DETAILED IMPROVEMENT PLAN

Road Name: MARALAL - OPIROI - BARSALOI **County:** SAMBURU **From:** 12+000 **To:** 13+000

Chain-age		(kilometres)	12 + 0				12 + 100				12 + 200				12 + 300				12 + 400				12 + 500				12 + 600				12 + 700				12 + 800				12 + 900				13 + 0
		(metres)																																									
Road form.		Subgrade																					LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG	LG
		Cross section																					G	G	G	G	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Earth-works		Method: RES, ETL or FILL																					RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
		Choice of reshaping: L, T or E																					E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
		Volume of ETL or Fill (m3/m)																																									
Gra-vel	Total	Thickness (cm,comp.)																																									
		Source (quarry No.)																																									
		Longitudinal gradient (in %)																					2				2				2				2				2					
Mitre drains	Total	Number left =																																									
	0	Number right =																																									
Catch water	Total	Length of drain left =																																									
	0	Length of drain right =																																									
Culverts	N	Chainage (m) = New line																																									
	Ex	= Existing line																																									
	CD	= Cross drainage																																									
	AC/D	= Access culvert/ drift																																									
	L/R	= Left/ right																																									
	Length (m)	Ø 450mm																																									
		Ø 600mm																																									
		Ø 900mm																																									
	Ramp	Earth fill (m3)																																									
		H. Concrete (m3)																																									
Head-walls		Inlet (Material/Type)																																									
		Outlet (Material/Type)																																									
Scour Checks	HC	= Material this sheet/ Spacing left (m) =																																									
	0	Spacing right (m) = =Total No. this sheet																																									
Additional Instruction as per Reference																																										

Quantity Assessment **MARALAL - OPIROI - BARSALOI** **County:** **SAMBURU** **From:** **12+000** **To:** **13+000** **pg** 1

Chainage:	12+000						12+200						12+400						12+600						12+800						13+000
Input Measurements:	Aver. (m)	1 to 4 readings*)					**Free Clearance Width for Calculating areas**																		Aver. (m)	1 to 4 readings					
Bush Clearing	0	0	0	0	0	m	0	0	0	0	0	m	4.5	4.5	0	0	0	m	4.5	4.5	0	0	0	m	4.5	4.5	0	0	0	m	
Grass Cutting						m						m						m						m						m	
Grubbing	0	0	0	0	0	m	0	0	0	0	0	m	4.5	4.5	0	0	0	m	4.5	4.5	0	0	0	m	4.5	4.5	0	0	0	m	
Tree and stump removal	0					m	0					m	0					m	0					m	0					m	

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

	12+000	12+200	12+400	12+600	12+800
Cross Section Sketch	-	-	-	-	-

Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)					**Height of Cut / Differences in Levels for calculating volumes**																		Aver. (m)	1 to 4 readings*)				
Height of cut < 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
Height of cut > 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**																													
Existing Roads	0	0				cm	0	0				cm	0					cm	0					cm	0					cm
Sloping						cm						cm						cm						cm						cm

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities:	**Quantities**									**Total this page**
Bush Clearing	2,600	m2	2,600	m2	1,700	m2	1,700	m2	1,700	**10,300**
Grass Cutting		m2		m2		m2		m2		
Grubbing	2,200	m2	2,200	m2	1,300	m2	1,300	m2	1,300	**8,300**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

	Quantities									**Total this page**
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** .... **Date:** .... **Signature:** ....

DETAILED IMPROVEMENT PLAN Page: **2**

Road Name: **MARALAL - OPIROI - BARSALOI** **County** **SAMBURU** **From:** **13+000** **To:** **14+000**

