

County Government of Machakos
in collaboration with
Ministry of Land, Housing and Urban Development



Digital Topographical Mapping and Preparation of Integrated Strategic Urban Development Plan for Cluster III Towns

Capital Investment Plans Machakos

November 2015



Intercontinental Consult-
ants
and Technocrats Pvt. Ltd.
A-8, Green Park,
New Delhi-110016-India

In association with



Geodev K. Ltd
New Hurlingham Plaza
P.O Box 14066-00100, Nairobi



Otieno Odongo & Partners
P.O Box-54021, Nairobi, Kenya

Table of Contents

1	Purpose and design of Capital Investment Plans	1
1.1	Background	1
1.2	Terms of reference	1
2	Prioritisation.....	2
2.1	Introduction	2
2.2	Global project list.....	2
2.3	Projects to be started within the next three years.....	26
2.4	Priorities established at the workshop	30
2.4.1	Process	30
2.4.2	Results : alternative scoring methods.....	30
2.4.3	Summary.....	32
2.4.4	Conclusion	33
2.5	Final list for detailed development	33
3	Funding options.....	34
3.1	County Budget	34
3.1.1	Existing own revenues	34
3.1.2	Potential to increase own revenues for allocation to capital expenditure.....	35
3.1.3	Equitable share	35
3.1.4	Estimated budget ceiling for capital expenditure	36
3.2	Public private partnerships (PPPs)	36
3.3	Donor finance.....	36
4	Capital Investment Plans	37
	Establishing sustainable finances.....	38
4.1	Establishing sustainable finances	39
4.1.1	Terms of Reference:	39
	Water: Rehabilitation of 15km of old and dilapidated water distribution lines in the town.....	45
4.2	Rehabilitation of 15km of old and dilapidated water distribution lines in the town.....	46
4.3	Reference map for rehabilitation and extension of water supply line in Machakos town ...	48
	Water: laying of new 30km water supply pipeline both main and direct connection to cover entire developed area	49
4.4	Laying of new 30km water supply pipelines both main and direct connections to cover the entire developed area	50
	Water: Provision of 20 additional communal water points in informal settlements and public places.....	52
4.5	Provision of 20 additional communal water points in informal settlements and public places.	53
	Sewerage: Rehabilitation of the existing sewage treatment plant.....	55

4.6	Rehabilitation of the existing sewage treatment plant.	56
4.7	Reference map for rehabilitation of sewer system.....	58
	Sewerage: Upgrading of the existing Machakos Girls School sewage treatment plant and construction of 20 toilets for the school	59
4.8	Upgrading of the existing Machakos Girls School sewage treatment plant and construction of 20 toilets for the school	60
	Sewerage: Rehabilitation of 20km of existing sewer reticulation system in Machakos town	62
4.9	Rehabilitation of 20km of existing sewer reticulation system in Machakos town	63
	Sewerage: Provision of 10 public toilets and sanitation facilities at markets and other public areas	65
4.10	Provision of 5 public toilets and sanitation facilities at markets and other public areas..	66
	Solid waste: Acquisition and development of a new infill site at Mitheu Valley next to Ketraco site	68
4.11	Acquisition and development of a new landfill site at Mitheu Valley next to Ketraco site	69
	Solid waste: Provision of adequate and accessible community skips in underserved areas	71
4.12	Provision of adequate and accessible community skips in underserved areas	72
	Solid waste: Acquisition of new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal	73
4.13	Acquisition of new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal	74
	Roads: Development of four lane divided paved carriageway for Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School	75
4.14	Development of four lane divided paved carriage way for Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School	76
	Roads: Acquisition of land for extension of road reserve to accommodate the four land carriageway to be developed under CIP 12 above.....	80
4.15	Acquisition of land for extension of road reserve to accommodate the four lane carriageway to be developed under CIP 12 above.....	81
4.16	Pedestrianisation of the CBD	84
	Security lighting: Repair of all the faulty security lights along the major roads and in the core areas	85
4.17	Repair of all the faulty security lights along the major roads and in the core areas.....	86
	Security lighting: Installation of new street lights along the major roads and in other areas of concentrated development especially at markets.....	88
4.18	Installation of new street lights along the major roads and in other areas of concentrated development especially at markets.....	89
	Security lighting: Installation of new high mast (30m high) lights at CBD, sub CBDs, markets, informal settlements, jua kali areas and main road junctions	91

4.19	Installation of new high mast (30m high) lights at CBD, Sub-CBDs, markets, informal settlements, jua kali areas and main road junctions.....	92
	Fire Fighting: Purchase of one new fire fighting vehicle locally assembled	94
4.20	Purchase of one new fire fighting vehicle (tender) locally assembled	95
	Housing.....	96
4.21	Housing	97
	4.21.1 Introduction	97
	4.21.2 Incomes and affordability.....	97
	4.21.3 Possible housing solutions	98
	4.21.4 Number of units.....	99
	4.21.5 The roles of the actors	99
	4.21.6 Costs and cash flow.....	101
	4.21.7 Site.....	102
5	Summary.....	104
	Multi-storey car park PPP	106
6	Multi storey car park PPP.....	107
	6.1 The existing situation	107
	6.2 Assumptions.....	107
	6.3 Results	108
	6.4 County Revenue	109
	6.5 Summary.....	109

Tables

Table 2.1:	Economic development implementation plan.....	3
Table 2.1:	Environmental projects implementation plan	5
Table 2.2:	Disaster Management Implementation Plan	7
Table 2.3:	Tourism and Heritage Implementation Plan.....	9
Table 2.4:	Water supply Implementation Plan	11
Table 2.5:	Sewerage and Sanitation Implementation Plan	13
Table 2.6:	Storm Water Drainage Implementation Plan.....	14
Table 2.7:	Solid Waste Management Implementation Plan	16
Table 2.8:	Road and Transport System Implementation Plan	17
Table 2.9:	Junction Improvement Implementation Plan	19
Table 2.10:	Fire Fighting Implementation Plan	20
Table 2.11:	Street Lighting Implementation Plan	21
Table 2.12:	Institutional Development Implementation Plan.....	22

Table 2.13: Financial Management Implementation Plan	24
Table 2.14: Weighted scoring method.....	30
Table 2.15: Results of weighted prioritisation	31
Table 2.16: Results of unweighted prioritisation	32
Table 2.17: Alternative priorities compared.....	32
Table 2.18: Possible projects	33
Table 3.1 Machakos Town Sub-County – Revenue collection efficiency in 2013/14	34
Table 3.2: Machakos Town rates revenue potential and realized in 2013/14.....	34
Table 3.3: Possible additional revenue by improved rate of collection (Kshs million)	35
Table 3.4: Possible allocation of capital budget to Machakos town.....	36
Table 3.5: Budget ceiling for expenditure on capital projects (Kshs million).....	36
Table 4.1 Cash Flow.....	39
Table 4.2: Urban Incomes	97
Table 4.3: Housing affordability by income group	98
Table 4.4: Affordable Loans by Income Group	98
Table 4.5: Indicative cost of different solutions (Kshs).....	99
Table 4.6: Space requirements per 1000 dwellings	99
Table 4.7: Housing demand 2016 – 2019	99
Table 4.8: Development costs for land and servicing for housing: Years 2016 - 2019.....	101
Table 4.9: Cash flow for housing development	101
Table 5.0.1 Summary of Budget and all CIP projects	105

1 Purpose and design of Capital Investment Plans

1.1 Background

Physical planning in the past has suffered from many deficiencies, of which the most important ones were the inflexibility of the instrument and the difficulties of updating it; the other has been the split between planning and implementation. Capital Investment Plans (CIPs) are intended to help bridge this gap by providing practical and realistic guidance regarding the next steps in implementing the capital development aspects of the plan.

In order to be realistic CIPs must have two very important qualities. The first is to be affordable within current budgetary conditions. The second is to respond to real priorities in terms of the expectations of the stakeholders and technical needs of the town as conceived by the staff. There is a potential for the priorities of the stakeholders and technical experts to be different: this report addresses this problem.

1.2 Terms of reference

The contract Terms of Reference refer to CIPs as follows:

The participatory process will result in a three year rolling capital investment plan (CIP) that reflects publicly agreed local priorities for investment in municipal services and is both financially realistic and feasible. The CIP will include estimated costs and responsibilities for implementation of agreed investments, as well as a financing plan.

This report addresses these issues as follows:

- The budgetary limitations
- Prioritisation of demand
- Capital Investment Plans for priority projects
- Summary cash flow.

2 Prioritisation

2.1 Introduction

Selecting the capital investments to be studied in detail has required a careful filtering process. Stage 1 was to study all the projects which will be required if the ISUDP is to be implemented. These are listed in the ISUDP Report.

Stage 2 was to classify these into two groups: those that should be started within the next three years, and those which were not required until a later stage – the majority, of course. Those projects which were identified for an immediate start were then costed on a preliminary and approximate basis. This would help in the final stages of selecting the projects which could be implemented within likely budget ceilings.

Stage 3 was to check the priorities established at the Draft ISUDP workshops, and assess how realistic those priorities were.

Stage 4 was to prepare a shortlist of projects which met the criteria established in Stages 2 and 3 and prepare a final list for detailed development.

The final stage, Stage 5, was to prepare detailed capital investment plans, as presented in this report.

2.2 Global project list

On the following pages we reproduce the list of project generated for the 20 year implementation period.

Table 2.1: Economic development implementation plan

Project	No.	Unit	Years																				Institutional Responsibility ¹
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Allocation of land for new industrial areas	317	ha																			Department of Physical Planning and Department Industry		
Allocation of land for new commercial areas	179	ha																					
Improvement of basic infrastructure and services (e.g. roads, drainage, water supply and electricity) in jua kali areas	-	-																			Department of Transport, Road & Public Works, MWASCO KPLC, Physical Planning Department		
Annual training for skill upgrading of jua kali artisans	1	No.																			Department Industrialisation Machakos County		
Marketing of jua kali products through a co-operative society	-	-																					
Organising annual fair to showcase the jua kali products at county and national level	-	-																					
Improvement of existing commercial areas	-	-																			Department of Transport, Road & Public Works		
Single window approval system	1	Nos.																			Department of Industrialisation and Finance		
Notification of the land demarcated for commercial and industrial development	-	-																			Departments of Finance and Industry		

¹ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Project	No.	Unit	Years																				Institutional Responsibility ¹
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Tax holidays for small and big industries																							
Establish farmers training centres for farming techniques, high yielding variety seeds, fertilisers & pesticides, farm equipments, cost effective irrigation and financial help	1	Nos.																			County Agriculture department		
Promote value addition in agriculture by helping farmer in establishing household industries of farm produce	1	Nos.																					
Establish a marketing centre for linking farmers to market	1	Nos.																					

Source: Generated by Consultants

Table 2.2: Environmental projects implementation plan

Projects	Qty	Unit	Years																				Institutional Responsibility ²
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Tree Plantation along river banks	30	Km ²																			Departments of Land and Water and Irrigation		
Construction of small check dams to create water reservoirs for recreational purposes	20	No.																			Departments of Land; Water and Irrigation and; Transport, Roads and Public Works		
Construction of public promenades on main rivers	10	Km																					
Creating recreational open areas like parks, playground, etc.	6	%																					
Development of dams/ wetlands for recreational activities (walkways, parks, tree plantation, boating)	2	No.																					
SEA for ISUDP of Machakos	1	No.																			NEMA		
Harmonizing the physical planning Act & EMCA	-	-																			NEMA, County Government and National Government		
Strict enforcement of environmental guidelines quarries	-	-																			NEMA and Department of Land		
Removal of encroachment on natural drainage system	-	-																			County Administration		

² The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Qty	Unit	Years																				Institutional Responsibility ²
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Promotion of energy saving eco-jikos	-	-	■	■	■	■	■														Department of Health		
Tax rebate for manufacturers and dealers of eco-jikos	-	-	■	■	■	■	■														National government		
Awareness campaign for eco-jiko & environment	-	-	■	■	■	■	■														County Administration		
Cluster park (per unit area 1ha)	14	No.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Departments of Physical Planning, Water and Irrigation and Transport, Roads & Public Works		
Cluster playground (per unit area 1ha)	14	No.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Sector Park (per unit area 2ha)	3	No.	■	■	■	■	■																
Sector Playground (per unit area 2ha)	3	No.	■	■	■	■	■																
Stadium (per unit area 5ha)	2	No.			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Zoo (area 10ha)	1	No.				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Amusement park (area 10ha)	1	No.																					
Proposed Water Sport & Recreational Centre	1	No.		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Integrated Sports Centre (area 10ha)	1	No.	■	■	■	■	■																

Source: Generated by Consultants

Table 2.3: Disaster Management Implementation Plan

Projects	Qty	Unit	Years																				Institutional Responsibility ³
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Mandatory provision of smoke detectors in all buildings with overall building approval system	-	-																			Department of Physical Planning,		
Mandatory provision of earthquake resistance in building design	-	-																			Department of Physical Planning,		
New fire stations, fire hydrants, fire vehicles ,etc (details given under Fire Fighting section)	-	-																			Department of Health and Emergency Services		
Awareness generation for general hygiene and health to prevent any health disaster	1	No.																			Department of Health and Emergency Services		
Provision of potable drinking water to all	-	-																			MWASCO		
Provision of proper sanitation facilities to all	-	-																			NEMA and County Government		
Environmental Management and Coordination Act (EMCA), the Physical Planning Act, the Water and Health Acts among others need to be enforced	-	-																			National Government, NEMA and County Government		
Prepare Town Disaster Management Plan (DMP)	1	No.																			County Government		
Carry out disaster mapping of town	1	No.																			County Government		
Establish early warning system and enhance risk assessments	1	No.																			County Government		

³ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Qty	Unit	Years																				Institutional Responsibility ³
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Creating a disaster management unit for Machakos town	1	No.																				County Government	
Establish fully equipped disaster management cum rescue centers at sector level (sub-town level)	-	-																				County Government	
Coordination mechanism among all concerned agencies for disaster management, like Health Department, Fire Department, police department, etc.	-	-																				County Government	
Develop, update regularly and widely disseminate information on disaster risks	-	-																				County Government	
Develop and maintain a Hazardscape at town level to make an informed risk assessment data base	-	-																				County Government	
Develop short-term and long-term strategy for flood management/erosion control	-	-																				County Government	
Record, analyze and summarize information on disaster occurrence, impact and losses	-	-																				County Government	
Effective development and maintenance of public buildings and offices	-	-																				County Government	
Preparation of hospital emergency preparedness plan to	-	-																				County Government	

Projects	Qty	Unit	Years																		Institutional Responsibility ³
			Phase I					Phase II					Phase III					Phase IV			
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
deal with mass casualty incidents																					
Training of hospital administration/ doctor for emergency preparedness	-	-																			County Government

Source: Generated by Consultants

Table 2.4: Tourism and Heritage Implementation Plan

Projects	Quantity	Unit	Years																		Institutional Responsibility ⁴
			Phase I					Phase II					Phase III					Phase IV			
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Construction of new hotels and guest houses	-	-																			Private sector
Proper management of solid waste in town	-	-																			Department of Health
Development of identified tourist sites (landscaping, solid waste management, access road, etc)	1	No.																			Department of Tourism, Sports and Culture
Construct road to top of Viet Hill (Diversion from Kathiani Road to hilltop: 5km)	4	km																			Department of Transport, Roads and Public Works
Construct road from Katoloni (Wote Road) to Kiima Kimwe hill (Masaku Pond)	-	-																			

⁴ The Department of Finance and Revenue Management will be responsible for arranging finance for the projects identified above

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁴
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Develop tourist campsite at Iveti Hill and Mua Hill	1	No.																			Department of Tourism, Sports and Culture and Department of Transport, Roads and Public Works		
Develop ropeway up to Iveti Hill top from Sweet Water	1	No.																					
Develop adventure sport centre at Iveti Hill	1	No.																					
Preparation of a regional tourist circuit map	1	No.																					
Construct cultural museum, picnic spot and fair ground at Kiima Kimwe (Sacrifice place of Masaku)	1	No.																					
Cluster community hall/ club/small library	13	No.																					
Sub-town level Community/cultural centre	3																				Department of Tourism, Sports and Culture		
Listing of tourist sites and documentation of sites with description	1	No.																					
Establish a tourism information centre (for travel planning, description of sites, distances, safety issues, accommodation, etc.)	1	No.																					

