	-	-	-	
3	Peak ridership (passengers/hr/direction)	-	**6,500**	**6,700**	**1,000**	-	**4,000**	**45,000**	**9,000**	**6,000**	**4,100**	**6,200**	**1,000**	**5,700**	**25,000**	**5,250**	**3,150**	**3,600**	**8,600**	**3,600**	**4,200**		**5000-10,000**
4	Actual peak ridership over 10,000 passengers per hour per direction	**No**	**No**	**No**	**No**	-	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**		**Yes**
5	Passenger volume greater than a mixed traffic lane (~3000 pphpd)	**Yes/No** (some yes)	**Yes**	**Yes**	**No**	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes/No** (Corr.1)	**Yes**	**No**	**Yes**	**Yes**	**Yes/No** (city center)	**Yes**	**Yes/No** (city center)	**Yes**	**Yes**	**Yes/No** (part)	**Yes**	**Yes**
6	Number of trunk corridors	**1**	**2** (more)	**5**	**1**	**1**	**8** (more)	**6**	**1**	**3**	**3**	**2**	**1**	**1**	**1**	**3**	**1**	**4**	**5**	**2**	**1** (circular road)	**2 (1)**	**2**
7	Network of routes and corridors	**Yes**	**Yes**	**Yes**	**No** (90 km planned)	**No**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
8	Location of busway lanes	Dedicated Roadway	Dedicated Roadway	Roadway Center	Roadway Center	Roadway Center	Roadway Center	Roadway Center	Roadway Center	Mostly Center	Roadway Center	Roadway Center	Mostly Center	Mainly Center	Roadway Center	Midway	Roadway Center	Roadway Center*	Roadway Center	Elevated Busways	Mostly Center	Roadway Center	Roadway Center
9	Segregated busways or bus-only roadways	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes/No**	**Yes**	**Yes/No** (3.5km)	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes/No** (mostly)	**Yes**
10	Total length of dedicated busway (km)	**38.8**, incl.4 km roop line	**19.3**	**43.0**	**12.5**	**11.9**	**124.0**	**84.0**	**28.5**	-	**34.5**	**41.0**	**6.0**	**9.0**	**22.5**	**17.4**	**7.7**	**34.4**	**46.7**	**38.2**	**26.6**		**14.0**
11		88%	100%	97%	100%	78%	99%	97%	100%		64%	91%	52%	66%	100%	40%	100%	100%	100%	95%	87%		
12	Length including mixed traffic portions (km)	**44.0**	**19.3**	**44.4**	**12.5**	**15.3**	**125.0**	**86.5**	**28.5**	-	**54.0**	**44.9**	**11.5**	**13.7**	**22.5**	**44.0**	**7.7**	**34.4**	**46.7**	**40.2**	**30.5**	**22.0**	
13	Overtaking lanes at more than half of all stations	**No**	**Yes**	**No** (not functioning)	**No**	**No**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**Yes/No**	**No**	**No**	**No**	**No**	**Yes**	**No**
14	Includes BRT-only tunnels or bridges	**Yes**	**Yes**	**No**	**Yes/No** (flyover)	**No**	**No**	**Yes**	**No**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**	**No**
15	Majority of bus passenger demand in the corridor met by BRT buses	**Yes**	**Yes**	**Yes**	**Yes**	-	**No**	**Yes**	-	**Yes**	**No**	**Yes**	**No**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**	**Yes/No** (some)	**No** (25%)	
16	Net time saving for bus passengers in corridor	**Yes**	**Yes**	**Yes**	**Yes**	-	**No**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**No**	**Yes/No**	**Yes**	**No**	**No**	**Yes/No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
17	High peak period operational speed (> 20km/hr)	**Yes**	**Yes**	**No**	**Yes**	-	**No**	**Yes**	-	**Yes**	**Yes/No** (Corr.1)	**Yes/No** (not city center)	**Yes**	**Yes**	**Yes/No** (not city center)	**Yes/No** (not city center)	**No**	**Yes/No** (not city center)	**Yes**	**Yes**	**Yes**	**Yes/No** (some)	
18	City centre peak hour speed	**35**	**Up to 29**	**12-14**	**22**	-	-	**18-28**	-	-	**21**	**17-19**	**31**	**23-25**	**18**	**15-17**	**11-13**	**15-17**	**11-14**	**29**	**20**	**23**	
19	Peak city centre buses/hr/direction	**10**	**175**	**200**	**12**	-	-	**310**	**60**	**60**	**55**	**70**	**6**	**75**	**304**	**65**	**60**	**40**	**140**	**50**	**40-50**		
20	Enhanced station environment (more than just a bus shelter)	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes** (some)	**Yes**
21	Station size based on passenger	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**	**No**	**Yes**	**No**	**No**	**No**	**No**	**Yes**	**No**	**Yes/No**	**No**	**No**	**No**	**No**	**No**	**Yes** (some)
22	Number of stations	**30**	**17**	**73**	**20**	**12**	**145**	**115**	**45**	-	**60**	**51**	**9**	**13**	**26**	**17**	**9**	**46**	**63**	**30**	**38**	**26**	**20**
23	Average distance between stations	**1,500**	**1,500**	**600**	**550**	**1,000**	-	**790**	**635**	-	**940**	**900**	**1,440**	**1,140**	**800**	**1,250**	**820**	**760**	**500**	**1,300**	**800**	**850**	**500-800**
24	Number of stations with passing	**0**	**13**	-	**0**	**0**	-	**115**	**0**	**14** (corr.3)	**7**	**0**	**1**	**1**	**26**	**0**	**9**	**2**	**4**	**2**	**10**		**All**
25	Stations away from intersections	**Yes**	**Yes**	**Yes**	-	-	-	**Yes**	**No**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**	**No**		**No**
26	Bicycle parking at BRT stations	**Yes**	**Yes** (not all)	**No**	**No**	**No**	**No**	**Yes** (some)	**No**	**No**	**No**	**No**	**No**	**No**	**Yes** (not all)	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
27	Distinctive BRT buses	**Yes**	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes/No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
28	High capacity BRT buses	**No** (90% special 12m)	**No**	**No**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes** (also 12m)	**No**	**Yes** (also 12m)	**No**	**Yes**	**No**	**Yes** (also 12m)	**Yes/No** (mostly)	**No**	**Yes**	**No**	**No**
29	BRT vehicle length	**18 m**	**12 m** (some 18m)	**10-11 m** (some 18m)	**12 m**	**12 m**	**12 m** (some 18m)	**18.5 m**	**18 m**	**upto 17 m**	**18.5 m**	**18.5 m**	**12.7 m**	**12m, 18.5m**	**12 m**	**18.5 m** (also 11m)	**12 m**	**12m, 18.5m**	**18.5 m** (mostly 10m)	**10m, 12m**	**18 m** (some 11m)	(12m)	**12 m**
30	At-level boarding and alighting large gap (level but sometimes)	**Yes/No** (mostly)	**No**	**No**	**Yes**	**Yes** (high floor)	**Yes** (high floor)	**Yes** (high floor)	**Yes** (high floor)	**Yes** (high floor)	**Yes/No** (mostly)	**Yes/No** (mostly)	**No**	**Yes/No** (mostly)	**Yes/No**	**Yes/No** (mostly)	**No**	**Yes**	**No**	**Yes**	**Yes**	**No**	**Yes**
31	BRT buses paid for by operators rather than government budget	-	**No**	**No**	**Yes**	**No**	**Yes** (new corridors)	**Yes**	-	-	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**	**No**	**Yes**	**No**	**No**		**No (Lease)**
32	No operational subsidy from government needed	Subsidy needed	Subsidy needed	Subsidy needed	Subsidy needed	Subsidy needed	Subsidy needed	**No subsidy**	-	-	Subsidy needed	Subsidy needed	Subsidy needed	Subsidy needed	-	Subsidy needed	-	Subsidy needed	**No subsidy**	Subsidy needed	Subsidy needed		**Yes**

Note: * Lines 1 and 2 under massive new elevated roads
Sources: BRT Information and Maps, China Bus Rapid Transit (Webpage: www.chinabrt.org), ** Lagos BRT from LAMATA, Nigeria

A10.3 DEVELOPMENT AND INVESTMENT PLAN

(1) Investment Plan in NTMP/GKMA

Table A6.3.1 and Figure A6.3.1 show the investment plan in NTMP/GKMA. The total investment cost was estimated at US$ 1,380.40 million in Year 2008-2023.

Table A10.3.1 Investment Plan in NTMP/GKMA

Roads	2008/09	2009/10	2010/11	2011/12	2012/13	2008/13	2013/14	2014/15	2015/16	2016/17	2017/18	2013/18
Dual Carriageways with railway viaduct	0.05	1.27	5.08	7.62	7.62	21.64	7.62	10.17	10.17	1.22		29.18
Dual Carriageways with railway viaduct	0.31	0.75	7.51	15.04	15.04	38.65	22.56	22.56	30.07	37.59	30.07	142.85
Single carriageway	0.48	2.36	4.73	7.10	7.11	21.78	7.10	7.11	7.10	35.50	47.33	104.14
Bus rapid transit network		1.50	1.50	35.67	35.66	74.33	35.67	35.67	35.67	35.67	35.67	178.35
Total, Roads	**0.84**	**5.88**	**18.82**	**65.43**	**65.43**	**156.40**	**72.95**	**75.51**	**83.01**	**109.98**	**113.07**	**454.52**
Safety improvements												
Junction Improvements	0.41	2.04	4.08	6.12	8.16	20.81	8.16	8.16	8.16	6.94	6.12	37.54
Railway crossings	0.02	0.12	0.32	0.32	0.63	1.41	0.63	0.95	0.95	0.95	1.26	4.74
Pedestrian pavement and crossings	0.03	0.15	0.15	0.76	2.27	3.36	2.27	2.27	2.27	2.27	3.03	12.11
Total safety improvements	**0.46**	**2.31**	**4.55**	**7.20**	**11.06**	**25.58**	**11.06**	**11.38**	**11.38**	**10.16**	**10.41**	**54.39**
Total Investment Costs	**1.30**	**8.19**	**23.37**	**72.63**	**76.49**	**181.98**	**84.01**	**86.89**	**94.39**	**120.14**	**123.48**	**508.91**

Roads	2018/19	2019/20	2020/21	2021/22	2022/23	2018/23	15-year Total	
Dual Carriageways with railway viaduct							50.82	3.7%
Dual Carriageways with railway viaduct	30.07	30.07	30.07	15.04	13.99	119.24	300.74	21.8%
Single carriageway	59.18	59.18	71.01	75.73	82.36	347.46	473.38	34.3%
Bus rapid transit network	35.66	35.67	35.67	35.66	35.67	178.33	431.01	31.2%
Total, Roads	**124.91**	**124.92**	**136.75**	**126.43**	**132.02**	**645.03**	**1,255.95**	91.0%
Safety Improvement								
Junction improvements	6.12	6.12	6.12	2.45	2.45	23.26	81.61	5.9%
Railway crossings	1.26	1.58	1.58	1.58	0.49	6.49	12.64	0.9%
Pedestrian pavements and crossings	3.03	3.78	3.78	3.03	1.18	14.80	30.27	2.2%
Total Safety Improvements	**10.41**	**11.48**	**11.48**	**7.06**	**4.12**	**44.55**	**124.52**	9.0%
Total Investment Costs	**135.32**	**136.40**	**148.23**	**133.49**	**136.14**	**689.58**	**1,380.47**	100.0%

Source: NTMP/GKMA, MoWT, May 2009

Of the total investment cost, 91% was allocated for road facilities and 9.0% for the safety improvement. The BRT cost was estimated at US$431 million (31.2%). The flyover cost was included in both dual carriageways with railway viaduct and junction improvement under the safety improvement. The Kampala - Entebbe Airport Expressway was not in NTMP/GKMA. Figure A6.3.2 shows the road network development plan in NTMP/GKMA but without the BRT Network.

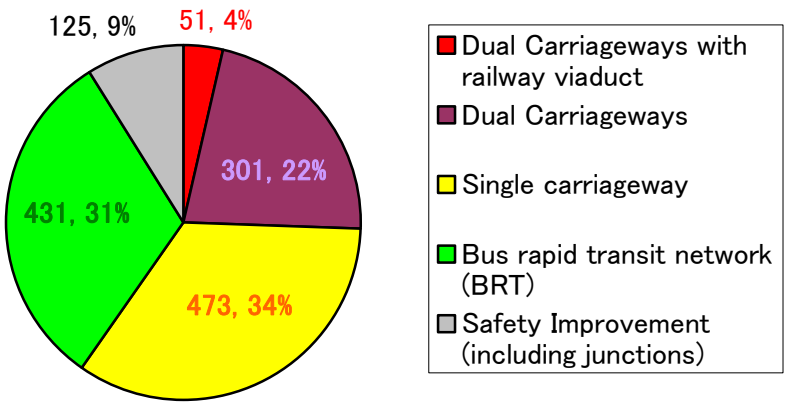
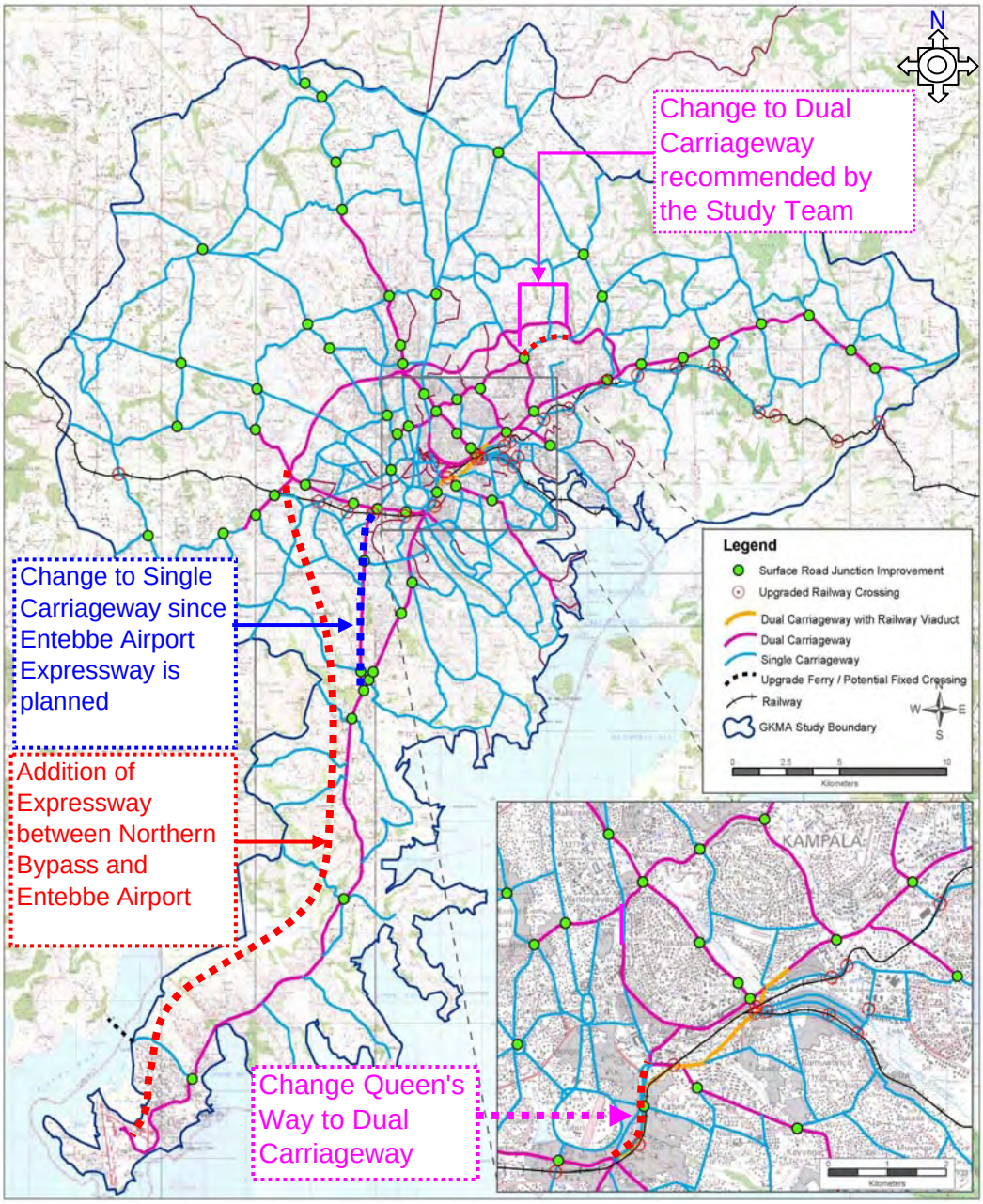


Figure A6.3.1 Investment Plan by Category in NTMP/GKMA



Source: The Study Team based on NTMP/GKMA

Figure A6.3.2 Road Network Development Plan in NTMP/GKMA

(2) Assumed Investment Plan in the Study (With-Project Cases)

Figure A6.3.3 shows the comparison of the annual investment amount with NTMP/GKMA and the scenarios in the Study. Figure A6.3.4 shows the total investment amount by category. The BRT length includes part of the dual carriageway programs in NTMP/GKMA.

