

**Aftercare Study on
the National Water Master Plan**

NAMANGA (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Namanga*

Organisation/Water Undertaker : *MOWR*

District : *Kajiado* Location: *Namanga*

Map (1/50,000) Ref. no : *181W/2*

Co-ordinates *X 36° 49' Y S 02° 33'*

Drainage Sub-basin : *3N*

Existing facilities:

Source: Spring oldonyo Orok hill and 1 No b Type of Intake : Elevation : *1540m*

Raw water system : *Gravity* H : Dia : *80mm and 100mm - Length 100m.*

Treatment Process : *Disinfection by chlorine only (TLC)*

Only town supply. No chlorination on rural Mbirika line 2 kg of chlorinated lime is mixed in 100 litres of treated water and is dozed by gravity for 16 hrs.at top of one of the tank.

Designed Capacity: *780 m³ /day but potential yield is only 300 - 400 m³/day.*

Treated water/Distribution system -

Area covered: *12 km²*

Distribution mains (80mm and above): *100mm to 80 mm*

Total length : *8.5 km*

UFW (Estimated) : *m³/d*

Consumers - Total no : *530*

Metered : *57*

Unmetered : *473*

Working Meters: *Data not available.*

Water production : *189 m³/d*

Service area population : *12,000*

Population served : *4,500*

Remark : *Most of billing is on estimated basis and rest on flat rates*

Financial/Revenue 1996

O & M costs : *Ksh 170,500*

Revenue earned : *Kshs 1,136,900*

Revenue collected : *Kshs 1,105,900*

Rehabilitation required/costs

	Kshs Estimated
<i>i) 9 boreholes and pumps</i>	<i>32,000,000</i>
<i>ii) Improvement and extensin of distribution system</i>	<i>51,000,000</i>
<i>iii) Storage</i>	<i>2,000,000</i>
<i>iv) Chlorination augmentation</i>	<i>200,000</i>
Total	<i>85,200,000</i>

Future development plan

Source : *9 Boreholes*

Treatment : *Chlorination* Capacity : *720 m³/d*

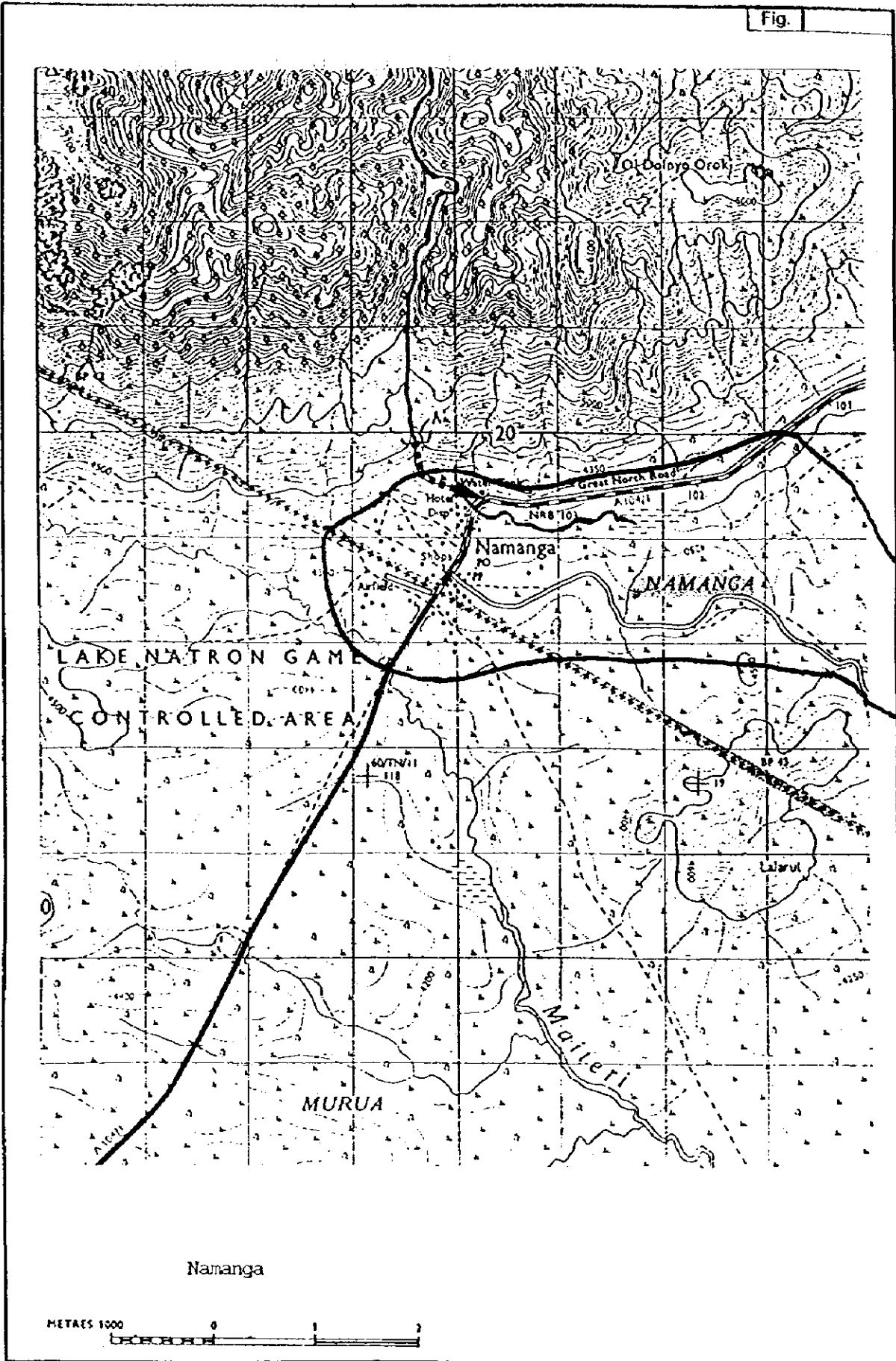
Design year : *2010*

Design population: *12,000*

Remarks

Namanga has inadequate source of surface water. The existing spring is ully utilised, more boreholes have been proposed but not implemented. 89% of the consumers are on flat rate. In order to control wastage of water, ensure equitable distribution of water to more consumers and enhance revenue collection. All consumers should be metered. The present water demand in the supply area is 625m³/d while the supply potential is approximately 300m³/d. The present production is only 189m³/d

Fig.



Aftercare Study on
the National Water Master Plan

MAGADI SODA CO. (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : *Magadi Soda Co.*

Organisation/Water Undertaker : *Magadi Soda Factory Management*

District : *Kajiado* Location: *Magadi*

Map (1/50,000) Ref. no : *160/4*

Co-ordinates *X 36° 18' Y S 01° 55'*

Drainage Sub-basin : *2H*

Existing facilities:

Source: *Rive Oloibor Toto*

Type of Intake : *Concrete da* Elevation : *795m*

Raw water system : *Gravity*

H : *140m* Dia : *250,200,175mm steel*

Treatment Process : *Full pressurised compact*

*1 Seal circular recievint basin acting also ass mixing and sedimentation tank. 2No pressure filters,
2No elevated clear tsnks and 1No very large clear water stee plate tank. All chemical pressure dozed*

Designed Capacity: *2450 m³/day*

Treated water/Distribution system -

Area covered: *2km² of Isiolo urban*

Distribution mains (80mm and above): *150mm to 100 mm*

Total length : *3.5 km*

UFW (Estimated) : *m³/d*

Consumers - Total no :

Working Meters: *No meter for consumers . Water is
supplied without charge*

Metered :

Unmetered :

Water production : *1364 m³/d*

Remark : *Since there is no other source everybody
is supplied with water from the factory
system.*

Service area population : *10,000*

Population served : *10,000*

Financial/Revenue

O & M costs : *Ksh*

Revenue earned : *Kshs* *Figures not available.*

Revenue collected : *Kshs*

Rehabilitation required/costs

Kshs Estimated

None required

*This is one of the best water supply system (erected in 1954) which is maintained , quality
controlled and operating properly.*

Total

Future development plan

Source :

Treatment : Capacity : *m³/d*

Design year :

Design population:

Remarks

*The factoryb manages and finances the water supply. Along the Magadi -Nairobi railway
line all consumers are supplied withwater by the railway wagon everyday, on the raw
water main tanks and cattle drinking troughs erected supply free water for the Masai and
their cattles.*

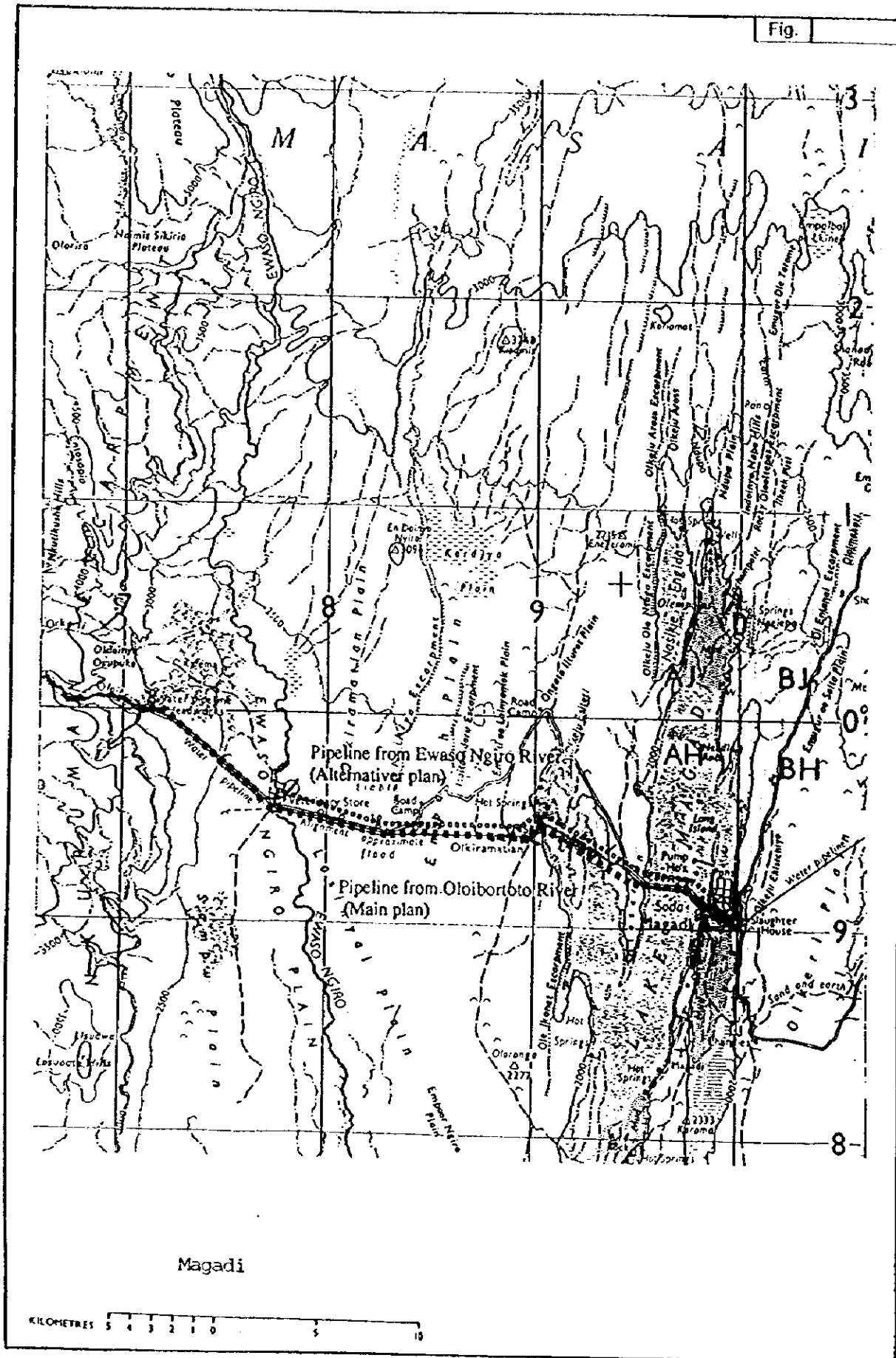


Fig.