Source: Generated by Consultants

Table 2.5: Water supply Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁵
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Construct Mavindini dam at the confluence of Athi River and Thwake River to serve Konza City and the new Machakos City.	1	No.																				TANATHI Water Services Board and Machakos County	
Construct Munyu dam upstream (in Kilimambogo area along Athi River) to increase water supply to Machakos for 2030 and beyond	1	No.																					
New water treatment plant to provide the adequate capacity required by 2035	40,000	m ³																				MWASCO	
Construction of overhead tanks	10	No.																				MWASCO	
Rehabilitate the whole old system pipe line CBD-3km Rising Mains at Iveti (5.2km) and Maruba (6km)	14.2	km																				MWASCO	
Rehabilitation of the current Water Treatment plant	-	-																					
Construction of Miwani and Mwanja dams to augment water supply	-	-																					
Extension of the water pipeline to Kimutwa (7.8km),	28.6	Km																					

⁵ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁵		
			Phase I					Phase II					Phase III					Phase IV							
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36							
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
Kaseve (7.6km), Katheka Kai (8km) and Mutituni (5.2km)																									
Laying new pipelines	30	km																							MWASCO
Installation of community water points in informal areas and public places	20	No.																							MWASCO
Construction of rain water harvesting structures on natural streams within the planning area to recharge the ground water	20	No.																							MWASCO
Mandatory provision of water harvesting building design																									Physical Planning Department
Recycling of waste water	1	No.																							MWASCO
Awareness programme among the people for the use of protected and unprotected sources of water	1	No.																							MWASCO
Asset management system (GIS Mapping of water supply network)	1	No																							MWASCO

Source: Generated by Consultants

Table 2.6: Sewerage and Sanitation Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁶
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Link functional toilet design with building approval system	1	No.																			Physical Planning Department		
IEC measures for safe sanitation practice	1	No.																			MWASCO		
Overhaul of the whole sewer system	20	Km																			MWASCO		
Rehabilitation of the existing Sewage Treatment Plant	1	No																			MWASCO		
Upgrading of the Machakos Girls School sewage treatment ponds	20	No																			MWASCO		
Construct a new sewage treatment plant (at Kivandini and Kaani)	2	No.																			MWASCO		
Conduct feasibility study and comprehensive design for sewer network	1	No.																			MWASCO		
Construct a sewerage network in unserved areas	45	Km																			MWASCO		
Construct community toilets in informal areas (1/20 families)	20	No.																			MWASCO		
Public Toilets in market areas and public buildings	20	No.																			MWASCO		

⁶ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Quantity	Unit	Years																		Institutional Responsibility ⁶
			Phase I					Phase II					Phase III					Phase IV			
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Construct decentralized treatment facilities (DTFs) in low income areas.	10	No.																			MWASCO and Physical Planning Department

Source: Generated by Consultants

Table 2.7: Storm Water Drainage Implementation Plan

Projects	Quantity	Unit	Years																		Institutional Responsibility ⁷
			Phase I					Phase II					Phase III					Phase IV			
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Implement the on-going feasibility study and master plan for stormwater	1	No.																			Department of Transport, Roads and Public Works
Construct primary drains (2 to 5 m ³)	37	Km																			
Construct secondary drains (1 m ³)	265	Km																			
Construct tertiary drains (1 to 5 cubic feet)	1128	Km																			
Construct small water harvesting structures on all natural streams	20	No.																			Department of Water and Irrigation and Transport, Roads, Public Works

⁷ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁷
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Covered drain in market areas to be used as footpath	10	Km																			Department of Transport, Roads and Public Works		
Remove the encroachments of drains	-	-																			Department of Physical Planning and Department of Transport, Roads, Public Works		
Notification of natural drainage area for non-construction activities	-	-																			Department of Transport, Roads, Public Works		

Source: Generated by Consultants

Table 2.8: Solid Waste Management Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ⁸
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Distribute community dustbins/ skips (20x20m)	380	No.																			Department of Health, Machakos County		
Litter Bin (small size)	200																						
Recruit more staff for waste collection	20	No.																					
Purchase compactor	4	No.																					
Purchase cess pool emptier	4	No.																					
Purchase covered truck	4	No.																					
Acquisition and development of a new landfill site	25	Ha																					
Composting of biodegradable waste	1	No.																					
Waste recycling	1	No.																					
Explore the possibility of PPP in solid waste management	1	No.																					
Awareness programme for segregation of waste at source and for solid waste management system in general	1	No.																					

Source: Generated by Consultants

⁸ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the project identified above

Table 2.9: Road and Transport System Implementation Plan

Road Name	Road Segment		Existing Lanes/Road Type	Proposed Lanes/Road Type	Years															Institutional Responsibility ⁹
					Phase I					Phase II					Phase III					
	2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31									
	From	To			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Kangundo-Machakos Road (C-99)	Mumbuni	Machakos-Kitui Road (C-97) near Susu Centre	2 lane undivided	4 lane divided															Department of Transport, Roads and Public Works	
	Machakos roundabout	Le Technisch	2 lane undivided	4 lane divided																
Machakos-Kitui Road (C-97)	Kanaani Technical College	Machakos roundabout	2 lane undivided	4 lane divided																
	Kangundo-Machakos Road (C-99) near Level-5 Hospital	Syokimau Avenue	2 lane undivided	4 lane divided																
Syokimau Avenue	Mwatu Wa Ngoma Street	Machakos-Kitui Road (C-97)	2 lane undivided	4 lane divided																
Kathemboni Road	Machakos-Kitui Road (C-97) near Machakos Girls High School	Kangundo-Machakos Road (C-99)	2 lane earthen	2 lane paved																
Mavivye-Machakos School-Muthini Road	Mavevivy on Kangundo-Machakos Road (C-99)	Machakos-Kitui Road (C-97) near Machakos School	2 lane earthen	2 lane paved																
	Machakos-Kitui Road (C-97) near Machakos School	Machakos-Wote Road (C-99)	2 lane earthen	2 lane paved																
Mumbuni-Machakos New Town	Mumbuni on Kangundo-Machakos Road (C-99)	Machakos-Kitui Road (C-97) near Kenya Israel	2 lane earthen	2 lane paved																

⁹ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Road Name	Road Segment		Existing Lanes/Road Type	Proposed Lanes/Road Type	Years															Institutional Responsibility ⁹
					Phase I					Phase II					Phase III					
	2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31									
	1	2			3	4	5	6	7	8	9	10	11	12	13	14	15			
Road	99)																			Department of Transport, Roads & Public Works , Machakos Government and National Government
	Machakos-Kitui Road (C-97) near Kenya Israel	Machakos New Town on Machakos-Wote Road (C-99)	2 Lane earthen	2 lane paved																
Inner Ring Bypass	Mavivye (via Machakos Boys School)	Machakos Girls on Kitui Road																		
Middle Ring Bypass	Kasinga (via Katelembu Centre of Excellency)	Katamani on Wote Road																		
Outer Ring Bypass	Kaloleni (via Kathome - Kimutwa)	Kalumoni on Kitui Road																		
Truck Terminal-cum-Logistic park (one)																				
Bus Terminal (Two)																				
Matatus Stations (five)																				

Table 2.10: Junction Improvement Implementation Plan

Intersections/Junctions	Existing Condition	Planned Improvements	Years										Institutional Responsibility ¹⁰	
			Phase I					Phase II						
			2015-16 to 2020-21					2021-22 to 2025-26						
			1	2	3	4	5	6	7	8	9	10		
Chumvi-Machakos Road (C-97) and Machakos School Road	Un-signalized T-junction, 2 lanes x 2 lanes	Signalized intersection, Chumvi-Machakos Road (C-97) to be 4 lanes, exclusive left turn lanes at C-97 and Machakos School Road												Department of Transport, Roads & Public Works
Chumvi-Machakos Road (C-97) and Kangundo-Machakos Road (C-99) near Susu Centre	Un-signalized 4-legged intersection, 2 lanes x 2 lanes	Signalized intersection, Chumvi-Machakos Road (C-97) and Kangundo-Machakos Road (C-99) to be 4 lanes, exclusive left turn lanes on both roads												
Chumvi-Machakos Road (C-97) and Mwatu Wa Ngoma Road at Machakos Roundabout	Un-signalized 4-legged roundabout, 2 lanes x 2 lanes	Signalized intersection, Chumvi-Machakos Road (C-97) 4 lanes and Mwatu Wa Ngoma Road (2 lanes), exclusive left turn lanes												
Kangundo-Machakos Road (C-99) and Machakos-Kitui Road (C-97) near Level 5 Hospital	Un-signalized T-junction, 2 lanes x 2 lanes	Signalized intersection, Kangundo-Machakos Road (C-99) 4 lanes and Machakos-Kitui Road (C-97) 4 lanes, exclusive left turn lanes												
Machakos-Kitui Road (C-97) and Syokimau Avenue	Un-signalized T-junction, 2 lanes X 2 lanes	Signalized intersection, Machakos-Kitui Road (C-97) 4 lanes X Syokimau Avenue 2 lanes, exclusive left turn lanes												
Kangundo-Machakos Road (C-99) and Mwatu Wa Ngoma Road near Machakos Golf Club	Un-signalized T-junction, 2 lanes X 2 lanes	Kangundo-Machakos Road (C-99) to be 4 lanes, Mwatu Wa Ngoma Road 2 lanes, exclusive left turn lanes at all directions												

¹⁰ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Table 2.11: Fire Fighting Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ¹¹
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Development of new fire sub-stations	6	No.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	Department of Health and Emergency Services, Department of Transport, Roads and Public Works; Physical Planning Department; and MWASCO		
Development of new fire stations	2	No.				■	■						■	■									
Repair the non-functional fire hydrants	2	No.	■	■																			
Install new fire hydrants as per planned expansion	80	No.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Purchase new fire tenders/vehicles	8	No.	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Purchase small fire tenders/vehicles to serve the congested areas	3	No.	■	■	■																		
Recruit new staff for fire fighting department	-	-	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Create a separate fire fighting unit for Machakos town area	-	-	■	■																			
Increase personnel and appliances in other fire stations in the other sub-counties in Machakos County to reduce overreliance on the Machakos town fire station	-	-	■	■																			
Regular checking of fire fighting installations within built-up areas	-	-	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				

¹¹ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the project identified above

Table 2.12: Street Lighting Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ¹²
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Repair the faulty street lights along the major roads and in the core areas.	150	No.																			Kenya Power and Lighting Company, Machakos County Government		
Install street light poles at distance of 30m	540	No.																					
Erect new high mast lights at CBD, Sub-CBDs, informal markets, jua kali areas and main junctions	81	No.																					

Source: Generated by Consultants

¹² The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Table 2.13: Institutional Development Implementation Plan

Projects	Quantity	Unit	Years																				Institutional Responsibility ¹³
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Regular training of County staff in financial management	1	No.																			Machakos County Government and Outside Agencies		
Regular training of County staff in technical aspects	1	No.																					
Creating local urban body for governance of the town area	1	No.																			National Government		
Establishing environmental land courts	1	No.																			Machakos County Government and Outside Agencies		
Preparation of manual of practice for the functions of central and county government	1	No.																					
Creating centralised system, to be accessible to head of departments, for auto-update of all proposed developments	1	No.																					
Formation of steering committee of CECs headed by H.E. Governor, to have meeting monthly to oversee the development works	1	No.																					
Purchasing of 3 ArcGIS 10.3 licences for Physical Planning Department	3	No.																			Departments of Physical Planning and ICT, Machakos County		
Purchasing of 3 laptop with high configuration	3	No.																					

¹³ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Quantity	Unit	Years																				Institutional Responsibility ¹³
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Purchasing of 2 Plotters	2	No.																			Machakos County Government		
Training of County Staff in GIS for 3 months	1	No.																					
Recruitment of 3 GIS Experts	3	No.																					
Recruitment of 4 Physical Planners	4	No.																		Machakos County Government			
Time bound Building Approval system with inclusion of NEMA, Surveys and other Departments (with specific time for different approvals like NEMA, Survey Department, Planning Department)	1	No.																		Departments of Physical Planning and Survey Department; and NEMA			
Creating daily programmes for local TV	1	No.																		Machakos County Government			
Creating electronic screens to display public information	1	No.																					
Establishment of formal local citizen forum	1	No.																					
Establishment of information cell for general and legal information about various policies and acts	1	No.																					
Creating local police helpline number	1	No.																					

Table 2.14: Financial Management Implementation Plan

Projects	Qty	Unit	Years																				Institutional Responsibility ¹⁴
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Creating a simple procedure for property tax assessment	1	No.																			Department of Finance and Revenue Management		
Creating property GIS system with mapping of all properties	1	No.																					
Increasing the coverage of taxed properties/tax base	1	No.																					
Improving collection performance	1	No.																					
Creating the accrual based double entry system for income and expenditure	1	No.																					
Regular updating of user charges for various services	1	No.																					
Creating online system for funds disbursement and utilization	1	No.																			Department of Finance and Revenue Management and Department of ICT		
Strengthen co-ordination between donor and Government funded projects	1	No.																			County Government		
Mapping of all public land within town	1	No.																					
Valuation of public land and assess its value for sale or lease	1	No.																			County Land Valuer		

¹⁴ The Department of Finance and Revenue Management, Machakos Government will be responsible for arranging finance for the projects identified above

Projects	Qty	Unit	Years																				Institutional Responsibility ¹⁴
			Phase I					Phase II					Phase III					Phase IV					
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035-36					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Utilising of public land for public purpose or using land as government contribution for attracting private developer for various project (PPP)	1	No.																			Department of Finance and Revenue Management,		
Create dedicated funds for provision of infrastructure facilities	1	No.																					
All development charges collected to be put into dedicated infrastructure fund	1	No.																					
Seed capital provided by government initially	1	No.																					