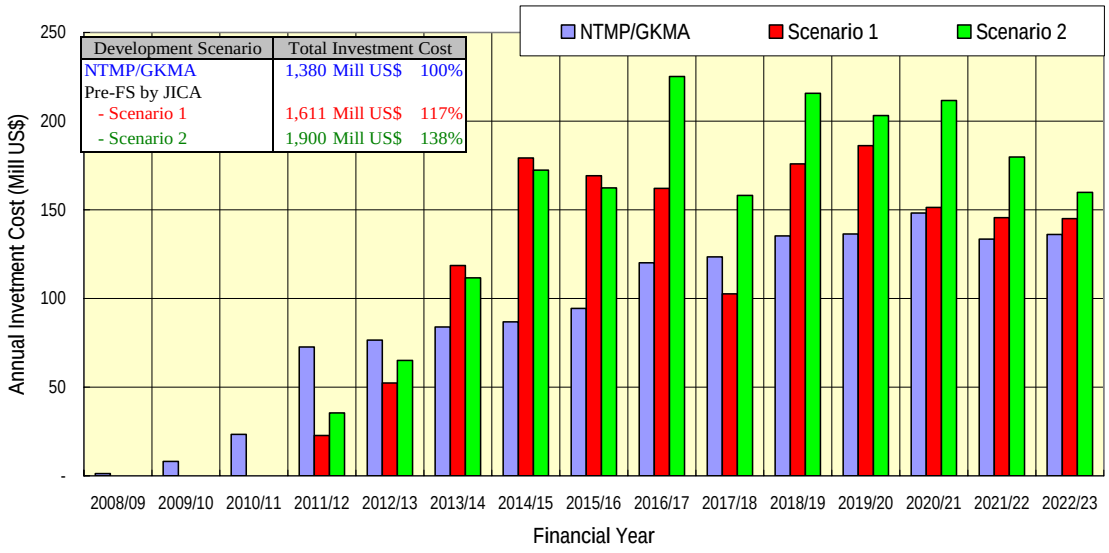


Figure A6.3.3 Annual Investment Plan by Scenario

Unit: US$ Mill

Categrory	NTMP/GKMA	Scenario 1	Scenario 2
Viaducts /Flyovers	51	139	155
Dual Carriageways	301	114	127
Single Carriageway	473	380	476
Bus Rapid Transit (BRT) Network	431	546	711
Safety Improvement	125	81	81
Kampala - Entebbe Expressway	0	350	350
Total	1,380	1,611	1,900

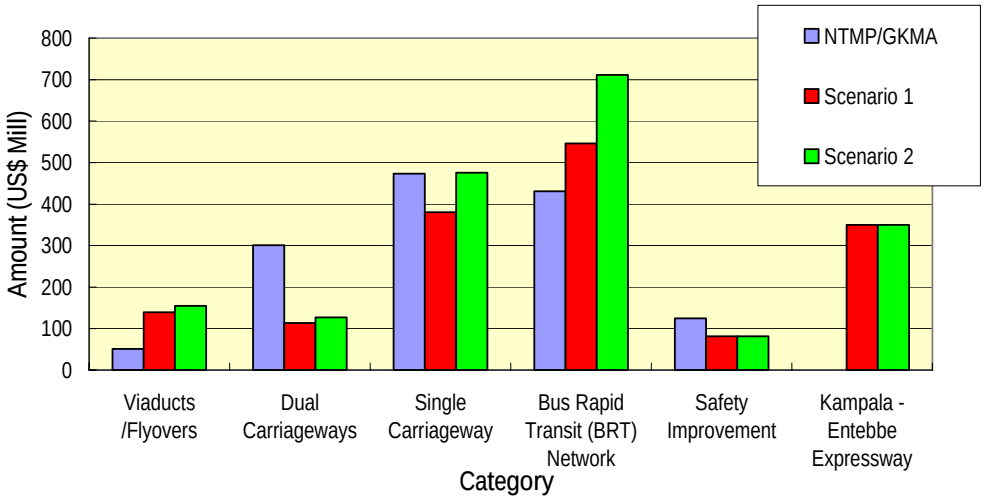


Figure A6.3.4 Total Investment Amount by Category

Figure A6.3.5 shows the comparison of the physical targets in length. The dual carriageway programs in Scenario 2 (aggressive plan) are almost the same as that in NTMP/GKMA (approximately 120 km in total) while Scenario 1 is about 20 km less if the BRT programs are added, which include the existing road widening from two lanes to six lanes. The flyover programs in Scenario 1 is almost the same as that in NTMP/GKMA, but Scenario 2 is approximately 40% more than the NTMP/GKMA plan in Scenario 2. The single carriageway improvement was kept as that of the NTMP/GKMA target in Scenario 2 (aggressive plan) but reduced to 80% in Scenario 1. No BRT length was given in NTMP/GKMA. The Kampala – Entebbe Expressway is a new work item not included in NTMP/GKMA.

Category	NTMP/GKMA	Scenario 1	Scenario 2
Viaducts /Flyovers*	4.7	4.5	6.5
Dual Carriageways	122.9	40.4	45.2
Single Carriageway	572.9	458.4	573.0
BRT Road Facility Length	(4 routes)	54.8	78.8
Kampala - Entebbe Expressway	0.0	35.0	35.0

Notes: * Other flyovers for 7 junctions in NTMP/GKMA were included in Safety Improvement.
** Some dual carriageway programs in NTMP/GKMA were included in BRT in Scenarios 1 and 2.

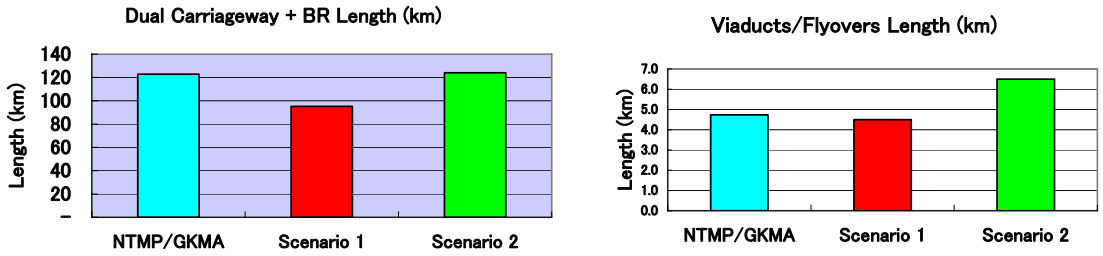


Figure A6.3.5 Total Investment Plan by Category

Attachments A6.1.1-A6.1.5 show the GKMA Road and BRT Development and Investments Plan in Scenario 1 (Standard Investment Plan) in which part of BRT, Kajansi – Entebbe Airport Section, flyovers and dual carriageways will be constructed after 2023. The total investment cost was estimated at US$1,611 million, which is 16.7% more than the NTMP/GKMA investment plan for the 2011-2023 period. Approximately 73.2% was allocated for roads, including 33.9% for BRT and public transport infrastructure for new large bus services, 5.1% for safety improvement and 21.7% for the Kampala – Entebbe Airport Expressway.

Table A6.3.2 Summary of Scenario 1 and Comparison with NTMP/GKMA

Item	Investment Category	Unit	NTMP/GKMA*		Scenario 1**			Difference		Remarks
			Quantity	Cost (Mill US$)	Quantity	Cost (Mill	Share	Quantity	Cost (Mill	
I	Roads									
1	Viaducts /Flyovers	km	4.74	50.80	4.50	139.08	8.6%	-0.24	88.28	
2	Dual Carriageways	km	122.85	300.73	40.40	113.65	7.1%	-82.45	-187.08	Part of this item was included in BRT
3	Single Carriageway	km	572.93	473.37	458.40	380.47	23.6%	-114.53	-92.90	
4	Bus Rapid Transit (BRT) Network	km	4 routes	431.00	64.60	546.26	33.9%		115.26	Length of BRT operation
	Sub-Total			1,255.90		1,179.45	73.2%		-76.45	
II	Safety Improvement	sum		124.51	1	81.49	5.1%	1	-43.02	Part of this item was included in flyovers
III	Kampala - Entebbe Expressway	km	0.00	0.00	35.00	350.00	21.7%	35.00	350.00	
	Total			1,380.41		1,610.94	100.0%		230.53	
	(% to the NTMP/GKMA Investment Plan)			100%		116.7%			16.7%	

Sources : * NTMP/GKMA Final Report, MoWT, May 2009
** The Study Team

The major project/program concepts of Scenario 1 are as follows:

- Flyover construction for critical junctions, including:
  - Yusufu Lule/Nile Avenue - Mukwano Road Flyover over Jinja Road Junction, including Right-Turn Ramp from Mukwano Road to Jinja Road and Jinja Road to Yusufu Lule Road
  - Mengo Hill - Clock Tower - Mukwano Road Flyover
- Dual carriageway construction is mostly as planned in NTMP/GKMA but some implementation after 2023 in line with the BRT schedule.
- Single carriageway upgrading is 80% of implementation compared with the NTMP/GKMA plan.
- The BRT network as planned in the BRT Pre-FS Draft Report (refer to Tables A6.2.3 and A6.2.4) but the Kajansi – Entebbe Airport section (24.0 km length) after 2023.

Note: If Kampala Entebbe International Airport Expressway is constructed, the existing Kajansi – Entebbe Airport road section will not be much congested by 2023. It is also better to divert the traffic flow from the critical Kibuye Junction to the Northern Bypass through the new expressway.

- Construction of Kampala Entebbe International Airport Expressway.

Attachments A6.2.1-A6.2.4 show the GKMA Road and BRT Developments and Investments Plan in Scenario 2 (Aggressive Investment Plan) for the short-, medium- and long-terms. The total investment cost was estimated at US$1,900 million, which is 37.7% more than the NTMP/GKMA investment plan, for the 2011-2023 period. Approximately 77.3% was allocated for roads, including 37.4% for BRT[2], 4.3% for safety improvement and 18.4% for the Kampala – Entebbe Airport Expressway. Table A6.3.3 shows the long-term investment plan (by 2023) and their comparison with the NTMP/GKMA plan by development category.

Table A6.3.3 Summary of Scenario 2 and Comparison with NTMP/GKMA

Item	Investment Category	Unit	NTMP/GKMA*		Scenario 2**			Difference		Remarks
			Quantity	Cost (Mill US$)	Quantity	Cost (Mill US$)	Share	Quantity	Cost (Mill US$)	
I	Roads									
1	Viaducts /Flyovers	km	4.74	50.80	6.50	154.93	8.2%	1.76	104.13	
2	Dual Carriageways	km	122.85	300.73	45.20	127.04	6.7%	-77.65	-173.69	Part of this item was included in BRT
3	Single Carriageway	km	572.93	473.37	573.00	475.59	25.0%	0.07	2.22	
4	Bus Rapid Transit (BRT) Network	km	4 routes	431.00	88.60	711.39	37.4%		280.39	Length of BRT operation
	Sub-Total			1,255.90		1,468.94	77.3%		213.04	
II	Safety Improvement	sum		124.51	1	81.49	4.3%	1	-43.02	Part of this item was included in flyovers
III	Kampala - Entebbe Expressway	km	0.00	0.00	35.00	350.00	18.4%	35.00	350.00	
	Total			1,380.41		1,900.43	100.0%		520.02	
	(% to the NTMP/GKMA Investment Plan)			100%		137.7%			37.7%	

Sources : * NTMP/GKMA Final Report, MoWT, May 2009
** The Study Team

The major project/program concepts of Scenario 2 are as follows:

- Flyover construction for critical junctions, including:
  - Yusufu Lule/Nile Ave - Mukwano Road Flyover over Jinja Road Junction
  - Jinja Road - Yusufu Lule Roads/Nile Avenue Flyover (Right-Turn) and Mukwano Road – Jinja Road Flyover (Right-Turn)

[2] The BRT investment cost includes the BRT bus purchase cost which might be invested by the private sector.

- Mengo Hill - Clock Tower - Mukwano Road Flyover
- Makerere Roundabout Flyover (Yusufu Lule North - Bombo Roads)
- Kibuye Roundabout Flyover (Katwe/Queen's Way – Entebbe Road or Masaka Road)
- Others (Wandegeya Junction and Mulago Junction crossing BRT)

Note: Flyovers under the safety improvement of NTMP/GKMA were re-categorized under this item.

- Dual carriageway construction is mostly as planned in NTMP/GKMA (refer to Figure A6.3.1). More than half the dual carriageway developments were incorporated in the BRT as these will be constructed when providing the BRT road facilities.
- Single carriageway upgrading is not changed in the NTMP/GKMA plan.
- The BRT network as planned in the BRT Pre-FS Draft Final Report (refer to Tables A6.2.3 and A6.2.4)
- Construction of the Kampala - Entebbe International Airport Expressway.

(3) Without-Project Cases for Scenarios 1 and 2

Attachments A6.3.1-A6.3.4 show development and investments plans for Without-Project Case of Scenario 1 and Attachments A6.4.1-A6.4.4 for Scenario 2.

(4) Assumed Implementation Schedule of Pre-FS Projects

- Figure 6.3.6 shows the assumed implementation schedule of Pre-FS Projects in case of the application of a soft loan, except for Clock Tower Flyover, and the relationship with the BRT Pilot Project for the traffic flow and demand analysis. The construction will start in 2014/2015 and be completed in 2016/2017.

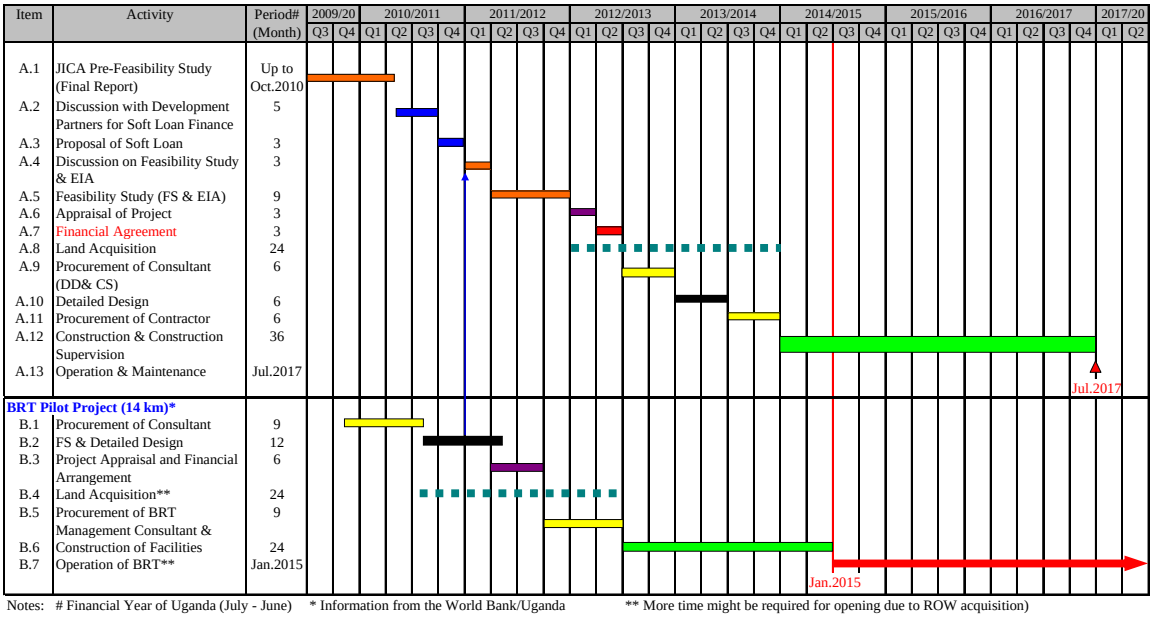


Figure A6.3.6 Assumed Implementation Schedule of Pre-FS Projects and Relationship with the BRT Pilot Project

Attachments for Annex 6

Attachment A6.1.1 With-Project Case Scenario 1: Standard Investment Plan on Planned Projects by 2023