**Aftercare Study on
the Nalloani Water Master Plan**

SOTIK (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Sotik*
 Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*
 District : *Bomet* Location : *Sotik*
 Map (1/50,000) Ref. no : *131/1* Co-ordinates X : *35° 07'* Y : *S 00° 40'*
 Drainage Sub-basin : *1JF*

Existing facilities

Source : *Kipsonoi River* Type of Intake : *Furrow* Elevation : *1,760 m*
 Raw water system : *Pumping* H : *m* Dia : *100 mm*
 Treatment Process : *Full Treatment*
1 No. Receiving Basin, 1 No. Mixing Chamber, 2 No. Sedimentation Basins, 2 No. Rapid Sand Filters, 1 No. Chlorination Chamber/Reservoir of 150 m³ capacity
 Designed Capacity : *Not available*
 Treated water/Distribution system - Area covered : *- km²*
 Distribution mains (80mm and above): *mm to mm*
 Total length : *km - information not available*

UFW (Estimated) : *m³/d*
 Consumers - Total no : *)* Working Meters:
 Metered : *) Information not available*
 Unmetered : *)*
 Water production : *m³/d* Remark : *Information not available*
 Service area population : *4,424*
 Population served : *N/A*

Financial/Revenue

O & M costs :Kshs *)*
 Revenue earned :Kshs *) Information not available*
 Revenue collected :Kshs *)*
Rehabilitation required/costs - *None proposed* Estimated Cost Kshs

Total

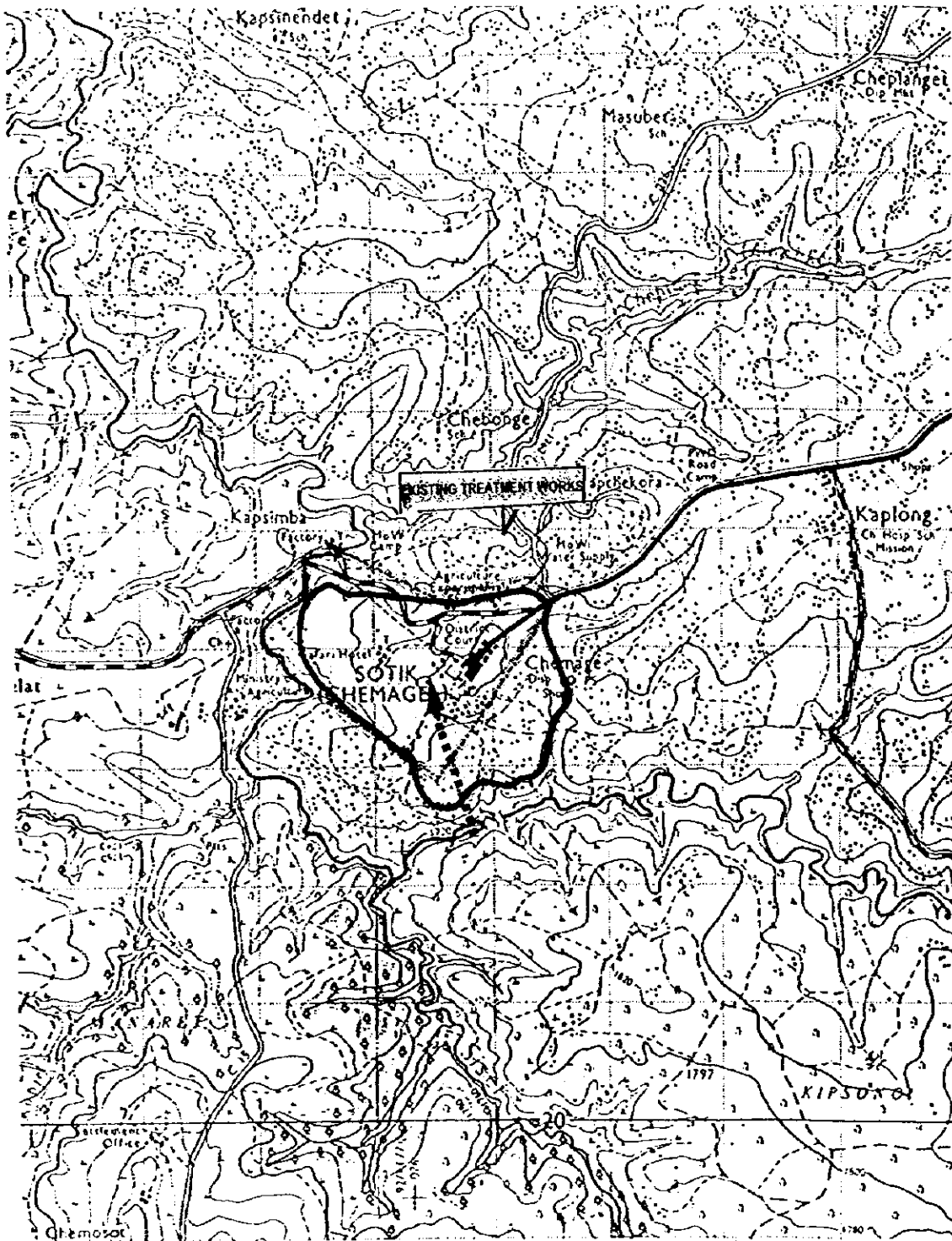
Future development plan

Source : *Furrow*
 Treatment : *Full Treatment* Capacity : *Not indicated* *m³/d*
 Design year : *2000*
 Design population : *11,200*

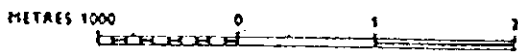
Remarks

This scheme was constructed in 1948 and since then no expansion has been done. During breakdowns, Sotik is served by Litein Water Supply Scheme which has Itare River as a source. The scheme has been delapidated over the years and is uneconomical to rehabilitate. A new source development is therefore proposed in the future as above. In the present scheme, full treatment is carried out as long as the system (water production) is working. Records are poorly kept. A records keeping system should therefore be put in place for better scheme management.

Fig.



Sotik



**Aftercare Study on
the National Water Master Plan**

KERICHO (1/1)

General

Name of Urban Centre : *Kericho*
 Organisation/Water Undertaker : *Kericho Municipal Council - WSD*
 District : *Kericho* Location : *Kericho*
 Map (1/50,000) Ref. no : *117/4* Co-ordinates X : *35° 16'* Y : *S 00° 20'*
 Drainage Sub-basin : *1JC*

Existing facilities

Source : *Timbilli River* Type of Intake : *Concrete Weir* Elevation : *2,000 m*
 Raw water system : *Gravity* H : *m* Dia : *450/350 mm*
 Treatment Process : *Full Treatment*

1 No. Receiving Basin, 2 No. Mixing Chambers, 2 No. Sedimentation Basins, 4 No. Rapid Sand Filters, 1 No. Chlorination Chamber/Reservoir

Designed Capacity : *8,460 m³/d*

Treated water/Distribution system -

Area covered : *66 km²*
 Distribution mains (80mm and above): *80 mm to 315 mm*
 Total length : *92 km*

uPVC 87.7 km; GF 0.35 km; AC 4.0 km

UFW (Estimated) : *m³/d*

Consumers - Total no : *4,801 - 1997*

Metered : *4,801 - 1997*

Unmetered : *None*

Working Meters: *Information not available*

Water production : *5,246 m³/d - 1997*

Remark : *Population figures not available*

Service area population : *Not available*

Population served : *Not available*

Financial/Revenue

O & M costs : *Kshs 131,123,611 - 1997*

Revenue earned : *Kshs*)

Revenue collected : *Kshs*)

Details not available

Rehabilitation required/costs

i)

ii)

iii) *N/A*

iv)

v)

Estimated Cost Kshs

Total

Future development plan

Source : *Dam on River*

Treatment : *Full Treatment* Capacity : *Not available m³/d*

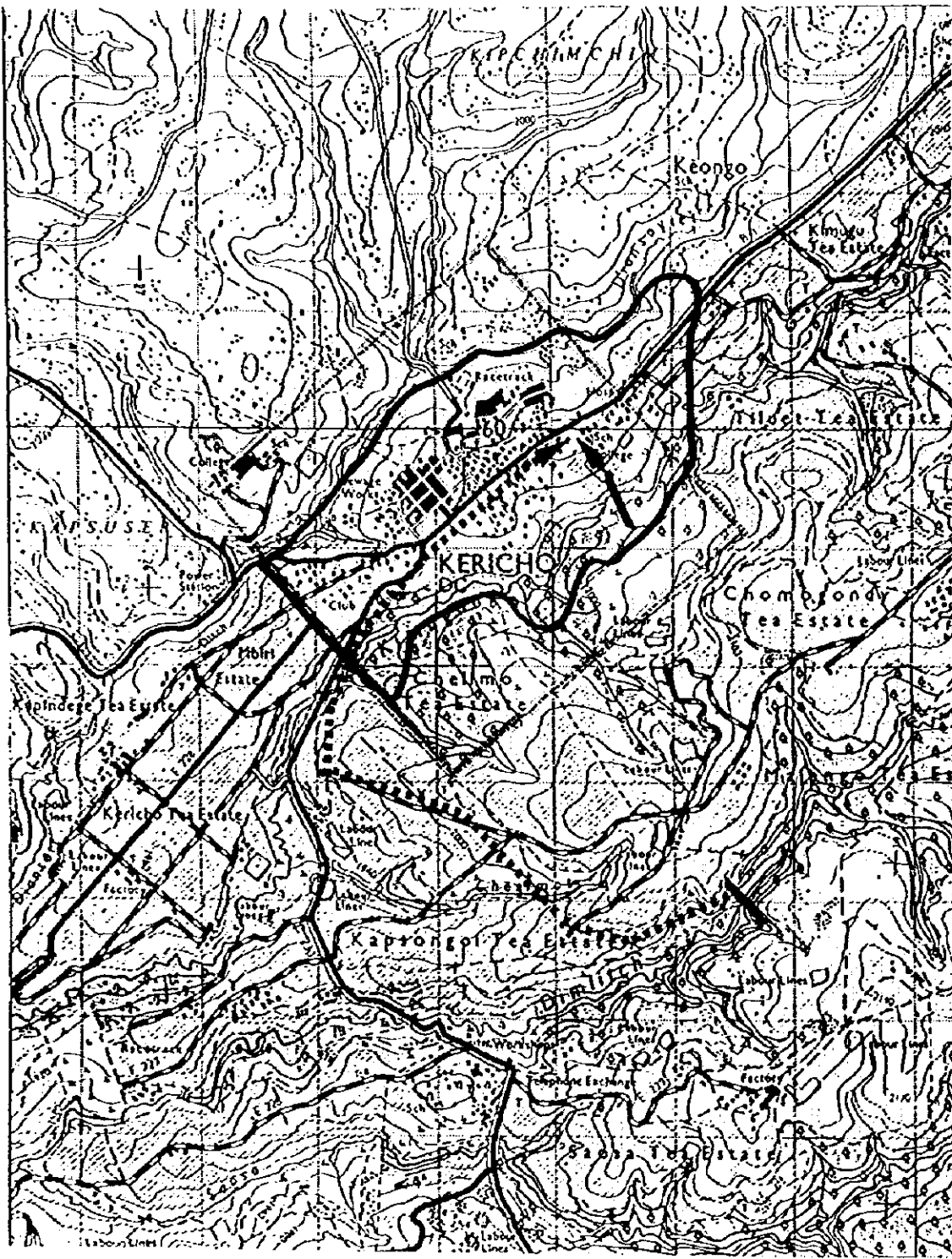
Design year : *Not available*

Design population : *Not available*

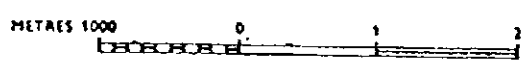
Remarks

Production in 1997 was 60% of maximum capacity. Unaccounted for water is very high, at 45%. Record keeping is not very efficient and improvements are needed especially with respect to served population and revenue collection.

Fig.



Kericho



**Aftercare Study on
the National Water Master Plan**

KIPKELION (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : Kipkelion

Organisation/Water Undertaker : Ministry of Water Resources

District : Kericho Location : Kipkelion

Map (1/50,000) Ref. no : 117/2 Co-ordinates X : 35° 28' Y : S 00° 12'

Drainage Sub-basin : 1GC

Existing facilities

Source : River - not named

Type of Intake : Weir Elevation : 2,000 m

Raw water system : Pumping

H : m Dia : 200 mm

Treatment Process : Full Treatment

1 No. Mixing Chamber, 1 No. Sedimentation Basin, 1 No. Rapid Sand Filter, 1 No. Chlorination Chamber/Reservoir

Designed Capacity : - m³/hr

Treated water/Distribution system -

Area covered : - km²

Distribution mains (80mm and above): 80 mm to 200 mm

Total length : 2.23 km

UFW (Estimated) m³/d

Consumers - Total no : 108 - 1996

Working Meters: Information not available

Metered : 108 - 1996

Unmetered :

Water production : 48 m³/d - 1996 for 3 months only

Remark : The system operated for 3 months only in 1996

Service area population : 20,000 - 1996

Population served : 1,500 - 1996

Financial/Revenue

O & M costs :Kshs 3,609 - 1996

) Salaries not included in O&M costs as staff are not permanent and records of payments are not available

Revenue earned :Kshs 68,001 - 1995

) - Includes arrears from previous years

Revenue collected :Kshs 34,108 - 1995

Rehabilitation required/costs

	Estimated Cost	Kshs
i) Rehabilitation of Intake		1,500,000
ii) Purchase of Dosers - 6 No. @ 120,000		540,000
iii) Electrification of pumps at Intake		20,000,000
iv) Rehabilitation of Clear Water Tanks		300,000
v) Rehabilitation of Staff Houses		200,000
Total		22,540,000