Chain-age		**(kilometres) (metres)**	13 + 0				13 + 100				13 + 200				13 + 300				13 + 400				13 + 500				13 + 600				13 + 700				13 + 800				13 + 900			14 + 0
Road form.		**Subgrade**	CG	CG	CG	CG	Concrete Road																																			
Road form.		**Cross section**	F	F	F	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works		**Method: RES, ETL or FILL**	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
Earth-works		**Choice of reshaping: L, T or E**	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works		**Volume of ETL or Fill (m3/m)**																																								
Gra-vel	**Total**	**Thickness (cm,comp.)**																																								
Gra-vel		**Source (quarry No.)**																																								
		Longitudinal gradient (in %)	-6				-11				-2				-6				-10				-7				-5				-1				6				6			
Mitre drains	**Total**	**Number left =**													1		1			1				1				1				1				1				1		
Mitre drains	**15**	**Number right =**					1		1						1		1							1				1				1										
Catch water	**Total**	**Length of drain left =**																																								
Catch water	**0**	**Length of drain right =**																																								
Culverts	N	**Chainage (m) = New line**	13+000																																							
Culverts	Ex	**= Existing line**	N																																							
Culverts	CD	**= Cross drainage**	CD																																							
Culverts	AC/D	**= Access culvert/ drift**																																								
Culverts	L/R	**= Left/ right**																																								
Culverts	**Length (m)**	**Ø 450mm**																																								
Culverts	**Length (m)**	**Ø 600mm**																																								
Culverts	**Length (m)**	**Ø 900mm**	8																																							
Culverts	**Ramp**	**Earth fill (m3)**																																								
Culverts	**Ramp**	**H. Concrete (m3)**	IV																																							
Head-walls		**Inlet (Material/Type)**	I																																							
Head-walls		**Outlet (Material/Type)**	I																																							
Scour Checks	**HC**	**= Material this sheet/ Spacing left (m) =**	15				4.5								15				5				15				20								15				15			
Scour Checks	**161**	**Spacing right (m) = =Total No. this sheet**	15				4.5								15				5				15				20								15				15			
Additional Instruction as per Reference																																										

Chainage:	13+000						13+200						13+400						13+600						13+800						14+000
Input Measurements:	Aver. (m)	1 to 4 readings*)											**Free Clearance Width for Calculating areas**												Aver. (m)	1 to 4 readings					
Bush Clearing	5	5	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4.5	4.5	0	0	0	m	4	4	0	0	0	m	
Grass Cutting						m						m						m						m						m	
Grubbing	5	5	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4.5	4.5	0	0	0	m	4	4	0	0	0	m	
Tree and stump removal	0					m	0					m	0					m	0					m	0					m	

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Cross Section Sketch	-	-	-	-	-

Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)											**Height of Cut / Differences in Levels for calculating volumes**												Aver. (m)	1 to 4 readings*)					
Height of cut < 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm	
Height of cut > 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm	
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**																														
Existing Roads	0	0				cm	0	0				cm	0					cm	0					cm	0					cm	
Sloping						cm						cm						cm						cm						cm	

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities:	**Quantities**								**Total this page**
Bush Clearing	1,600	m2	1,800	m2	1,800	m2	1,700	m2	1,800	**8,700**
Grass Cutting		m2		m2		m2		m2		
Grubbing	1,200	m2	1,400	m2	1,400	m2	1,300	m2	1,400	**6,700**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

	Quantities								**Total this page**
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** ..... **Date:** .....**Signature:** .....

DETAILED IMPROVEMENT PLAN

Road Name: MARALAL - OPIROI - BARSALOI **County:** SAMBURU **From:** 14+000 **To:** 15+000

Chain-age	(kilometres)		14 + 0				14 + 100				14 + 200				14 + 300				14 + 400				14 + 500				14 + 600				14 + 700				14 + 800				14 + 900			15 + 0
	(metres)																																								
Road form.	Subgrade		CG	CG	CG	CG	CG	CG	CG	CG	Concrete Road																															
	Cross section		G	G	G	G	F	F	F	F	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	F	F	F	F	F	F	F	F	E	E	E	E
Earth-works	Method: RES, ETL or FILL		RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
	Choice of reshaping: L, T or E		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	Volume of ETL or Fill (m3/m)																																								
Gra-vel	Total	Thickness (cm,comp.)																																							
		Source (quarry No.)																																							
Longitudinal gradient (in %)			-5				-1				-8				-9				-10				-17				-16				-17				-15				-9			
Mitre drains	Total	Number left =		1				1																																	
	4	Number right =		1				1																																	
Catch water	Total	Length of drain left =																																							
	0	Length of drain right =																																							
Culverts		Chainage (m) = New line									14+200 N			14+270 N																												
	N	Ex = Existing line																																							
	CD	= Cross drainage									CD			CD																												
	AC/D	= Access culvert/ drift																																							
	L/R	= Left/ right																																							
	Length (m)	Ø 450mm																																							
		Ø 600mm																																							
		Ø 900mm									8			8																												
	Ramp	Earth fill (m3)																																							
		H. Concrete (m3)									IV			IV																												
Head-walls	Inlet (Material/Type)										I			I																												
	Outlet (Material/Type)										I			I																												
Scour Checks	HC	= Material this sheet/ Spacing left (m) =	20								10				7.5				5				4				4				4				4				7.5			
	323	Spacing right (m) = =Total No. this sheet	20								10				7.5				5				4				4				4				4				7.5			
Additional Instruction as per Reference																Level Drift																										