Unit: Mill US$ at 2010 Prices

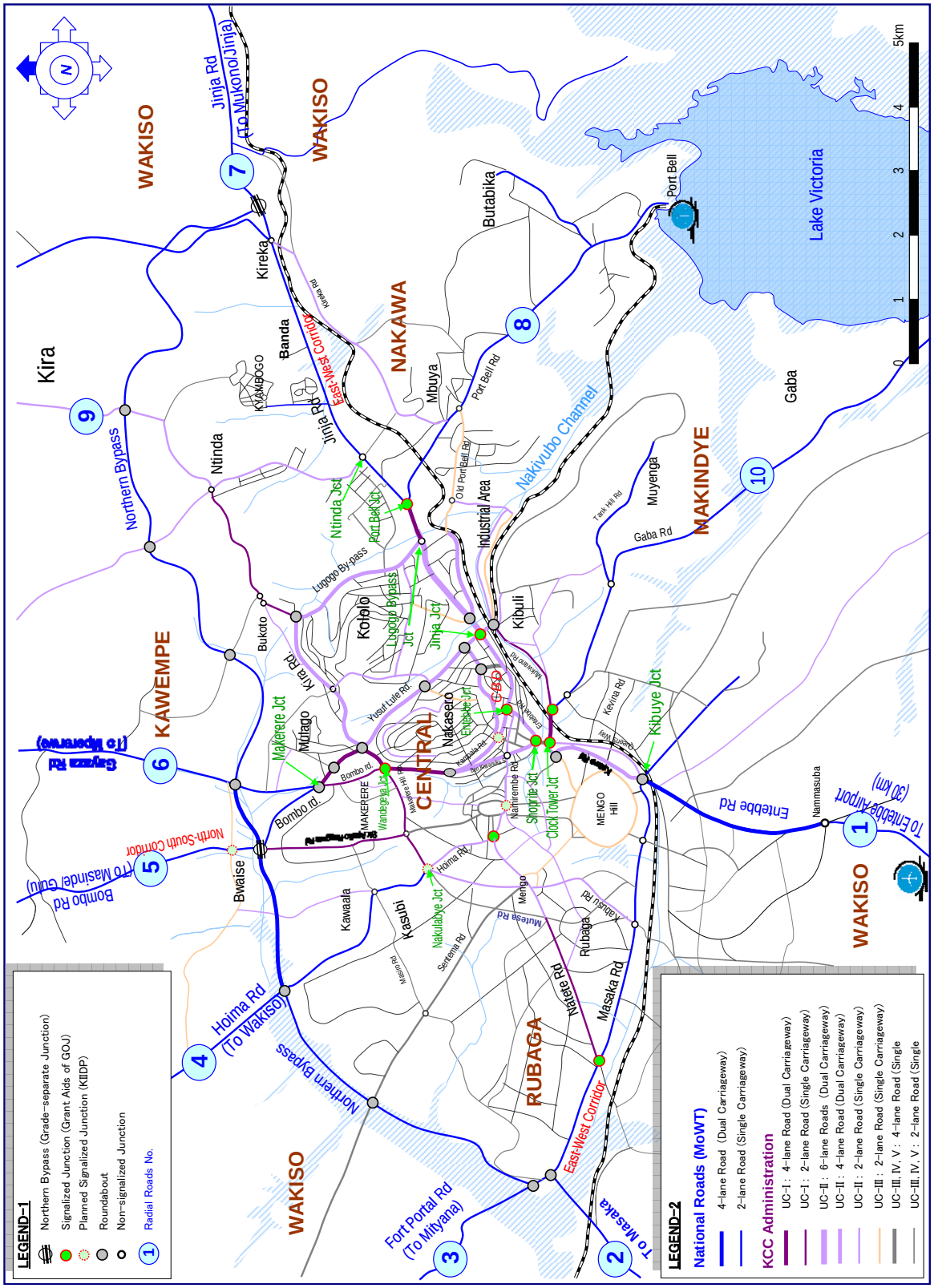
No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/10	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2023	Remarks (Share)
A. Investment Plan for Viaducts/Flyover Projects																							
FO1#	Yusufu Lule/Nile Ave - Mukwano Rd FO	Length (km)	1.70						0.00		0.57	0.57	0.57		1.70						0.00	1.70	
	(over Jinja Jct)	Amount	44.00						0.00		24.93	24.93	24.93		74.80						0.00	74.80	4.6%
FO2#	Jinja/Old Port Bell - Yusufu Lule Rds/Nile	Length (km)	2.30						0.00		0.77	0.77	0.77		2.30						0.00	2.30	
	Ave FO (Right-Turn)	Amount	24.61						0.00		18.87	18.87	18.87		56.60						0.00	56.60	3.5%
FO3#	Mengo Hill - Clock Tower - Mukwano Rd	Length (km)	0.50						0.00						0.00				0.25	0.25	0.50	0.50	
	FO	Amount	15.35						0.00						0.00				3.84	3.84	7.68	7.68	0.5%
FO4	Makerere Rbt FO	Length (km)							0.00						0.00						0.00	0.00	
	(Yusufu Lule North - Bombo Rds)	Amount	44.00						0.00						0.00						0.00	0.00	0.0%
FO5	Kibuye Rbt FO	Length (km)							0.00						0.00						0.00	0.00	
	(Katwe/Queen's Way - Masaka Rds)	Amount	44.00						0.00						0.00						0.00	0.00	0.0%
FO6	Other Flyovers	Length (km)							0.00						0.00						0.00	0.00	
	(Mulago Rbt FO, Wandegeya Jct FO)	Amount	44.00						0.00						0.00						0.00	0.00	0.0%
	Total	**Length (km)**	**4.50**				**0.00**	**0.00**	**0.00**	**0.00**	**1.33**	**1.33**	**1.33**	**0.00**	**4.00**	**0.00**	**0.00**	**0.00**	**0.25**	**0.25**	**0.50**	**4.50**	
		Amount					**0.00**	**0.00**	**0.00**	**0.00**	**43.80**	**43.80**	**43.80**	**0.00**	**131.40**	**0.00**	**0.00**	**0.00**	**3.84**	**3.84**	**7.68**	**139.08**	**8.6%**
B. Investment Plan for Dual Carriageway Projects																							
R1*	Entebbe Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R2*	Masaka Road	Length (km)	3.00						0.00						0.00	1.50	1.50				3.00	3.00	
	(Busega - Nabbingo)	Amount	2.79						0.00						0.00	4.19	4.19				8.37	8.37	0.5%
R3*	Mityana Road	Length (km)	2.50						0.00						0.00	1.25	1.25				2.50	2.50	
	(Busega - Bulaga)	Amount	2.79						0.00						0.00	3.49	3.49				6.98	6.98	0.4%
R4*	Hoima Road (Nakulabye Jct - Nabweru)	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R5*	Bombo Road (Kawempe - Kawanda)	Length (km)							0.00						0.00						0.00	0.00	
	(Up to Kawempe under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R6*	Gayaza Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R7*	Lugogo Jct - Northern Bypass	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
	Northern Bypass - Mukono	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R8*	Port Bell Road	Length (km)	1.80						0.00				0.90	0.90	1.80						0.00	1.80	
	(Port Bell Jct - Old Port Bell Rd)	Amount	2.79						0.00				2.51	2.51	5.02						0.00	5.02	0.3%
R9*	Kira Road	Length (km)	5.20						0.00						0.00		2.60	2.60			5.20	5.20	
	(Lugogo Bypass - Northern Bypass)	Amount	2.79						0.00						0.00		7.25	7.25			14.51	14.51	0.9%
R10*	Nsambya Road & Gaba Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
NB1	Northern Bypass	Length (km)	17.00						0.00	5.67	5.67	5.67			17.00						0.00	17.00	
	(Remaining Sections)	Amount	2.79						0.00	15.81	15.81	15.81			47.43						0.00	47.43	2.9%
IR1	Makerere Hill Road (Wandegeya - Nakulabye J	Length (km)	1.70						0.00				0.85	0.85	1.70						0.00	1.70	
	(Other Dual Carriageway constructed under BR	Amount	3.07						0.00				2.61	2.61	5.22						0.00	5.22	0.3%
IR2#	Mukwano Road, includ. Jcts	Length (km)	1.80						0.00		0.60	0.60	0.60		1.80						0.00	1.80	
	(Nsambya Jct - Mukwano Rbt)	Amount	6.35						0.00		3.81	3.81	3.81		11.43						0.00	11.43	0.7%
IR3	Mutesa Rd - Kaweesa Rd - Kabasu Rd	Length (km)	3.20						0.00				1.60	1.60	3.20						0.00	3.20	
	(South IRR, Single Carriageway)	Amount	0.93						0.00				1.49	1.49	2.98						0.00	2.98	0.2%
O1	Ntinda - Northern Bypass Road	Length (km)	4.20						0.00						0.00				2.10	2.10	4.20	4.20	
	(Jinja Jct - NB Rbt)	Amount	2.79						0.00						0.00				5.86	5.86	11.72	11.72	0.7%
	Total	**Length (km)**	**40.40**				0.00	0.00	**0.00**	5.67	6.27	6.27	3.95	3.35	**25.50**	2.75	5.35	2.60	2.10	2.10	**14.90**	**40.40**	
		Amount					**0.00**	**0.00**	**0.00**	**15.81**	**19.62**	**19.62**	**10.42**	**6.61**	**72.08**	**7.67**	**14.93**	**7.25**	**5.86**	**5.86**	**41.57**	**113.65**	**7.1%**
C. Investment Plan for Single Carriageway Upgrading Programs																							
S1	GKMA Roads	Length (km)	458.40				20.00	20.00	40.00	41.84	41.84	41.84	41.84	41.84	209.20	41.84	41.84	41.84	41.84	41.84	209.20	458.40	
		Amount	0.83				**16.60**	**16.60**	**33.20**	**34.73**	**34.73**	**34.73**	**34.73**	**34.73**	**173.64**	**34.73**	**34.73**	**34.73**	**34.73**	**34.73**	**173.64**	**380.47**	**23.6%**

Attachment A6.1.1 With-Project Case Scenario 1: Standard Investment Plan on Planned Projects by 2023 (continued)

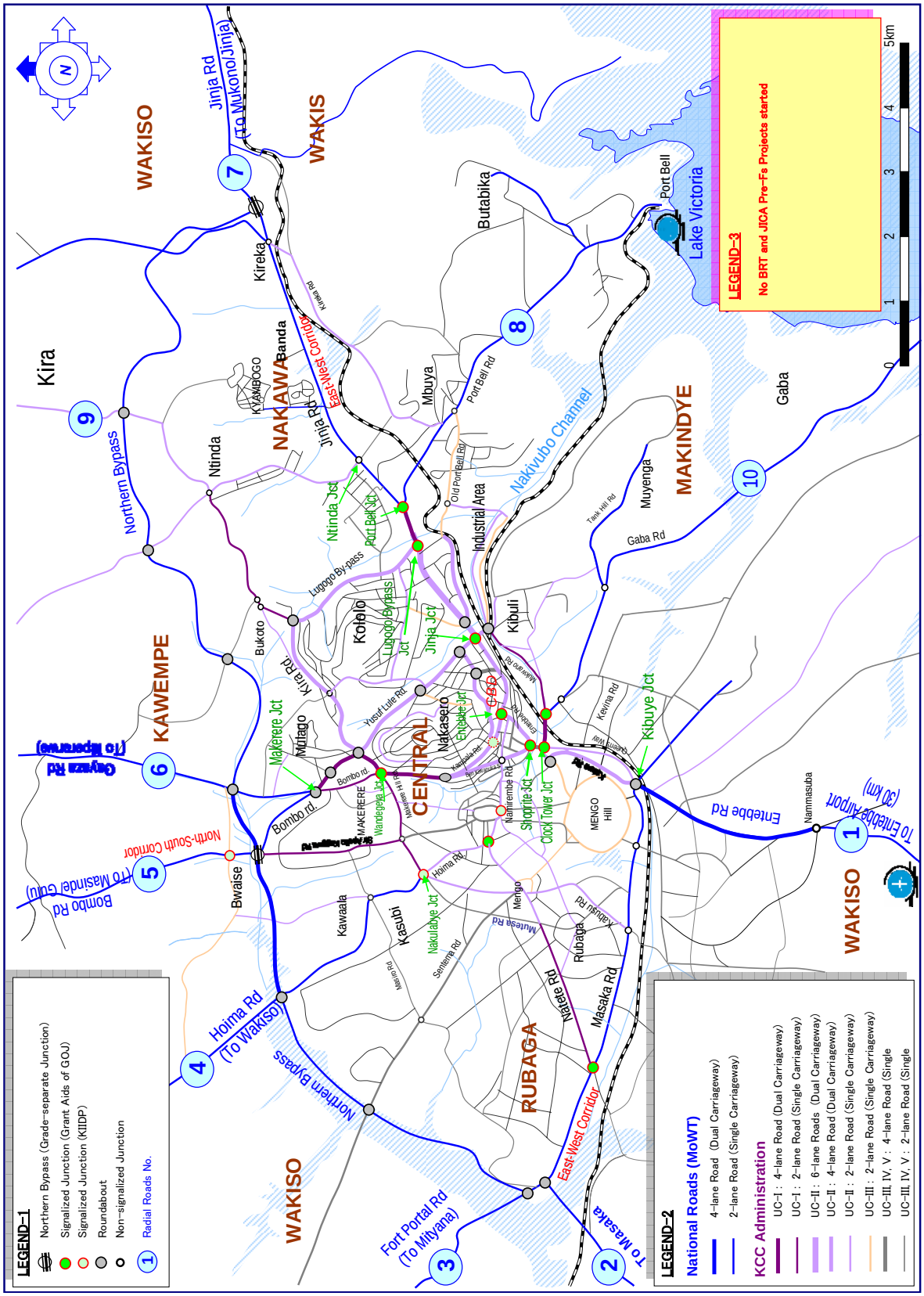
Unit: Mill US$ at 2010 Prices

No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/09	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2013	Remarks (Share)
D. BRT Project and Large Bus Introduction																							
	Purchase of BRT Bus	Quantity	550						0.00		200	50	50	50	350.00	50	50	50		50	200	550	
		Amount	0.20						0.00		40.00	10.00	10.00	10.00	70.00	10.00	10.00	10.00		10.00	40.00	110.00	6.8%
	BRT Feeder System	Quantity	50						0.00	10	10	5	5	5	35.00	5	5	5			15.00	50.00	
	(at BRT Stations)	Amount	0.30						0.00	3.00	3.00	1.50	1.50	1.50	10.50	1.50	1.50	1.50			4.50	15.00	0.9%
A1.P (Pilot)	Bombo Rd – Kampala Rd – Jinja Road (Pilot)	Length (km)	14.00					3.50	3.50	7.00	3.50				10.50						0.00	14.00	
		Amount	8.46					29.61	29.61	59.22	29.61				88.83						0.00	118.44	7.4%
A1	Kireka/Northern Bypass – Mukono Terminal	Length (km)	13.50						0.00					4.50	4.50	4.50	4.50				9.00	13.50	
		Amount	6.77						0.00					30.46	30.46	30.46	30.46				60.91	91.37	5.7%
	Northern Bypass – Kawempe Terminal	Length (km)	1.60						0.00					0.40	0.40	0.80	0.40				1.20	1.60	
		Amount	6.77						0.00					2.71	2.71	5.41	2.71				8.12	10.83	0.7%
B1	Entebbe Rd (Kampala Rd – Kibuye Jct – Kajansi)	Length (km)	13.10						0.00			6.55	6.55		13.10						0.00	13.10	
		Amount	6.77						0.00			44.33	44.33		88.66						0.00	88.66	5.5%
	Entebbe Rd (Kajansi – Airport)	Length (km)	24.00						0.00						0.00						0.00	0.00	
		Amount	5.92						0.00						0.00						0.00	0.00	0.0%
A2	Makerere Rbt – Northern Bypass – Kanyama Terminal (Gayaza Rd)	Length (km)	2.40						0.00						0.00	0.60	1.20	0.60			2.40	2.40	
		Amount	6.77						0.00						0.00	4.06	8.12	4.06			16.24	16.24	1.0%
A3	Kampala Rd - Bombo Rd - Kira Rd (Kampala - Bukoto)	Length (km)	2.50						0.00						0.00	0.63	1.25	0.63			2.50	2.50	
		Amount	5.92						0.00						0.00	3.70	7.40	3.70			14.81	14.81	0.9%
A4	Wandegeya Jct – Nabweru Terminal (Hoima Rd)	Length (km)	7.10						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B2	Kibuye Jct – Busega Rbt	Length (km)	6.50						0.00						0.00			1.63	3.25	1.63	6.50	6.50	
		Amount	6.77						0.00						0.00			11.00	22.00	11.00	43.99	43.99	2.7%
B3	Clock Tower – Nsambya Road – Gaba	Length (km)	9.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B4	Africana Rbt – Old Port Bell Rd – Port Bell	Length (km)	8.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
C	CBD Triangle (Kampala - B.Kiwanuka - Entebbe Rds)	Length (km)	1.20						0.00				0.30	0.60	0.90	0.30					0.30	1.20	
		Amount	6.77						0.00				2.03	4.06	6.09	2.03					2.03	8.12	0.5%
L	**Large Bus Service Introduction (Public Transport Infrastructures)**	Amount	33.00						0.00			6.77	6.77	6.77	20.30			2.83	2.83	2.83	8.50	28.80	1.8%
	Total	**Length (km)**	**103.50**				0.00	3.50	**3.50**	7.00	3.50	6.55	6.85	5.50	**29.40**	6.83	7.35	2.85	3.25	1.63	**21.90**	**54.80**	
		Amount					**0.00**	**29.61**	**29.61**	**62.22**	**72.61**	**62.60**	**64.63**	**55.49**	**317.55**	**57.16**	**60.19**	**33.09**	**24.83**	**23.83**	**199.10**	**546.26**	**32.1%**
E. Safety Improvement																							
E1. Junction Improvement Projects (Flyovbers, Signalization & Traffic Safety)																							
J.1	4 Jcts under KIIDP	No.	4				2	2	4						0						0	4	
	(Pioneer Mall, Bwaise, Nakulabye, Old Tho	**Amount**	1.00				2.00	2.00	4.00						0.00						0.00	4.00	0.2%
J.2#	- Shoprite/ Clock Tower Jcts	No.	1						0		0.3	0.3	0.3		1						0	1	
		Amount	8.12						0.00		2.71	2.71	2.71		8.12						0.00	8.12	0.5%
J.3	Other Jcts	No.	25				1	1	2	2	2	2	2	2	12	2	2	2	2	2	12	25	
		Amount	1.00				1.00	1.00	2.00	2.30	2.30	2.30	2.30	2.30	11.50	2.30	2.30	2.30	2.30	2.30	11.50	25.00	1.6%
	Sub-Total	**No.**	30				3	3	6	2	3	3	3	2	13	2	2	2	2	2	12	30	
		Amount					3.00	3.00	6.00	2.30	5.01	5.01	5.01	2.30	19.62	2.30	2.30	2.30	2.30	2.30	11.50	37.12	2.3%
E2. Railway Crossings																							
RC1	Railway crossings improvement	No.	27				3	3	6	2	2	2	2	2	10	2	2	2	2	3	11	27	
		Amount	0.47				1.41	1.41	2.82	0.94	0.94	0.94	0.94	0.94	4.70	0.94	0.94	0.94	0.94	1.41	5.17	12.69	0.8%
E3. Pedestrian Pavements and Crossings																							
P.1	Sidewalk pavements, guardrails and	km	1,056				58	58	116	85	85	85	85	85	425	103	103	103	103	103	515	1,056	
	pedestrian bridges, etc.	**Amount**	0.03				1.74	1.74	3.48	2.55	2.55	2.55	2.55	2.55	12.75	3.09	3.09	3.09	3.09	3.09	15.45	31.68	2.0%
	Total of E (Safety Improvement)	**Amount**					**6.15**	**6.15**	**12.30**	**5.79**	**8.50**	**8.50**	**8.50**	**5.79**	**37.07**	**6.33**	**6.33**	**6.33**	**6.33**	**6.80**	**32.12**	**81.49**	**5.1%**
F. Investment Plan for Expressway Project																							
EW1	Kampala - Entebbe	Length (km)	35.00						0.00						0.00	7.00	7.00	7.00	7.00	7.00	35.00	35.00	
	(Northern Bypass - Entebbe Airport)	**Amount**	10.00						**0.00**						**0.00**	**70.00**	**70.00**	**70.00**	**70.00**	**70.00**	**350.00**	**350.00**	**21.7%**
	Grand Total	**Amount**					22.75	52.36	**75.11**	118.55	179.25	169.24	162.07	102.62	**731.73**	175.89	186.17	151.40	145.58	145.06	**804.11**	**1,610.94**	**100.0%**