Future development plan

Source : Present River Source

Treatment : Full Treatment Capacity : m³/d

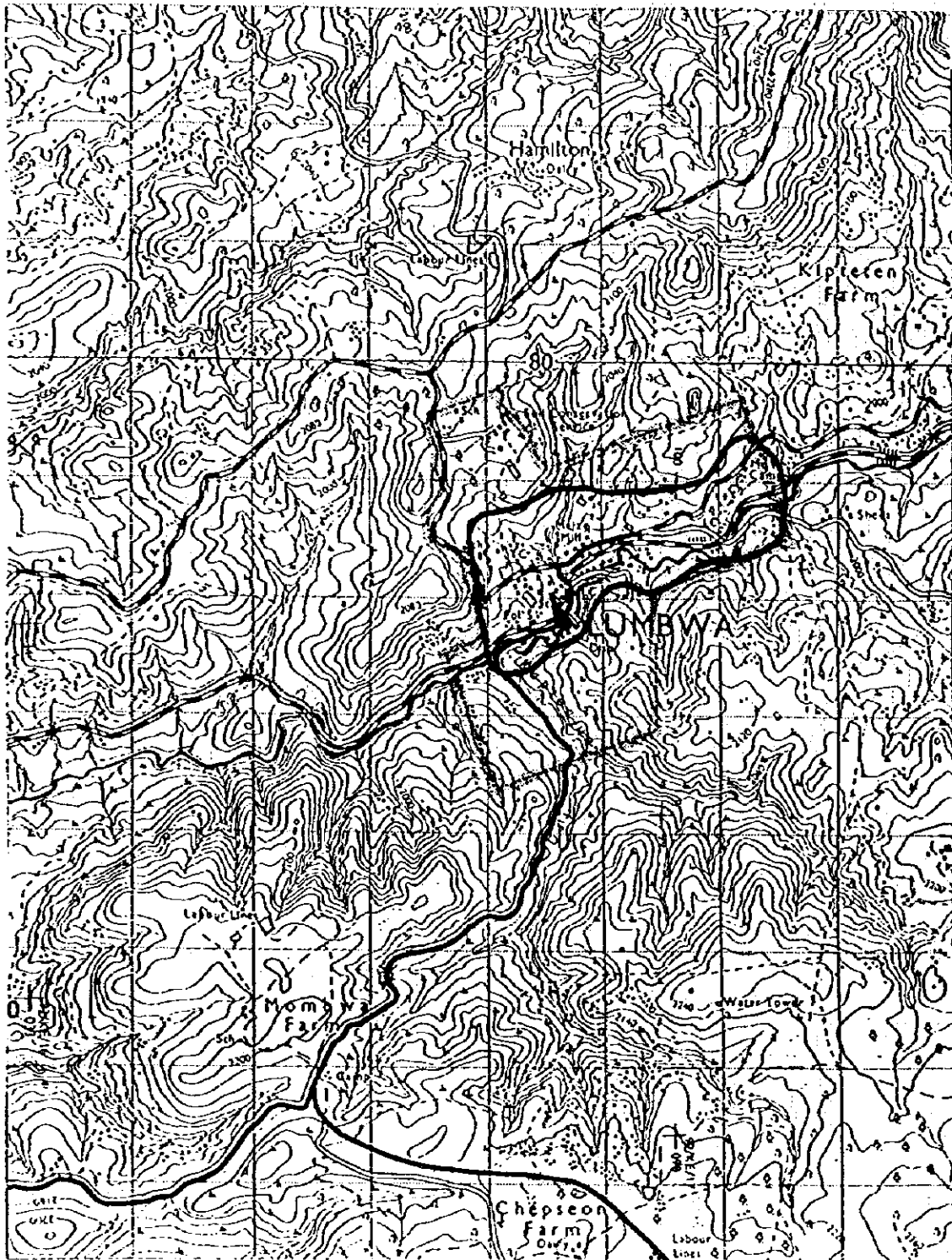
Design year :

Design population :

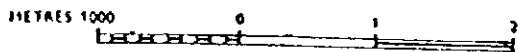
Remarks

This scheme was constructed in 1940's. Pumps are run by diesel engines and water production is dependent on availability of diesel for pumping. The system was last rehabilitated between 1990-92. Production is presently very low, having operated for only 3 months in 1996. This is due to frequent breakdown of old diesel engine-run pumps and lack of diesel to run the engines. When the system works, no treatment is done as all dosing equipment is broken down. Rehabilitation of the system is urgently required.

Fig.



Kipkelion



**Aftercare Study on
the National Water Master Plan**

LONDIANI (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Londiani*

Organisation/Water Undertaker : *Ministry of Water Resources*

District : *Kericho*

Location : *Londiani*

Map (1/50,000) Ref. no : *118/1*

Co-ordinates X : *35° 36'*

Y : *S 00° 10'*

Drainage Sub-basin : *1GC*

Existing facilities

Source : *River - not named*

Type of Intake : *Small Dam*

Elevation : *7,550 m*

Raw water system : *Gravity*

H : *m* Dia : *150 mm*

Treatment Process : *Full Treatment*

1 No. Mixing Chamber, 2 No. Sedimentation Basins, 1 No. Rapid Sand Filter, 1 No. Chlorination Chamber, 3 No. Reservoirs -

However dosing equipment not working at present, hence no chemical treatment is done

Designed Capacity : *31.5 m³/hr*

Treated water/Distribution system -

Area covered : *km²*

Distribution mains (80mm and above): *100 mm*

Total length : *0.2 km*

UFW (Estimated) : *m³/d*

Consumers - Total no : *224 - 1996*

Working Meters: *Not available. However, information is that most meters are not working - flat rate billing is done*

Metered : *190 - 1996*

Unmetered : *34 - 1996*

Water production : *169 m³/d*

Service area population : *18,000 - 1996*

Population served : *4,000 - 1996*

Remark :

Financial/Revenue

O & M costs :Kshs *2,869,780 - 1996*)

Salaries not included in O&M costs as staff are not permanent and records of payments are not available

Revenue earned :Kshs *737,431 - 1995*)

Revenue collected :Kshs *311,450 - 1995*)

Rehabilitation required/costs

i) *Rehabilitation of Dam Embankment*

800,000

ii) *Rehabilitation of Intake Structure*

800,000

iii) *Rehabilitation of Distribution Mains*

1,800,000

iv) *Completion of 225 m³ Tank and Pipework*

1,000,000

v) *Rehabilitation of Office Block, Staff Houses*

500,000

vi) *Rehabilitation of Treatment Works*

1,200,000

Total

6,100,000

Future development plan

Source : *Present River Source*

Treatment : *Full Treatment*

Capacity :

m³/d)

Design year :

) *Information not complete*

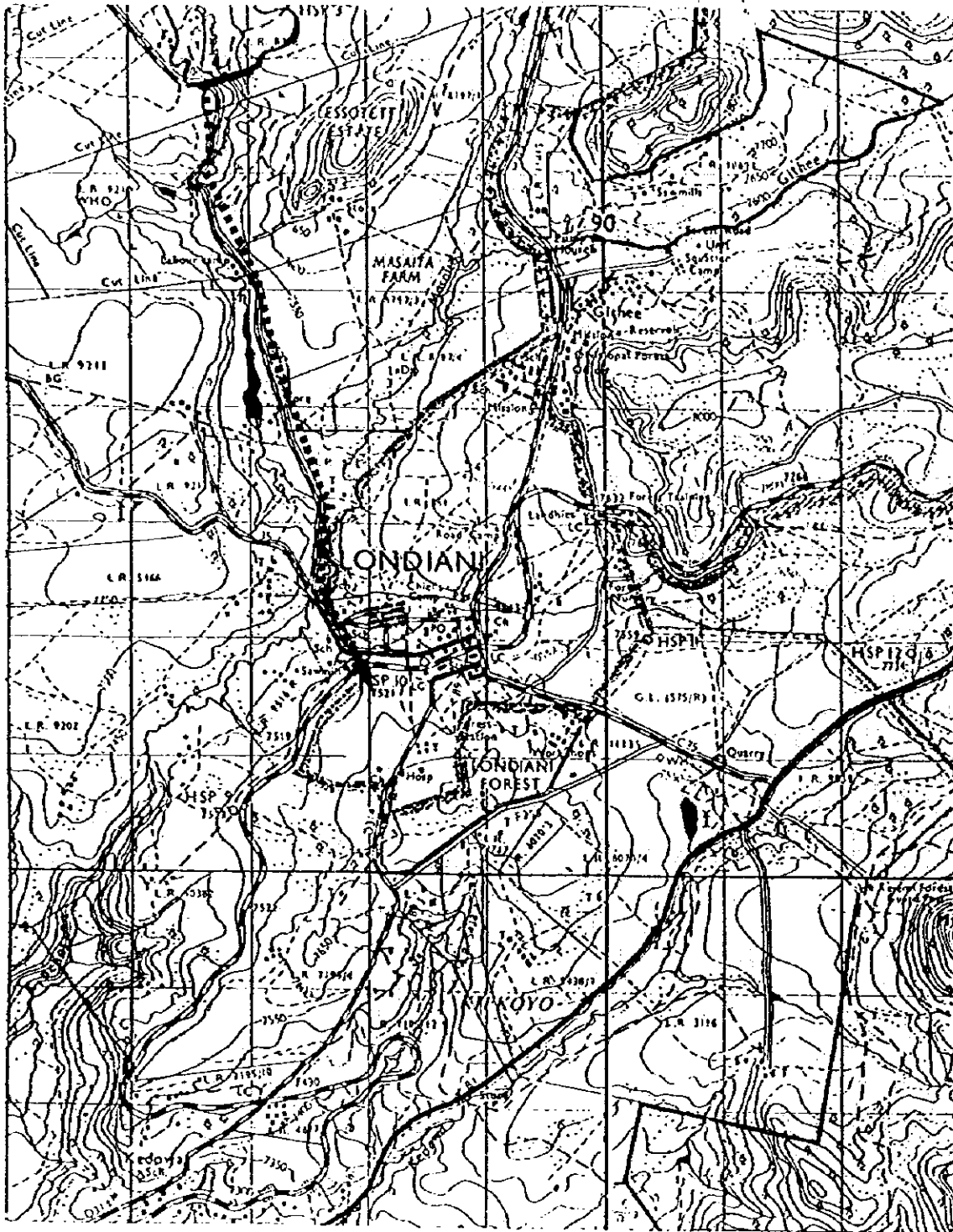
Design population :

)

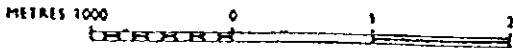
Remarks

This scheme was constructed in 1940's. It has gravity raw water system and treated water pumping system. Rehabilitation was commenced by NORAD in 1988 but stopped before completion. It is apparent that this scheme is currently supplying untreated water to consumers. Operation and maintenance costs are too high compared to revenue collection. The scheme is uneconomical to run. Apart from the rehabilitation required, metering, revenue collection and overall management need to be improved.

Fig.



Londiani



**Aftercare Study on
the National Water Plan**

NANYUKI (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Nanyuki*

Organisation/Water Undertaker : *Nanyuki Municipal Council*

District : *Laikipia* Location : *Nanyuki*

Map (1/50,000) Ref. no : *107/3*

Co-ordinates X : *37° 05' E* Y : *00° 01' N*

Drainage Sub-basin : *SBE*

Existing facilities

Source : *Liki River*

Type of Intake : Elevation : m

Raw water system : *Pumping*

H : m Dia : mm

Treatment Process : *Full Conventional Treatment*

Process - *Coagulation, Sedimentation, Filtration, Disinfection by Chlorine (TCL)*

Production - *3,400 m³/d in 1971 and 6,800 m³/d in 1986*

Designed Capacity : *6,800 m³/d*

Treated water/Distribution system -

Area covered : km²

Distribution mains (80mm and above): *80 mm to 300 mm*

Total length : *60 km*

UFW (Estimated) : m³/d

Consumers - Total no :

Working Meters: *None*

Metered :

Unmetered :

Water production : m³/d

Remark : *Water production details not available*

Service area population : *53,100*

Population served : *43,500*

Financial/Revenue

O & M costs :Kshs *34,420,000 - 1997*

Revenue earned :Kshs

Revenue collected :Kshs *47,716,000 (Excludes sewerage income - 1997)*

Rehabilitation required/costs

Estimated Cost Kshs

Total

Future development plan

Source :

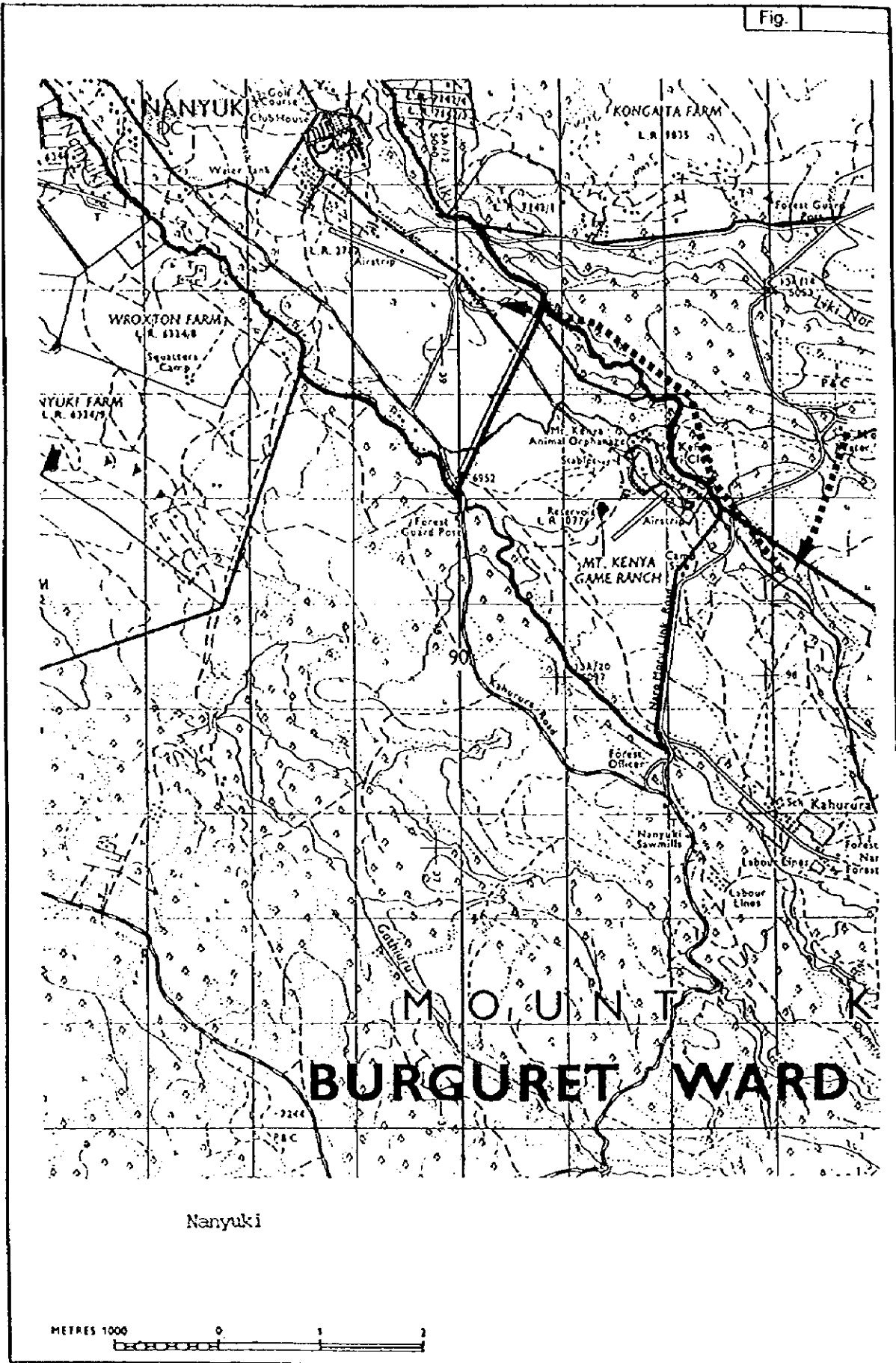
Treatment : Capacity : m³/d

Design year :

Design population : _____

Remarks

River Liki has been identified as the source for future, but no comprehensive study carried out. There are no records available / kept on water production and service connections. Administration, Commercial and Operation & Maintenance Departments require to be strengthened for efficient operation of the scheme.