Quantity Assessment	MARALAL - OPIROI - BARSALOI	County:	SAMBURU	From:	14+000	To:	15+000	pg	3

Chainage:	14+000						14+200						14+400						14+600						14+800						15+000
Input Measurements:	Aver. (m)	1 to 4 readings*)					**Free Clearance Width for Calculating areas**																		Aver. (m)	1 to 4 readings					
Bush Clearing	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	
Grass Cutting						m						m						m						m						m	
Grubbing	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	0	0	0	0	0	m	
Tree and stump removal	0					m	0					m	0					m	0					m	0					m	

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Cross Section Sketch	14+000	14+200	14+400	14+600	14+800
			-	-	-

Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)					**Height of Cut / Differences in Levels for calculating volumes**																		Aver. (m)	1 to 4 readings*)				
Height of cut < 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
Height of cut > 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**																													
Existing Roads	0	0				cm	0	0				cm	0					cm	0					cm	0					cm
Sloping						cm						cm						cm						cm						cm

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities:	**Quantities**									**Total this page**
Bush Clearing	2,600	m2	2,600	m2	2,600	m2	2,600	m2	2,600	**13,000**
Grass Cutting		m2		m2		m2		m2		
Grubbing	2,200	m2	2,200	m2	2,200	m2	2,200	m2	2,200	**11,000**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

	Quantities									**Total this page**
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** ………………………………………………………………………… **Date:** ……………………………………………….**Signature:** ………………………………………………………………

DETAILED IMPROVEMENT PLAN

Road Name: MARALAL - OPIROI - BARSALOI **County:** SAMBURU **From:** 15+000 **To:** 16+000

Chain-age	(kilometres)	15 + 0				15 + 100				15 + 200				15 + 300				15 + 400				15 + 500				15 + 600				15 + 700				15 + 800				15 + 900				16 + 0
	(metres)																																								
Road form.	Subgrade	Concrete Road																																						
	Cross section	E	E	E	E	E	E	E	E	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	A	A	A	A	E	E	E	E
Earth-works	Method: RES, ETL or FILL	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
	Choice of reshaping: L, T or E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	Volume of ETL or Fill (m3/m)																																								
Gra-vel	Total Thickness (cm,comp.)																																								
	Source (quarry No.)																																								
Longitudinal gradient (in %)		-15				-16				-16				-16				-14				-15				-16				-16				-12				-10				
Mitre drains	Total Number left =																																								
	0 Number right =																																								
Catch water	Total Length of drain left =																																								
	0 Length of drain right =																																								
Culverts	N Chainage (m) = New line																																								
	Ex = Existing line																																								
	CD = Cross drainage																																								
	AC/D = Access culvert/ drift																																								
	L/R = Left/ right																																								
	Length (m) Ø 450mm																																								
	Length (m) Ø 600mm																																								
	Length (m) Ø 900mm																																								
	Ramp Earth fill (m3)																																								
	Ramp H. Concrete (m3)																																								
Head-walls	Inlet (Material/Type)																																								
	Outlet (Material/Type)																																								
Scour Checks	HC = Material this sheet/ Spacing left (m) =					4				4				4				4				4				4				4				4				5				
	440 Spacing right (m) = =Total No. this sheet					4				4				4				4				4				4				4				4				5				
Additional Instruction as per Reference																																									

Quantity Assessment	MARALAL - OPIROI - BARSALOI	County:	SAMBURU	From:	15+000	To:	16+000	pg	4

Chainage:	15+000	15+200	15+400	15+600	15+800	16+000

Input Measurements: — **Free Clearance Width for Calculating areas**

	Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings				
Bush Clearing	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m
Grass Cutting			m			m			m			m			m			m
Grubbing	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m	0	0 0 0 0	m
Tree and stump removal	0		m	0		m	0		m	0		m	0		m	0		m

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Cross Section Sketch	-	-	-	-	-

Measurements for small cut to fill: — **Height of Cut / Differences in Levels for calculating volumes**

	Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings*)				
Height of cut < 0.25m	0	0	cm	0		cm	0	0 0	cm	0	0 0	cm	0	0 0	cm	0	0 0	cm
Height of cut > 0.25m	0	0	cm	0		cm	0	0 0	cm	0	0 0	cm	0	0 0	cm	0	0 0	cm