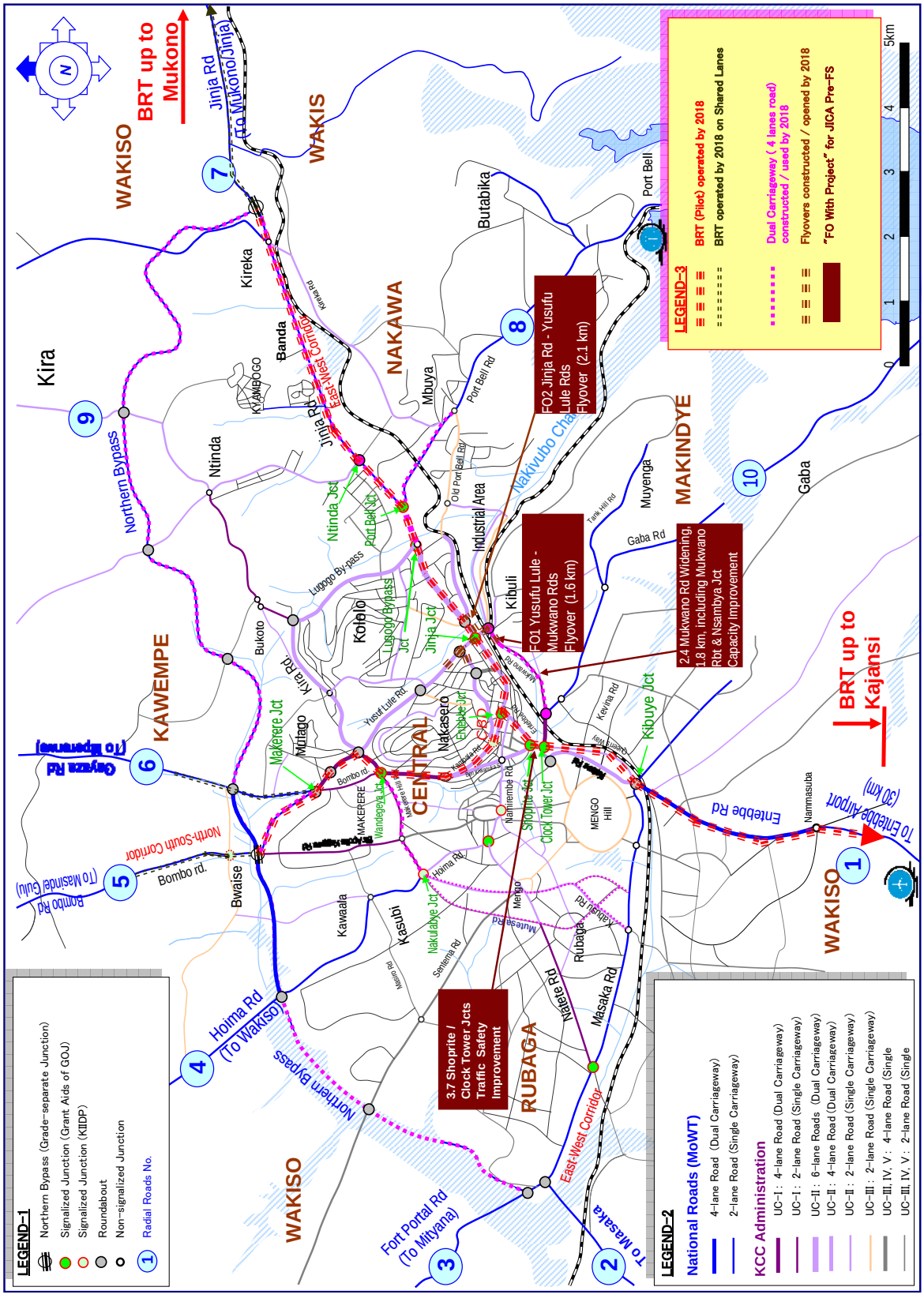
Notes : 1. Financial Year from July to June
2. * Radial Road Number
3. BRT Road Cost included the road widening from the 2 lanes to dual carriageways (6-lanes) or construction of the city center roads from 4 lanes to 6 lanes and BRT stations which were originally estimated under the dual carriageway projects under NTMP/GKMA.
4. # Pre-FS Projects of the Study
5. BRT Bus Purchase might be by private sector participation.
6. Investment Cost in NTMP/GKMA, May 2009 — Amount (Mill US$): 72.63 | 76.49 | 181.98 | 84.01 | 86.89 | 94.39 | 120.14 | 123.48 | 508.91 | 135.32 | 136.40 | 148.23 | 133.49 | 136.14 | 689.58 | 1,380.47
7. Difference to the NTMP/GKMA and an increase is mostly mostly by the investment on the Expressway from Kampala to Entebbe International Air port, flyovers/Viaducts in Kampala. And BRT — Amount (Mill US$): -49.88 | -24.13 | -106.87 | 34.54 | 92.36 | 74.85 | 41.93 | -20.86 | 222.82 | 40.57 | 49.77 | 3.17 | 12.09 | 8.92 | 114.53 | 230.47 | 16.7%



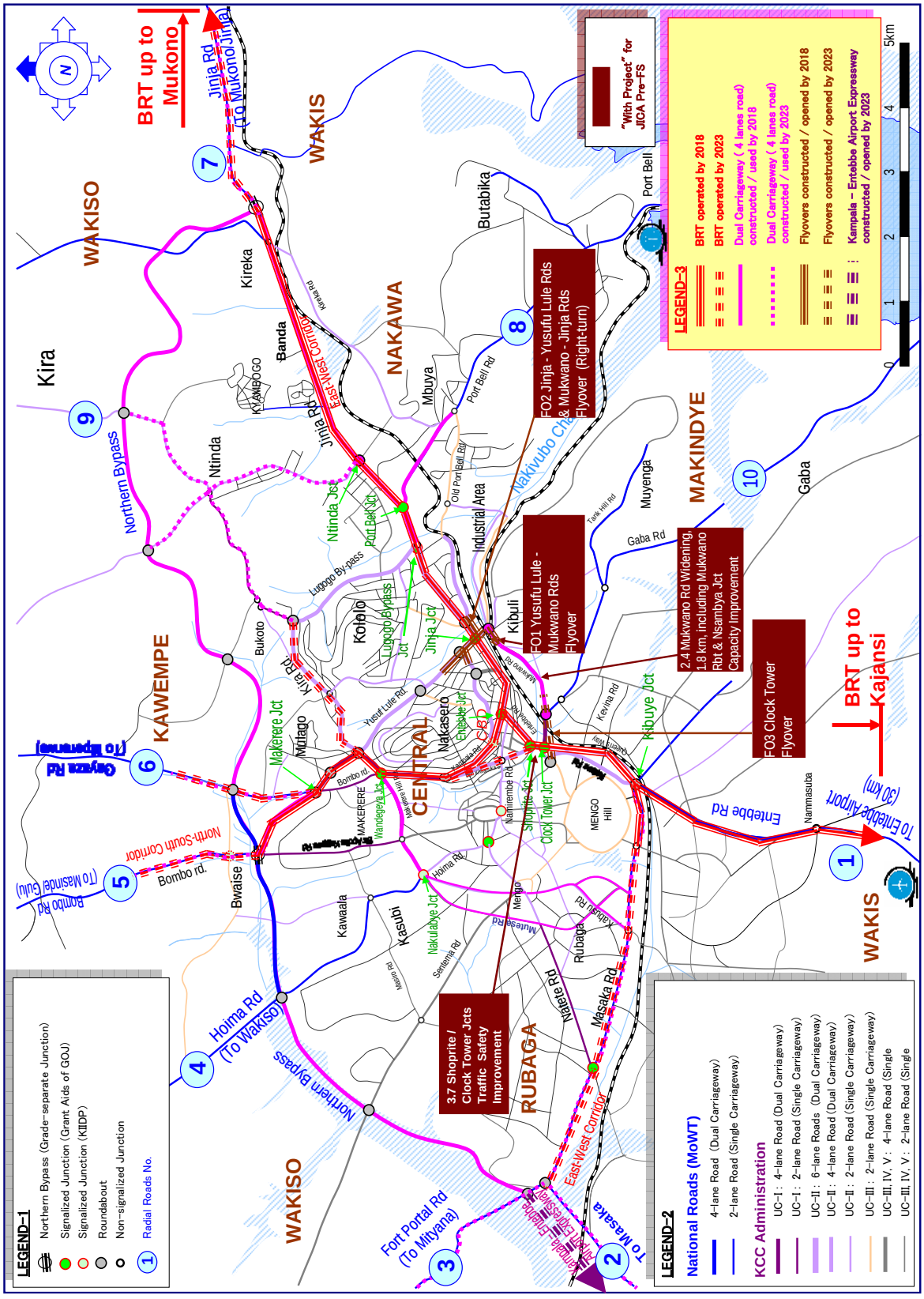
Attachment A6.1.2 Road Width by Road Class and Administration (2010), Base



Attachment A6.1.3 Road and BRT Development in Short Term by 2013 (With-Project Case Scenario 1)



Attachment A6.1.4 Road and BRT Development in Short Term by 2018 (With-Project Case Scenario 1)



Attachment A6.1.5 Road and BRT Development in Short Term by 2023 (With-Project Case: Scenario 1)

Attachment A6.2.1 With-Project Case Scenario 2: Aggressive Investment on Planned Projects by 2023

Unit: Mill US$ at 2010 Prices

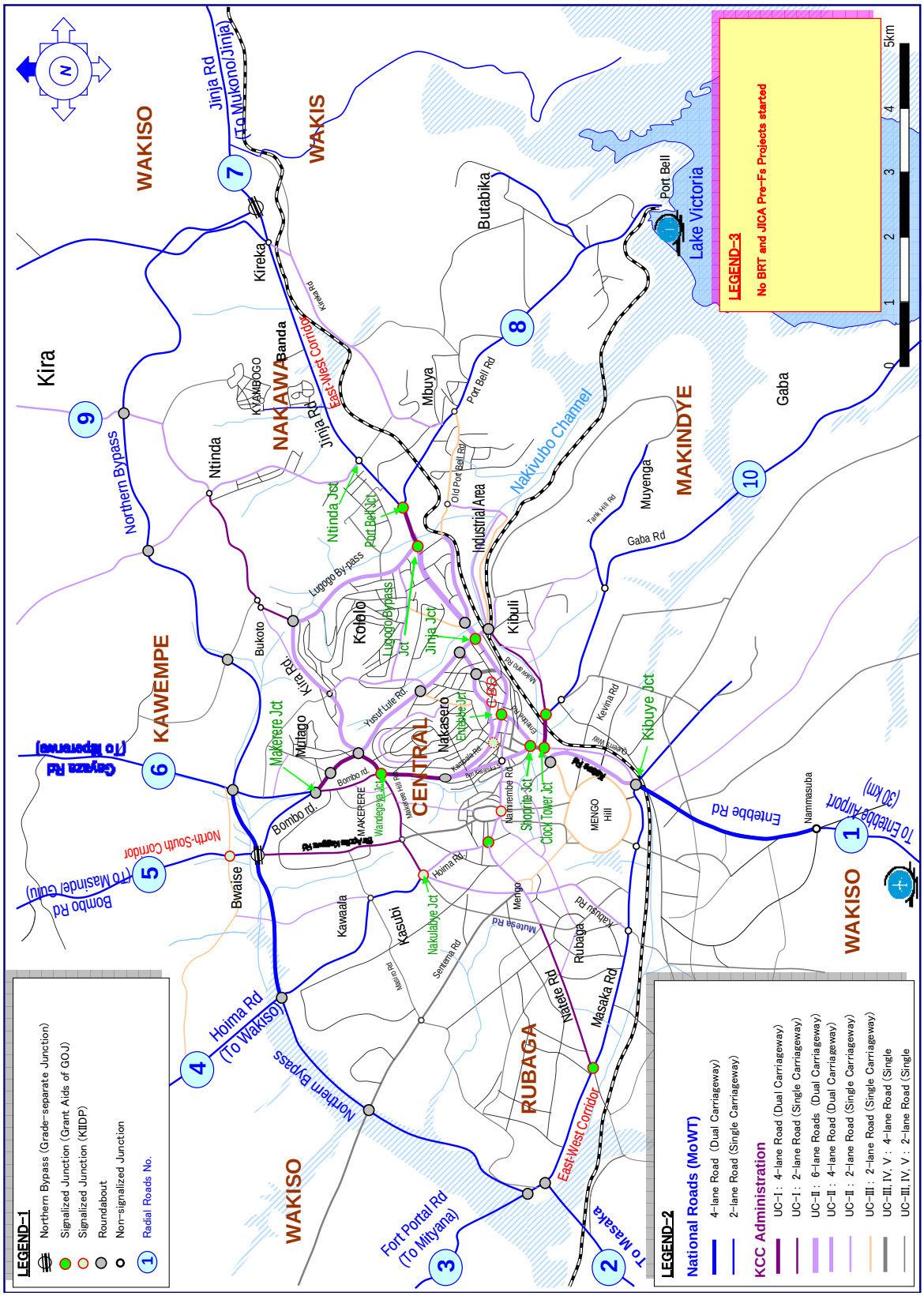
No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/10	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2023	Remarks (Share)
A. Investment Plan for Viaducts/Flyover Projects																							
FO1#	Yusufu Lule/Nile Ave - Mukwano Rd FO	Length (km)	1.70						0.00		0.57	0.57	0.57		1.70						0.00	1.70	
	(over Jinja Jct)	Amount	44.00						0.00		24.93	24.93	24.93		74.80						0.00	74.80	3.9%
FO2#	Jinja/Old Port Bell - Yusufu Lule Rds/Nile	Length (km)	2.30						0.00		0.77	0.77	0.77		2.30						0.00	2.30	
	Ave FO (Right-Turn)	Amount	24.61						0.00		18.87	18.87	18.87		56.60						0.00	56.60	3.0%
FO3#	Mengo Hill - Clock Tower - Mukwano Rd	Length (km)	0.50						0.00						0.00				0.25	0.25	0.50	0.50	
	FO	Amount	15.35						0.00						0.00				3.84	3.84	7.68	7.68	0.4%
FO4	Makerere Rbt FO	Length (km)	0.50						0.00						0.00	0.25	0.25				0.50	0.50	
	(Yusufu Lule North - Bombo Rds)	Amount	15.35						0.00						0.00	3.84	3.84				7.68	7.68	0.4%
FO5	Kibuye Rbt FO	Length (km)	0.50						0.00						0.00			0.25	0.25		0.50	0.50	
	(Katwe/Queen's Way - Masaka Rds)	Amount	15.35						0.00						0.00			3.84	3.84		7.68	7.68	0.4%
FO6	Other Flyovers	Length (km)	1.00						0.00						0.00				0.50	0.50	1.00	1.00	
	(Mulago Rbt FO, Wandegeya Jct FO)	Amount	0.50						0.00						0.00				0.25	0.25	0.50	0.50	0.0%
	Total	**Length (km)**	**6.50**				**0.00**	**0.00**	**0.00**	**0.00**	**1.33**	**1.33**	**1.33**	**0.00**	**4.00**	**0.25**	**0.25**	**0.25**	**1.00**	**0.75**	**2.50**	**6.50**	
		Amount					**0.00**	**0.00**	**0.00**	**0.00**	**43.80**	**43.80**	**43.80**	**0.00**	**131.40**	**3.84**	**3.84**	**3.84**	**7.93**	**4.09**	**23.53**	**154.93**	**8.2%**
B. Investment Plan for Dual Carriageway Projects																							
R1*	Entebbe Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R2*	Masaka Road	Length (km)	3.00						0.00						0.00	1.50	1.50				3.00	3.00	
	(Busega - Nabbingo)	Amount	2.79						0.00						0.00	4.19	4.19				8.37	8.37	0.4%
R3*	Mityana Road	Length (km)	2.50						0.00						0.00	1.25	1.25				2.50	2.50	
	(Busega - Bulaga)	Amount	2.79						0.00						0.00	3.49	3.49				6.98	6.98	0.4%
R4*	Hoima Road (Nakulabye Jct - Nabweru)	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R5*	Bombo Road (Kawempe - Kawanda)	Length (km)	4.80						0.00						0.00				2.40	2.40	4.80	4.80	
	(Up to Kawempe under BRT)	Amount	2.79						0.00						0.00				6.70	6.70	13.39	13.39	0.7%
R6*	Gayaza Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R7*	Lugogo Jct - Northern Bypass	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
	Northern Bypass - Mukono	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R8*	Port Bell Road	Length (km)	1.80						0.00				0.90	0.90	1.80						0.00	1.80	
	(Port Bell Jct - Old Port Bell Rd)	Amount	2.79						0.00				2.51	2.51	5.02						0.00	5.02	0.3%
R9*	Kira Road	Length (km)	5.20						0.00						0.00		2.60	2.60			5.20	5.20	
	(Lugogo Bypass - Northern Bypass)	Amount	2.79						0.00						0.00		7.25	7.25			14.51	14.51	0.8%
R10*	Nsambya Road & Gaba Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
NB1	Northern Bypass	Length (km)	17.00						0.00	5.67	5.67	5.67			17.00						0.00	17.00	
	(Remaining Sections)	Amount	2.79						0.00	15.81	15.81	15.81			47.43						0.00	47.43	2.5%
IR1	Makerere Hill Road (Wandegeya - Nakulabye Jc	Length (km)	1.70						0.00				0.85	0.85	1.70						0.00	1.70	
	(Other Dual Carriageway constructed under BRT	Amount	3.07						0.00				2.61	2.61	5.22						0.00	5.22	0.3%
IR2#	Mukwano Road, includ. Jcts	Length (km)	1.80						0.00		0.60	0.60	0.60		1.80						0.00	1.80	
	(Nsambya Jct - Mukwano Rbt)	Amount	6.35						0.00		3.81	3.81	3.81		11.43						0.00	11.43	0.6%
IR3	Mutesa Rd - Kaweesa Rd - Kabasu Rd	Length (km)	3.20						0.00				1.60	1.60	3.20						0.00	3.20	
	(South IRR, Single Carriageway)	Amount	0.93						0.00				1.49	1.49	2.98						0.00	2.98	0.2%
O1	Ntinda - Northern Bypass Road	Length (km)	4.20						0.00						0.00				2.10	2.10	4.20	4.20	
	(Jinja Jct - NB Rbt)	Amount	2.79						0.00						0.00				5.86	5.86	11.72	11.72	0.6%
	Total	**Length (km)**	**45.20**				0.00	0.00	**0.00**	5.67	6.27	6.27	3.95	3.35	**25.50**	2.75	5.35	2.60	4.50	4.50	**19.70**	**45.20**	
		Amount					**0.00**	**0.00**	**0.00**	**15.81**	**19.62**	**19.62**	**10.42**	**6.61**	**72.08**	**7.67**	**14.93**	**7.25**	**12.56**	**12.56**	**54.96**	**127.04**	**6.7%**
C. Investment Plan for Single Carriageway Upgrading Programs																							
S1	GKMA Roads	Length (km)	573.00				36.50	36.50	73.00	33.33	33.33	33.33	33.33	33.33	166.67	66.67	66.67	66.67	66.67	66.67	333.33	573.00	
		Amount	0.83				**30.30**	**30.30**	**60.59**	**27.67**	**27.67**	**27.67**	**27.67**	**27.67**	**138.33**	**55.33**	**55.33**	**55.33**	**55.33**	**55.33**	**276.67**	**475.59**	**25.0%**