Source: Generated by Consultants

2.3 Projects to be started within the next three years

Economic development projects	
1	Allocation of land for new industrial areas
2	Allocation of land for new commercial areas
3	Improvement of basic infrastructure and services (e.g. roads, drainage, water supply and electricity) in jua kali areas
4	Annual training for skill upgrading of jua kali artisans
5	Marketing of jua kali products through a co-operative society
6	Organising annual fair to showcase the jua kali products at county and national level
7	Improvement of existing commercial areas
8	Single window approval system
9	Notification of the land demarcated for commercial and industrial development
10	Tax holidays for small and big industries

Environmental projects	
1	Tree Plantation along river banks
2	Construction of small check dams to create water reservoirs for recreational purposes
3	Creating recreational open areas like parks, playground, etc.
4	SEA for ISUDP of Machakos
5	Harmonizing the physical planning Act & EMCA
6	Strict enforcement of environmental guidelines quarries
7	Removal of encroachment on natural drainage system
8	Promotion of energy saving eco-jikos
9	Tax rebate for manufacturers and dealers of eco-jikos
10	Awareness campaign for eco-jiko & environment
11	Cluster park (per unit area 1ha)
12	Cluster playground (per unit area 1ha)
13	Sector Park (per unit area 2ha)
14	Sector Playground (per unit area 2ha)
15	Integrated Sports Centre (area 10ha)

Disaster Management projects	
1	Mandatory provision of smoke detectors in all buildings with overall building approval system
2	Mandatory provision of earthquake resistance in building design
3	New fire stations, fire hydrants, fire vehicles ,etc (details given under Fire Fighting section)
4	Awareness generation for general hygiene and health to prevent any health disaster
5	Provision of potable drinking water to all
6	Provision of proper sanitation facilities to all
7	Environmental Management and Coordination Act (EMCA), the Physical Planning Act, the Water and Health Acts among others need to be enforced

Tourism and Heritage projects	
1	Construction of new hotels and guest houses
2	Proper management of solid waste in town
3	Development of identified tourist sites (landscaping, solid waste management, access road, etc)
4	Construct road to top of Iveti Hill (Diversion from Kathiani Road to hilltop: 5km)
5	Construct road from Katoloni (Wote Road) to Kiima Kimwe hill (Masaku Pond)
6	Preparation of a regional tourist circuit map
7	Cluster community hall/ club/small library
8	Listing of tourist sites and documentation of sites with description
9	Establish a tourism information centre (for travel planning, description of sites, distances, safety issues, accommodation, etc.)

Water supply projects	
1	Construct Munyu dam upstream (in Kilimambogo area along Athi River) to increase water supply to Machakos for 2030 and beyond
2	New water treatment plant to provide the adequate capacity required by 2035
3	Construction of overhead tanks
4	Rehabilitate the whole old system pipe line in Kangaru, Majengo and town
5	Laying new pipelines
6	Installation of community water points in informal areas and public places
7	Construction of rain water harvesting structures on natural streams within the planning area to recharge the ground water
8	Mandatory provision of water harvesting building design
9	Awareness programme among the people for the use of protected and unprotected sources of water
10	Asset management system (GIS Mapping of water supply network)

Sewerage and Sanitation projects	
1	Link functional toilet design with building approval system
2	IEC measures for safe sanitation practice
3	Construct a new sewage treatment plant (at Kivandini and Kaani)
4	Construct a sewerage network in unserved areas
5	Construct community toilets in informal areas (1/10 families)
6	Public Toilets in market areas and public buildings
7	Construct decentralized treatment facilities (DTFs) in low income areas.

Storm Water Drainage projects	
1	Implement the on-going feasibility study and master plan for stormwater
2	Construct secondary drains (1 m ³)
3	Construct tertiary drains (1 to 5 cubic feet)
4	Construct small water harvesting structures on all natural streams
5	Covered drain in market areas to be used as footpath
6	Remove the encroachments of drains
7	Notification of natural drainage area for non-construction activities

Solid Waste Management projects	
1	Distribute community dustbins/ skips (20x20m)
2	Litter Bin (small size)
3	Recruit more staff for waste collection
4	Purchase compactor
5	Purchase cess pool emptier
6	Purchase covered truck
7	Acquisition and development of a new landfill site
8	Composting of biodegradable waste
9	Waste recycling
10	Explore the possibility of PPP in solid waste management
11	Awareness programme for segregation of waste at source and for solid waste management system in general

Road and Transport projects		
1	Kangundo-Machakos Road (C-99): Mumbuni – Machakos/Kitui road Susu Centre	4 lane divided
2	Machakos-Kitui Road (C-97): Kanaani Technical College – Machakos roundabout	4 lane divided
3	Machakos-Kitui Road: near Hospital – Syokimau Avenue	4 lane divided
4	Kathemboni Road	2 lane paved
5	Mavivye-Machakos School-Muthini Road: Mevevivyve – Wote Road	2 lane paved
6	Inner Ring Bypass	

Junction Improvement projects		
1	Chumvi-Machakos Road (C-97) and Machakos School Road	Signalized intersection, Chumvi-Machakos Road (C-97) to be 4 lanes, exclusive left turn lanes at C-97 and Machakos School Road
2	Chumvi-Machakos Road (C-97) and Kangundo-Machakos Road (C-99) near Susu Centre	Signalized intersection, Chumvi-Machakos Road (C-97) and Kangundo-Machakos Road (C-99) to be 4 lanes, exclusive left turn lanes on both roads
3	Chumvi-Machakos Road (C-97) and Mwatu Wa Ngoma Road at Machakos Roundabout	Signalized intersection, Chumvi-Machakos Road (C-97) 4 lanes and Mwatu Wa Ngoma Road (2 lanes), exclusive left turn lanes
4	Kangundo-Machakos Road (C-99) and Machakos-Kitui Road (C-97) near Level 5 Hospital	Signalized intersection, Kangundo-Machakos Road (C-99) 4 lanes and Machakos-Kitui Road (C-97) 4 lanes, exclusive left turn lanes

Fire Fighting projects	
1	Development of new fire sub-stations
2	Repair the non-functional fire hydrants
3	Install new fire hydrants as per planned expansion
4	Purchase new fire tenders/vehicles
5	Purchase small fire tenders/vehicles to serve the congested areas
6	Recruit new staff for fire fighting department
7	Create a separate fire fighting unit for Machakos town area
8	Increase personnel and appliances in other fire stations in the other sub-counties in Machakos County to reduce overreliance on the Machakos town fire station
9	Regular checking of fire fighting installations within built-up areas

Street Lighting projects	
1	Repair the faulty street lights along the major roads and in the core areas.
2	Install street light poles at distance of 30m
3	Erect new high mast lights at CBD, Sub-CBDs, informal markets, jua kali areas and main junctions

Institutional Development	
1	Regular training of County staff in financial management
2	Regular training of County staff in technical aspects
3	Creating local urban body for governance of the town area
4	Establishing environmental land courts
5	Preparation of manual of practice for the functions of central and county government
6	Creating centralised system, to be accessible to head of departments, for auto-update of all proposed developments
7	Formation of steering committee of CECs headed by H.E. Governor, to have meeting monthly to oversee the development works
8	Purchasing of 3 ArcGIS 10.3 licences for Physical Planning Department
9	Purchasing of 3 laptop with high configuration
10	Purchasing of 2 Plotters
11	Training of County Staff in GIS for 3 months
12	Recruitment of 3 GIS Experts
13	Recruitment of 4 Physical Planners
14	Time bound Building Approval system with inclusion of NEMA, Surveys and other Departments (with specific time for different approvals like NEMA, Survey Department, Planning Department)
15	Creating daily programmes for local TV
16	Creating electronic screens to display public information
17	Establishment of formal local citizen forum
18	Establishment of information cell for general and legal information about various policies and acts
19	Creating local police helpline number

Financial management	
1	Creating a simple procedure for property tax assessment
2	Creating property GIS system with mapping of all properties
3	Increasing the coverage of taxed properties/tax base
4	Improving collection performance
5	Creating the accrual based double entry system for income and expenditure
6	Regular updating of user charges for various services
7	Creating online system for funds disbursement and utilization
8	Strengthen co-ordination between donor and Government funded projects
9	Mapping of all public land within town
10	Valuation of public land and assess its value for sale or lease
11	Utilising of public land for public purpose or using land as government contribution for attracting private developer for various project (PPP)
12	Create dedicated funds for provision of infrastructure facilities
13	All development charges collected to be put into dedicated infrastructure fund
14	Seed capital provided by government initially

2.4 Priorities established at the workshop

2.4.1 Process

At the Draft ISUDP workshop a list of possible projects was circulated to all who attended. This list was compiled from data collected from prior workshops and community consultations. Space was provided for participants to add any project that was not included in the list.

Participants were advised that they should rank their top five projects in terms of what they thought were most important (which they should mark number 1), the second most important (marked 2) and so on. They were told that they could not rank more than one project with the same number (some people had difficulty in so doing and a few papers were spoiled by multiple “top priorities” all numbered 1).

2.4.2 Results : alternative scoring methods

There were 62 valid voting papers received. The results were tallied using Excel.

Weighted method

The original intention was to give more weight to projects with higher priority, thus the votes were scored as follows:

Table 2.15: Weighted scoring method

Rank	Score
1	5
2	4
3	3
4	2
5	1

Table 2.16: Results of weighted prioritisation

Project	Weighted
Improved water supply	172
Improved Security	78
Easy process of taking title deeds	76
Improved local health services	76
Good Housing	70
Improved solid waste removal and treatment	60
Better roads within the town	57
Environmental conservation	41
Improved/new schools/more educational facilities	40
Improved/more Storm water drainage	24
New bypass road	22
Sewers to all houses	19
Regularisation of informal settlements	16
More police stations	15
Better conditions for jua kali	14
Improved conditions in the CBD	13
Improved bus/matatu park	12
Better facilities for pedestrians and bicycles	12
Improved procedure for planning and building approval	12
More recreational facilities parks and playgrounds	11
Improved system for payment of SBP/Rates	11
Modern shopping facilities	10
More electrical connections	10
New industrial park	10
Improved markets	9
Improved procedure for starting a business	8
More street lighting	6
Improved fire services	5
Improve tourist and heritage sites	5
Truck terminal cum logistic park	0

Unweighted method

Participants had great difficulty in deciding how to rank competing needs. In some senses, therefore, there was little real difference in terms of priority between projects numbered one and two, or even one and four, for example. To test the effect of recognising this dilemma an alternative ranking was prepared in which all votes were counted as “1”. Thus there was no difference in points between projects selected 1, 2, 3, 4 or 5.

Table 2.17: Results of unweighted prioritisation

Project	Unweighted
Improved water supply	44
Improved security	26
Improved solid waste removal and treatment	23
Improved local health services	22
Good housing	22
Easy process of taking title deeds	20
Better roads within the town	19
Environmental conservation	16
Improved/new schools/more educational facilities	13
Improved/more Storm water drainage	8
Sewers to all houses	8
More electrical connections	7
Better facilities for pedestrians and bicycles	7
New bypass road	6
Improved conditions in the CBD	6
Improved bus/matatu park	6
Improved procedure for planning and building approval	6
More police stations	5
Modern shopping facilities	5
Improved markets	5
Improved system for payment of SBP/Rates	5
Regularisation of informal settlements	4
More recreational facilities parks and playgrounds	4
New industrial park	4
Better conditions for jua kali	3
Improved procedure for starting a business	3
Improve tourist and heritage sites	3
More street lighting	2
Improved fire services	2
Truck terminal cum logistic park	0

2.4.3 Summary

Table 2.18: Alternative priorities compared

Project	Priority weighted	Priority unweighted
Improved water supply	1	1
Improved security	2	2
Easy process of taking title deeds	3	6
Improved local health services	4	4
Good housing	5	5

Improved solid waste removal and treatment	6	3
Better roads within the town	7	7
Environmental conservation	8	8

From this it can be seen that there is little real difference between the two scoring methods.

2.4.4 Conclusion

What remains therefore is to determine what specific projects should be developed to respond to these priorities.

Table 2.19: Possible projects

Priority	Project	Comment
1	Improved water supply	This is an important and substantial project as the system requires substantial investment
2	Improved security	This can partially be addressed by additional street lights and high mast lighting
3	Easy process of taking title deeds	This is not under the control of the County, though their survey department has a role in facilitating information. The new cadastral mapping will also assist
4	Improved local health services	This is largely a matter of management. Capital development is partly the responsibility of National Government, and is therefore not covered here. However neighbourhood health centres should be developed
5	Good housing	Land will be serviced and provision will be made for more housing
6	Improved solid waste removal and treatment	Provision will be made for acquisition of more vehicles
7	Better roads within the town	Sub-standard roads will be upgraded
8	Environmental conservation	Support will be given to protect environmentally vulnerable areas, but this will not require much capital investment

2.5 Final list for detailed development

The scope of work for preparing capital investment plan include the a three year rolling capital investment plan (CIP) reflecting publicly agreed local priorities for investment in municipal services and is both financially realistic and feasible. The consultant has taken consideration of prioritization by stakeholders during the workshop of draft proposal within the overall framework of the options of practicability, feasibility and implementability. After considering the priorities of stakeholders, the consultant has weighed the priorities in terms of feasible and practically implementable projects.

3 Funding options

3.1 County Budget

3.1.1 Existing own revenues

The table below compares the actual revenue yields to estimated potential yields of the sub-county's major sources of revenue in the financial year 2013/14:

Table 3.1 Machakos Town Sub-County – Revenue collection efficiency in 2013/14

Revenue	Potential Ksh Million	Actual Ksh Million	% actual to potential
Motor vehicle parking fees	60.40	38.85	64%
Single Business Permit (SBP)	41.79	38.00	90%
Land rates and land rents	127.00	30.90	24%
User fees and charges (various)	94.72	58.73	62%
Engineering, planning & works	13.86	12.75	92%
Enforcement/Municipal court	15.25	14.64	96%
Other sources	42.45	35.65	84%
Total Revenues	395.47	229.52	58%

Source: Machakos County Government

Note: Land rates revenue potential is based on the value of rateable land on the Machakos Town 1991 Valuation Roll. SBPs revenue potential is based on the number of permits issued, and for all other sources, budget amounts are taken as the potential.

The most important source of revenue is the Rates. The Table below shows how the total debt is calculated.

Table 3.2: Machakos Town rates revenue potential and realized in 2013/14

Number of plots/parcels	9076
Rates levy per plot	14,000
Potential rates revenue p.a. Kshs. Million	127.00
Amount collected in 2013/14 Kshs. Million	30.9
% Compliance	24%

Source: Machakos County Government

3.1.2 Potential to increase own revenues for allocation to capital expenditure

Table 3.3: Possible additional revenue by improved rate of collection (Kshs million)

All amounts in Kshs million	Current amount	Rate of increase	Max	Annual increase by rate in Column 3. Existing income to go to recurrent budget				
				Year	2016	2017	2018	2019
Existing rates income*	30,9	80%	254	24,72	44,50	80,09	144,17	254,00
Existing SBP income	38	30%	41,79	11,40	14,82	19,27	25,05	32,56
Water**	0,00	60%	0,00	0,00	0,00	0,00	0,00	0,00
Total				36,12	59,32	99,36	169,21	286,56

- Existing rates use very low base and many properties not included: therefore double the existing total used

** Current water receipts are very low: these calculations assume that current water supply difficulties will gradually be resolved.

As has been noted above there is room to improve the present level of collection, especially in respect of Rates. This may require substantial improvements in terms of systems and even political will. The table above shows what might be achievable in practice.

3.1.3 Equitable share

According to the County Allocation of Revenue Bill, 2015, the allocation for Machakos County in FY 2015/16 will be Kshs 6,768,653,467. The question is how much of this should be allocated to the urban area of Machakos?

There are two criteria which might be applied to this.

The population criterion

The population of Machakos County is 1,098,584 (2009) and the population of Machakos town is 121,756¹⁵ (2009). Thus Machakos town has 11.1% of the population of the County as a whole.