For Reshaping : — **Difference in Level between Exist. Camber and Side Drain for calculating volumes**

Existing Roads	0	0	cm	0	0	cm	0		cm	0		cm	0		cm	0		cm
Sloping			cm			cm			cm			cm			cm			cm

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities: — **Quantities**

										Total this page
Bush Clearing	2,600	m2	2,600	m2	2,600	m2	2,600	m2	2,600	**13,000**
Grass Cutting		m2		m2		m2		m2		
Grubbing	2,200	m2	2,200	m2	2,200	m2	2,200	m2	2,200	**11,000**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

Quantities

										Total this page
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** …… **Date:** ……**Signature:** ……

DETAILED IMPROVEMENT PLAN

Road Name: MARALAL - OPIROI - BARSALOI **County:** SAMBURU **From:** 16+000 **To:** 17+000

Chain-age		(kilometres)	16 + 0				16 + 100				16 + 200				16 + 300				16 + 400				16 + 500				16 + 600				16 + 700				16 + 800				16 + 900			17 + 0
		(metres)																																							
Road form.		Subgrade	Concrete Road																																						
		Cross section	E	E	E	E	A	A	A	A	A	A	A	A	E	E	E	E	E	E	E	E	E	E	E	E	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Earth-works		Method: RES, ETL or FILL	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
		Choice of reshaping: L, T or E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
		Volume of ETL or Fill (m3/m)																																						
Gra-vel	Total	Thickness (cm,comp.)																																						
		Source (quarry No.)																																						
Longitudinal gradient (in %)			-23				-17				-14				-18				-17				-9				-17				-4				-13				-11			
Mitre drains	Total	Number left =																																						
	0	Number right =																																						
Catch water	Total	Length of drain left =																																						
	0	Length of drain right =																																						
Culverts		Chainage (m) = New line																																						
	N																																							
	Ex	= Existing line																																						
	CD	= Cross drainage																																						
	AC/D	= Access culvert/ drift																																						
	L/R	= Left/ right																																						
	Length (m)	Ø 450mm																																						
		Ø 600mm																																						
		Ø 900mm																																						
	Ramp	Earth fill (m3)																																						
		H. Concrete (m3)																																						
Head-walls		Inlet (Material/Type)																																						
		Outlet (Material/Type)																																						
Scour Checks	HC	= Material this sheet/ Spacing left (m) =					4				4				4								7.5				4								4				4.5			
	321	Spacing right (m) = =Total No. this sheet					4				4				4								7.5				4								4				4.5			
Additional Instruction as per Reference																																							

Quantity Assessment	MARALAL - OPIROI - BARSALOI	County:	SAMBURU	From:	16+000	To:	17+000	pg	5

Chainage:	16+000	16+200	16+400	16+600	16+800	17+000

Input Measurements:	Aver. (m)	1 to 4 readings*)	Free Clearance Width for Calculating areas				Aver. (m)	1 to 4 readings	
Bush Clearing	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0
Grass Cutting										
Grubbing	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0	5	5 0 0 0
Tree and stump removal	0		0		0		0		0	

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Cross Section Sketch	-	-	-	-	-

Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)	Height of Cut / Differences in Levels for calculating volumes				Aver. (m)	1 to 4 readings*)	
Height of cut < 0.25m	0	0	0	0 0 0	0	0 0 0	0	0 0 0	0	0 0 0
Height of cut > 0.25m	0	0	0	0 0 0	0	0 0 0	0	0 0 0	0	0 0 0
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**									
Existing Roads	0	0	0	0	0		0		0	
Sloping										

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities:	Quantities									Total this page
Bush Clearing	1,600	m2	1,600	m2	1,600	m2	1,600	m2	1,600	**8,000**
Grass Cutting		m2		m2		m2		m2		
Grubbing	1,200	m2	1,200	m2	1,200	m2	1,200	m2	1,200	**6,000**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

	Quantities									Total this page
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** ..... **Date:** .....**Signature:** .....