Attachment A6.2.1 With-Project Case Scenario 2: Aggressive Investment on Planned Projects by 2023 (continued)

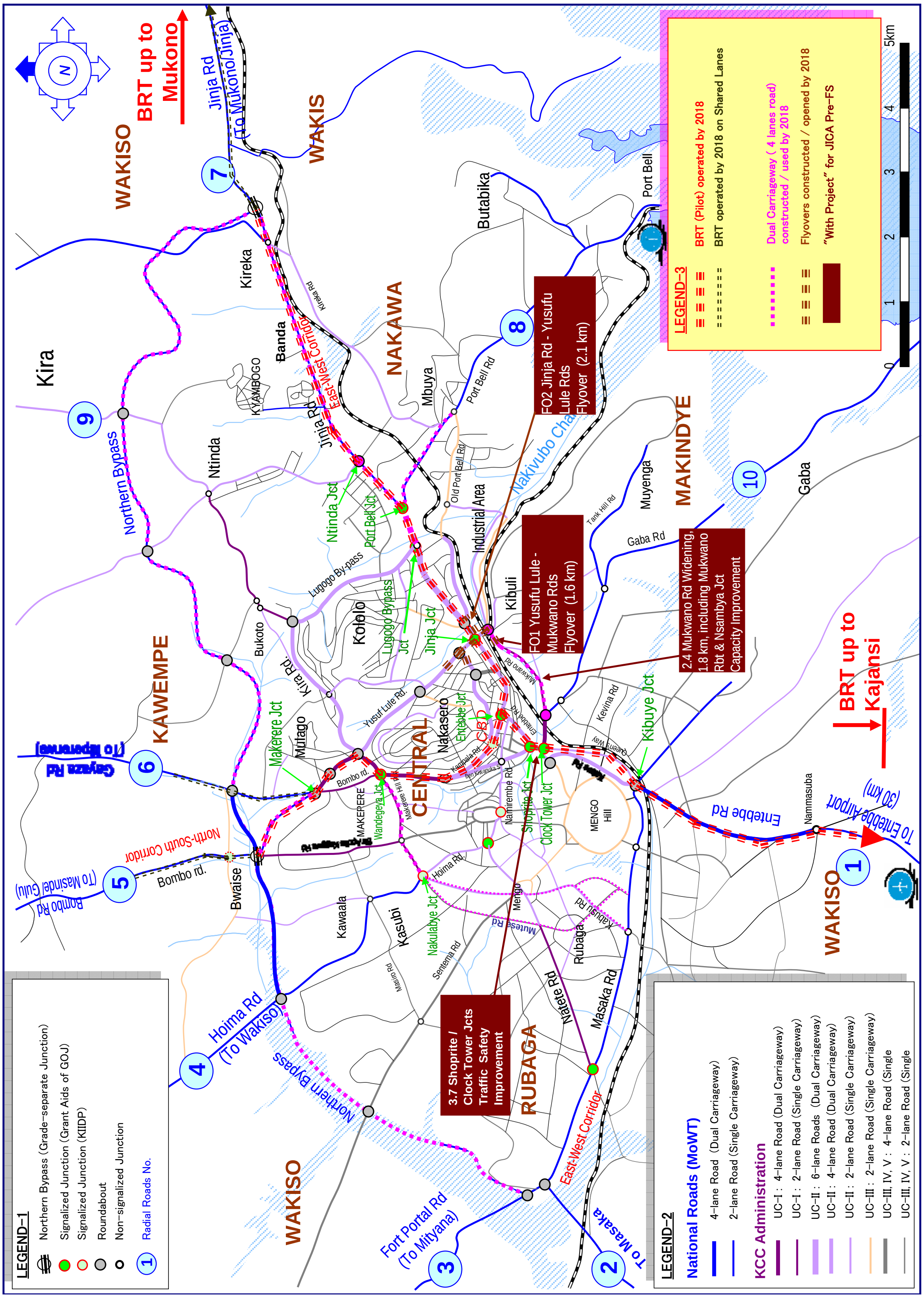
Unit: Mill US$ at 2010 Prices

No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/09	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2013	Remarks (Share)
D. BRT Project																							
	Purchase of BRT Bus	Quantity	650						0.00		200	50	50	50	350.00	50	50	50		150	300	650	
		Amount	0.20						0.00		40.00	10.00	10.00	10.00	70.00	10.00	10.00	10.00		30.00	60.00	130.00	6.8%
	BRT Feeder System	Quantity	60						0.00	10	10	5	5	5	35.00	5	5	5	5	5	25.00	60.00	
	(at BRT Stations)	Amount	0.30						0.00	3.00	3.00	1.50	1.50	1.50	10.50	1.50	1.50	1.50	1.50	1.50	7.50	18.00	0.9%
A1.P (Pilot)	Bombo Rd – Kampala Rd – Jinja Road (Pilot)	Length (km)	14.00					3.50	3.50	7.00	3.50				10.50						0.00	14.00	
		Amount	8.46					29.61	29.61	59.22	29.61				88.83						0.00	118.44	6.2%
A1	Kireka/Northern Bypass – Mukono Terminal	Length (km)	13.50						0.00					3.38	3.38	6.75	3.38				10.13	13.50	
		Amount	6.77						0.00					22.84	22.84	45.68	22.84				68.53	91.37	4.8%
	Northern Bypass – Kawempe Terminal	Length (km)	1.60						0.00					0.40	0.40	0.80	0.40				1.20	1.60	
		Amount	6.77						0.00					2.71	2.71	5.41	2.71				8.12	10.83	0.6%
B1	Entebbe Rd (Kampala Rd – Kibuye Jct – Kajansi)	Length (km)	13.10						0.00			6.55	6.55		13.10						0.00	13.10	
		Amount	6.77						0.00			44.33	44.33		88.66						0.00	88.66	4.7%
	Entebbe Rd (Kajansi – Airport)	Length (km)	24.00						0.00						0.00			6.00	12.00	6.00	24.00	24.00	
		Amount	5.92						0.00						0.00			35.53	71.06	35.53	142.13	142.13	7.5%
A2	Makerere Rbt – Northern Bypass – Kanyama Terminal (Gayaza Rd)	Length (km)	2.40						0.00						0.00	0.60	1.20	0.60			2.40	2.40	
		Amount	6.77						0.00						0.00	4.06	8.12	4.06			16.24	16.24	0.9%
A3	Kampala Rd - Bombo Rd - Kira Rd (Kampala - Bukoto)	Length (km)	2.50						0.00						0.00	0.63	1.25	0.63			2.50	2.50	
		Amount	5.92						0.00						0.00	3.70	7.40	3.70			14.81	14.81	0.8%
A4	Wandegeya Jct – Nabweru Terminal (Hoima Rd)	Length (km)	7.10						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B2	Kibuye Jct – Busega Rbt	Length (km)	6.50						0.00						0.00			1.63	3.25	1.63	6.50	6.50	
		Amount	6.77						0.00						0.00			11.00	22.00	11.00	43.99	43.99	2.3%
B3	Clock Tower – Nsambya Road – Gaba	Length (km)	9.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B4	Africana Rbt – Old Port Bell Rd – Port Bell	Length (km)	8.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
C	CBD Triangle (Kampala - B.Kiwanuka - Entebbe Rds)	Length (km)	1.20						0.00				0.30	0.60	0.90	0.30					0.30	1.20	
		Amount	6.77						0.00				2.03	4.06	6.09	2.03					2.03	8.12	0.4%
L	**Large Bus Service Introduction (Public Transport Infrastructures)**	Amount	33.00						0.00			6.77	6.77	6.77	20.30			2.83	2.83	2.83	8.50	28.80	1.5%
	Total	**Length (km)**	**103.50**				0.00	3.50	**3.50**	7.00	3.50	6.55	6.85	4.38	**28.28**	9.08	6.23	8.85	15.25	7.63	**47.03**	**78.80**	
		Amount					**0.00**	**29.61**	**29.61**	**62.22**	**72.61**	**62.60**	**64.63**	**47.88**	**309.93**	**72.39**	**52.57**	**68.63**	**97.39**	**80.86**	**371.85**	**711.39**	**35.9%**
E. Safety Improvement																							
E1. Junction Improvement Projects (Flyovbers, Signalization & Traffic Safety)																							
J.1	4 Jcts under KIIDP	No.	4				2	2	4						0						0	4	
	(Pioneer Mall, Bwaise, Nakulabye, Old Tha	**Amount**	1.00				2.00	2.00	4.00						0.00						0.00	4.00	0.2%
J.2#	- Shoprite/ Clock Tower Jcts	No.	1						0		0.3	0.3	0.3		1						0	1	
		Amount	8.12						0.00		2.71	2.71	2.71		8.12						0.00	8.12	0.4%
J.3	Other Jcts	No.	25						0	3	3	3	3	3	13	3	3	3	3	3	13	25	
		Amount	1.00						0.00	2.50	2.50	2.50	2.50	2.50	12.50	2.50	2.50	2.50	2.50	2.50	12.50	25.00	1.3%
	Sub-Total	**No.**	30				2	2	4	3	3	3	3	3	14	3	3	3	3	3	13	30	
		Amount					2.00	2.00	4.00	2.50	5.21	5.21	5.21	2.50	20.62	2.50	2.50	2.50	2.50	2.50	12.50	37.12	2.0%
E2. Railway Crossings																							
RC1	Railway crossings improvement	No.	27				3	3	6	2	2	2	2	2	10	2	2	2	2	3	11	27	
		Amount	0.47				1.41	1.41	2.82	0.94	0.94	0.94	0.94	0.94	4.70	0.94	0.94	0.94	0.94	1.41	5.17	12.69	0.7%
E3. Pedestrian Pavements and Crossings																							
P.1	Sidewalk pavements, guardrails and	km	1,056				58	58	116	85	85	85	85	85	425	103	103	103	103	103	515	1,056	
	pedestrian bridges, etc.	**Amount**	0.03				1.74	1.74	3.48	2.55	2.55	2.55	2.55	2.55	12.75	3.09	3.09	3.09	3.09	3.09	15.45	31.68	1.7%
	Total of E (Safety Improvement)	**Amount**					**5.15**	**5.15**	**10.30**	**5.99**	**8.70**	**8.70**	**8.70**	**5.99**	**38.07**	**6.53**	**6.53**	**6.53**	**6.53**	**7.00**	**33.12**	**81.49**	**4.3%**
F. Investment Plan for Expressway Project																							
EW1	Kampala - Entebbe	Length (km)	35.00						0.00				7.00	7.00	14.00	7.00	7.00	7.00			21.00	35.00	
	(Northern Bypass - Entebbe Airport)	**Amount**	10.00						**0.00**				**70.00**	**70.00**	**140.00**	**70.00**	**70.00**	**70.00**			**210.00**	**350.00**	**18.4%**
	Grand Total	**Amount**					35.45	65.06	**100.50**	111.69	172.39	162.38	225.21	158.14	**829.81**	215.76	203.20	211.58	179.74	159.84	**970.12**	**1,900.43**	**100.0%**

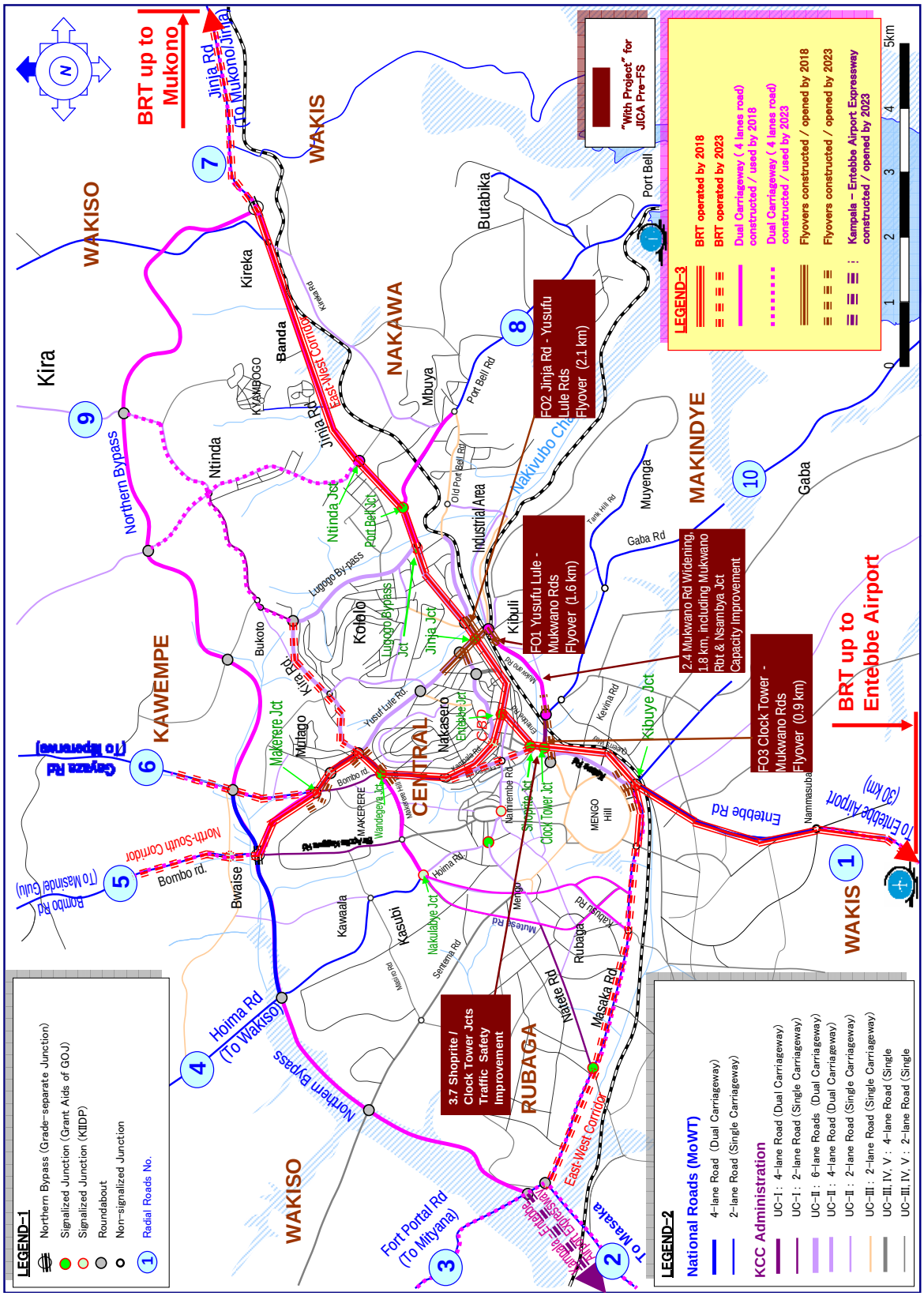
Notes : 1. Financial Year from July to June
2. * Radial Road Number
3. BRT Road Cost included the road widening from the 2 lanes to dual carriageways (6-lanes) or construction of the city center roads from 4 lanes to 6 lanes and BRT stations which were originally estimated under the dual carriageway projects under NTMP/GKMA.
4. **# Pre-FS Projects of the Study**
5. BRT Bus Purchase might be by private sector participation.
6. Investment Cost in NTMP/GKMA, May 2009 — Amount (Mill US$): 72.63 | 76.49 | 181.98 | 84.01 | 86.89 | 94.39 | 120.14 | 123.48 | 508.91 | 135.32 | 136.40 | 148.23 | 133.49 | 136.14 | 689.58 | 1,380.47
7. Difference to the NTMP/GKMA and an increase is mostly mostly by the investment on the Expressway from Kampala to Entebbe International Air port, flyovers/Viaducts in Kampala. And BRT — Amount (Mill US$): -37.19 | -11.44 | -81.48 | 27.68 | 85.50 | 67.99 | 105.07 | 34.66 | 320.90 | 80.44 | 66.80 | 63.35 | 46.25 | 23.70 | 280.54 | 519.96 | 37.7%