**Aftercare Study on
the National Water Plan**

RUMURUTI (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Rumuruti*

Organisation/Water Undertaker : *Laikipia County Council*

District : *Laikipia*

Location : *Rumuruti*

Map (1/50,000) Ref. no : *106/1*

Co-ordinates X: *36° 31' E* Y: *00° 18' N*

Drainage Sub-basin : *5AA*

Existing facilities

Source : *Borehole - 1 No.*

Type of Intake : Elevation : m

Raw water system :

H: m Dia: mm

Treatment Process : *Coagulation, Filtration and Disinfection by Chlorine*

Designed Capacity :

Treated water/Distribution system -

Area covered : *6 km²*

Distribution mains (80mm and above): mm to mm

Total length : km

UFW (Estimated) : *m³/d*

Consumers - Total no : *232*

Working Meters: *All consumers on flat rate*

Metered :

Unmetered : *232*

Water production : *m³/d*

Remark :

Service area population :

Population served :

Financial/Revenue

O & M costs :Kshs

Revenue earned :Kshs

Revenue collected :Kshs

Rehabilitation required/costs

Estimated Cost

Kshs

Total

Future development plan

Source : *Ewaso Narok River / Boreholes*

Treatment : *Full Treatment* Capacity : *872 m³/d*

Design year : *2020*

Design population : *11,628*

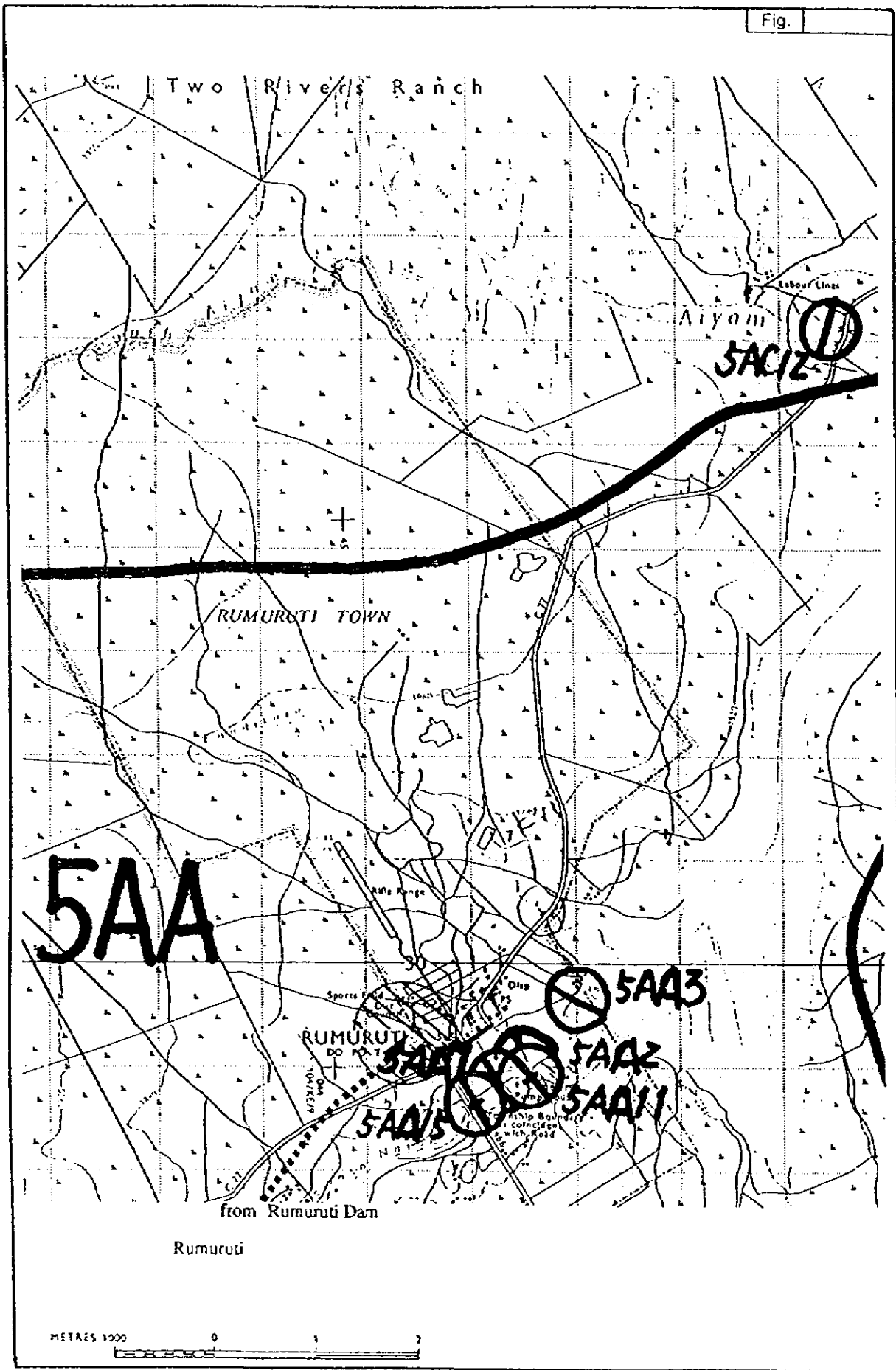
Remarks

It is recommended to build a new treatment works and augment/rehabilitate existing distribution for 2020 requirement

The existing supply is not adequate to meet the demand of the growing urban population. There are no records available / kept on finances and water production. All the consumers are on flat rate. In order to contain wastage of water, maintenance should be strengthened and equitable distribution of water ensured to enhance revenue collection.

All consumers should be metered.

Fig.



**Aftercare Study on
the National Water Plan**

NYAHURURU (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : Nyahururu
 Organisation/Water Undertaker : Nyahururu Municipal Council
 District : Laikipia Location : Nyahururu Township
 Map (1/50,000) Ref. no : 105/4 Co-ordinates X : 36° 22' Y : 00° 04' N
 Drainage Sub-basin : 5AA

Existing facilities

Source : River - Upstream of Thompson Falls Type of Intake : Weir Elevation : m
 Raw water system : Pumping H : 70 m Dia : 400 mm
 Treatment Process :

Full Conventional Treatment - Raw water is pumped to the treatment works where dosage, sedimentation, filtration and disinfection by Chlorine (TCL) is carried out. The dosage rates are:- TCL - 33 kg/day, Soda Ash - 35 kg/day, Alum - 250 kg/day

Designed Capacity : 2500 m³/d

Treated water/Distribution system - Area covered : 4.8 km²
 Distribution mains (80mm and above): 400 mm to 70 mm
 Total length : 17.9 km

UFW (Estimated) : m³/d

Consumers - Total no : 2282

Metered : 2250

Unmetered : 32

Water production : 3000 m³/d

Service area population : 150,000

Population served : 50,000

Financial/Revenue

O & M costs :Kshs 5,746,140

Revenue earned :Kshs 9,245,669

Revenue collected :Kshs 8,206,261

Rehabilitation required/costs

	Estimated Cost	Kshs
i) Raw water balancing tank		300,000
ii) Filter media / underdrain		200,000
iii) Extension of vertical basins		500,000
iv)		
v)		
Total		1,000,000

Remark : The production is obtained from a master meter. Many of the individual meters are either faulty or buried

Future development plan

Source :

Treatment : Full Conventional

Capacity : 15,000 m³/d

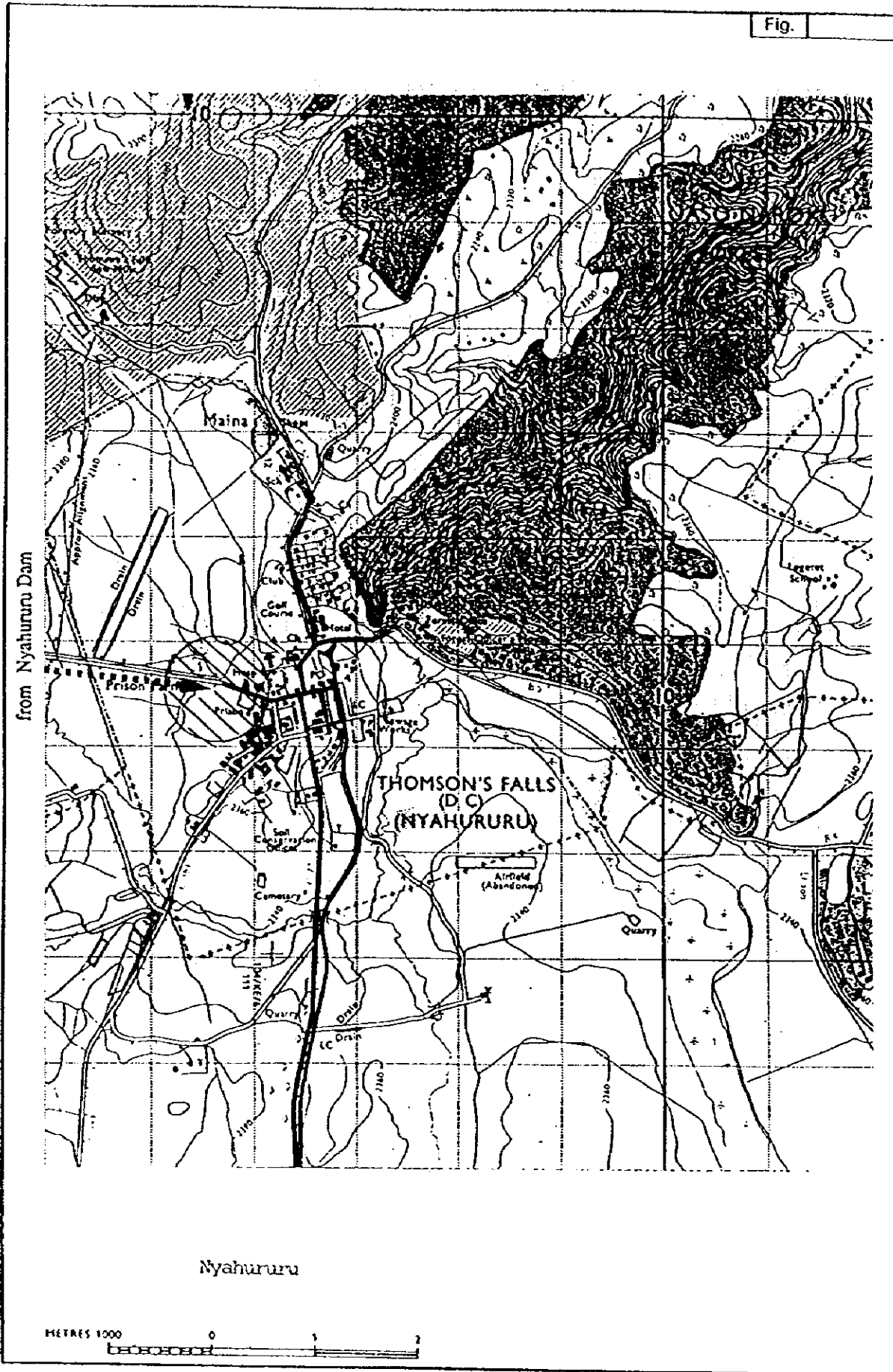
Design year : 1998

Design population : 222,000

Remarks

Billing and revenue collection is not carried out effectively due to lack of transport. The present source is considered to be sufficient for future planning but is polluted. A likely alternative source has been identified on eastern side of town, with a design production capacity of 15,000 m³/day to serve a population of 222,000. Operation and maintenance require to be strengthened for efficient operation of the scheme.

Fig.