DETAILED IMPROVEMENT PLAN

Page: 6

Road Name: MARALAL - OPIROI - BARSALOI **County:** SAMBURU **From:** 17+000 **To:** 18+000

Chain-age (kilometres) + (metres)	17 + 0				17 + 100				17 + 200				17 + 300				17 + 400				17 + 500				17 + 600				17 + 700				17 + 800				17 + 900			18 + 0
Road form. – Subgrade	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG
Road form. – Cross section	A	A	A	A	A	A	A	A	E	E	E	E	G	G	G	G	E	E	E	E	A	A	A	A	F	F	F	F	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works – Method: RES, ETL or FILL	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
Earth-works – Choice of reshaping: L, T or E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works – Volume of ETL or Fill (m3/m)																																								
Gra-vel – Total – Thickness (cm,comp.)																																								
Gra-vel – Source (quarry No.)																																								
Longitudinal gradient (in %)	-1				-7				-8				-8				-6				-8				-8				-1				-5				-8			
Mitre drains – Total – Number left =						1								1																										
Mitre drains – 6 – Number right =		1								1									1							1														
Catch water – Total – Length of drain left =																																								
Catch water – 0 – Length of drain right =																																								
Culverts – Chainage (m) = New line (N) / = Existing line (Ex)													17+300 N												17+600 N				17+780 N											
Culverts – CD = Cross drainage													CD												CD				CD											
Culverts – AC/D = Access culvert/ drift																																								
Culverts – L/R = Left/ right																																								
Culverts – Length (m) – Ø 450mm																																								
Culverts – Length (m) – Ø 600mm																																								
Culverts – Length (m) – Ø 900mm													8												8				8											
Culverts – Ramp – Earth fill (m3)																																								
Culverts – Ramp – H. Concrete (m3)													IV												IV				IV											
Head-walls – Inlet (Material/Type)													I												I				I											
Head-walls – Outlet (Material/Type)													I												I				I											
Scour Checks – HC = Material this sheet/ Spacing left (m) =					15				10				10								10				10								20				10			
Scour Checks – 123 – Spacing right (m) = =Total No. this sheet					15				10				10								10				10								20				10			
Additional Instruction as per Reference																																								

Quantity Assessment	MARALAL - OPIROI - BARSALOI										County:	SAMBURU					From:	17+000					To:	18+000					pg	6
Chainage:	**17+000**						**17+200**						**17+400**						**17+600**						**17+800**						**18+000**
Input Measurements:	Aver. (m)	1 to 4 readings*)					**Free Clearance Width for Calculating areas**																		Aver. (m)	1 to 4 readings				
Bush Clearing	5	5	0	0	0	m	5	5	0	0	0	m	5	5	0	0	0	m	8	8	0	0	0	m	6	6	0	0	0	m
Grass Cutting						m						m						m						m						m
Grubbing	5	5	0	0	0	m	5	5	0	0	0	m	5	5	0	0	0	m	8	8	0	0	0	m	6	6	0	0	0	m
Tree and stump removal	0					m	0					m	0					m	0					m	0					m
*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).																														
Cross Section Sketch	-						-						-						-						-					
Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)					**Height of Cut / Differences in Levels for calculating volumes**																		Aver. (m)	1 to 4 readings*)				
Height of cut < 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
Height of cut > 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**																													
Existing Roads	0	0				cm	0	0				cm	0					cm	0					cm	0					cm
Sloping						cm						cm						cm						cm						cm
*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).																														

Quantities:	**Quantities**								**Total this page**
Bush Clearing	1,600	m2	1,600	m2	1,600	m2	1,000	m2	1,400	**7,200**
Grass Cutting		m2		m2		m2		m2		
Grubbing	1,200	m2	1,200	m2	1,200	m2	600	m2	1,000	**5,200**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**
	Quantities								**Total this page**
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** ..... **Date:** .....**Signature:** .....

DETAILED IMPROVEMENT PLAN Page: **7**

Road Name: MARALAL - OPIROI - BARSALOI **County: SAMBURU** **From: 18+000** **To: 19+000**

Chain-age (kilometres) (metres)	18 + 0				18 + 100				18 + 200				18 + 300				18 + 400			
Road form. – Subgrade	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG
Road form. – Cross section	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G
Earth-works – Method: RES, ETL or FILL	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
Earth-works – Choice of reshaping: L, T or E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works – Volume of ETL or Fill (m3/m)																				
Gra-vel – Total – Thickness (cm,comp.)																				
Gra-vel – Source (quarry No.)																				
Longitudinal gradient (in %)	-1				-5				-8				4				5			
Mitre drains – Total – Number left =																		1		
Mitre drains – 9 – Number right =										1				1				1		
Catch water – Total – Length of drain left =																				
Catch water – 0 – Length of drain right =																				
Culverts – N / Ex – Chainage (m) = New line / = Existing line										19+230 N										
Culverts – CD – = Cross drainage										CD										
Culverts – AC/D – = Access culvert/ drift																				
Culverts – L/R – = Left/ right																				
Culverts – Length (m) – Ø 450mm																				
Culverts – Length (m) – Ø 600mm																				
Culverts – Length (m) – Ø 900mm										8										
Culverts – Ramp – Earth fill (m3)																				
Culverts – Ramp – H. Concrete (m3)										IV										
Head-walls – Inlet (Material/Type)										I										
Head-walls – Outlet (Material/Type)										I										
Scour Checks – HC = Material this sheet/ Spacing left (m) =					20				10											
Scour Checks – 117 – Spacing right (m) = =Total No. this sheet					20				10											
Additional Instruction as per Reference																				