Attachment A6.2.2 Road and BRT Development in Short Term by 2013 (With-Project Case Scenario 2)



Attachment A6.2.3 Road and BRT Development in Short Term by 2018 (With-Project Case Scenario 2)



Attachment A6.2.4 Road and BRT Development in Short Term by 2023 (With-Project Case: Scenario 2)

Attachment A6.3.1 Without-Project Case Scenario 1: Standard Investment Plan on Planned Projects by 2023

Unit: Mill US$ at 2010 Prices

No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/10	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2023	Remarks (Share)
A. Investment Plan for Viaducts/Flyover Projects																							
FO1#	Yusufu Lule/Nile Ave - Mukwano Rd FO	Length (km)		(no project implementation)					0.00		0.00	0.00	0.00		0.00						0.00	0.00	
	(over Jinja Jct)	Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
FO2#	Jinja/Old Port Bell - Yusufu Lule Rds/Nile	Length (km)		(no project implementation)					0.00		0.00	0.00	0.00		0.00						0.00	0.00	
	Ave FO (Right-Turn)	Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
FO3#	Mengo Hill - Clock Tower - Mukwano Rd	Length (km)		(no project implementation)					0.00						0.00				0.00	0.00	0.00	0.00	
	FO	Amount							0.00						0.00				0.00	0.00	0.00	0.00	0.0%
FO4	Makerere Rbt FO	Length (km)							0.00						0.00						0.00	0.00	
	(Yusufu Lule North - Bombo Rds)	Amount							0.00						0.00						0.00	0.00	0.0%
FO5	Kibuye Rbt FO	Length (km)							0.00						0.00						0.00	0.00	
	(Katwe/Queen's Way - Masaka Rds)	Amount							0.00						0.00						0.00	0.00	0.0%
FO6	Other Flyovers	Length (km)							0.00						0.00						0.00	0.00	
	(Mulago Rbt FO, Wandegeya Jct FO)	Amount							0.00						0.00						0.00	0.00	0.0%
	Total	**Length (km)**	**0.00**				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		Amount					**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0%**
B. Investment Plan for Dual Carriageway Projects																							
R1*	Entebbe Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R2*	Masaka Road	Length (km)	3.00						0.00						0.00	1.50	1.50				3.00	3.00	
	(Busega - Nabbingo)	Amount	2.79						0.00						0.00	4.19	4.19				8.37	8.37	0.6%
R3*	Mityana Road	Length (km)	2.50						0.00						0.00	1.25	1.25				2.50	2.50	
	(Busega - Bulaga)	Amount	2.79						0.00						0.00	3.49	3.49				6.98	6.98	0.5%
R4*	Hoima Road (Nakulabye Jct - Nabweru)	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R5*	Bombo Road (Kawempe - Kawanda)	Length (km)							0.00						0.00						0.00	0.00	
	(Up to Kawempe under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R6*	Gayaza Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R7*	Lugogo Jct - Northern Bypass	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
	Northern Bypass - Mukono	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R8*	Port Bell Road	Length (km)	1.80						0.00				0.90	0.90	1.80						0.00	1.80	
	(Port Bell Jct - Old Port Bell Rd)	Amount	2.79						0.00				2.51	2.51	5.02						0.00	5.02	0.4%
R9*	Kira Road	Length (km)	5.20						0.00		2.60	2.60			5.20						0.00	5.20	
	(Lugogo Bypass - Northern Bypass)	Amount	2.79						0.00		7.25	7.25			14.51						0.00	14.51	1.0%
R10*	Nsambya Road & Gaba Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
NB1	Northern Bypass	Length (km)	17.00						0.00	5.67	5.67	5.67			17.00						0.00	17.00	
	(Remaining Sections)	Amount	2.79						0.00	15.81	15.81	15.81			47.43						0.00	47.43	3.3%
IR1	Makerere Hill Road (Wandegeya - Nakulabye J	Length (km)	1.70						0.00				0.85	0.85	1.70						0.00	1.70	
	(Other Dual Carriageway constructed under BR	Amount	3.07						0.00				2.61	2.61	5.22						0.00	5.22	0.4%
IR2#	Mukwano Road, includ. Jcts	Length (km)		(no project implementation)					0.00		0	0	0		0.00						0.00	0.00	
	(Nsambya Jct - Mukwano Rbt)	Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
IR3	Mutesa Rd - Kaweesa Rd - Kabasu Rd	Length (km)	3.20						0.00				1.60	1.60	3.20						0.00	3.20	
	(South IRR, Single Carriageway)	Amount	0.93						0.00				1.49	1.49	2.98						0.00	2.98	0.2%
O1	Ntinda - Northern Bypass Road	Length (km)	4.20						0.00				2.10	2.10	4.20						0.00	4.20	
	(Jinja Jct - NB Rbt)	Amount	2.79						0.00				5.86	5.86	11.72						0.00	11.72	0.8%
	Total	**Length (km)**	**38.60**				0.00	0.00	**0.00**	5.67	8.27	8.27	5.45	5.45	**33.10**	2.75	2.75	0.00	0.00	0.00	**5.50**	**38.60**	
		Amount					**0.00**	**0.00**	**0.00**	**15.81**	**23.06**	**23.06**	**12.47**	**12.47**	**86.87**	**7.67**	**7.67**	**0.00**	**0.00**	**0.00**	**15.35**	**102.22**	**7.2%**
C. Investment Plan for Single Carriageway Upgrading Programs																							
S1	GKMA Roads	Length (km)	458.40				20.00	20.00	40.00	41.84	41.84	41.84	41.84	41.84	209.20	41.84	41.84	41.84	41.84	41.84	209.20	458.40	
		Amount	0.83				**16.60**	**16.60**	**33.20**	**34.73**	**34.73**	**34.73**	**34.73**	**34.73**	**173.64**	**34.73**	**34.73**	**34.73**	**34.73**	**34.73**	**173.64**	**380.47**	**26.7%**

Attachment A6.3.1 Without-Project Case Scenario 1: Standard Investment Plan on Planned Projects by 2023 (continued)

Unit: Mill US$ at 2010 Prices

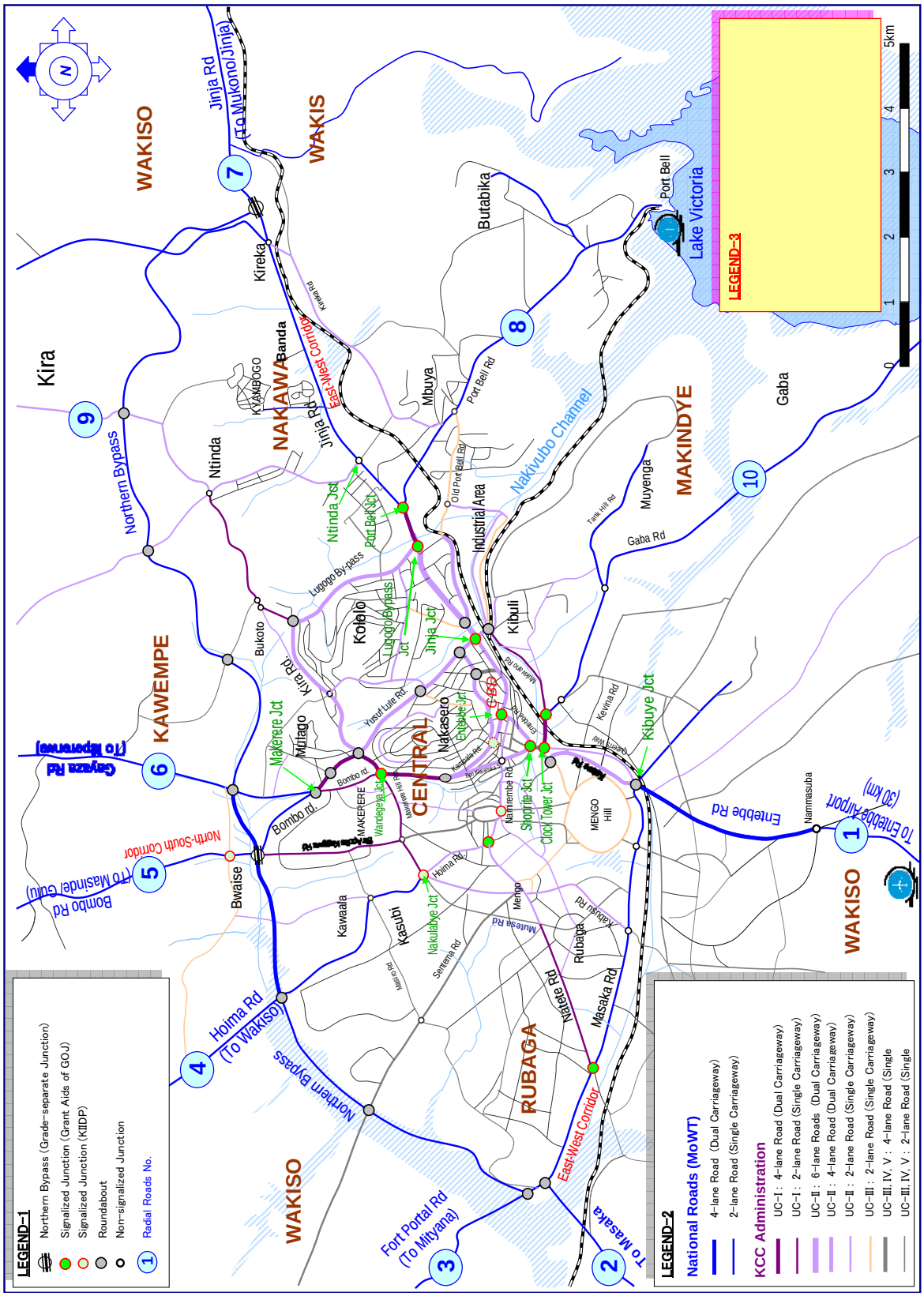
No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/09	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2013	Remarks (Share)
D. BRT Project																							
	Purchase of BRT Bus	Quantity	550						0.00		200	50	50	50	350.00	50	50	50		50	200	550	
		Amount	0.20						0.00		40.00	10.00	10.00	10.00	70.00	10.00	10.00	10.00		10.00	40.00	110.00	7.7%
	BRT Feeder System	Quantity	60						0.00	10	10	5	5	5	35.00	5	5	5			15.00	50.00	
	(at BRT Stations)	Amount	0.30						0.00	3.00	3.00	1.50	1.50	1.50	10.50	1.50	1.50	1.50			4.50	15.00	1.1%
A1.P (Pilot)	Bombo Rd – Kampala Rd – Jinja Road (Pilot)	Length (km)	14.00					3.50	3.50	7.00	3.50				10.50						0.00	14.00	
		Amount	8.46					29.61	29.61	59.22	29.61				88.83						0.00	118.44	8.3%
A1	Kireka/Northern Bypass – Mukono Terminal	Length (km)	13.50						0.00					4.50	4.50	4.50	4.50				9.00	13.50	
		Amount	6.77						0.00					30.46	30.46	30.46	30.46				60.91	91.37	6.4%
	Northern Bypass – Kawempe Terminal	Length (km)	1.60						0.00					0.40	0.40	0.80	0.40				1.20	1.60	
		Amount	6.77						0.00					2.71	2.71	5.41	2.71				8.12	10.83	0.8%
B1	Entebbe Rd (Kampala Rd – Kibuye Jct – Kajansi)	Length (km)	13.10						0.00			6.55	6.55		13.10						0.00	13.10	
		Amount	6.77						0.00			44.33	44.33		88.66						0.00	88.66	6.2%
	Entebbe Rd (Kajansi – Airport)	Length (km)	24.00						0.00						0.00						0.00	0.00	
		Amount	5.92						0.00						0.00						0.00	0.00	0.0%
A2	Makerere Rbt – Northern Bypass – Kanyama Terminal (Gayaza Rd)	Length (km)	2.40						0.00						0.00	0.60	1.20	0.60			2.40	2.40	
		Amount	6.77						0.00						0.00	4.06	8.12	4.06			16.24	16.24	1.1%
A3	Kampala Rd - Bombo Rd - Kira Rd (Kampala - Bukoto)	Length (km)	2.50						0.00						0.00	0.63	1.25	0.63			2.50	2.50	
		Amount	5.92						0.00						0.00	3.70	7.40	3.70			14.81	14.81	1.0%
A4	Wandegeya Jct – Nabweru Terminal (Hoima Rd)	Length (km)	7.10						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B2	Kibuye Jct – Busega Rbt	Length (km)	6.50						0.00						0.00			1.63	3.25	1.63	6.50	6.50	
		Amount	6.77						0.00						0.00			11.00	22.00	11.00	43.99	43.99	3.1%
B3	Clock Tower – Nsambya Road – Gaba	Length (km)	9.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B4	Africana Rbt – Old Port Bell Rd – Port Bell	Length (km)	8.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
C	CBD Triangle (Kampala - B.Kiwanuka - Entebbe Rds)	Length (km)	1.20						0.00				0.30	0.60	0.90	0.30					0.30	1.20	
		Amount	6.77						0.00				2.03	4.06	6.09	2.03					2.03	8.12	0.6%
	Total	**Length (km)**	**103.50**				0.00	3.50	**3.50**	7.00	3.50	6.55	6.85	5.50	**29.40**	6.83	7.35	2.85	3.25	1.63	**21.90**	**54.80**	
		Amount					**0.00**	**29.61**	**29.61**	**62.22**	**72.61**	**55.83**	**57.86**	**48.72**	**297.25**	**57.16**	**60.19**	**30.26**	**22.00**	**21.00**	**190.60**	**517.46**	**36.4%**
E. Safety Improvement																							
E1. Junction Improvement Projects (Flyovbers, Signalization & Traffic Safety)																							
J.1	4 Jcts under KIIDP	No.	4				2	2	4						0						0	4	
	(Pioneer Mall, Bwaise, Nakulabye, Old The	**Amount**	1.00				2.00	2.00	4.00						0.00						0.00	4.00	0.3%
J.2#	- Shoprite/ Clock Tower Jcts	No.		(no project implementation)					0		0	0	0		0						0	0	
		Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
J.3	Other Jcts	No.	25				1	1	2	2	2	2	2	2	12	2	2	2	2	2	12	25	
		Amount	1.00				1.00	1.00	2.00	2.30	2.30	2.30	2.30	2.30	11.50	2.30	2.30	2.30	2.30	2.30	11.50	25.00	1.8%
	Sub-Total	**No.**	29				3	3	6	2	2	2	2	2	12	2	2	2	2	2	12	29	
		Amount					3.00	3.00	6.00	2.30	2.30	2.30	2.30	2.30	11.50	2.30	2.30	2.30	2.30	2.30	11.50	29.00	2.0%
E2. Railway Crossings																							
RC1	Railway crossings improvement	No.	27				3	3	6	2	2	2	2	2	10	2	2	2	2	3	11	27	
		Amount	0.47				1.41	1.41	2.82	0.94	0.94	0.94	0.94	0.94	4.70	0.94	0.94	0.94	0.94	1.41	5.17	12.69	0.9%
E3. Pedestrian Pavements and Crossings																							
P.1	Sidewalk pavements, guardrails and	km	1,056				58	58	116	85	85	85	85	85	425	103	103	103	103	103	515	1,056	
	pedestrian bridges, etc.	**Amount**	0.03				1.74	1.74	3.48	2.55	2.55	2.55	2.55	2.55	12.75	3.09	3.09	3.09	3.09	3.09	15.45	31.68	2.2%
	Total of E (Safety Improvement)	**Amount**					**6.15**	**6.15**	**12.30**	**5.79**	**5.79**	**5.79**	**5.79**	**5.79**	**28.95**	**6.33**	**6.33**	**6.33**	**6.33**	**6.80**	**32.12**	**73.37**	**5.2%**
F. Investment Plan for Expressway Project																							
EW1	Kampala - Entebbe	Length (km)	35.00						0.00						0.00	7.00	7.00	7.00	7.00	7.00	35.00	35.00	
	(Northern Bypass - Entebbe Airport)	**Amount**	10.00						**0.00**						**0.00**	**70.00**	**70.00**	**70.00**	**70.00**	**70.00**	**350.00**	**350.00**	**24.6%**
	Grand Total	**Amount**					22.75	52.36	**75.11**	118.55	136.19	119.41	110.85	101.71	**586.70**	175.89	178.92	141.32	133.05	132.53	**761.71**	**1,423.52**	**100.0%**
	6. Investment Cost in NTMP/GKMA, May 2009	Amount (Mill US$):					72.63	76.49	181.98	84.01	86.89	94.39	120.14	123.48	508.91	135.32	136.40	148.23	133.49	136.14	689.58	1,380.47	
	7. Difference to the NTMP/GKMA and	Amount (Mill US$):					-49.88	-24.13	-106.87	34.54	49.30	25.02	-9.29	-21.77	77.79	40.57	42.52	-6.91	-0.44	-3.61	72.13	43.05	3.1%

Notes : 1. Financial Year from July to June 2. * Radial Road Number 3. BRT Road Cost included the road widening from the 2 lanes to dual carriageways (6-lanes) or construction of the city center roads from 4 lanes to 6 lanes and BRT stations which were originally estimated under the dual carriageway projects under NTMP/GKMA.