The need criterion

By their nature urban areas require a higher level of capital investment than rural ones. Such investments are essential to support an active economy: they therefore pay for themselves. However, before they cannot pay for themselves without prior capital expenditure. There is therefore a strong argument that urban areas should have relatively higher levels of capital expenditure than rural ones. The urban population of the county is 571,355 – 52% of the total.

It is possible to correct the allocation based purely on population by adding a weighting of 80% to the figure. The result of this calculation is shown in the table below.

¹⁵ Current estimated population of Machakos town planning area is 275,607 (2015) and since projected population of Machakos county for year 2015 is unavailable, therefore the population of Machakos town planning area for year 2009 has been taken for comparative analysis

Table 3.4: Possible allocation of capital budget to Machakos town

		Kshs million
Total County allocation 2015/16		6,768
Population of Machakos town	121,756	
Population of County	1,098,584	
Urban population of County	571,355	
Machakos town as % of County	11.08%	
Allocation based on population only		749.89
Add for urban	80% of population-based amount	599.85
Total		1349,66

3.1.4 Estimated budget ceiling for capital expenditure

Using the data derived from the two sources above – increased collections and share of the equitable share of national revenues it is possible to estimate possible budget ceilings. However, one proposed CIP is to conduct a study of all sources of revenue and thereby increase the total available for capital investment. It is assumed that a total of 10% of the sum of the County resources and own revenues can be added to the total. The table below gives the result of this calculation.

Table 3.5: Budget ceiling for expenditure on capital projects (Kshs million)

Source	Year				
	2016	2017	2018	2019	2020
Machakos town share of govt transfer to County	1 349,66	1 349,66	1 349,66	1 349,66	1 349,66
Percentage of transfer for capital	269,93	269,93	269,93	269,93	269,93
Increased existing revenues	38,05	62,41	104,30	177,12	299,21
Additional revenues	7,61	12,48	20,86	35,42	59,84
Total	315,59	344,82	395,09	482,48	628,99

Note: It is assumed that the Equitable share will remain constant when inflation is taken into account.

3.2 Public private partnerships (PPPs)

It is proposed that the new multi-storey car park be the subject of a public private partnership. A feasibility study for this is included as Annex 1.

3.3 Donor finance

The following are on-going projects financed by donors

- Stormwater drainage study
- Water supply and sewerage study

4 Capital Investment Plans

The following capital investments have been selected:

1. Establishing Sustainable Finance
2. Water: Rehabilitate existing pipes
3. Water: Extension of water reticulation to unserved areas
4. Water: Provide water points in informal settlements
5. Sewerage: Rehabilitation of existing sewage treatment plant
6. Sewerage: Upgrading of Machakos Girls School STP
7. Sewerage: Rehabilitation of existing sewers
8. Sewerage: Provide public toilets
9. Solid waste: Acquisition of new landfill site
10. Solid waste: Buy skips
11. Solid waste: Buy compactor trucks
12. Roads: Construct ring road Mavivye – Machakos Girls School
13. Roads: Purchase land for ring road
14. Pedestrianisation of CBD
15. Security lighting: Repair existing lights
16. Security lighting: Install additional lights
17. Security lighting: Install high mast lights
18. Fire fighting: Buy new fire tender
19. Housing

Source of Costing: The cost estimates for the CIPs were based on unit rates which were built-up from basic principles based on market prices for the various material items and works components as applicable. The unit rates developed in the build-up exercise were compared to recent rates derived from construction contracts of similar nature carried out in the respective project areas. Reference was also made to the following documents:

- “Current Construction Costs in Kenya” as prepared by the Institute of Quantity Surveyors of Kenya and published in the “The Quantity Surveyors” Magazine.
- “Current Construction Costs Handbook” published by the Cost Planning Unit of the Quantity and Contracts Department of the Ministry of Public Works.

CIP 1

Establishing sustainable finances

4.1 Establishing sustainable finances

Total cost: Kshs 5,000,000

Table 4.1 Cash Flow

Year	2015/2016	2016/2017	2017/2018	2018/2019
Amount	5,000,000			

4.1.1 Terms of Reference:

Introduction

These terms of reference are intended as the basis for a request for proposals from suitably qualified firms in regard to methods for increasing revenues.

1. Increasing own revenues
 - 1.1. The degree to which increased revenues may be achieved by more efficient and effective collection.
 - 1.2. Whether the existing basis for charges is equitable and results in a system that is progressive (in economic terms), i.e. is structured in such a way that those with high incomes pay relatively more.
 - 1.3. Whether there are additional sources of revenue.
 - 1.4. Whether the current system of valuation for rating purposes could be simplified and made more effective.
 - 1.5. The potential for linkages through GIS and other systems to increase revenue.
2. Asset management
 - 2.1. An assessment of whether current assets are being managed effectively in terms of protecting the value.
 - 2.2. In view of the need for public authorities to maintain a balance between the need for social responsibility and financial returns, whether the value of assets is being exploited to their full potential.
 - 2.3. Proposals with regard to the methodology and timing of any future asset sales/leases.
 - 2.4. Proposals with regard to structuring the involvement of the private sector in terms of the public asset development and management

3. Other sources

In assessing the importance and feasibility of the above, the following issues should be considered:

- Legislative changes required to realise improved revenues.
- Degree to which the current financial position of the county can be improved by the measures proposed.
- Potential for financial growth.

Increasing Own Revenues

Efficient and effective?

Based on information supplied by the County, the following is the situation as far as own revenues are concerned.

Machakos Town Sub-County – Revenue collection efficiency in 2013/14

Revenue	Potential Ksh Million	Actual Ksh Million	% actual to potential
Motor vehicle parking fees	60.40	38.85	64%
Single Business Permit (SBP)	41.79	38.00	90%
Land rates and land rents	127.00	30.90	24%
User fees and charges (various)	94.72	58.73	62%
Engineering, planning & works	13.86	12.75	92%
Enforcement/Municipal court	15.25	14.64	96%
Other sources	42.45	35.65	84%
Total Revenues	395.47	229.52	58%

Source: Machakos County Government

It will be noted that:

The degree to which revenues are being received is almost inversely proportional to the income levels of the payers. Thus market and parking fees¹⁶ which are paid in general by lower income groups show both lower levels of non-payment, and account for the majority of the receipts. The single business permit is another major course of income, but data does not exist with regard to the types of business that are in arrears – this must be studied.

Rates

The biggest gap in terms of revenues is with regard to property rates. The reasons for this must be analysed and proposals made with regard to improved collection methods, provided these are within the powers of the County as stated within the Rating Act¹⁷ (see Annexure !). Among alternatives to be studied are:

Collection methods

1. The frequency of rates collections: should they be payable monthly instead of annually?
2. Whether there is the possibility of linking payment of rates to that of other municipal services, e.g. water.
3. Whether the location and method of payment at which rates must be paid act as a deterrent to prompt payment.
4. Whether other methods (such as direct bank transfers, Mpesa, etc could be used.
5. Whether discounts should be allowed for prompt payment and or standing bank orders, and if what a reasonable and sufficient inducement would be.
6. Whether improved methods of communication would affect payments – e.g. SMS to the payer when payment is required or made.
7. Whether the difference between residential commercial, industrial and agricultural rates is fair and reasonable.

Updating and maintaining the valuation roll

1. Whether there is a system to ensure that all of those who should pay are identified.
2. The potential for using the cadastral mapping to link approvals for subdivisions and building approvals to the valuation roll and rates accounts.

¹⁶ It can be argued that higher income groups are the only ones who can afford cars, therefore they must be a major contributor to parking fees. However, this ignores the fact that matatus and buses are a major contributor, as well as small commercial vehicles such as pick-ups. In addition it may be observed that many among the higher income groups employ drivers who can evade parking fees.

¹⁷ Although the Rating Act is designed for a Local Government System that no longer exists, the work should assume that this will be regularised in such a way as to give comparable powers to Counties.

Valuation

1. Whether there is a method of simplifying the method of property valuation
2. Whether to base rates on land only or land plus improvements, and if so the implications in terms of equity and quantum
3. Whether the Rating Act in its current form can be used for any proposed amendments. For example does section (5) provide for the scope required for a reformed and simplified system.

Single Business Permit

Fair rates

The basis for charges for the single business permit is that it represents a cost to the County which has to be recovered. It therefore cannot be used as a tax, but must rather be based on costs. Within these limits the amount charged to different businesses varies based on the type of business, the number of employees and the size of the premises. However, in practice the County must select the tariff that is affordable to its citizens for the prescribed tariffs.

Improving collection

Prompt service

Many complaints have been received in our consultations with stakeholders regarding the delays in issuing SBPs. This is a management problem which should be researched (for example what is the average time taken? what process is used to approve and issue licences? How many departments are involved?, etc, and recommendations made regarding improving the service provided.

GIS

How can SBPs be linked to a GIS system? Ideally, for formal businesses the location should be identified on a map, and the cadastral information recorded to link it with the assessment and collection of rates. How practical would this be?

Enforcement

Are there businesses which do not pay the SBP? If so, how are they discovered? Is this an efficient and cost effective method? Is it necessary?

Parking

There are three major issues in relation to parking charges.

Do they vary based on the area concerned? For example is there a different price for parking spaces in the CBD and a suburban shopping centre?

Are they based on the period of parking or at a fixed rate?

How good is the enforcement, and what evidence is there of corruption in the collection?

Are there controlled car parks (as opposed to on-street parking)?

Are the rates fair? Can revenues be increased, and if so how?

Asset management

Assets can be placed in two classes: those which generate income or have the potential to add value, and those which do not. This report concerns the former category only and in particular publicly owned land and buildings.

The consultant should prepare an inventory of all public land within the urban boundary including the following:

1. A location map

2. The extent and value of the land
3. The use, construction and approximate size of any buildings on it.
4. The value of the buildings

Other sources

Development levy

All development, from the most modest house to the grandest mansion or most spectacular commercial development requires services. One of the biggest obstacles in recent urbanisation has been the lack of funds for infrastructure, and it is reasonable to require those who develop land to share in the cost of doing so. Proposals for how to assess such costs based on different land uses and area of land developed should be proposed.

Such charges can be made when subdivision and/or building approvals are granted.

Betterment levy/Land value capture

Windfall gains in land values due to change of user can also be taxed. This allows the state to share in the private gain from land development. There are many different ways of assessing and levying this, but it is not clear whether Counties have the power to collect it as it might be considered a tax. An assessment of the legislative and administrative framework required, as well as the potential gains should be undertaken.

CHAPTER 267 - Rating Act

Commencement Date: 12/12/1963

4.(1) The rating authority may, for the purposes of levying rates, adopt the following forms of rating—

(a) an area rate in accordance with section 5;

(aa) an agricultural rental value rate;

(b) a site value rate or a site value rate in combination with an improvement rate in accordance with section 6:

Provided that—

(i) where any one of the aforementioned forms of rating has been adopted in respect of any rating area, no other form of rating under this subsection shall, at the same time, be adopted in respect of that area;

(ii) before the rating authority adopts any form of rating, the Minister's approval to the form of rating so adopted and the rating area in respect of which such form of rating is adopted shall be obtained and a notice to this effect shall be published by the rating authority.

(2) As soon as may be after the rating authority has adopted as a form of rating for any rating area any form of area rate or agricultural rental value rate the Minister may, under section 27, make rules appropriate to the form of rating so adopted.

(3) Where the rating authority has adopted for any rating area a form of rating under subsection (1) (b), the provisions of the Valuation for Rating Act shall apply to the form of rating so adopted.

Alternative methods of area rating

5.(1) Subject to subsection (2), the rating authority may, with the approval of the Minister, adopt one or more of the following methods of rating—

(a) a flat rate upon the area of land;

(b) a graduated rate upon the area of land;

(c) a differential flat rate or a differential graduated rate upon the area of land according to the use to which the land is put, or capable of being put, or for which it is reserved;

(d) an industrial rate upon the area of land used for other than agricultural or residential purposes;

(e) a residential rate upon the area of land used for residential purposes;

(f) such other method of rating upon the area of land or buildings or other immovable property as the rating authority may resolve, and a rate levied in accordance with any such method as aforesaid shall in this Act be known as an area rate.

(2) The rating authority may adopt different methods of area rating for different parts of the area of the rating authority and may from time to time vary the method or methods adopted, and may adopt in relation to any rating area the methods of area rating referred to in subsection (1) in the manner following, that is to say—

(i) method (a) or method (b) or method (c) as alternative methods which are mutually exclusive;

(ii) method (d) or method (e), or both, in addition to method (a) or method (b), but not in addition to method (c);

(iii) method (f) shall not be combined with any other method of area rating.

Site value and improvement rates

L.N.39/1965. Cap.266

6.(1) Where there is in force in respect of any area of a municipality or a county a valuation roll or supplementary valuation roll which, by reason of the issue by the Minister of a declaration under the proviso to section 6 of the Valuation for Rating Act, does not include the value of land or when no improvement rate is levied, the rating authority may levy a rate on the unimproved value of land as appearing in such roll (in this Act referred to as a site value rate) for each financial year of such amount as the rating authority shall determine:

Provided that such rate shall not, without the consent of the Minister, exceed four per centum of the unimproved value of land.

(2) In any case to which subsection (1) does not apply, the rating authority may levy a site value rate in combination with a rate on the assessment for improvement rate as appearing in the valuation roll (in this Act referred to as an improvement rate):

Provided that—

(i) any site value rate shall not, without the consent of the Minister, exceed four per centum of the unimproved value of land; and

(ii) the estimated product of any improvement rate shall not, without the consent of the Minister, exceed in any financial year one quarter of the estimated aggregate product of the rate levied in such financial year by the rating authority.

(3) In this section "assessment for improvement rate", "value of land" and "value of unimproved land" shall have the meanings assigned to those expressions in the Valuation for Rating Act.

CIP 2

**Water: Rehabilitation of 15km of old and dilapidated water
distribution lines in the town**

4.2 Rehabilitation of 15km of old and dilapidated water distribution lines in the town

Project Name

Rehabilitation of 15km of old and dilapidated water distribution lines in the town.