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the National Water Master Plan**

GILGIL (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Gilgil*

Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*

District : *Nakuru*

Location : *743.2 - Gilgil*

Map (1/50,000) Ref. no : *119/4*

Co-ordinates X : *36° 20'* Y : *S 00° 29'*

Drainage Sub-basin :

Existing facilities

Source : *Murinditi and Malewa Rivers*

Type of Intake : *Weir* Elevation : *2103 m*

Raw water system : *Gravity*

H : *m* Dia : *600/500 mm*

Treatment Process :

Full Conventional Treatment - Coagulation, Sedimentation, Filtration and Disinfection by Chlorine (TCL)

Designed Capacity :

Treated water/Distribution system -

Area covered : *2.0 km²*

Distribution mains (80mm and above): *80 mm to 500 mm*

Total length : *11.84 km*

UFW (Estimated) : *m³/d*

Consumers - Total no : *1277*

Working Meters: *Details not available*

Metered : *501*

Unmetered : *776*

Water production : *12,956 m³/d*

Remark :

Service area population : *475,000*

Population served : *170,000*

Financial/Revenue

O & M costs :Kshs *7,464,699*

Revenue earned :Kshs *46,902,612*

Revenue collected :Kshs *24,300,408*

Rehabilitation required/costs

Estimated Cost Kshs

i)

ii)

iii)

Total N/A

Future development plan - N/A

Source :

Treatment : Capacity : *m³/d*

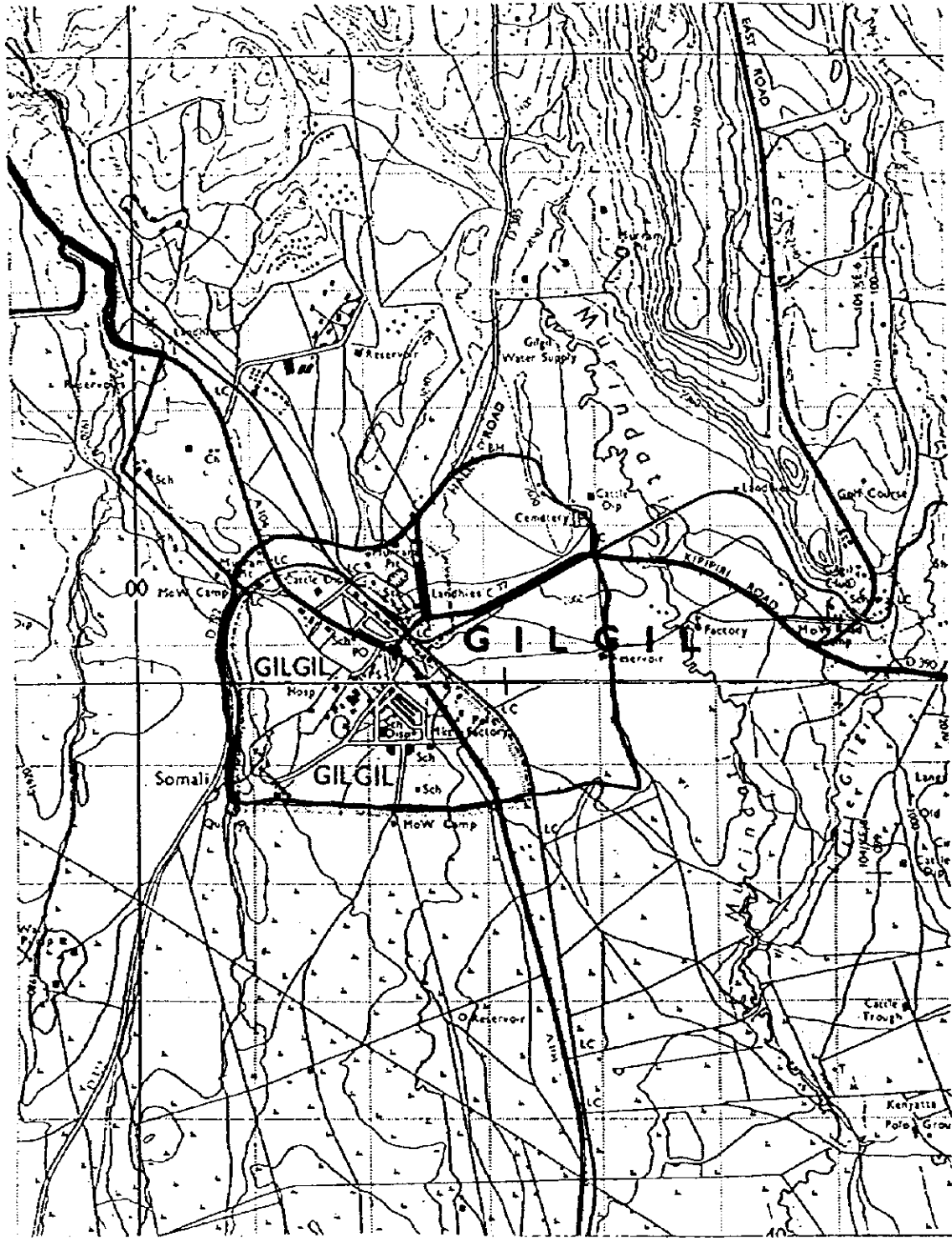
Design year :

Design population :

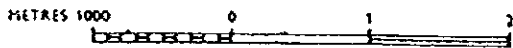
Remarks

According to the Regional Manager there is adequate supply to the Urban population. To supplement supply from Turasha Treatment Works there are two other treatment works - Gilgil/Malewa Treatment Works and Gilgil Murindati Treatment Works. 60% of the consumers are not metered. In order to control wastage of water, ensure equitable distribution of water to more consumers and to enhance revenue collection, all consumers should be metered and all existing faulty meters repaired.

Fig.



Gilgil



**Aftercare Study on
the National Water Master Plan**

NAIVASHA (1/1)

General

Name of Urban Centre : *Naivasha*
 Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*
 District : *Nakuru* Location : *744.1 - Naivasha*
 Map (1/50,000) Ref. no : *133/2* Co-ordinates X : *36° 27'* Y : *S 00° 42'*
 Drainage Sub-basin :

Existing facilities

Source : <i>Boreholes - 4 No.</i>	Type of Intake :	Elevation :	m
Raw water system : <i>Pumping</i>	H : m	Dia : <i>250mm</i>	
Treatment Process :			

No Treatment except disinfection by chlorine (TCL)

Designed Capacity :

Treated water/Distribution system -	Area covered :	<i>3.0 km²</i>
	Distribution mains (80mm and above):	<i>100 mm to 250 mm</i>
	Total length :	<i>7.5 km</i>

UFW (Estimated) : *m³/d*
 Consumers - Total no : *1,947*
 Metered : *1,531*
 Unmetered : *416*

Working Meters:

Water production : *762 m³/d*
 Service area population : *48,000*
 Population served : *46,000*

Remark :

Financial/Revenue - 1996/97

O & M costs :Kshs *218,880*
 Revenue earned :Kshs
 Revenue collected :Kshs *365,617*

Rehabilitation required/costs - N/A

i) Rehabilitation of existing borehole No. CA177

Estimated Cost	Kshs
Total	<i>Costing not yet worked out</i>

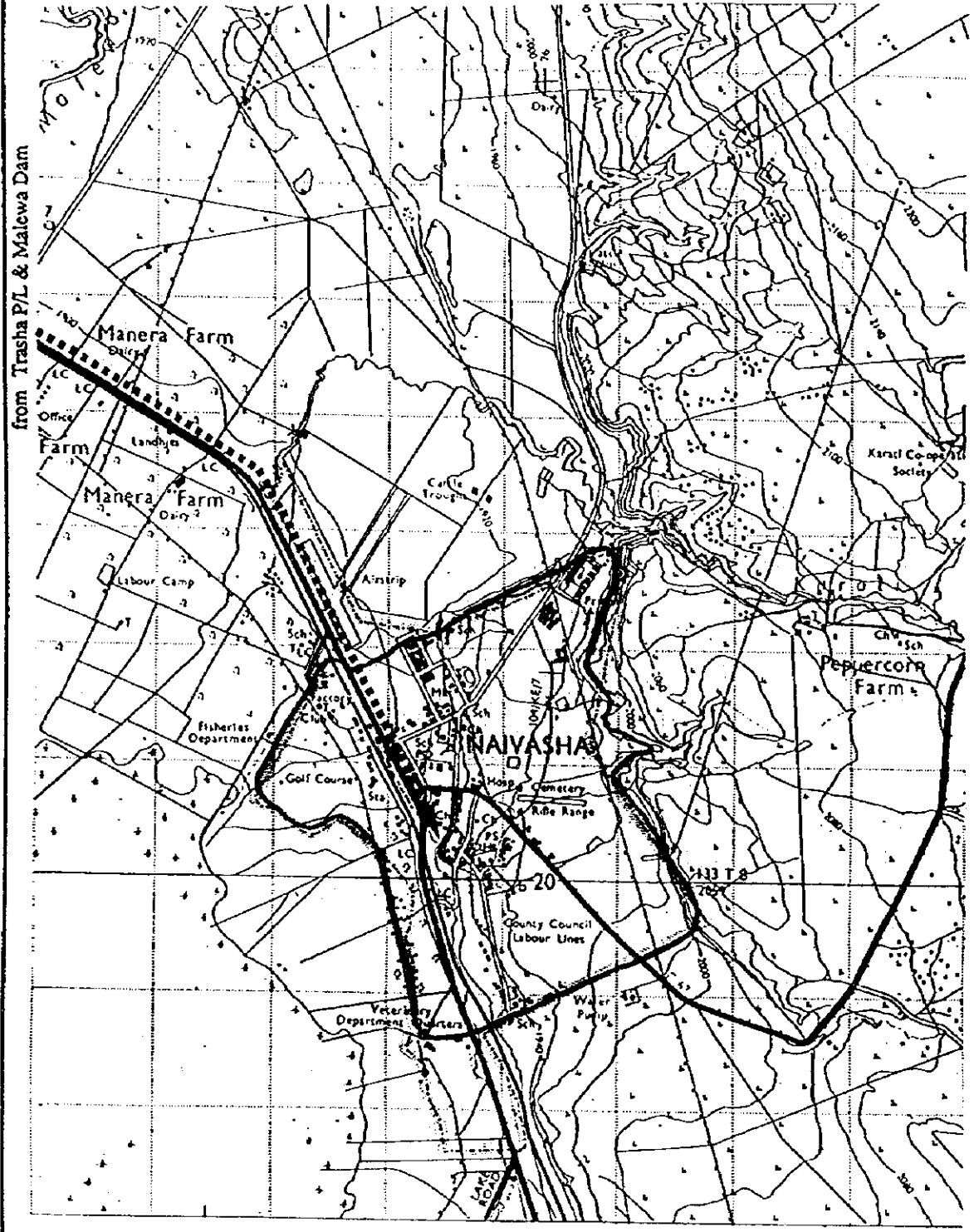
Future development plan

Source : *Drilling additional boreholes*
 Treatment : Capacity : *m³/d*
 Design year :
 Design population :

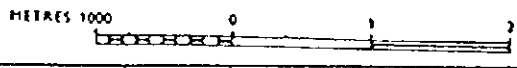
Remarks

The present supply is not adequate to meet the growing Urban population. Naivasha Urban used to get supplement supply from Kinangop ring main operated by Ministry of Water Resources. However, at present there is no supply from that source as a result of high demand in the upper zone in Nyandarua District. Operation and maintenance require to be strengthened and all consumers should be metered in order to control wastage and to enhance revenue collection. Alternative water source should be considered.

Fig.



Naivasha



**Aftercare Study on
the National Water Master Plan**

NJORO (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Njoro*
 Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*
 District : *Nakuru* Location : *746.1 - Njoro*
 Map (1/50,000) Ref. no : *118/4* Co-ordinates X : *35° 57'* Y : *S 00° 19'*
 Drainage Sub-basin :

Existing facilities

Source : *Boreholes - 2 No.* Type of Intake : Elevation : m
 Raw water system : *Pumping* H : m Dia : *150 mm*
 Treatment Process :
No Treatment except disinfection by chlorine (TCL)
 Designed Capacity :
 Treated water/Distribution system - Area covered : *2.0 km²*
 Distribution mains (80mm and above): *80mm to 250mm*
 Total length : km - *Details not available*

UFW (Estimated) : m³/d
 Consumers - Total no : *298* Working Meters:
 Metered : *200*
 Unmetered *98*

Water production : *224 m³/d* Remark :
 Service area population : *20,000*
 Population served : *5,000*

Financial/Revenue

O & M costs :Kshs *1,356,660*
 Revenue earned :Kshs *685,440*
 Revenue collected :Kshs *1,370,690*

Rehabilitation required/costs

i) *Rehabilitation and expansion works were carried out between 1988 and 1991 during construction of Greater Nakuru Water Project*