Chain-age (kilometres) (metres)	18 + 500				18 + 600				18 + 700				18 + 800				18 + 900			19 + 0
Road form. – Subgrade	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG	QG
Road form. – Cross section	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	G	G	G	G
Earth-works – Method: RES, ETL or FILL	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES	RES
Earth-works – Choice of reshaping: L, T or E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
Earth-works – Volume of ETL or Fill (m3/m)																				
Gra-vel – Total – Thickness (cm,comp.)																				
Gra-vel – Source (quarry No.)																				
Longitudinal gradient (in %)	-14				-9				-2				-4				-5			
Mitre drains – Total – Number left =		1				1														
Mitre drains – 9 – Number right =		1				1				1										
Catch water – Total – Length of drain left =																				
Catch water – 0 – Length of drain right =																				
Culverts – N / Ex – Chainage (m) = New line / = Existing line																				
Culverts – CD – = Cross drainage																				
Culverts – AC/D – = Access culvert/ drift																				
Culverts – L/R – = Left/ right																				
Culverts – Length (m) – Ø 450mm																				
Culverts – Length (m) – Ø 600mm																				
Culverts – Length (m) – Ø 900mm																				
Culverts – Ramp – Earth fill (m3)																				
Culverts – Ramp – H. Concrete (m3)																				
Head-walls – Inlet (Material/Type)																				
Head-walls – Outlet (Material/Type)																				
Scour Checks – HC = Material this sheet/ Spacing left (m) =	4				7.5												20			
Scour Checks – 117 – Spacing right (m) = =Total No. this sheet	4				7.5												20			
Additional Instruction as per Reference																				

Quantity Assessment	MARALAL - OPIROI - BARSALOI	County:	SAMBURU	From:	18+000	To:	19+000	pg	7

Chainage:	18+000	18+200	18+400	18+600	18+800	19+000

Free Clearance Width for Calculating areas

Input Measurements:	Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings					Aver. (m)	1 to 4 readings					Aver. (m)	1 to 4 readings					Aver. (m)	1 to 4 readings				
Bush Clearing	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m
Grass Cutting						m						m						m						m						m
Grubbing	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m	4	4	0	0	0	m
Tree and stump removal	0					m	0					m	0					m	0					m	0					m

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Cross Section Sketch	-	-	-	-	-

Height of Cut / Differences in Levels for calculating volumes

Measurements for small cut to fill:	Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings*)					Aver. (m)	1 to 4 readings*)				
Height of cut < 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
Height of cut > 0.25m	0	0				cm	0					cm	0		0		0	cm	0		0		0	cm	0		0		0	cm
For Reshaping :	**Difference in Level between Exist. Camber and Side Drain for calculating volumes**																													
Existing Roads	0	0				cm	0	0				cm	0					cm	0					cm	0					cm
Sloping						cm						cm						cm						cm						cm

*) Note: The user is free to select the number of reading required according to the site conditions. (min. 1 max. 4 for each section).

Quantities

Quantities:										Total this page
Bush Clearing	1,800	m2	1,800	m2	1,800	m2	1,800	m2	1,800	**9,000**
Grass Cutting		m2		m2		m2		m2		
Grubbing	1,400	m2	1,400	m2	1,400	m2	1,400	m2	1,400	**7,000**
Tree and stump removal	0	No.	0	No.	0	No.	0	No.	0	**0**

Quantities

										Total this page
Height of cut < 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Height of cut > 0.25m	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	m3 (insitu)	0	**0**
Embankment		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
Drains full re-construction	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	m3 (insitu)	242	**1,208**
Reshaping by Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Towed Grader/Labour		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		
By Equipment Based Method		m3 (insitu)		m3 (insitu)		m3 (insitu)		m3 (insitu)		

Data Collected by: **Name:** …….... **Date:** …….....**Signature:** …….....