Client

Machakos Water Supply and Sewerage Company

Purpose

To improve water transmission system for Machakos for the period 2015– 2020

Site Details

Project Location - Various areas in Machakos town

Land registration number, ownership and size - N/A

Value (if privately owned) - N/A

Topography, soils and geology

Slope - varied

Soils - varied

Vegetation -varied

Nature of on-site works

Brief description

Extension of water reticulation pipes in developed but un-served areas within the town as follows:

50mm diameter pvc pipes -6km

75mm diameter pvc pipes – 4km

100mm diameter pvc pipes -3km

150mm diameter pvc pipes -2km

Costs (at 2015 prices)

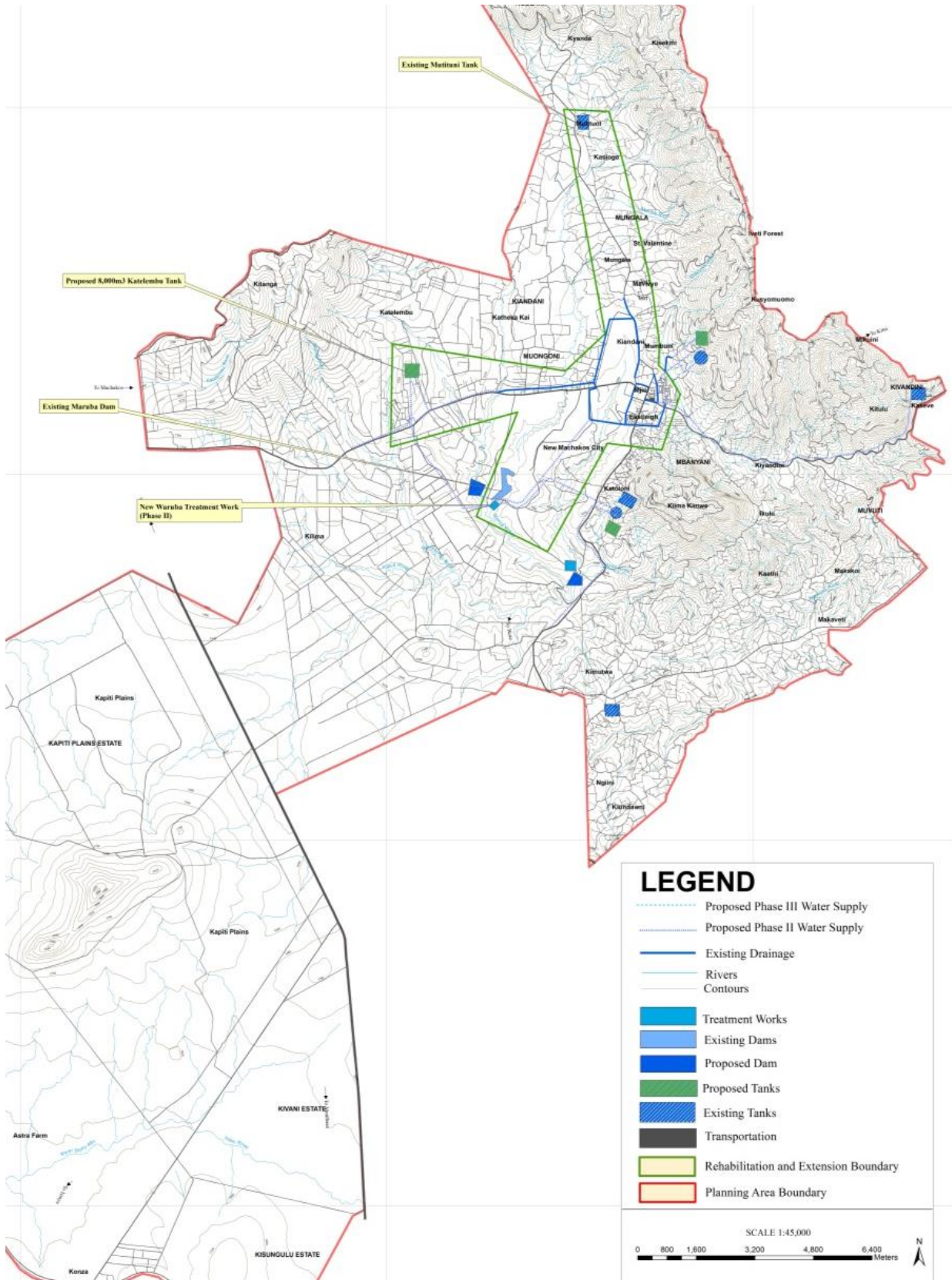
S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	50mm diameter pvc pipes	6km @225,000/=	1,350,000/=
2.	75mm diameter pvc pipes	4km @500,000/=	2,000,000/=
3.	100mm diameter pvc pipes	3km@850,000/=	2,550,000/=
4.	150mm diameter pvc pipes	2km@1,300,000/=	2,600,000/=
8.	Sub-total construction		8,500,000/=
9.	Professional fees	4%	340,000/=
10.	Supervision	2%	170,000/=
12.	Grand total		9,010,000/=

Off-site infrastructure (as required) with costs

Brief description - N/A

Implementation programme	Town	Machakos												
	Project	Rehabilitation of 15km of old and dilapidated water distribution lines in the town.												
	Start date	2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01	
Consultant selection	█													
Land Acquisition														
Concept design				█										
Working drawings						█								
Tender documents								█						
Tender									█					
Award										█				
Construction												█		
Defects liability period (space for more)														
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01	
Land Acquisition														
Concept design														
Working drawings														
Tender documents														
Tender														
Award														
Construction	█													
Defects liability period (space for more)						█								

4.3 Reference map for rehabilitation and extension of water supply line in Machakos town



CIP 3

**Water: laying of new 30km water supply pipeline both main
and direct connection to cover entire developed area**

4.4 Laying of new 30km water supply pipelines both main and direct connections to cover the entire developed area

Project Name

Laying of new 30km water supply pipelines both main and direct connections to cover the entire developed area.

Client

Machakos Water Supply and Sewerage Company

Purpose

To improve the water distribution capacity for Machakos town for the period 2015– 2020

Site Details

Project Location - Developed but un-served areas in Machakos town.

Land registration number, ownership and size - N/A

Value (if privately owned) - N/A

Topography, soils and geology

Slope - varied

Soils - varied

Vegetation - varied

Nature of on-site works

Brief description

Laying of new 30km water supply pipelines both main and direct connections to cover the entire developed areas as follows:

50mm diameter pipes – 12km

75mm diameter pipes – 8km

100mm diameter pipes - 6km

150mm diameter pipes - 4km

Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	50mm diameter pipes	12km @225,000/=	2,700,000/=
2.	75mm diameter pipes	8km @500,000/=	4,000,000/=
3.	100mm diameter pipes	6km @850,000/=	5,100,000/=
4.	150mm diameter pipes	4km@1,300,000/=	5,200,000/=
5.	Sub-total construction		17,000,000/=
6.	Professional fees	4%	680,000/=
7.	Supervision	2%	340,000/=
8.	Grand total		18,020,000/=

Off-site infrastructure (as required) with costs

Brief description - N/A

Implementation programme	Town	Machakos											
	Project	Laying of new 30km water supply pipelines both main and direct connections to cover the entire developed areas											
	Start date	2018-01-01 (enter as year-month-day)											
Month	2018-02-01	2018-03-01	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01
Consultant selection	█												
Land Acquisition													
Concept design				█									
Working drawings						█							
Tender documents								█					
Tender									█				
Award										█			
Construction												█	
Defects liability period (space for more)													
Month	2019-03-01	2019-04-01	2019-05-01	2019-06-01	2019-07-01	2019-08-01	2019-09-01	2019-10-01	2019-11-01	2019-12-01	2020-01-01	2020-02-01	2020-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)													
Month	2020-04-01	2020-05-01	2020-06-01	2020-07-01	2020-08-01	2020-09-01	2020-10-01	2020-11-01	2020-12-01	2021-01-01	2021-02-01	2021-03-01	2021-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)							█						

CIP 4

**Water: Provision of 20 additional communal water points in
informal settlements and public places**

4.5 Provision of 20 additional communal water points in informal settlements and public places.

Project Name

Provision of 20 additional communal water points in informal settlements and public places.

Client

Machakos Water Supply and Sewerage Company

Purpose

To improve water supply services to the community in the informal settlements of the Machakos town for the period 2015– 2020

Site Details

Project Location

Land registration number, ownership and size - N/A

Value (if privately owned) - N/A

Topography, soils and geology

Slope - varied

Soils - varied

Vegetation - varied

Nature of on-site works

Brief description

Provision of 20No additional communal water points in the informal settlement and public places.

Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Water Point structure	4m ² @20,000/=	80,000/=
2.	Water main and drainage	15%	12,000/=
3.	Miscellaneous	10%	8,000/=
4.	Sub-total construction		100,000/=
5.	Professional fees	4%	4,000/=
6.	Supervision	2%	2,000/=
7.	Sub-Total inclusive		106,000/=
8.	Grand total for 20No. water points	x 20	2,120,000/=

Off-site infrastructure (as required) with costs

Brief description - N/A

Implementation programme	Town	Machakos												
	Project	Provision of 20 additional communal water points in informal settlements and public places												
	Start date	2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01	
Consultant selection	█													
Land Acquisition														
Concept design				█										
Working drawings						█								
Tender documents								█						
Tender										█				
Award											█			
Construction												█		
Defects liability period (space for more)														
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01	
Land Acquisition														
Concept design														
Working drawings														
Tender documents														
Tender														
Award														
Construction	█													
Defects liability period (space for more)						█								

CIP 5

**Sewerage: Rehabilitation of the existing sewage treatment
plant**

4.6 Rehabilitation of the existing sewage treatment plant.

Project Name
Rehabilitation of the existing sewage treatment plant.

Client
Machakos Water Supply and Sewerage Company

Purpose
To improve sewage treatment capacity and efficiency of the plant to meet the required final effluent standards for discharge into Mitheu river within the period 2015-2020.

Site Details
Project Location – along Mitheu river off Kitui Road in Machakos Town.

Land registration number, ownership and size - Existing Sewage Treatment Plant site belonging to Machakos Water Supply and Sewerage Company.

Value (if privately owned) - N/A

Topography, soils and geology

Slope - varied

Soils - varied

Vegetation -varied

Nature of on-site works

Brief description

Rehabilitation of the existing Sewage Treatment Plant as follows:.

- i) Facultative Lagoons – 2No
- ii) Maturation Ponds – 1No

Costs (at 2015 prices)

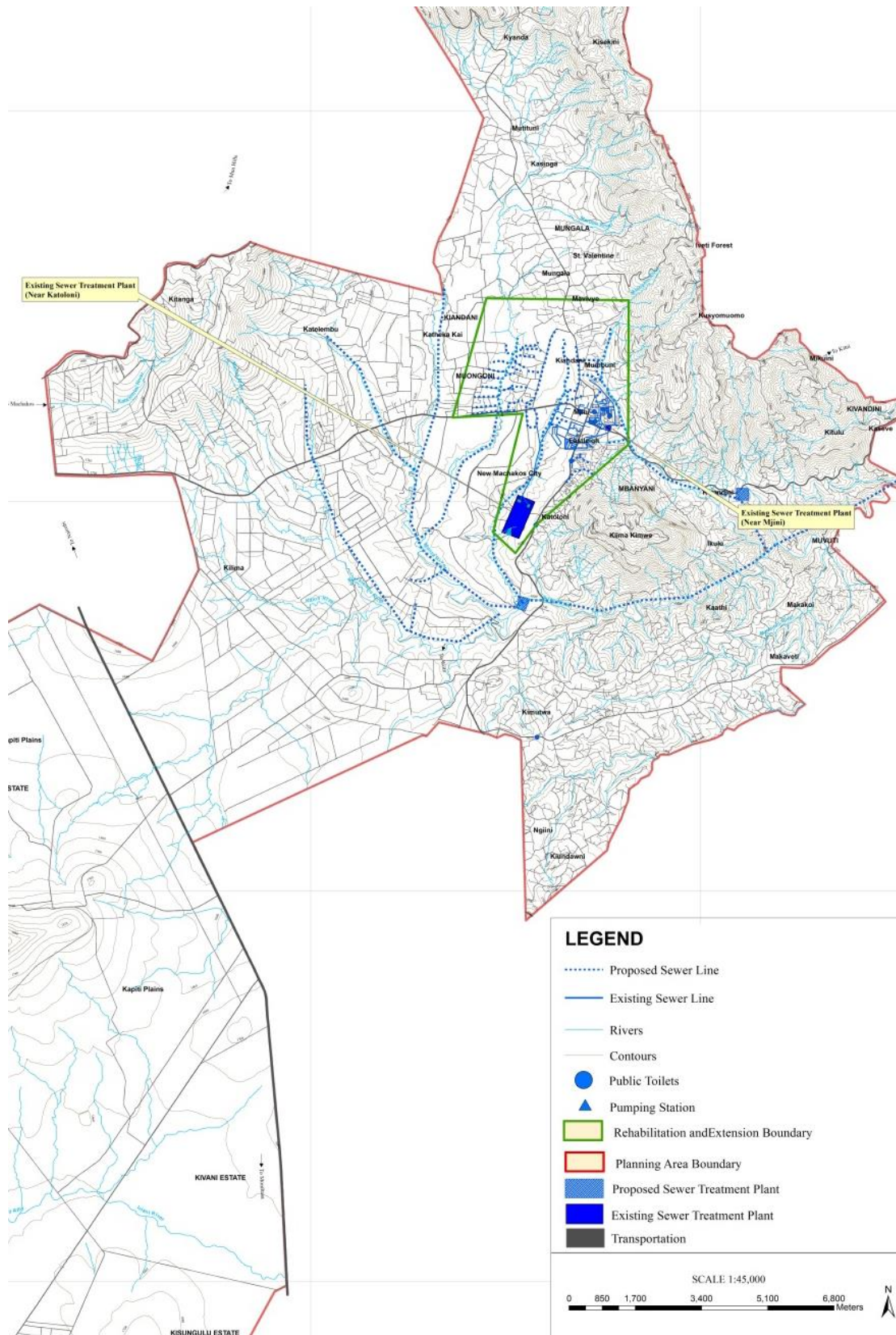
S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	2No. Facultative lagoons	2No@500,000/=	1,000,000/=
2.	1No. Maturation pond	1No@4,000,000/=	4,000,000/=
3.	Sub-total construction		5,000,000/=
4.	Professional fees	4%	200,000/=
5.	Supervision	2%	100,000/=
6.	Grand total		5,300,000/=

Off-site infrastructure (as required) with costs

Brief description - N/A

Implementation programme	Town	Machakos												
	Project	Rehabilitation of existing sewage treatment plant												
	Start date	2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01	
Consultant selection	█													
Land Acquisition														
Concept design				█										
Working drawings						█								
Tender documents								█						
Tender										█				
Award											█			
Construction												█		
Defects liability period (space for more)														
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01	
Land Acquisition														
Concept design														
Working drawings														
Tender documents														
Tender														
Award														
Construction	█													
Defects liability period (space for more)					█									

4.7 Reference map for rehabilitation of sewer system



CIP 6

**Sewerage: Upgrading of the existing Machakos Girls School
sewage treatment plant and construction of 20 toilets for the
school**

4.8 Upgrading of the existing Machakos Girls School sewage treatment plant and construction of 20 toilets for the school

Project Name

Upgrading of the existing Machakos Girls School sewage treatment plant and construction of 20 toilets for the school.

Client

Machakos Water Supply and Sewerage Company

Purpose

Upgrading of the existing Machakos Girls School Sewage Treatment Plant (STP) to serve the Kariobangi and surrounding areas and Construction of 20No. toilets for the school in exchange for the STP within the period 2015-2020.

Site Details

Project Location – Machakos Girls School off Kitui Road in Machakos Town.

Land registration number, ownership and size - Existing Sewage Treatment Plant location site belonging to Machakos Girls School to revert to Machakos Water and Sewerage Company.

Value (if privately owned) - N/A

Topography, soils and geology

Slope - varied

Soils - varied

Vegetation -varied

Nature of on-site works

Brief description

Upgrading of the existing Machakos Girls School Sewage Treatment Plant (STP) to serve the Kariobangi and surrounding areas and Construction of 20No. toilets for the school in exchange.

Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Rehabilitation of existing STP	1No@3,000,000/=	3,000,000/=
2.	Construction of 20No. new Toilets	20No@100,000/=	2,000,000/=
3.	Sub-total construction		5,000,000/=
4.	Professional fees	4%	200,000/=
5.	Supervision	2%	100,000/=
6.	Grand total		5,300,000/=

Off-site infrastructure (as required) with costs

Brief description - N/A

Implementation programme	Town	Machakos												
	Project	Upgrading of existing Machakos Girls School sewgare treatment plant and construction of 20 toilets for the school												
	Start date	2017-01-01 (enter as year-month-day)												
Month	2017-02-01	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	
Consultant selection	█													
Land Acquisition														
Concept design				█										
Working drawings						█								
Tender documents								█						
Tender										█				
Award											█			
Construction												█		
Defects liability period (space for more)														
Month	2018-03-01	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01	
Land Acquisition														
Concept design														
Working drawings														
Tender documents														
Tender														
Award														
Construction	█													
Defects liability period (space for more)						█								

CIP 6

**Sewerage: Rehabilitation of 20km of existing sewer
reticulation system in Machakos town**

4.9 Rehabilitation of 20km of existing sewer reticulation system in Machakos town

Project Name

Rehabilitation of 20km of existing sewer reticulation system in Machakos town.

Client

Machakos Water Supply and Sewerage Company

Purpose

To improve the old sewer reticulation system and reduce sewer leakages in several areas in Machakos town within the period 2015-2020.

Site Details

Project Location – several areas within Machakos town where the sewer reticulation system is old and broken.

- a. Land registration number, ownership and size - N/A
- b. Value (if privately owned) - N/A
- c. Topography, soils and geology
 - i. Slope - varied
 - ii. Soils - varied
 - iii. Vegetation -varied

Nature of on-site works

d. Brief description

Rehabilitation of 20km of existing sewer reticulation system in Machakos town using PVC pipes as follows:

- i) 225mm diameter PVC pipes – 10km
- ii) 315mm diameter PVC pipes – 6km
- iii) 375mm diameter PVC pipes – 4km

e. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	225mm diameter pvc sewer pipes	10km @ 1,200,000/=	12,000,000/=
2.	315mm diameter pvc sewer pipes	6km @ 1,800,000/=	10,800,000/=
3.	375mm diameter pvc sewer pipes	4km @ 2,200,000/=	8,800,000/=
4.	Sub-total construction		31,600,000/=
5.	Professional fees	4%	1,264,000/=
6.	Supervision	2%	632,000/=
7.	Grand total		33,496,000/=

Off-site infrastructure (as required) with costs

- f. Brief description - N/A

Implementation programme	Town	Machakos											
	Project	Rehabilitation of 20km of existing sewer reticulation in Machakos town											
	Start date	2017-01-01 (enter as year-month-day)											
Month	2017-02-01	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01
Consultant selection	█												
Land Acquisition													
Concept design				█									
Working drawings						█							
Tender documents								█					
Tender										█			
Award											█		
Construction												█	
Defects liability period (space for more)													
Month	2018-03-01	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)													
Month	2019-04-01	2019-05-01	2019-06-01	2019-07-01	2019-08-01	2019-09-01	2019-10-01	2019-11-01	2019-12-01	2020-01-01	2020-02-01	2020-03-01	2020-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)					█								

CIP 8

Sewerage: Provision of 10 public toilets and sanitation facilities at markets and other public areas

4.10 Provision of 5 public toilets and sanitation facilities at markets and other public areas

1. Project Name
Provision of 5 public toilets and sanitation facilities at market and other public areas.
2. Client
Machakos Water Supply and Sewerage Company
3. Purpose
To improve the general sanitation at markets and other public areas of Machakos town within the period 2015– 2020.
4. Site Details
Project Location – markets and other public areas of Machakos town where there is no sewerage system.
 - a. Land registration number, ownership and size - N/A
 - b. Value (if privately owned) - N/A
 - c. Topography, soils and geology
 - i. Slope - varied
 - ii. Soils - varied
 - iii. Vegetation -varied
5. Nature of on-site works
 - a. Brief description
Provision of 5 No. public toilets and sanitation facilities at market centres and other public areas Machakos town where there is no sewerage systems currently - plinth area 30m² each.

b. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Toilet structure covering 30m ²	30m ² @23,000/=	690,000/=
2.	Miscellaneous costs 20%	20%X690,000/=	140,000/=
3.	Overhead costs 10%	10%X690,000/=	70,000/=
4.	Sub-total construction		900,000/=
5.	Professional fees	4%	36,000/=
6.	Supervision	2%	18,000/=
7.	Total cost (per toilet block)		954,000/=
8.	Grand total (for 5 toilet blocks)		4,770,000/=

6. Off-site infrastructure (as required) with costs
 - a. Brief description - N/A

Implementation programme	Town	Machakos											
	Project	Provision of 10 public toilets and sanitation facilities in markets and other public areas											
	Start date	2017-01-01 (enter as year-month-day)											
Month	2017-02-01	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01
Consultant selection	█												
Land Acquisition													
Concept design				█									
Working drawings						█							
Tender documents								█					
Tender										█			
Award										█			
Construction												█	
Defects liability period (space for more)												█	
Month	2018-03-01	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)											█		
Month	2019-04-01	2019-05-01	2019-06-01	2019-07-01	2019-08-01	2019-09-01	2019-10-01	2019-11-01	2019-12-01	2020-01-01	2020-02-01	2020-03-01	2020-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)	█												

CIP 9

**Solid waste: Acquisition and development of a new infill site
at Mitheu Valley next to Ketraco site**

4.11 Acquisition and development of a new landfill site at Mitheu Valley next to Ketraco site

1. Project Name
Acquisition and development of a new landfill site at Mitheu Valley next to Ketraco site.
2. Client
Machakos County
3. Purpose
To improve efficiency in solid waste collection and disposal within Machakos town during the period 2015– 2020.
4. Site Details
Project Location - at Mitheu Valley next to Ketraco site in Machakos town.
 - a. Land registration number, ownership and size - N/A
 - b. Value (if privately owned) - N/A
 - c. Topography, soils and geology
 - i. Slope - varied
 - ii. Soils - varied
 - iii. Vegetation -varied
5. Nature of on-site works
 - a. Brief description
Acquisition and development of a new 25Ha landfill site at Mitheu Valley next to Ketraco site.

b. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
	Acquisition of land – 25Ha	25ha@485,000/=	12,125,000/=
1.	Development of dumping site – 25Ha	25@140,000/=	3,500,000/=
2.	Miscellaneous costs – 15%	15%x3,425,000/=	525,000/=
3.	Overhead costs – 10%	10%3,425,000/=	350,000/=
4.	Sub-total costs		16,500,000/=
5.	Professional fees	4%	660,000/=
6.	Supervision	2%	330,000/=
7.	Total cost		17,490,000/=
8.	Grand Total	Say	17,500,000/=

6. Off-site infrastructure (as required) with costs
 - a. Brief description - N/A

Implementation programme	Town	Machakos												
	Project	Acquisition and development of a new landfill site at Mitheu Valley next to Kentraco site												
	Start date	2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01	
Consultant selection	█													
Land Acquisition	█													
Concept design		█												
Working drawings			█											
Tender documents				█										
Tender					█									
Award						█								
Construction							█							
Defects liability period (space for more)								█						
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01	
Land Acquisition														
Concept design														
Working drawings														
Tender documents														
Tender														
Award														
Construction	█													
Defects liability period (space for more)		█												

CIP 10

**Solid waste: Provision of adequate and accessible
community skips in underserved areas**

4.12 Provision of adequate and accessible community skips in underserved areas

1. Project Name

Provision of adequate and accessible community skips in underserved areas.

2. Client

Machakos County

3. Purpose

To improve solid waste collection and management for the underserved areas in Machakos town during the period 2015– 2020.

4. Site Details

Project Location - underserved areas in Machakos town.

a. Land registration number, ownership and size - N/A

b. Value (if privately owned) - N/A

c. Topography, soils and geology

i. Slope - varied

ii. Soils - varied

iii. Vegetation -varied

5. Nature of on-site works

a. Brief description

Provision of 50 community skips in underserved areas within Machakos town, which are easily accessible to the people.

b. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Community skip basic cost – 1No. skip	1@77,000/=	77,000/=
2.	Miscellaneous costs – 20%	20%X77,000/=	15,400/=
3.	Overhead costs – 10%	10%X77,000/=	7,600/=
4.	Sub-total costs		100,000/=
5.	Professional fees	4%	4,000/=
6.	Supervision	2%	2,000/=
7.	Total (for 1 skip)		106,000/=
8.	Grand Total (for 50 skips)		5,300,000/=

6. Off-site infrastructure (as required) with costs

a. Brief description- N/A

CIP 11

Solid waste: Acquisition of new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal

4.13 Acquisition of new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal

1. Project Name
Acquisition of new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal.
2. Client
Machakos County
3. Purpose
To improve efficiency in solid waste collection and disposal within Machakos town during the period 2015– 2020.
4. Site Details
Project Location - Machakos town areas.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1. Slope - varied
 - 4.3.2. Soils - varied
 - 4.3.3. Vegetation -varied
5. Nature of on-site works
 - 5.1. Brief description
Acquisition of 4No. new covered refuse compactor trucks to ensure improved efficiency in solid waste collection and disposal.
 - 5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Covered Refuse Truck – 1No.	1 @8,000,000/=	8,000,000/=
2.	Refuse Compactor – 1No.	1 @5,000,000/=	5,000,000/=
3.	Miscellaneous and overhead costs	inclusive	-
4.	Sub-total costs		13,000,000/=
5.	Professional fees	-	-
6.	Supervision	-	-
7.	Total cost (for 1No. compactor truck)		13,000,000/=
8.	Grand Total (for 4 No. compactor trucks)		52,000,000/=
6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

CIP 12

**Roads: Development of four lane divided paved carriageway
for Inner Ring Road from Mavivye-Machakos School-Muthini
Estate-Machakos Girls School**

4.14 Development of four lane divided paved carriage way for Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School

1. Project Name
Development of four lane divided paved carriage way for Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School.
2. Client
Machakos County
3. Purpose
To improve the capacity of the road, accessibility to the areas, reduce traffic jams and road accidents in this part of Machakos town during the period 2015– 2020.
4. Site Details
Project Location - Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School in Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1.Slope - flat to rolling terrain
 - 4.3.2.Soils - patches of red and black cotton soils
 - 4.3.3.Vegetation - grass and varied road side vegetation
5. Nature of on-site works
 - 5.1. Brief description
Development of 5.84km of four lane paved bituminous carriage way from Mavivye-Machakos School-Muthini Estate-Machakos Girls School, including road kerbs, channels & lined drains.

5.2. Costs (at 2015 prices)

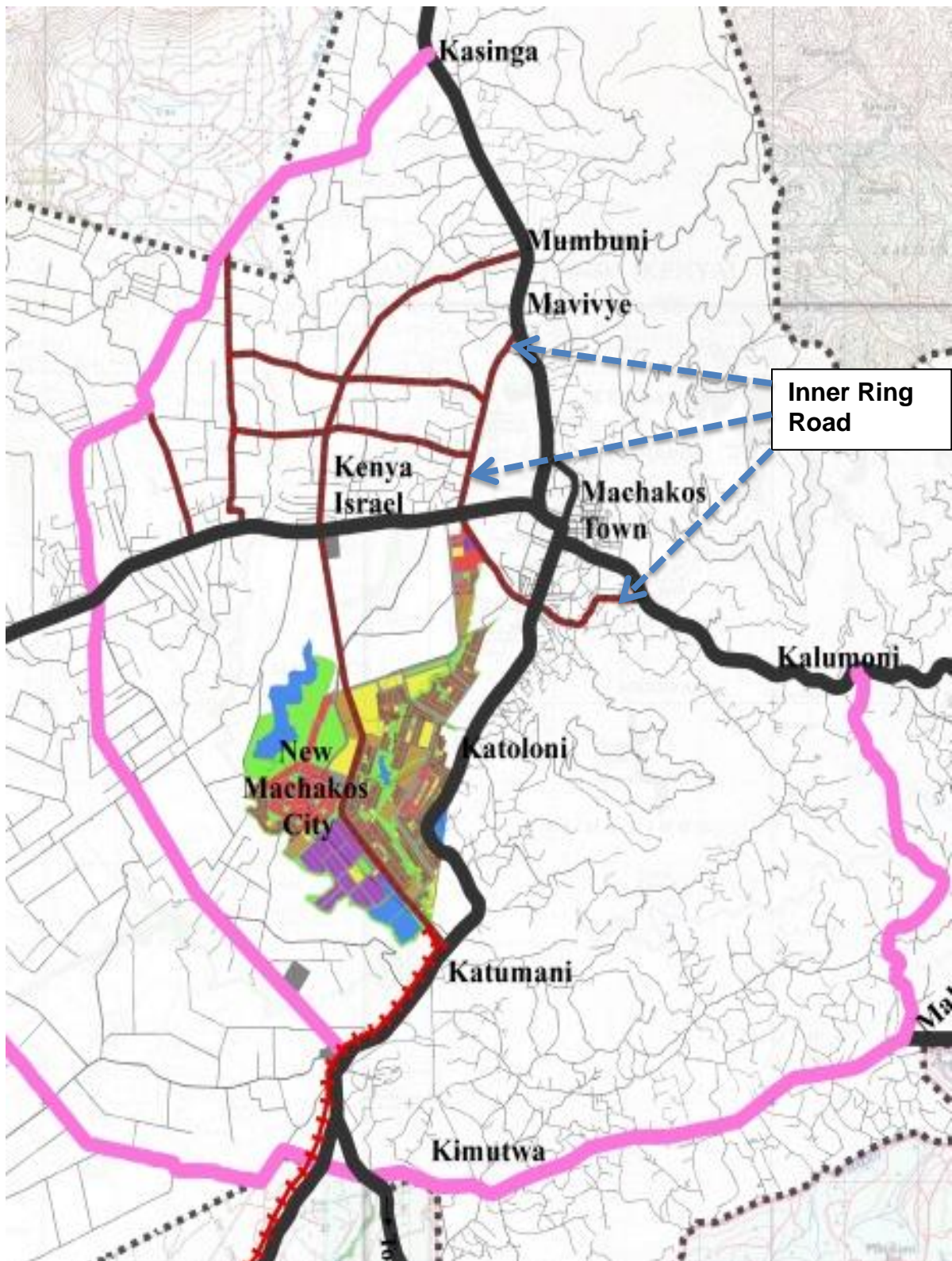
S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
	Preliminary and supervisory/support services	Lump sum	83,517,464.09
1.	Site Clearance and Topsoil Stripping		18,590,987.51
2.	Earthworks	-	127,134,459.70
3.	Culverts and Drainage Works		11,340,001.27
4.	Passage of Traffic		9,688,025.83
5.	Natural Material Subbase and Base		91,201,070.78
6.	Cement and Lime Treatment		91,212,763.23
7.	Bituminous Surface Treatment & Surface Dressing		55,562,498.51
8.	Bituminous Mixes		140,576,595.50
9.	Road Furniture		15,589,926.63
10.	Sub-total 1 costs		644,413,793.10
11.	Plus 10% Provisional sums for contingencies	-	64,441,379.31
12.	Plus 15% Provisional sums for variation of prices	-	96,662,068.97

13.	Sub-total 2 costs		805,517,241.38
14.	Plus 16% VAT		128,882,758.62
15.	Grand Total costs		934,400,000.00

6. Off-site infrastructure (as required) with costs
N/A

Implementation programme	Town	Machakos											
	Project	Development of four lane divided paved carriageway for Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School											
	Start date	2016-01-01 (enter as year-month-day)											
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01
Consultant selection	█												
Land Acquisition													
Concept design													
Working drawings				█									
Tender documents						█							
Tender							█						
Award								█					
Construction										█			
Defects liability period (space for more)													
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)													
Month	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01	2019-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction	█												
Defects liability period (space for more)													

Location of inner ring road



CIP 13

**Roads: Acquisition of land for extension of road reserve to
accommodate the four land carriageway to be developed
under CIP 12 above**

4.15 Acquisition of land for extension of road reserve to accommodate the four lane carriageway to be developed under CIP 12 above

1. Project Name
Acquisition of land for extension of road reserve to accommodate the four lane carriageway to be developed under CIP 12 above
2. Client
Machakos County
3. Purpose
To acquire land for extension of road reserve to accommodate the four lane carriageway to be developed under CIP 12 above.
4. Site Details
Project Location - Inner Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School in Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1. Slope - level
 - 4.3.2. Soils - red soils
 - 4.3.3. Vegetation - grass and varied low growing vegetation
5. Nature of on-site works
 - 5.1. Brief description
Acquisition of 13Ha of land in Ring Road from Mavivye-Machakos School-Muthini Estate-Machakos Girls School in Machakos town for extension of road reserve to accommodate the four lane carriageway to be developed under CIP 12 above

5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Acquisition of land – 13 ha	10@14,000,000/ =	182,000,000.00
2.	Overhead costs	Nil	-
3.	Sub-total costs		182,000,000.00
4.	Professional fees	Nil	-
5.	Supervision	Nil	-
6.	Grand Total cost		182,000,000.00

6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

Implementation programme	Town	Machakos											
	Project	Land Acquisition for extension of road reserve to be developed under CIP 12											
	Start date	2016-01-01 (enter as year-month-day)											
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01
Consultant selection													
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period													
(space for more)													
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period													
(space for more)													

CIP 14
Pedestrianisation of the CBD

4.16 Pedestrianisation of the CBD

1. Project Name

Pedestrianisation of the CBD.