Estimated Cost	Kshs
Total	

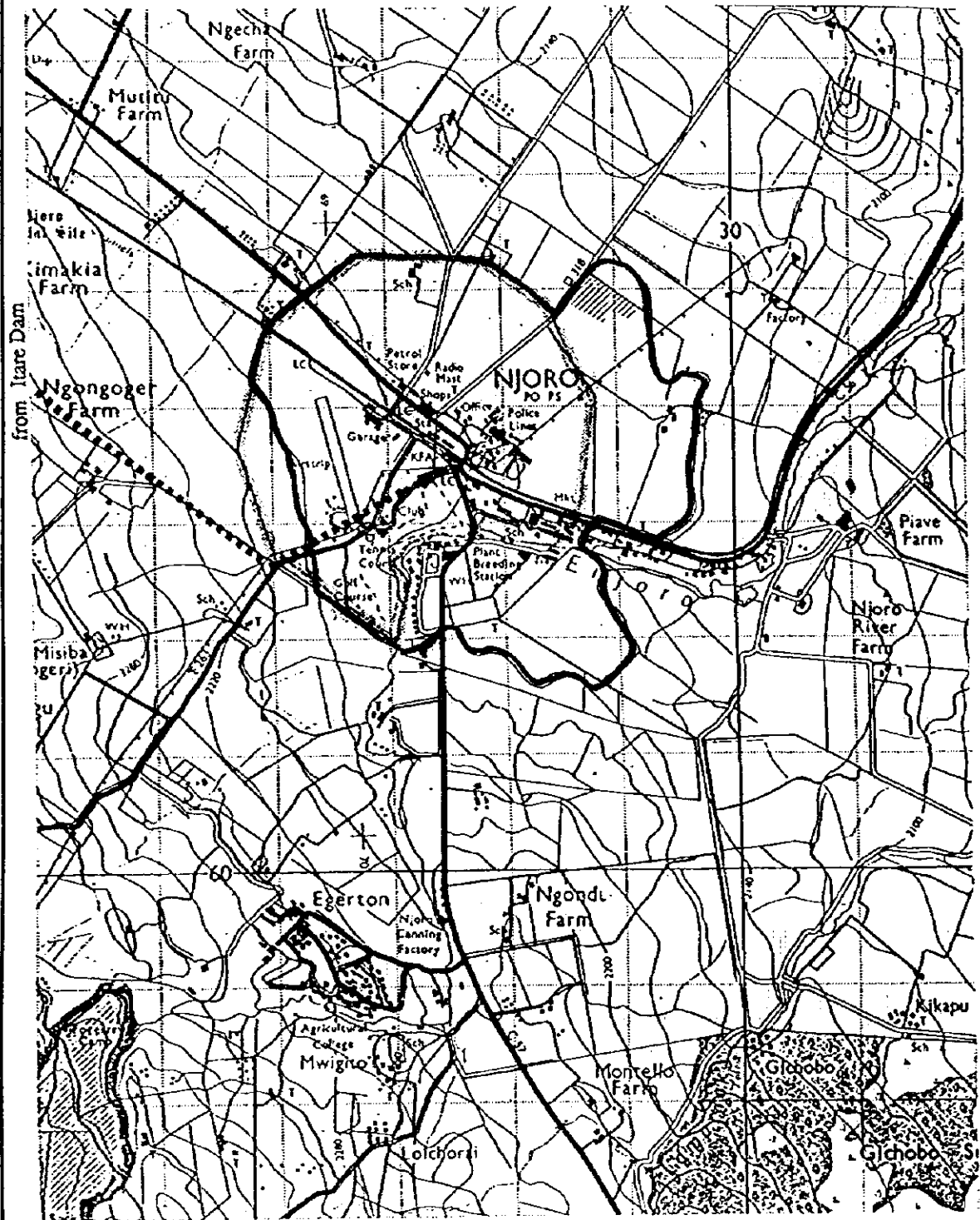
Future development plan

Source : *Itare River - Dam*
 Treatment : *Full Conventional* Capacity : *3,129 m³/d - 2020 Water Demand*
 Design year : *2020*
 Design population : *25,031*

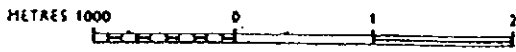
Remarks

According to the Regional Manager the present supply is not adequate to meet the water demand of the growing Urban population. Alternative source with full conventional treatment should be considered.

Fig.



Njoro



Aftercare Study on
the National Water Master Plan

ELBURGON (1/1)

General

Name of Urban Centre : *Elburgon*
 Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*
 District : *Nakuru* Location : *747.3 - Elburgon*
 Map (1/50,000) Ref. no : *118/4* Co-ordinates X : *35° 50'* Y : *S 00° 15'*
 Drainage Sub-basin :

Existing facilities

Source : <i>Boreholes - 2 No.</i>	Type of Intake :	Elevation :	m
Raw water system :	H : m	Dia :	mm
Treatment Process :			

No Treatment except disinfection by chlorine (TCL)

Designed Capacity :

Treated water/Distribution system -	Area covered :	<i>1.0 km²</i>
	Distribution mains (80mm and above):	mm to mm
	Total length :	<i>_____ km - Details not available</i>

UFW (Estimated) : m³/d
 Consumers - Total no : *687*
 Metered : *681*
 Unmetered : *6*

Working Meters:

Water production : *391 m³/d*
 Service area population : *30,000*
 Population served : *6,000*

Remark :

Financial/Revenue - 1996/97
 O & M costs :Kshs *879,518*
 Revenue earned :Kshs *1,586,076*
 Revenue collected :Kshs *2,709,921*

Rehabilitation required/costs

Estimated Cost Kshs

i) *Rehabilitation works were carried out between 1988 and 1991 during construction of Greater Nakuru Water Supply Project*

Total

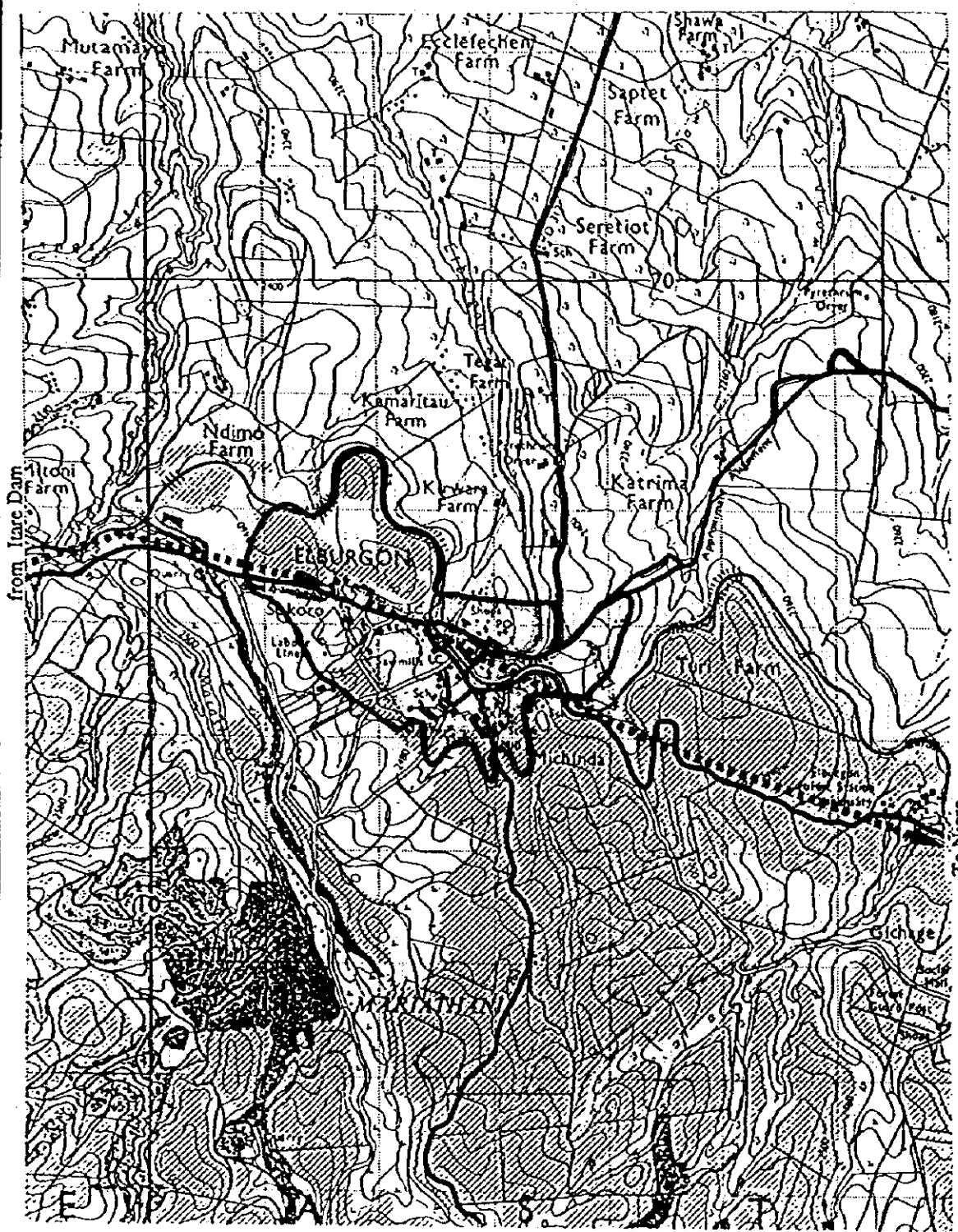
Future development plan

Source : <i>Itare River - Dam</i>	Capacity : <i>4,886 m³/d - 2020 Demand</i>
Treatment : <i>Full Conventional</i>	
Design year : <i>2020</i>	
Design population : <i>39,091</i>	

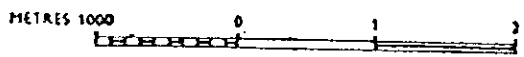
Remarks

The present supply is not adequate to meet the water demand for the growing Urban population. Only 20% of the urban population is served. Alternative water source should be considered.

Fig.



El Burgon



Aftercare Study on
the National Water Master Plan

MOLO (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : *Molo*
 Organisation/Water Undertaker : *National Water Conservation & Pipeline Corporation*
 District : *Nakuru* Location : *747.5 - Molo South*
 Map (1/50,000) Ref. no : *118/1* Co-ordinates X : *35° 42'* Y : *S 00° 14'*
 Drainage Sub-basin :

Existing facilities

Source : <i>Nguso Spring and Boreholes</i>	Type of Intake :	Elevation :	m
Raw water system : <i>Gravity from Spring and pumping from Boreholes</i>	H : m	Dia :	300 mm

Treatment Process :

There is no treatment process except disinfection by chlorine (TCL)

Designed Capacity :

Treated water/Distribution system -	Area covered :	<i>0.8 km²</i>
	Distribution mains (80mm and above):	<i>80 mm to 150 mm</i>
	Total length :	<i>km - Details not available</i>

UFW (Estimated) : *m³/d*

Consumers - Total no : *663*

Metered : *602*

Unmetered : *61*

Water production : *775 m³/d*

Service area population : *30,000*

Population served : *10,000*

Financial/Revenue - 1996/97

O & M costs :Kshs *2,792,579*

Revenue earned :Kshs *1,452,332*

Revenue collected :Kshs *1,618,215*

Rehabilitation required/costs

i) *Rehabilitation works / expansion works were carried out between 1981 and 1991 during construction of Greater Nakuru Water Supply Project*

Estimated Cost Kshs

Total

Future development plan

Source : *Itare River - Dam*

Treatment : *Full Conventional*

Design year : *2020*

Design population : *30,990*

Capacity : *3,874 m³/d - 2020 Demand*

Remarks

According to the Regional Manager the present water supply is not adequate to meet the demand of the growing urban population and only caters for approximately 30% of the water demand. Alternative water source should be considered with full conventional treatment.

Aftercare Study on
the National Water Master Plan

NAKURU (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : Nakuru

Organisation/Water Undertaker : Municipal Council of Nakuru

District : Nakuru Location : 749 - Nakuru Municipality

Map (1/50,000) Ref. no : 119/3 Co-ordinates X : 36° 34' Y : S 00° 17'

Drainage Sub-basin :

Existing facilities

Source : Meroroni & Malewa Rivers, Kabatini Boreholes & Baharini Boreholes, Pipeline Offtake from Greater Nakuru Water Supply
Type of Intake : Weir Elevation : m

Raw water system : Pumping/Gravity H : m Dia : 250, 150 mm

Treatment Process : Conventional Full Treatment for Malewa and Meroroni

Sources, only disinfection by chlorine (TCL) is carried for Baharini and Kabatini borehole sources

Designed Capacity : Meroroni - 5,960 m³/day, Malewa - 2,190 m³/day, Kabatini - 15,000 m³/day, Baharini - 5,819 m³/day

Treated water/Distribution system - Area covered : 44.1 km²
Distribution mains (80mm and above): 80 mm to 600 mm
Total length : 86 km

UFW (Estimated) : 12,774 m³/d - Studies carried out in March 1996 by Mangat, I.B. Patel & Partners

Consumers - Total no : 19,223 Working Meters: 11,554 - Information abstracted from meter reading books during studies carried out by MIBP in May 1996
Metered : 19,223
Unmetered : Nil

Water production : 28,161 m³/d Remark :