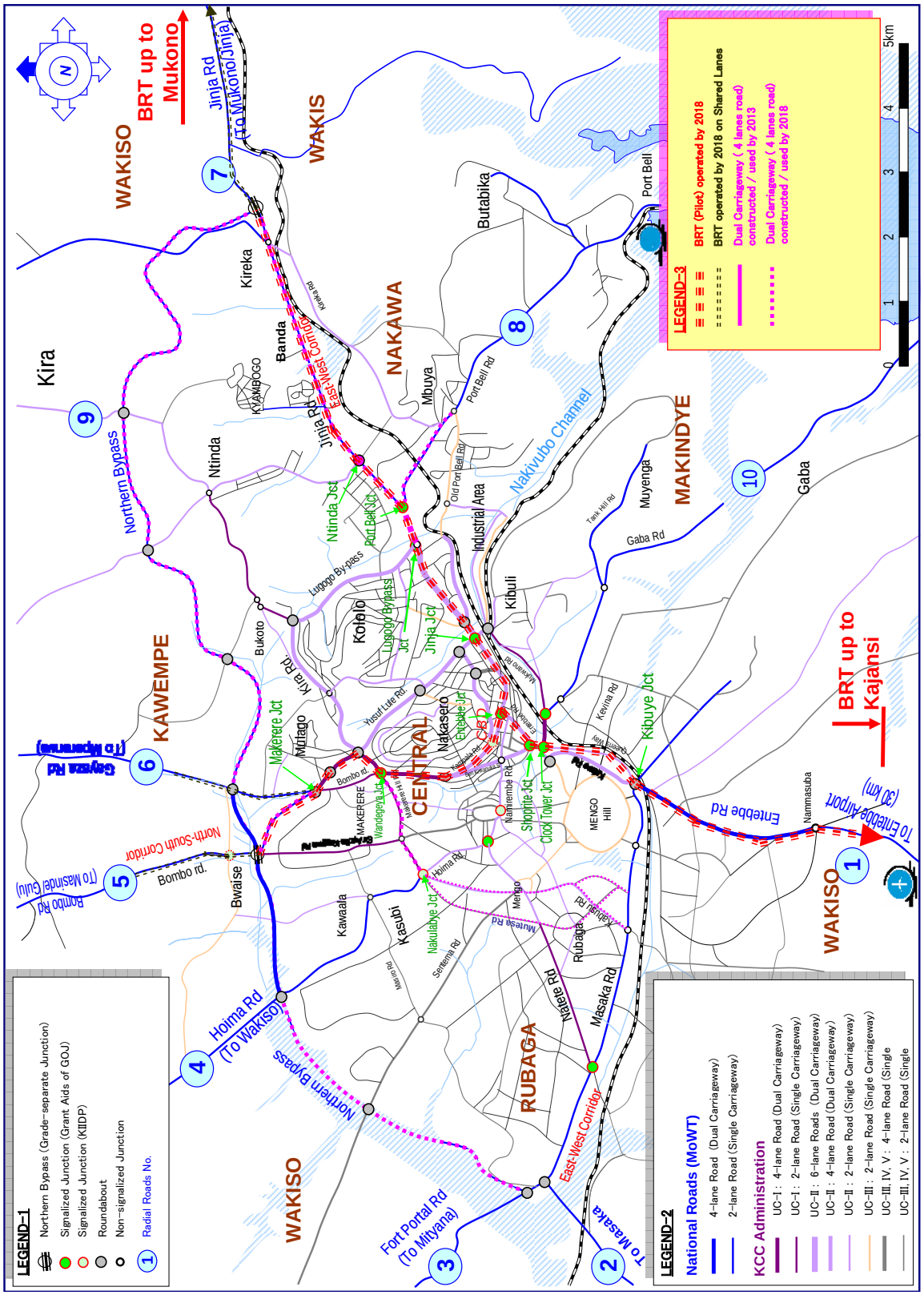
4. # Pre-FS Projects of the Study

5. BRT Bus Purchase might be by private sector participation.

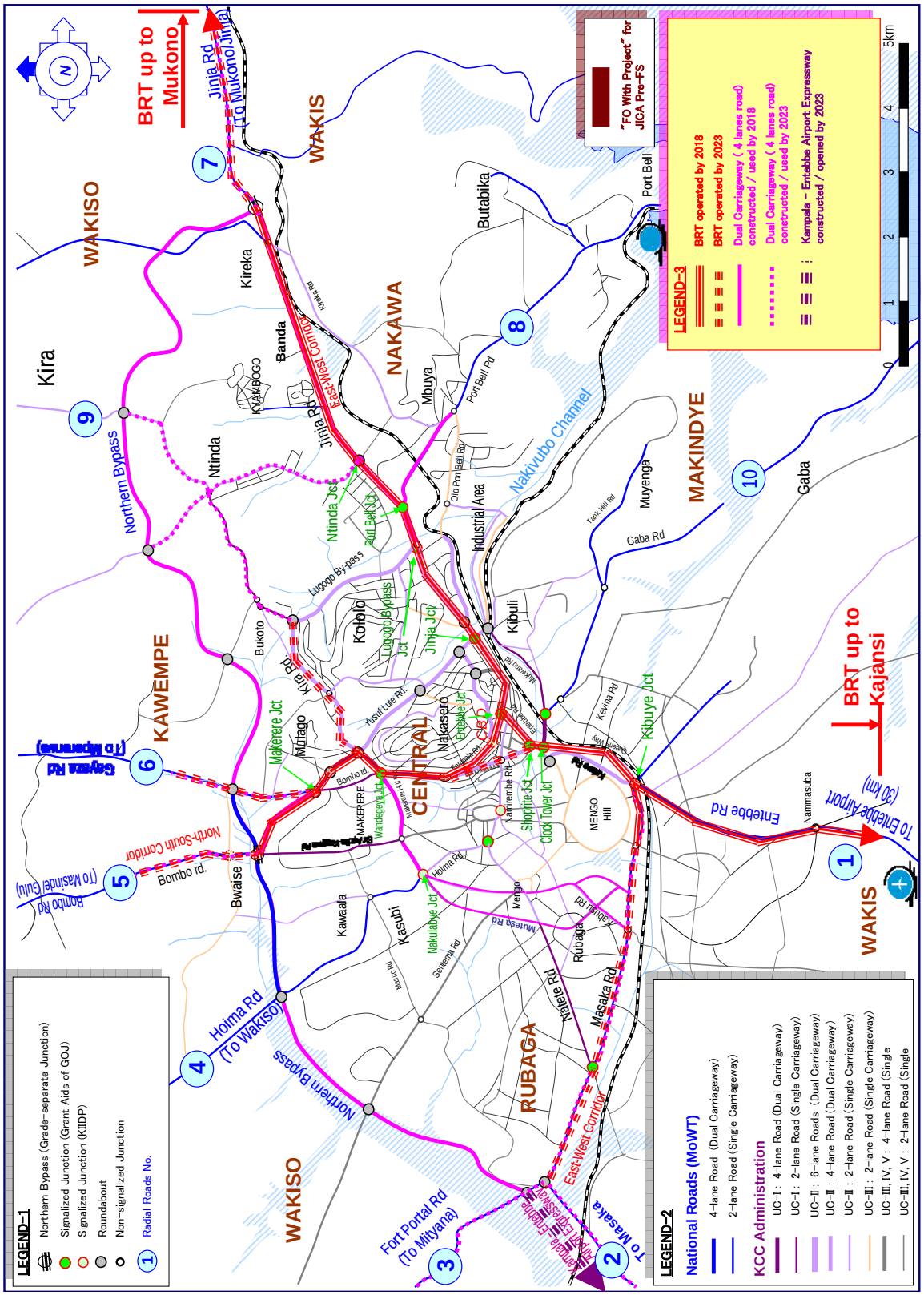
an increase is mostly mostly by the investment on the Expressway from Kampala to Entebbe International Air port, flyovers/Viaducts in Kampala. And BRT



Attachment A6.3.2 Road and BRT Development in Short Term by 2013 (Without-Project Case Scenario 1)



Attachment A6.3.3 Road and BRT Development in Short Term by 2018 (Without-Project Case Scenario 1)



Attachment A6.3.4 Road and BRT Development in Short Term by 2023 (Without-Project Case: Scenario 1)

Attachment A6.4.1 Without-Project Case Scenario 2: Aggressive Investment on Planned Projects by 2023

Unit: Mill US$ at 2010 Prices

No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/10	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2023	Remarks (Share)
A. Investment Plan for Viaducts/Flyover Projects																							
FO1#	Yusufu Lule/Nile Ave - Mukwano Rd FO (over Jinja Jct)	Length (km)		(no project implementation)					0.00		0.00	0.00	0.00		0.00						0.00	0.00	
		Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
FO2#	Jinja/Old Port Bell - Yusufu Lule Rds/Nile Ave FO (Right-Turn)	Length (km)		(no project implementation)					0.00		0.00	0.00	0.00		0.00						0.00	0.00	
		Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
FO3#	Mengo Hill - Clock Tower - Mukwano Rd FO	Length (km)		(no project implementation)					0.00						0.00				0.00	0.00	0.00	0.00	
		Amount							0.00						0.00				0.00	0.00	0.00	0.00	0.0%
FO4	Makerere Rbt FO (Yusufu Lule North - Bombo Rds)	Length (km)		(no project implementation)					0.00						0.00	0.00	0.00				0.00	0.00	
		Amount							0.00						0.00	0.00	0.00				0.00	0.00	0.0%
FO5	Kibuye Rbt FO (Katwe/Queen's Way - Masaka Rds)	Length (km)		(no project implementation)					0.00						0.00			0.00	0.00		0.00	0.00	
		Amount							0.00						0.00			0.00	0.00		0.00	0.00	0.0%
FO6	Other Flyovers (Mulago Rbt FO, Wandegeya Jct FO)	Length (km)		(no project implementation)					0.00						0.00				0.00	0.00	0.00	0.00	
		Amount							0.00						0.00				0.00	0.00	0.00	0.00	0.0%
	Total	**Length (km)**	**0.00**				**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	
		Amount					**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0%**
B. Investment Plan for Dual Carriageway Projects																							
R1*	Entebbe Road (Dual Carriageway constructed under BRT)	Length (km)	0.00						0.00						0.00						0.00	0.00	
		Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R2*	Masaka Road (Busega - Nabbingo)	Length (km)	3.00						0.00						0.00	1.50	1.50				3.00	3.00	
		Amount	2.79						0.00						0.00	4.19	4.19				8.37	8.37	0.5%
R3*	Mityana Road (Busega - Bulaga)	Length (km)	2.50						0.00						0.00	1.25	1.25				2.50	2.50	
		Amount	2.79						0.00						0.00	3.49	3.49				6.98	6.98	0.4%
R4*	Hoima Road (Nakulabye Jct - Nabweru)	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R5*	Bombo Road (Kawempe - Kawanda)	Length (km)	4.80						0.00						0.00				2.40	2.40	4.80	4.80	
	(Up to Kawempe under BRT)	Amount	2.79						0.00						0.00				6.70	6.70	13.39	13.39	0.8%
R6*	Gayaza Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R7*	Lugogo Jct - Northern Bypass	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
	Northern Bypass - Mukono	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
R8*	Port Bell Road (Port Bell Jct - Old Port Bell Rd)	Length (km)	1.80						0.00				0.90	0.90	1.80						0.00	1.80	
		Amount	2.79						0.00				2.51	2.51	5.02						0.00	5.02	0.3%
R9*	Kira Road (Lugogo Bypass - Northern Bypass)	Length (km)	5.20						0.00						0.00		2.60	2.60			5.20	5.20	
		Amount	2.79						0.00						0.00		7.25	7.25			14.51	14.51	0.9%
R10*	Nsambya Road & Gaba Road	Length (km)	0.00						0.00						0.00						0.00	0.00	
	(Dual Carriageway constructed under BRT)	Amount	2.79						0.00						0.00						0.00	0.00	0.0%
NB1	Northern Bypass (Remaining Sections)	Length (km)	17.00						0.00	5.67	5.67	5.67			17.00						0.00	17.00	
		Amount	2.79						0.00	15.81	15.81	15.81			47.43						0.00	47.43	2.8%
IR1	Makerere Hill Road (Wandegeya - Nakulabye J	Length (km)	1.70						0.00				0.85	0.85	1.70						0.00	1.70	
	(Other Dual Carriageway constructed under BR	Amount	3.07						0.00				2.61	2.61	5.22						0.00	5.22	0.3%
IR2#	Mukwano Road, includ. Jcts (Nsambya Jct - Mukwano Rbt)	Length (km)		(no project implementation)					0.00		0.00	0.00	0.00		0.00						0.00	0.00	
		Amount	6.00						0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
IR3	Mutesa Rd - Kaweesa Rd - Kabasu Rd (South IRR, Single Carriageway)	Length (km)	3.20						0.00				1.60	1.60	3.20						0.00	3.20	
		Amount	0.93						0.00				1.49	1.49	2.98						0.00	2.98	0.2%
O1	Ntinda - Northern Bypass Road (Jinja Jct - NB Rbt)	Length (km)	4.20						0.00						0.00				2.10	2.10	4.20	4.20	
		Amount	2.79						0.00						0.00				5.86	5.86	11.72	11.72	0.7%
	Total	**Length (km)**	**43.40**				0.00	0.00	**0.00**	5.67	5.67	5.67	3.35	3.35	**23.70**	2.75	5.35	2.60	4.50	4.50	**19.70**	**43.40**	
		Amount					**0.00**	**0.00**	**0.00**	**15.81**	**15.81**	**15.81**	**6.61**	**6.61**	**60.65**	**7.67**	**14.93**	**7.25**	**12.56**	**12.56**	**54.96**	**115.61**	**6.8%**
C. Investment Plan for Single Carriageway Upgrading Programs																							
S1	GKMA Roads	Length (km)	573.00				36.50	36.50	73.00	33.33	33.33	33.33	33.33	33.33	166.67	66.67	66.67	66.67	66.67	66.67	333.33	573.00	
		Amount	0.83				**30.30**	**30.30**	**60.59**	**27.67**	**27.67**	**27.67**	**27.67**	**27.67**	**138.33**	**55.33**	**55.33**	**55.33**	**55.33**	**55.33**	**276.67**	**475.59**	**28.0%**

Attachment A6.4.1 Without-Project Case Scenario 2: Aggressive Investment on Planned Projects by 2023 (continued)