2. Client
Machakos County

3. Purpose
To convert existing roads and pavements into a pedestrian-friendly environment.

4. Site Details
Project Location -As shown on the attached map.

a. Land registration number, ownership and size - Public

b. Value (if privately owned) - N/A

c. Topography, soils and geology

The paving and other treatment will be laid on the existing roads.

5. Nature of on-site works

a. Brief description



CIP 15

**Security lighting: Repair of all the faulty security lights along
the major roads and in the core areas**

4.17 Repair of all the faulty security lights along the major roads and in the core areas

1. Project Name
Repair of all the faulty security lights along the major roads and in the core areas.
2. Client
Machakos County
3. Purpose
To improve street lighting and security in general on major roads and core centres of Machakos town during the period 2015– 2020.
4. Site Details
Project Location - major roads and core centres in Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1. Slope - varied
 - 4.3.2. Soils - varied
 - 4.3.3. Vegetation -varied
5. Nature of on-site works
 - 5.1. Brief description
Repair of 50 No. faulty security lights along the major roads and in the core areas of Machakos town.

5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Bulk head repair – 1No. light	1 @ 14,500/=	14,500/=
2.	Electrical wiring repair – 1No.	1 @ 7,500/=	7,500/=
3.	Miscellaneous & Overhead costs – No.	1 @ 2,500/=	2,500/=
4.	Sub-total costs		24,500/=
5.	Professional fees	-	-
6.	Supervision	2%	500/=
7.	Total (for 1 light)		25,000/=
8.	Grand Total (for 50 lights)		1,250,000/=

6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

Implementation programme	Town Machakos												
	Project Repair of all faulty lights along the major roads and in the core areas												
	Start date 2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01
Consultant selection													
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													

CIP 16

Security lighting: Installation of new street lights along the major roads and in other areas of concentrated development especially at markets

4.18 Installation of new street lights along the major roads and in other areas of concentrated development especially at markets

1. Project Name
Installation of new street lights along the major roads and in other areas of concentrated development especially at markets.
2. Client
Machakos County
3. Purpose
To improve street lighting and security along the major roads and in other areas of concentrated development within Machakos town during the period 2015– 2020.
4. Site Details
Project Location - along major roads and in other areas of concentrated developments within Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1. Slope - varied
 - 4.3.2. Soils - varied
 - 4.3.3. Vegetation -varied
5. Nature of on-site works
 - 5.1. Brief description
Installation of 450No. new street lights along major roads and in other areas of concentrated developments along major roads in Machakos town.

5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Bulk head cost – 1No. light	1 @20,000/=	20,000/=
2.	Street lighting pole – 1No.	1 @40,000/=	40,000/=
3.	Electrical wiring cost – 1No.	1 @10,000/=	10,000/=
4.	Miscellaneous & overhead cost – 1No.	1 @3,500/=	3,500/=
5.	Sub-total costs		73,500/=
6.	Professional fees	-	-
6.	Supervision	2%	1,500/=
7.	Total (for 1 light)		75,000/=
8.	Grand Total (for 450 lights)		33,750,000/=

6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

Implementation programme	Town	Machakos											
	Project	Installation of new street lights along the major roads and in other areas of concentrated development especially at markets											
	Start date	2017-01-01 (enter as year-month-day)											
Month	2017-02-01	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01
Consultant selection													
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2018-03-01	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													

CIP 17

Security lighting: Installation of new high mast (30m high) lights at CBD, sub CBDs, markets, informal settlements, jua kali areas and main road junctions

4.19 Installation of new high mast (30m high) lights at CBD, Sub-CBDs, markets, informal settlements, jua kali areas and main road junctions

1. Project Name
Installation of new high mast (30m high) lights at CBD, Sub-CBDs, markets, informal settlements, jua kali areas and main road junctions.
2. Client
Machakos County
3. Purpose
To improve security at CBD, Sub-CBDs, market centres, informal settlements, Jua Kali areas and main road junctions within Machakos town during the period 2015– 2020.
4. Site Details
Project Location - at CBD, Sub-CBDs, market centres, informal settlements, Jua Kali areas and main road junctions within Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
 - 4.3.1. Slope - varied
 - 4.3.2. Soils - varied
 - 4.3.3. Vegetation -varied
5. Nature of on-site works
 - 5.1. Brief description
Installation of 10 new high masts (30m high) lights at CBD, Sub-CBDs, market centres, informal settlements, Jua Kali and main road junctions in Machakos town.
 - 5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	4 Sided Bulk head cost – 1No. light	1 @75,000/=	80,000/=
2.	30m High mast cost – 1No.	1 @130,000/=	130,000/=
3.	Electrical wiring cost – 1No.	1 @50,000/=	50,000/=
4.	Miscellaneous & overhead cost – 1No.	1 @23,000/=	23,000/=
5.	Sub-total costs	-	283,000/=
6.	Professional fees	4%	11,300/=
7.	Supervision	2%	5,700/=
8.	Total (for 1 mast)		300,000/=
9.	Grand Total (for 10 masts)		3,000,000/=
6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

Implementation programme	Town Machakos												
	Project Installation of high mast lights at CBD, sub-CBDs, informal markets, jua kali areas and main road junctions												
	Start date 2016-01-01 (enter as year-month-day)												
Month	2016-02-01	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01
Consultant selection													
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2017-03-01	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2018-04-01	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01	2019-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													

CIP 18

**Fire Fighting: Purchase of one new fire fighting vehicle locally
assembled**

4.20 Purchase of one new fire fighting vehicle (tender) locally assembled

1. Project Name
Purchase of one new fire fighting vehicle (tender) locally assembled.
2. Client
Machakos County
3. Purpose
To improve fire fighting capacity and enhance fire safety in Machakos town during the period 2015– 2020.
4. Site Details
Project Location - Machakos town.
 - 4.1. Land registration number, ownership and size - N/A
 - 4.2. Value (if privately owned) - N/A
 - 4.3. Topography, soils and geology
Slope - varied

Soils - varied

Vegetation -varied
5. Nature of on-site works
 - 5.1. Brief description
Purchase of one new Fire Fighting Vehicle (Tender) which is locally assembled.
 - 5.2. Costs (at 2015 prices)

S No.	Type	Component cost (Kshs)	Total Cost (Kshs)
1.	Fire Fighting Vehicle cost	1 @ 15,000,000/=	15,000,000/=
2.	Miscellaneous costs	Inclusive	-
3.	Overhead costs	Inclusive	-
4.	Sub-total costs		15,000,000/=
5.	Professional fees	Nil	-
6.	Supervision	Nil	-
7.	Total cost		15,000,000/=
6. Off-site infrastructure (as required) with costs
 - 6.1. Brief description - N/A

CIP 19
Housing

4.21 Housing

Housing demand is based on population projections, and assumptions about the effective demand for different income groups. the rationale for Chapter 7 of the Interim report. The relevant parts are reproduced here.

4.21.1 Introduction

A successful housing policy provides solutions for all sections of society at prices that they can afford. Kenya lacks the funds to provide subsidised housing for the poor, but this should not prevent public authorities from addressing their needs.

The policy development thus follows a three stage process:

- Analyse incomes
- Match incomes to housing solutions
- Allocate responsibilities for each actor in the process

What follows is a very preliminary such analysis, of which the main objective is to determining the future requirements in terms of land and infrastructure, It does not purpose to be a prescriptive housing policy as such.

4.21.2 Incomes and affordability

The only source for household incomes is the household survey which provides expenditure data. Expenditure data are considered a very good proxy for incomes especially in the lower income groups.

The last household survey for which urban expenditure is available was in 2005-6. To update this to 2014 figures the annual inflation rates have been used. The resulting data are as shown in the Table below.

Table 4.2: Urban Incomes

Midpoint Urban Income deciles	2005	2014	2014
	US \$	US\$	Kshs
1	1 110	2 271	204 376
2	1 888	3 862	347 623
3	2 404	4 918	442 630
4	2 955	6 045	544 081
5	3 578	7 320	658 789
6	4 288	8 772	789 516
7	5 009	10 247	922 268
8	6 058	12 393	1 115 412
9	8 202	16 780	1 510 170
10	22 823	46 691	4 202 219

Source: HH data: Gakuru, Rhoda and Mathenge, Naomi: *Poverty Growth and Income Distribution in Kenya: Agrodep Working Paper, 0001, June 2012, Table 2.*

Inflation data: Kenya National Bureau of Statistics, *Consumer Price Indices*

Given these incomes, how much can each income group afford? General practice has the upper limit at 40% of income¹⁸, but as incomes decline the available disposable income declines with it. Therefore a sliding scale of affordability is the most realistic, ranging from 15% of income for the very poor to 40% for the higher income groups.

¹⁸ Walley, Simon: *Developing Kenya's Mortgage Market*, World Bank report 63391-KE, Washington DC, 2011

Following common practice, it is easiest to use monthly rather than annual figures for both incomes and expenditure. Using the assumptions above, the affordability table is as follows:

Table 4.3: Housing affordability by income group

Decile	Monthly income 2014	Estimated affordability	Monthly payment
	Kshs		Kshs
1	17 031	15,00%	2 555
2	28 969	15,00%	4 345
3	36 886	20,00%	7 377
4	45 340	20,00%	9 068
5	54 899	25,00%	13 725
6	65 793	25,00%	16 448
7	76 856	30,00%	23 057
8	92 951	30,00%	27 885
9	125 847	40,00%	50 339
10	350 185	49,00%	171 591

The next stage is to calculate what such a monthly payment will buy. Using a interest rate of 12%, a repayment period of 15 years the affordable amounts are as shown in the following table¹⁹.

Table 4.4: Affordable Loans by Income Group

Decile	Monthly payment	Affordable Loan	Total
	Kshs	Kshs	Kshs
1	2 555	212 861	212 861
2	4 345	362 056	362 056
3	7 377	614 677	682 975
4	9 068	755 562	839 513
5	13 725	1 143 571	1 270 634
6	16 448	1 370 495	1 522 772
7	23 057	1 921 122	2 134 580
8	27 885	2 323 449	2 581 610
9	50 339	4 194 328	4 660 365
10	171 591	14 297 216	15 885 795

4.21.3 Possible housing solutions

Finally, we must construct development scenarios which correspond to the costs in the above table. The below is an example of such a scenario.

¹⁹ These calculations are not based on the assumption that all income groups will be able to borrow from a bank. They are rather used as a tool to indicate the potential in terms of a sustainable housing finance system. In the case of income deciles above 2, it is assumed that a deposit of 10% will be paid.

Table 4.5: Indicative cost of different solutions (Kshs)

Plot area (sm)	96	120	140	240	240	500	Multi-storey
Land	71 181	88 977	103 806	177 954	177 954	370 737	46 342
Basic services	108 282	125 216					
Full services			220 570	359 232	359 232	545 933	68 242
Unit size (sm)		25	35	50	70	100	100
Construction		450 000	1 260 000	1 800 000	3 150 000	6 300 000	7 875 000
Total	179 463	664 193	1 584 376	2 337 186	3 687 186	7 216 669	7 989 684
Monthly repayments							
Kshs	2 154	7 971	19 015	28 050	44 252	86 612	95 890
Affordable for Groups	1,2	3	5,6	7,8	9	10/2	10/2

The bottom line of the table shows which groups can afford the proposed solution. Thus, if there is a requirement for 1000 units, the distribution of solutions would be as follows:

Table 4.6: Space requirements per 1000 dwellings

Plot area (sm)	96	120	140	240	240	500	Multi-storey
Number of each type	200	100	200	200	100	50	50

This data allows for strategic planning to be undertaken in terms of overall land use.

Clearly, an important question is to what extent densities will increase. The table makes assumptions, but these may be adjusted in light of experience. As in all matters of strategic planning the challenge is to plan for appropriate development, while being flexible enough to respond to market pressures.

4.21.4 Number of units

Table 4.7: Housing demand 2016 – 2019

Type	Number
Low cost	2 327
Medium cost	831
High cost	166
Total	3 324

4.21.5 The roles of the actors

In housing provision there are many potential actors, but it useful to analyse which can or should do what.

The diagrams below offer a simplified series of models.

Private sector large scale (Percentile 10)				
Function Actor	Land	Infrastructure	Construction	Maintenance
State	Titling			
Local Government				
Private sector	Acquisition			Flats and rental
Community				
Individual				Home owners

Private Sector and Local Government PPP				
Function Actor	Land	Infrastructure	Construction	Maintenance
State	Titling			
Local Government	Acquisition			
Private sector				
Community				
Individual				Home owners

Serviced land for individual construction				
Function Actor	Land	Infrastructure	Construction	Maintenance
State	Titling			
Local Government	Acquisition			
Private sector				
Community				
Individual				

Serviced land for housing cooperatives				
Function Actor	Land	Infrastructure	Construction	Maintenance
State	Titling			
Local Government	Acquisition			
Private sector				
Community				
Individual				

Incremental housing and upgrading				
Function Actor	Land	Infrastructure	Construction	Maintenance
State	Titling			
Local Government	Acquisition			
Private sector				
Community				
Individual				

The above scenarios show the importance of land, and the provision of land in sufficient quantities to meet the demand. In the absence of a proactive policy of land provision, land prices soar, low income families are excluded, informal settlements mushroom and housing conditions are very negatively affected.