Service area population : 232,000

Population served : 134,561

Financial/Revenue - 1996/97

O & M costs :Kshs 29,996,554

Revenue earned :Kshs

Revenue collected :Kshs 131,766,920

Rehabilitation required/costs

Estimated Cost Kshs

i) Swabbing and scouring of raw water main from the Meroroni Intake to the Municipal Water Works

ii) -Ditto- raw water main from Greater Nakuru Water Supply to Eastern system

iii) Installation of 4 No. constant flow valves

iv) Relocation of borehole No. 6 at Kabatini and borehole No. 4 at Baharini

Total

Future development plan

Source : Itare River

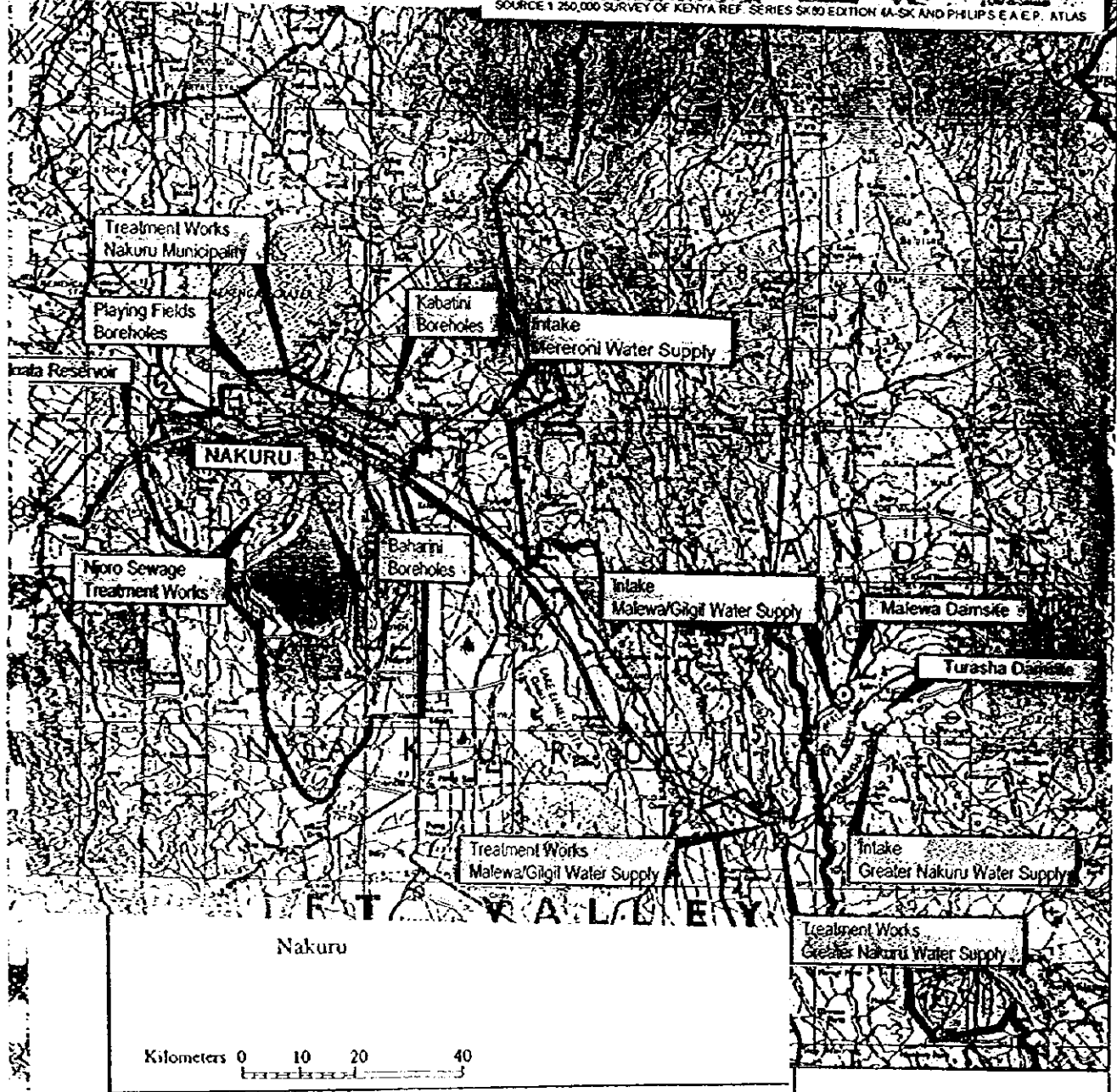
Treatment : Full Conventional Capacity : 150,000 m³/d

Design year : 2020

Design population : 580,313

Remarks

The present water supply system comprises of six schemes/sources which use both surface water and ground water. The most recent one is Greater Nakuru Water Supply Project which is operated by NWCP. Water is sold to the Municipal Council in bulk by NWCP. Operation and maintenance require to be strengthened and all existing faulty meters repaired in order to control wastage of water and enhance revenue collection.



**Aftercare Study on
the National Water Master Plan**

NAROK (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Narok*
 Organisation/Water Undertaker : *Ministry of Water Resources*
 District : *Narok* Location : *752-1 - Lower Melili*
 Map (1/50,000) Ref. no : *146/2* Co-ordinates X : *35°53'* Y : *501°05'*
 Drainage Sub-basin :

Existing facilities

Source : *Narok River and Spring* Type of Intake : *Side Chamu* Elevation : *m*
 Raw water system : *Pumping* H : *m* Dia : *100,50,75 mm Twin 75mm Dia. Pipes*
 Treatment Process : *Full Conventional*
Coagulation, Sedimentation, Filtration, and Disinfection by Chlorine (TCL). Treatment Works comprise of 3 No. different Treatment Units. Supply from the Spring is not treated. The chemicals dosed are Chlorine (TCL), Alum and Soda Ash. Dosage rate of the chemicals is not known.

Designed Capacity :
 Treated water/Distribution system - Area covered : *3.0 km²*
 Distribution mains (80mm and above): *mm to mm*
 Total length : *km* (*Details not available*)
 UFW (Estimated) : *m³/d*
 Consumers - Total no : *1027* Working Meters:
 Metered : *913*
 Unmetered : *114*

Water production : *1315 m³/d* Remark :
 Service area population : *30,000*
 Population served : *12,000*

Financial/Revenue *1996/1997*
 O & M costs : *Kshs 3,520,000*
 Revenue earned : *Kshs 2,760,000*
 Revenue collected : *Kshs 2,500,000*

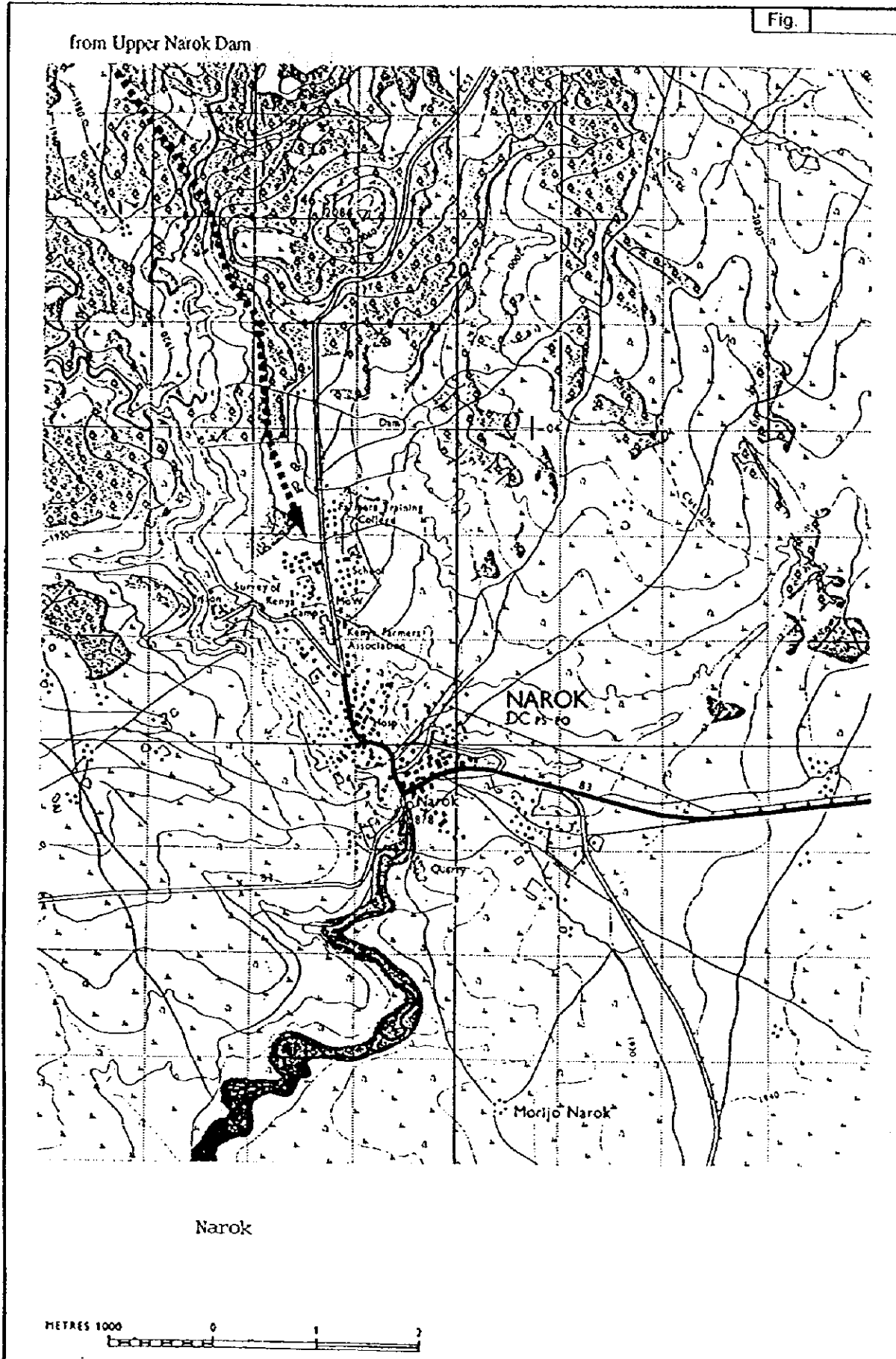
Rehabilitation required/costs	Estimated Cost	Kshs
i) <i>Rehabilitation of Pump House</i>		<i>300,000</i>
ii) <i>Rehabilitation of Staff Houses</i>		<i>150,000</i>
iii) <i>Rehabilitation of Laboratory</i>		<i>110,000</i>
iv) <i>Rehabilitation of Toilets and Store</i>		<i>410,000</i>
v) <i>Rehabilitation of Mixing Chamber</i>		<i>180,000</i>
vi) <i>Rehabilitation of Dosing Equipments and Pumps</i>		<i>630,000</i>
	Total	<i>1,760,000</i>

Future development plan

Source : *Borehole*
 Treatment : Capacity : *m³/d*
 Design year :
 Design population :

Remarks

According to the Assistant DWE the scheme has been adversely affected by the recent heavy rains, with sections of the Distribution Mains washed away, Clogging of Intake Chamber etc. Operation and maintenance require to be strengthened for efficient operation of the scheme. All consumers should be metered and all existing faulty meters repaired in order to control wastage of water and enhance revenue collection.



**Aftercare Study on
the National Water Master Plan**

NAIRAGE NGARE (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : Nairage Ngare
 Organisation/Water Undertaker : Ministry of Water Resources
 District : Narok Location : 7525 - Keekonyoike
 Map (1/50,000) Ref. no : 147/1 Co-ordinates X : 36° 10' Y : S01° 03'
 Drainage Sub-basin :

Existing facilities

Source : Lolongo Stream/Earth Dam Type of Inlake : Dam Elevation : 1702 m AOD
 Raw water system : Gravity H : m Dia : mm
 Treatment Process :

No Treatment - The earth dam is not protected. There is likelihood of water being contaminated from animal and human waste

Designed Capacity : (Dam Capacity - 80,00 m³)
 Treated water/Distribution system - Area covered : 0.5 km²
 Distribution mains (80mm and above): mm to mm
 Total length : km

UFW (Estimated) :

Consumers - Total no : N/A Working Meters:
 Metered : N/A
 Unmetered : N/A

Water production : Remark :
 Service area population :
 Population served :

Financial/Revenue 1996/1997

O & M costs :Kshs
 Revenue earned :Kshs
 Revenue collected :Kshs
Rehabilitation required/costs Estimated Cost Kshs

- i)
- ii)
- iii)
- iv)

Total

Future development plan

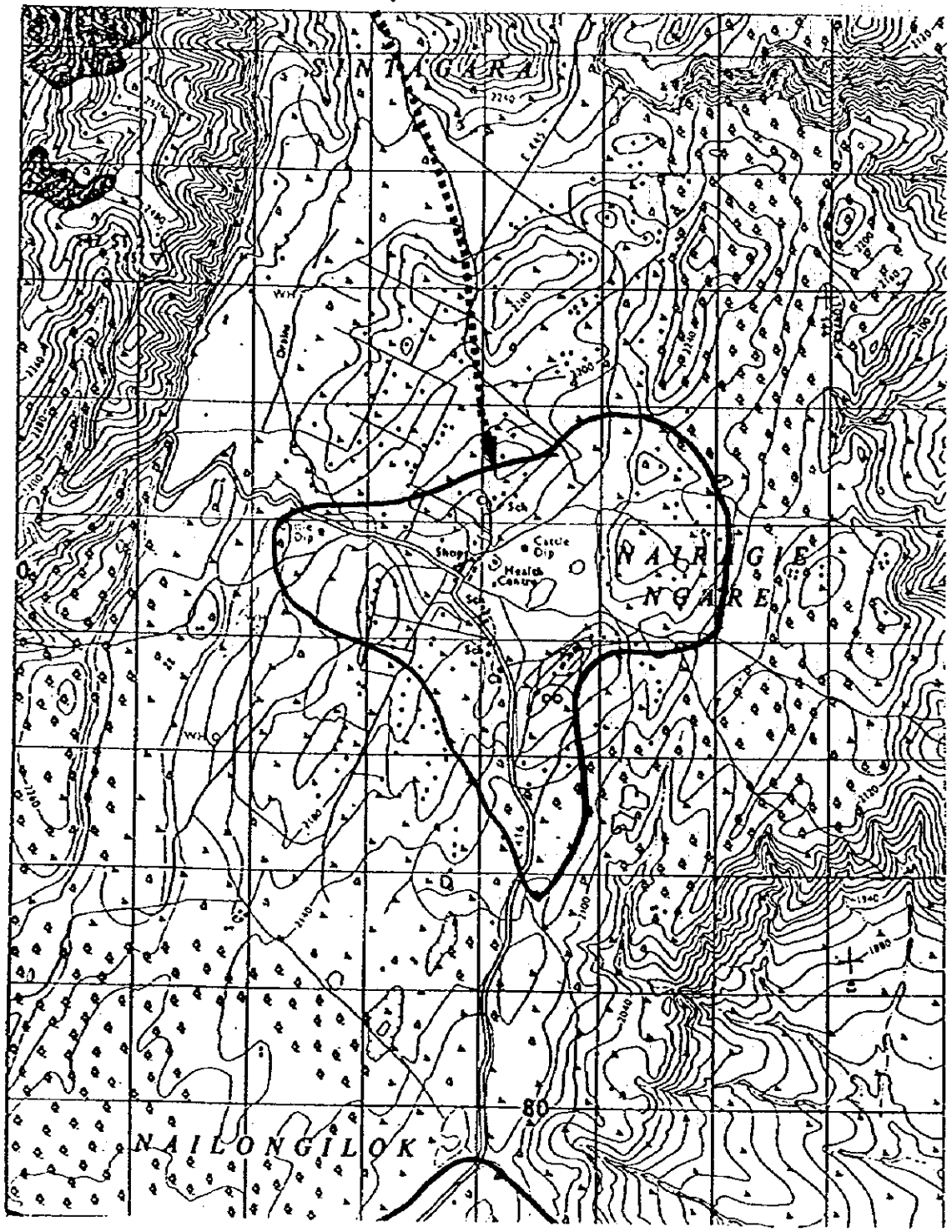
Source :
 Treatment : Capacity : m³/d
 Design year :
 Design population :