Unit: Mill US$ at 2010 Prices

No	Road Name	Length / Cost	Total Length / Unit Price	Short Term 2008/09	2009/10	2010/11	2011/12	2012/13	Sub-Total 2008/13	Medium Term 2013/14	2014/15	2015/16	2016/17	2017/18	Sub-Total 2013/18	Long Term 2018/19	2019/20	2020/21	2021/22	2022/23	Sub-Total 2018/23	Total 2008/2013	Remarks (Share)
D. BRT Project																							
	Purchase of BRT Bus	Quantity	650						0.00		200	50	50	50	350.00	50	50	50		150	300	650	
		Amount	0.20						0.00		40.00	10.00	10.00	10.00	70.00	10.00	10.00	10.00		30.00	60.00	130.00	7.7%
	BRT Feeder System	Quantity	60						0.00	10	10	5	5	5	35.00	5	5	5	5	5	25.00	60.00	
	(at BRT Stations)	Amount	0.30						0.00	3.00	3.00	1.50	1.50	1.50	10.50	1.50	1.50	1.50	1.50	1.50	7.50	18.00	1.1%
A1.P (Pilot)	Bombo Rd – Kampala Rd – Jinja Road (Pilot)	Length (km)	14.00					3.50	3.50	7.00	3.50				10.50						0.00	14.00	
		Amount	8.46					29.61	29.61	59.22	29.61				88.83						0.00	118.44	7.0%
A1	Kireka/Northern Bypass – Mukono Terminal	Length (km)	13.50						0.00					3.38	3.38	6.75	3.38				10.13	13.50	
		Amount	6.77						0.00					22.84	22.84	45.68	22.84				68.53	91.37	5.4%
	Northern Bypass – Kawempe Terminal	Length (km)	1.60						0.00					0.40	0.40	0.80	0.40				1.20	1.60	
		Amount	6.77						0.00					2.71	2.71	5.41	2.71				8.12	10.83	0.6%
B1	Entebbe Rd (Kampala Rd – Kibuye Jct – Kajansi)	Length (km)	13.10						0.00			6.55	6.55		13.10						0.00	13.10	
		Amount	6.77						0.00			44.33	44.33		88.66						0.00	88.66	5.2%
	Entebbe Rd (Kajansi – Airport)	Length (km)	24.00						0.00						0.00			6.00	12.00	6.00	24.00	24.00	
		Amount	5.92						0.00						0.00			35.53	71.06	35.53	142.13	142.13	8.4%
A2	Makerere Rbt – Northern Bypass – Kanyama Terminal (Gayaza Rd)	Length (km)	2.40						0.00						0.00	0.60	1.20	0.60			2.40	2.40	
		Amount	6.77						0.00						0.00	4.06	8.12	4.06			16.24	16.24	1.0%
A3	Kampala Rd - Bombo Rd - Kira Rd (Kampala - Bukoto)	Length (km)	2.50						0.00						0.00	0.63	1.25	0.63			2.50	2.50	
		Amount	5.92						0.00						0.00	3.70	7.40	3.70			14.81	14.81	0.9%
A4	Wandegeya Jct – Nabweru Terminal (Hoima Rd)	Length (km)	7.10						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B2	Kibuye Jct – Busega Rbt	Length (km)	6.50						0.00						0.00			1.63	3.25	1.63	6.50	6.50	
		Amount	6.77						0.00						0.00			11.00	22.00	11.00	43.99	43.99	2.6%
B3	Clock Tower – Nsambya Road – Gaba	Length (km)	9.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
B4	Africana Rbt – Old Port Bell Rd – Port Bell	Length (km)	8.30						0.00						0.00						0.00	0.00	
		Amount	6.77						0.00						0.00						0.00	0.00	0.0%
C	CBD Triangle (Kampala - B.Kiwanuka - Entebbe Rds)	Length (km)	1.20						0.00				0.30	0.60	0.90	0.30					0.30	1.20	
		Amount	6.77						0.00				2.03	4.06	6.09	2.03					2.03	8.12	0.5%
	Total	**Length (km)**	**103.50**				0.00	3.50	**3.50**	7.00	3.50	6.55	6.85	4.38	**28.28**	9.08	6.23	8.85	15.25	7.63	**47.03**	**78.80**	
		Amount					**0.00**	**29.61**	**29.61**	**62.22**	**72.61**	**55.83**	**57.86**	**41.11**	**289.63**	**72.39**	**52.57**	**65.79**	**94.56**	**78.03**	**363.35**	**682.59**	**40.2%**
E. Safety Improvement																							
E1. Junction Improvement Projects (Flyovbers, Signalization & Traffic Safety)																							
J.1	4 Jcts under KIIDP	No.	4				2	2	4						0						0	4	
	(Pioneer Mall, Bwaise, Nakulabye, Old The	**Amount**	1.00				2.00	2.00	4.00						0.00						0.00	4.00	0.2%
J.2#	- Shoprite/ Clock Tower Jcts	No.		(no project implementation)					0		0.0	0.0	0.0		0						0	0	
		Amount							0.00		0.00	0.00	0.00		0.00						0.00	0.00	0.0%
J.3	Other Jcts	No.	25				1	1	2	2	2	2	2	2	12	2	2	2	2	2	12	25	
		Amount	1.00				1.00	1.00	2.00	2.30	2.30	2.30	2.30	2.30	11.50	2.30	2.30	2.30	2.30	2.30	11.50	25.00	1.5%
	Sub-Total	**No.**	29				3	3	6	2	2	2	2	2	12	2	2	2	2	2	12	29	
		Amount					3.00	3.00	6.00	2.30	2.30	2.30	2.30	2.30	11.50	2.30	2.30	2.30	2.30	2.30	11.50	29.00	1.7%
E2. Railway Crossings																							
RC1	Railway crossings improvement	No.	27				3	3	6	2	2	2	2	2	10	2	2	2	2	3	11	27	
		Amount	0.47				1.41	1.41	2.82	0.94	0.94	0.94	0.94	0.94	4.70	0.94	0.94	0.94	0.94	1.41	5.17	12.69	0.7%
E3. Pedestrian Pavements and Crossings																							
P.1	Sidewalk pavements, guardrails and	km	1,056				58	58	116	85	85	85	85	85	425	103	103	103	103	103	515	1,056	
	pedestrian bridges, etc.	**Amount**	0.03				1.74	1.74	3.48	2.55	2.55	2.55	2.55	2.55	12.75	3.09	3.09	3.09	3.09	3.09	15.45	31.68	1.9%
	Total of E (Safety Improvement)	**Amount**					**6.15**	**6.15**	**12.30**	**5.79**	**5.79**	**5.79**	**5.79**	**5.79**	**28.95**	**6.33**	**6.33**	**6.33**	**6.33**	**6.80**	**32.12**	**73.37**	**4.3%**
F. Investment Plan for Expressway Project																							
EW1	Kampala - Entebbe	Length (km)	35.00						0.00				7.00	7.00	14.00	7.00	7.00	7.00			21.00	35.00	
	(Northern Bypass - Entebbe Airport)	**Amount**	10.00						**0.00**				**70.00**	**70.00**	**140.00**	**70.00**	**70.00**	**70.00**			**210.00**	**350.00**	**20.6%**
	Grand Total	**Amount**					36.45	66.06	**102.50**	111.49	121.88	105.10	167.93	151.18	**657.56**	211.73	199.16	204.71	168.78	152.72	**937.10**	**1,697.16**	**100.0%**

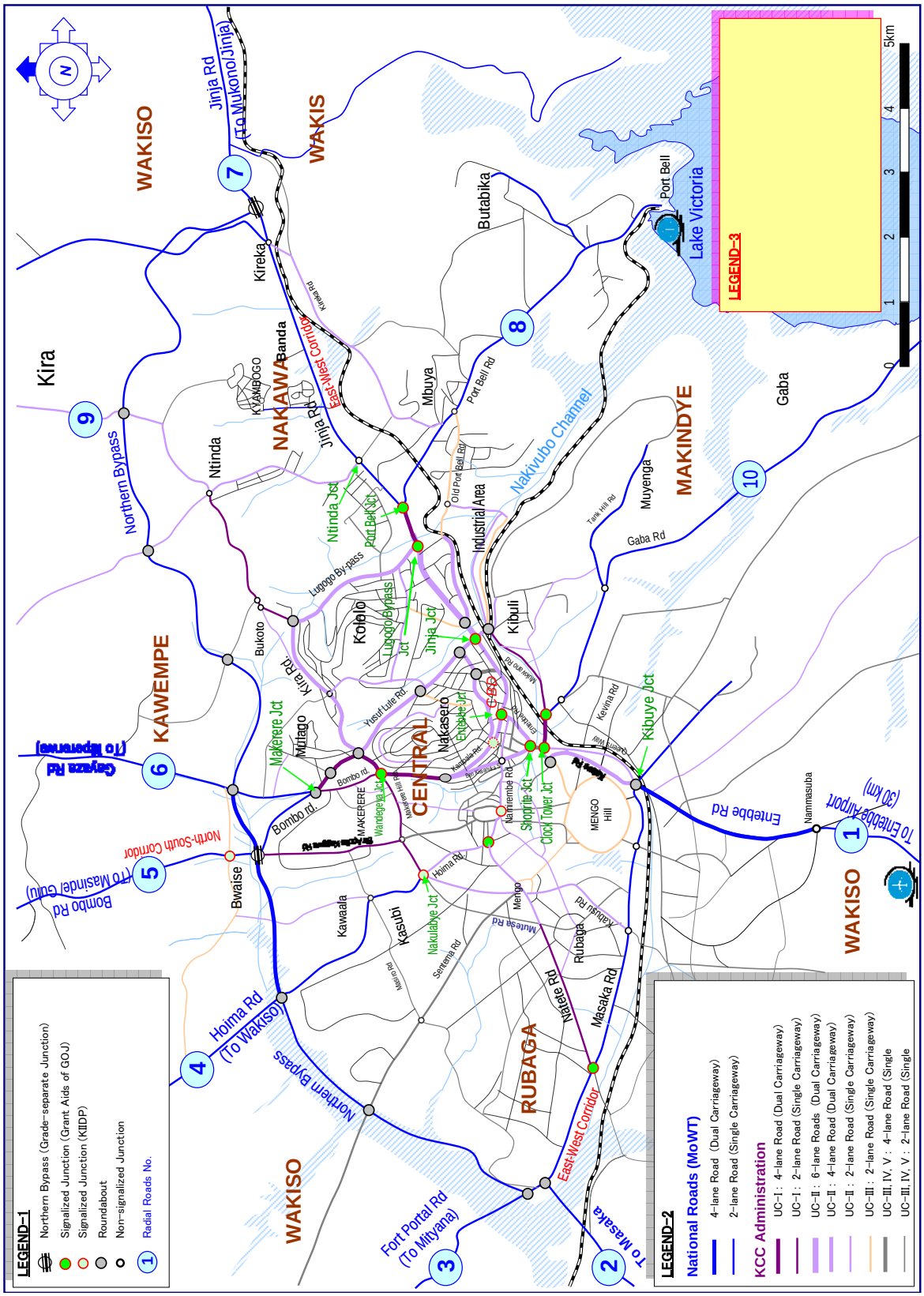
Notes : 1. Financial Year from July to June 2. * Radial Road Number 3. BRT Road Cost included the road widening from the 2 lanes to dual carriageways (6-lanes) or construction of the city center roads from 4 lanes to 6 lanes and BRT stations which were originally estimated under the dual carriageway projects under NTMP/GKMA.

4. # Pre-FS Projects of the Study

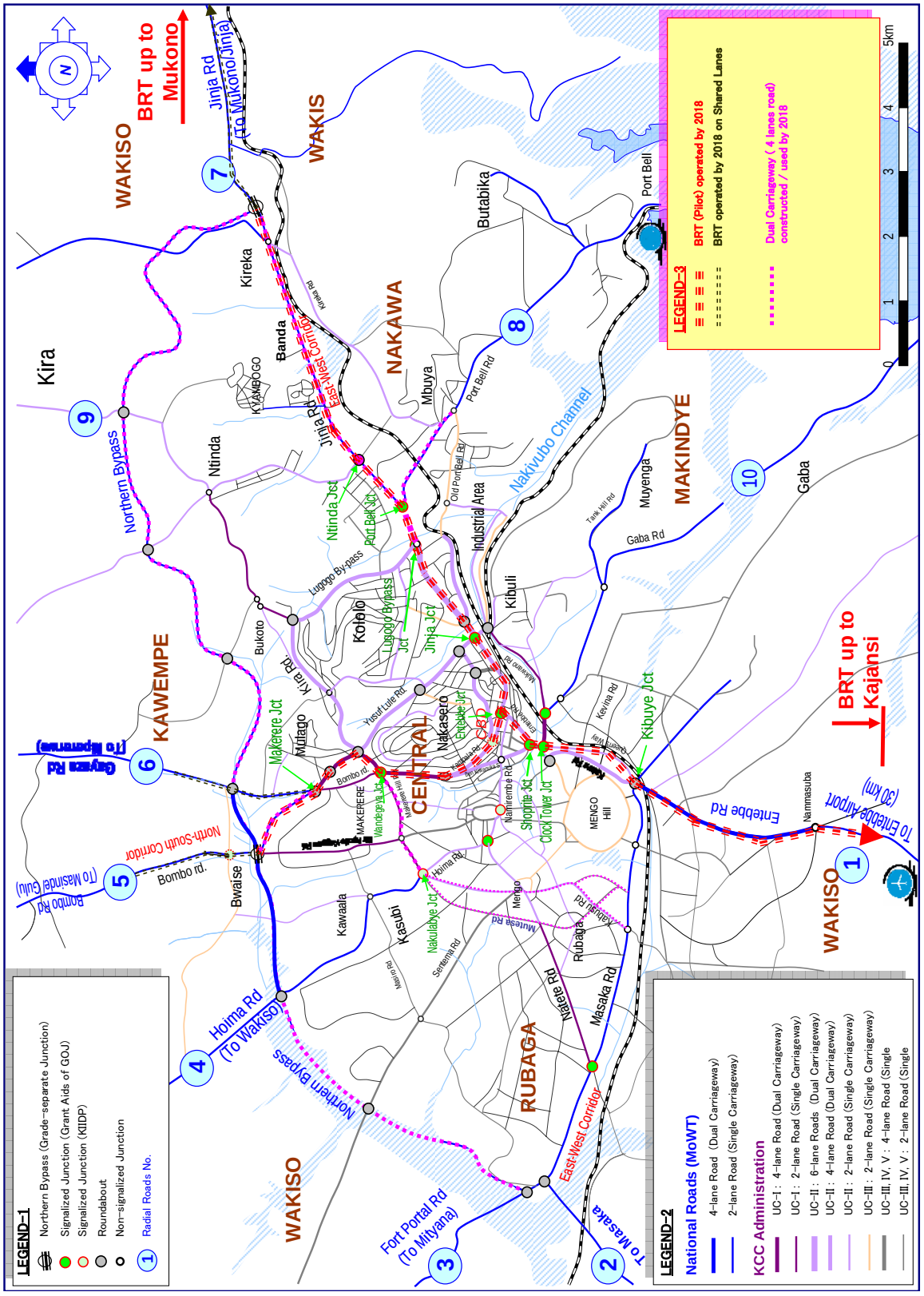
5. BRT Bus Purchase might be by private sector participation.

6. Investment Cost in NTMP/GKMA, May 2009	Amount (Mill US$):	72.63	76.49	181.98	84.01	86.89	94.39	120.14	123.48	508.91	135.32	136.40	148.23	133.49	136.14	689.58	1,380.47	
7. Difference to the NTMP/GKMA and	Amount (Mill US$):	-36.19	-10.44	-79.48	27.48	34.99	10.71	47.79	27.70	148.65	76.41	62.76	56.48	35.29	16.58	247.52	316.69	22.9%

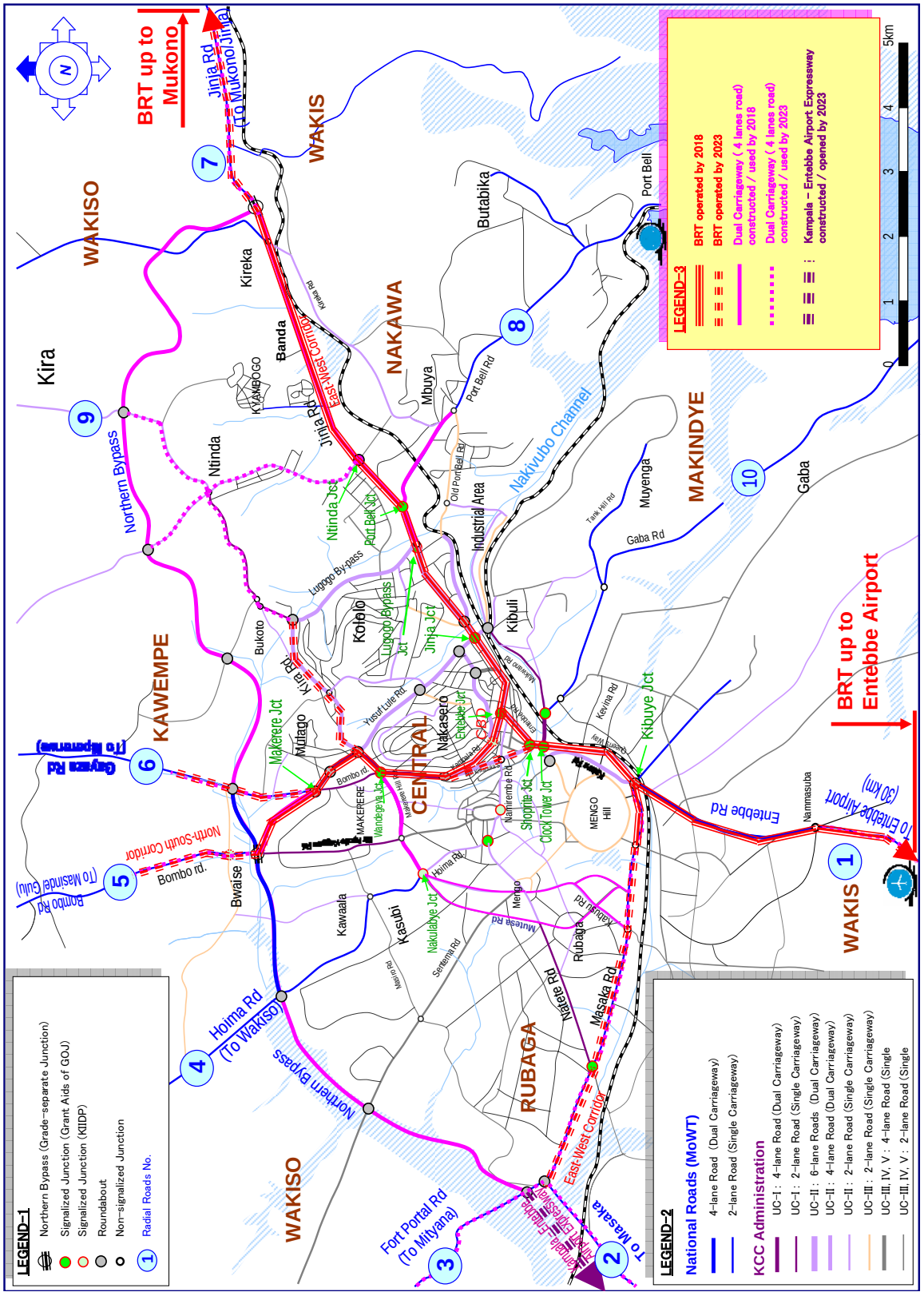
an increase is mostly mostly by the investment on the Expressway from Kampala to Entebbe International Air port, flyovers/Viaducts in Kampala. And BRT



Attachment A6.4.2 Road and BRT Development in Short Term by 2013 (Without-Project Case Scenario 2)



Attachment A6.4.3 Road and BRT Development in Short Term by 2018 (Without-Project Case Scenario 2)



Attachment A6.4.4 Road and BRT Development in Short Term by 2023 (Without-Project Case: Scenario 2)