4.21.6 Costs and cash flow

Table 4.8: Development costs for land and servicing for housing: Years 2016 - 2019

Costs		Number	Roads	Water	Sewers
Low Cost					
Plot size	96	2327			
Costs (kshs)					
Roads/plot	7 503	17 459 310	17 459 310		
Water	2 750	6 398 450		6 398 450	
Sewers	8 202	19 086 208			19 086 208
Medium Cost					
Plot size	240	831			
Costs (kshs)					
Roads/plot	16 815	13 975 261	13 975 261		
Water	3 944	3 277 517		3 277 517	
Sewers	16 607	13 802 222			13 802 222
High Cost					
Plot size	500	166			
Costs (kshs)					
Roads/plot	26 330	4 376 671	4 376 671		
Water	5 528	918 802		918 802	
Sewers	25 486	4 236 378			4 236 378
		Total	35 811 242	10 594 769	37 124 808
		Grand total			83 530 819

It is proposed to phase the development in such a way as to minimise the outlay by the County. It is planned that the development will be on public land: there is thus no land acquisition cost. The cash flow table below shows that the cost of land servicing can be recovered over the years and will be expected to yield a surplus.

In the table below the assumption is made (based on international experience) that land on which services have already been provided and for which all necessary planning approvals are guaranteed can attract a premium. In the prevailing conditions in Machakos it is presumed that a factor of 30% is realistic.

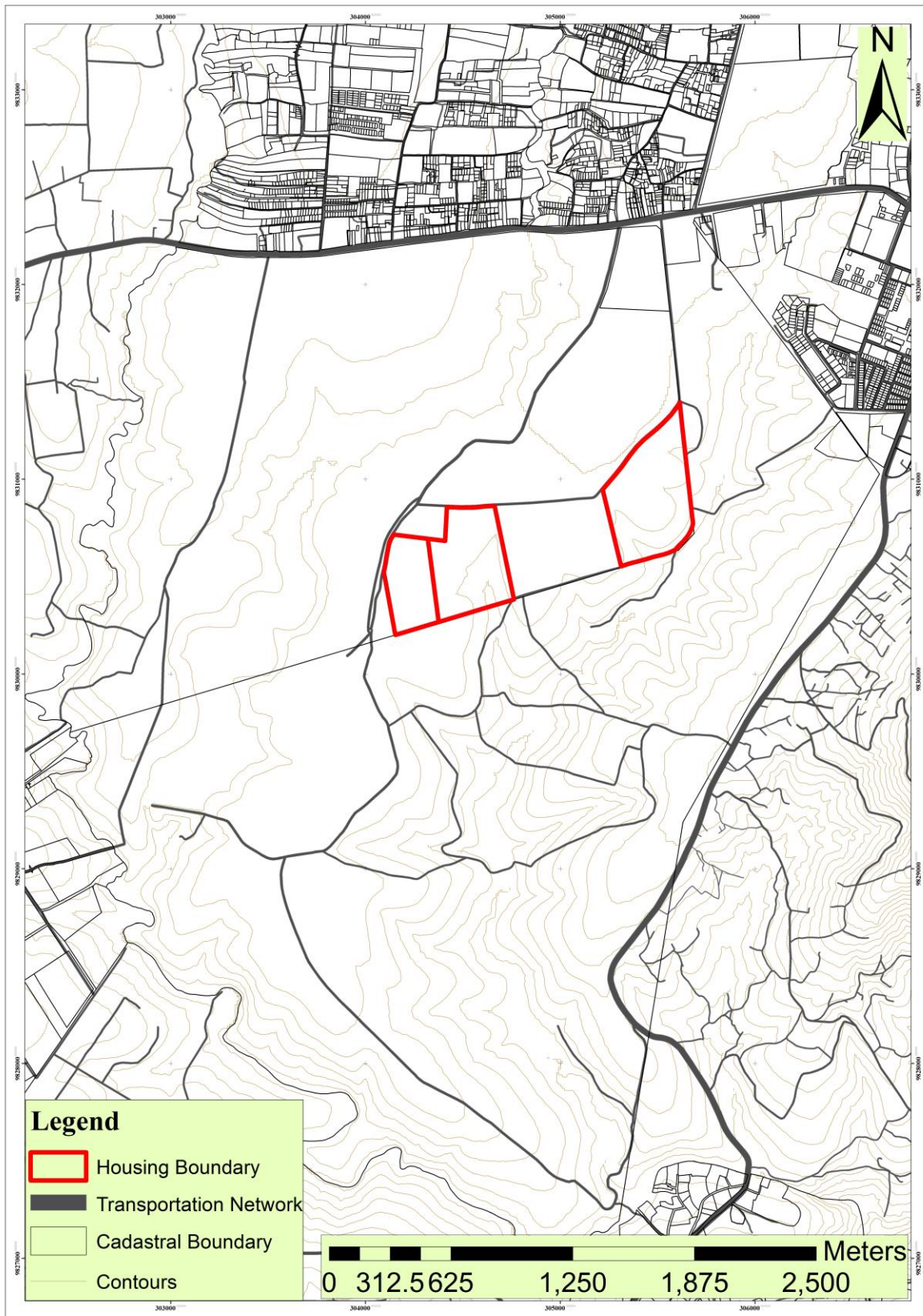
Thus the cash flow will be as follows:

Table 4.9: Cash flow for housing development

Cash flow	2016	2017	2018	2019	Total
Expenditure (const)	8 353 082	16 706 164	58 471 573		83 530 819
Land	35 418 954	70 837 908	177 094 770		283 351 631
Income			227 614 586	341 421 879	569 036 466
Net	-43 772 036	-87 544 072	-7 951 757		202 154 015

This demonstrates that it will be possible to make a surplus of about Kshs 200 million to be reinvested in future land development.

4.21.7 Site



Implementation programme	Town	Machakos											
	Project	Land servicing for housing											
	Start date	2016-02-01 (enter as year-month-day)											
Month	2016-03-01	2016-04-01	2016-05-01	2016-06-01	2016-07-01	2016-08-01	2016-09-01	2016-10-01	2016-11-01	2016-12-01	2017-01-01	2017-02-01	2017-03-01
Consultant selection													
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2017-04-01	2017-05-01	2017-06-01	2017-07-01	2017-08-01	2017-09-01	2017-10-01	2017-11-01	2017-12-01	2018-01-01	2018-02-01	2018-03-01	2018-04-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													
Month	2018-05-01	2018-06-01	2018-07-01	2018-08-01	2018-09-01	2018-10-01	2018-11-01	2018-12-01	2019-01-01	2019-02-01	2019-03-01	2019-04-01	2019-05-01
Land Acquisition													
Concept design													
Working drawings													
Tender documents													
Tender													
Award													
Construction													
Defects liability period (space for more)													

5 Summary

The total costs are summarised below. It will be noted that some projects cannot be finished with the first three years: the total cost is therefore higher than the budget for the three years.

Table 5.0.1 Summary of Budget and all CIP projects

	Machakos	Total	2016	2017	2018
1	Finance	5 000 000	5 000 000		
	Water				
2	Rehabilitate existing pipes	9 010 000	7 000 000	2 010 000	
3	Extension of water reticulation	18 020 000		8 000 000	10 020 000
4	Water points for informal settlements	2 120 000	2 120 000		
	Sewerage				
5	Rehab of existing STP	5 300 000	5 300 000		
6	Upgrading of Girls school STP	5 300 000		5 300 000	
7	Rehab of existing sewers	33 496 000	18 000 000	11 000 000	4 496 000
8	Public toilets	4 770 000		4 770 000	
	Solid waste				
9	Acquisition of landfill site	17 500 000	5 000 000	12 500 000	
10	Provide skips	5 300 000		5 300 000	
11	Buy compactor trucks	52 000 000		26 000 000	26 000 000
	Roads				
12	4 lane Inner RR - Machakos Girls	934 400 000	63 000 000	132 000 000	337 500 000
13	Land for roads	182 000 000	152 000 000	30 000 000	
14	Pedestrianise CBD	20 000 000	10 000 000	10 000 000	
	Security lighting				
15	Repair of existing lights	1 250 000	1 250 000		
16	Additional street lights	33 750 000		11 000 000	10 000 000
17	Additional high mast lights	3 000 000	3 000 000		
	Fire fighting				
18	New tender	15 000 000			15 000 000
19	Housing	202 000 000	44 000 000	87 000 000	-8 000 000
	Total	1 549 216 000	315 670 000	344 880 000	395 016 000
	Total during period	1 050 566 000			
	Budget	1 055 506 398	315 593 479	344 818 735	395 094 184
	Difference	4 940 398	-76 521	-61 265	78 184

Annexure 1
Multi-storey car park PPP

6 Multi storey car park PPP

6.1 The existing situation

Congestion in the CBD is caused in equal measure by three factors:

- The poor junction design
- The indiscipline of matatu drivers who stop anywhere
- The car parking arrangements and lack of parking space

There is unanimity about the need for improvements in all of these aspects, and all of them are being addressed in the ISUDP. Due to space constraints and land prices surface parking is not practicable: therefore options regarding multi-storey parking must be explored.

Considering that that car parking is a revenue generating activity (the Country received about Kshs 60 million in 2013/4 from this source), construction of a multi-storey car park lends itself to a public private partnership (PPP). This brief feasibility study examines whether, based on initial data, such a concept is feasible.

6.2 Assumptions

The following data are used as the basis for the study:

1. Number of cars to be accommodated: 3,000.
2. Area required: 60,000 m²
3. Height: 3 storeys
4. Number of car parking spaces 2,976

Revenues

Estimation of revenues per car parking space requires more detailed study in terms of the length of time each vehicle will use the space for. Typically there will be a core of full-time parkers, who use their cars to come to work. They will normally, therefore, stay for 8 or nine hours per day.

The remainder of the spaces will typically be used for periods of between 30 minutes and two hours. Thus these spaces will be available for use at least four times a day and up to 16 times a day.

Car parks typically charge a small rate for the first hour, increase it for the second hour, and further increase it for longer stays. Contracts can be entered into for users wishing to use the space for a whole day.

With these factors in mind, and using the figure of Kshs 50 per parking spot per hour it is reasonable to assume a daily take of Kshs 200 per day per space.

This yields a daily income of Kshs 600,000. In addition to this the ground floor will be used for a bus and matatu park. The income from this (based on current levels) will be Kshs 360,000 per day, which makes about Kshs 302,400,000 per year assuming a six day week.

However, there are periods of lower demand, so to be safe it is assumed that in practice there may be a lower rate of utilisation – at least for the first year or two. This figure is therefore reduced by 30% to make an annual revenue of about Kshs 211,680,000.

On the assumption that the project is debt financed, and using an interest rate of 16%, over 10 years, the monthly repayments are as follows.

Loan repayment

Interest	16,00%
Years	10
Principle	389,954,916
Annual payment	80,682,094

6.3 Results

In addition to revenues, there will also be expenditures in terms of maintenance and management costs. The table below summarises the situation considering revenues, management costs and debt finance.

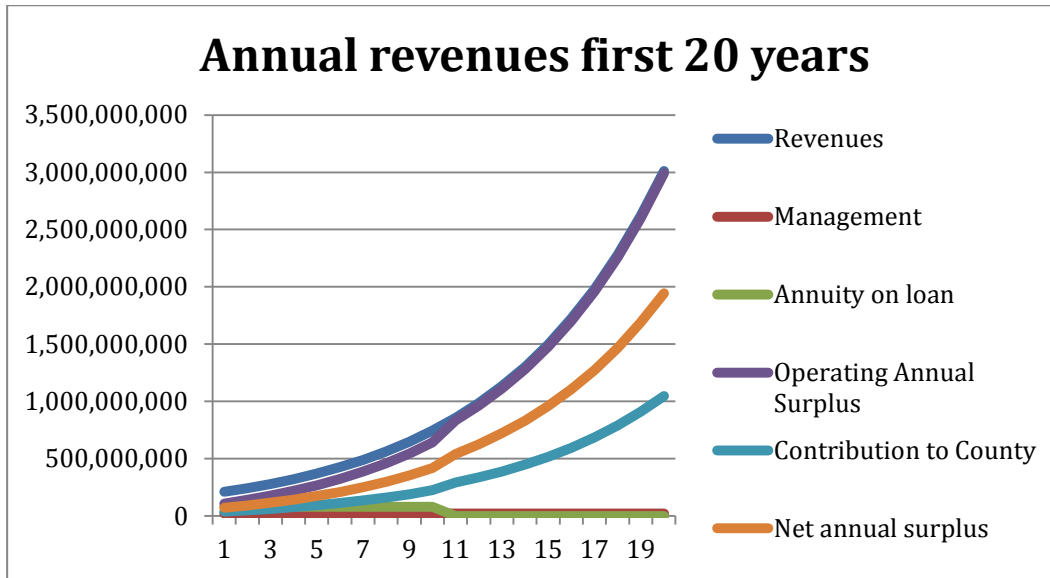
Revenue

Rate/space/hour	50
Rate per space/day	200
Number of spaces	3000
Take/day	600 000
Matatus/buses	360 000
Take/year (six day week)	302 400 000
Allow for 30% reduction	211 680 600

Expenditure

Management	10 584 000
Maintenance	10 584 000
Debt repayment	80 682 094
Sub-total: expenditure	101 829 906
Net annual income	109 829 906

It should be noted that while debt repayment will stay constant over the life of the loan, there will be two factors that will positively influence revenues. These are inflation, and increased car ownership due to rises in income levels. Thus even net revenues were lower in year 1 than those predicted above, they will increase as shown in the following graph.

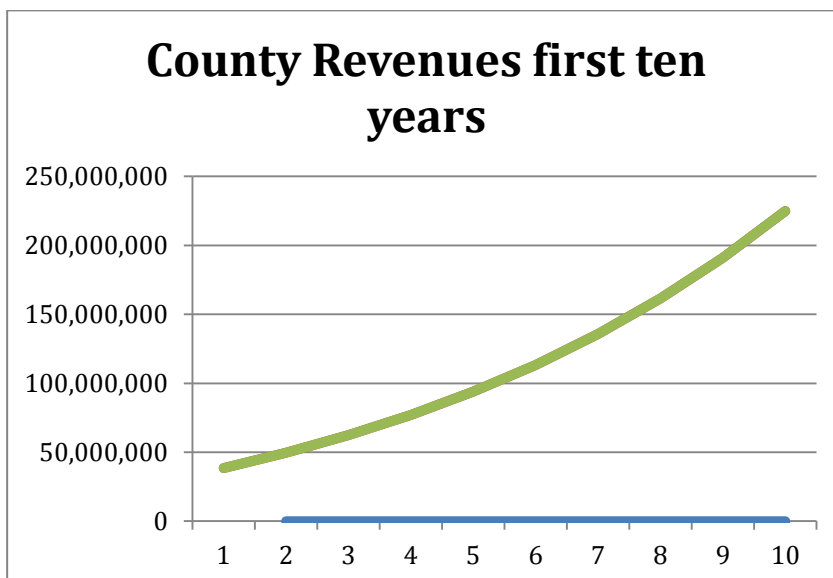


6.4 County Revenue

Both parks are designed to leave the ground floor free for use as matatu and bus parks. This revenue should be kept exclusively for the County which should also be responsible for management of that area. This would be expected to yield at least one third of the current total revenue from parking.

However, the County will be providing the land on which the facility is built and will require income from that land. It will also have the power to enter into an agreement with the private party to share in the proceeds of the facility. This is totally normal and will be expected by the developer.

It is recommended that the County take 35% of the surplus generated by the facility. This will result in revenues as follows:



6.5 Summary

The net revenues after payments to the County are still very positive, as shown in the graph below. The "Net Surplus" shows the amount the private investor will earn after payments to the County. This demonstrates that the project will be an attractive opportunity for private sector investment.