Remarks

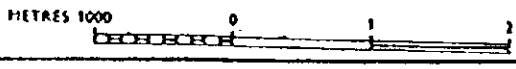
The supply is not adequate to meet the demand of the local community

Fig.

from Nasampolai River



Nairagie Ngare



**Aftercare Study on
the National Water Master Plan**

KILGORIS (1/1)

General

Name of Urban Centre : *Kilgoris*
 Organisation/Water Undertaker : *Ministry of Water Resources*
 District : *Narok* Location : *754-4 - Uasin Gichu East*
 Map (1/50,000) Ref. no : *144/2* Co-ordinates X : *34°53'* Y : *S01°00'*
 Drainage Sub-basin :

Existing facilities

Source : *River Inkituaak* Type of Intake : *Weir* Elevation : *1702 m AOD*
 Raw water system : *Pumping* H : *m* Dia : *150 mm*
 Treatment Process : *Full Conventional Treatment*
Coagulation, Sedimentation, Filtration, and Disinfection by Chlorine (TCL). Chemicals dosed are Chlorine (TCL), Alum and Soda Ash. Dosage rate of the chemicals is not known.

Designed Capacity : *600m³/day*
 Treated water/Distribution system -

Area covered : *1.5 km²*
 Distribution mains (80mm and above): *80 mm to 150 mm*
 Total length : *3.5 km*

UFW (Estimated) : *m³/d*
 Consumers - Total no : *224*
 Metered : *82*
 Unmetered : *142*

Working Meters:

Water production : *362 m³/d*
 Service area population : *8500*
 Population served : *3500*

Remark :

Financial/Revenue 1996/1997
 O & M costs : *Kshs 1,160,640.00*
 Revenue earned : *Kshs 1,139,023.00*
 Revenue collected : *Kshs 1,034,742.00*

Rehabilitation required/costs

- i) *Rehabilitation of 1 No. Raw Water Pump*
- ii) *1 No. Treater Water Pump (Switch Gear and Motor)*

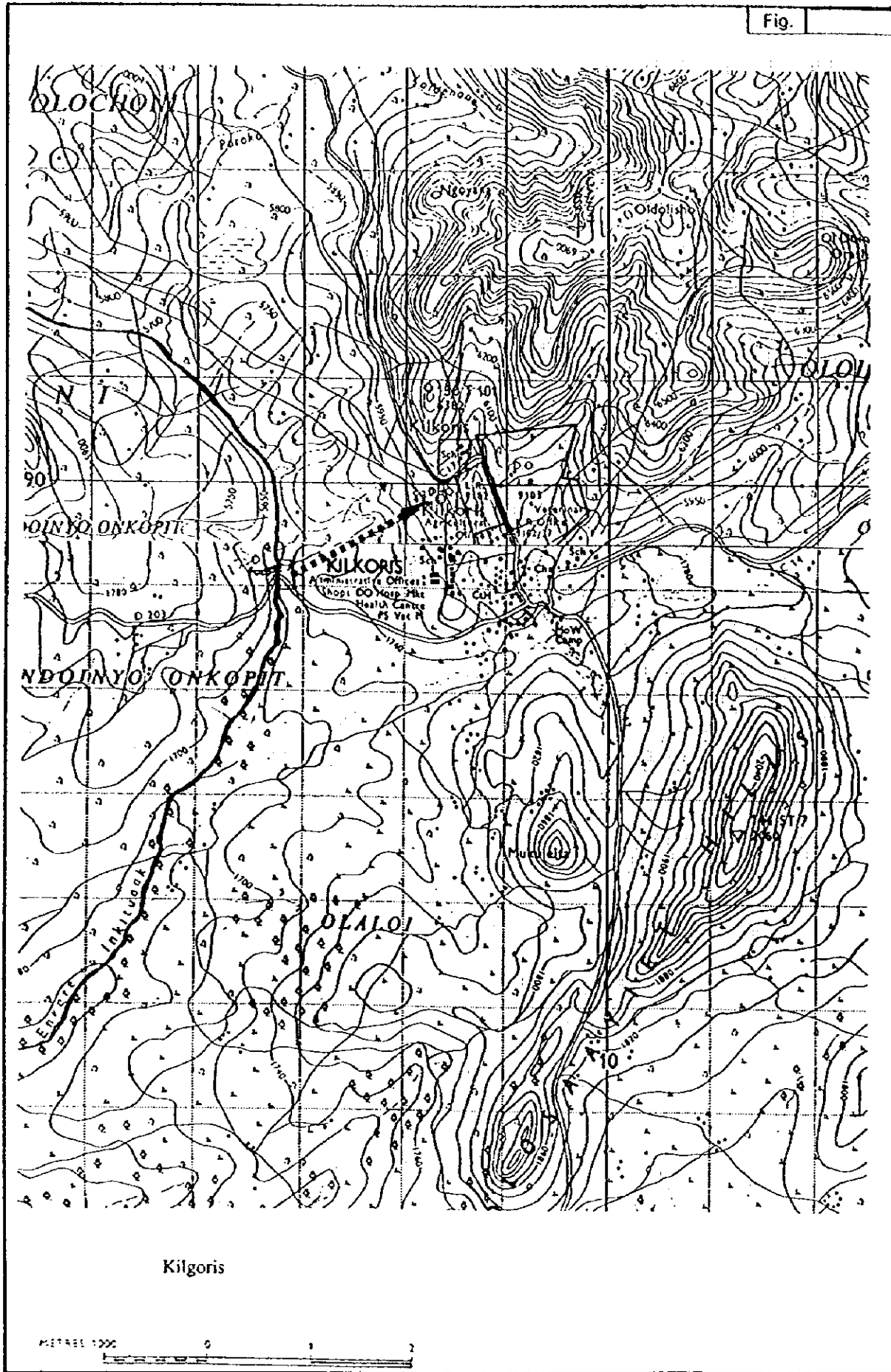
Estimated Cost	Kshs
Total	900,000.00

Future development plan

Source : *N/A*
 Treatment : Capacity : *m³/d*
 Design year :
 Design population :

Remarks

According to the Assistant DWE the present water supply is not adequate to meet the demand of the growing urban population and serve only 40% of the urban population. Approximately 63% of the consumers are not metered. In order to control wastage of water, ensure equitable distribution of water to more consumers and enhance revenue collection, all consumers should be metered and all existing faulty meters repaired.



Aftercare Study on
the National Water Master Plan

LOLGORIEN (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : Lolgorien
 Organisation/Water Undertaker : Ministry of Water Resources
 District : Transmara Location : 755-1 Siria East
 Map (1/50,000) Ref. no : 144/2 Co-ordinates X : 34°48' Y : S 01°13'
 Drainage Sub-basin :

Existing facilities

Source : River Lolgorien Type of Intake : Weir Elevation : 1560 m AOD
 Raw water system : Pumping H : m Dia : 50 mm
 Treatment Process :

No Treatment - Consumers often do complain about the quality of water being supplied

Designed Capacity :

Treated water/Distribution system - Area covered : 1.0 km²
 Distribution mains (80mm and above): mm to mm
 Total length : km Distribution mains are below 80mm

UFW (Estimated) : m³/d

Consumers - Total no : 15

Metered : 9

Unmetered : 6

Working Meters:

Water production : 4.0 m³/d

Remark :

Service area population : 1,475

Population served : 1,200

Financial/Revenue 1996/1997

O & M costs :Kshs 131,948.00

Revenue earned :Kshs 13,486.00

Revenue collected :Kshs 14,199.00

Rehabilitation required/costs

	Estimated Cost	Kshs
i) Construction of 1 No. Storage Tank Capacity - 100 m ³		500,000
ii) Rehabilitation of Existing Intake Works		200,000
iii) Construction of 3 No. Staff Houses and Fencing		250,000
iv) Installation of 2 No. Treated Water Pumps		1,000,000
v) Rehabilitation of Approximately 1500 m of Distribution Pipes		3,600,000
Total		5,550,000

Future development plan

Source : Sinking 1 No. Borehole

Treatment : Chlorination

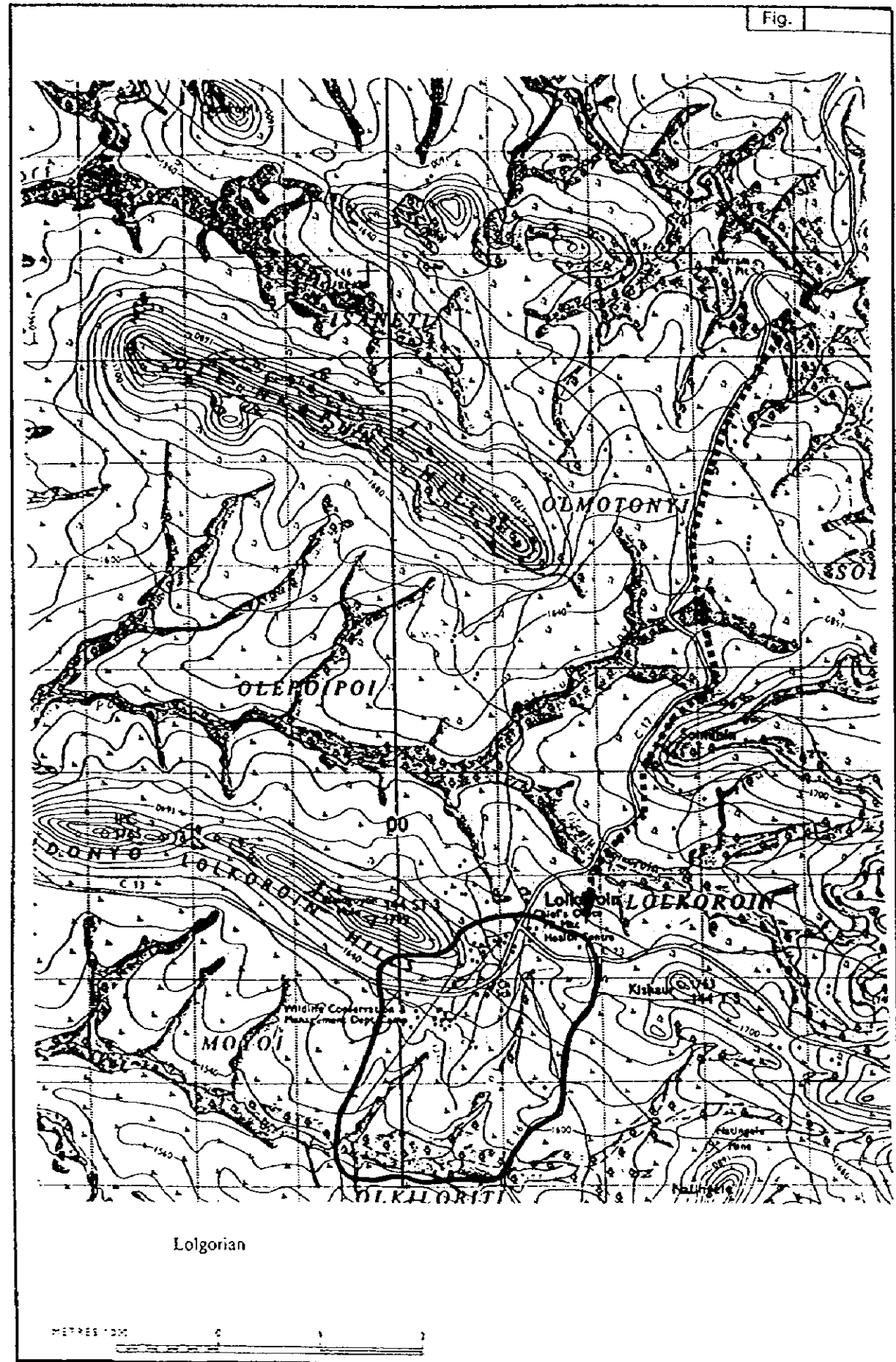
Capacity : 20 m³/d

Design year : 2006

Design population : 2184

Remarks

Lolgorien Water Supply was constructed in 1973. In 1997, a composite sedimentation/filtration unit was constructed but has not been commissioned. The scheme has only 30 connections but 15 connects have been disconnected due to non-payment of bills. The present operation of the scheme is much higher than the revenue generated from the sale of water



Lolgorian

METRES 1:20000

**Aftercare Study on
the National Water Master Plan**

KITALE (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Kitale*

Organisation/Water Undertaker : *Kitale Municipal Council*

District : *Trans Nzoia* Location : *Kitale*

Map (1/50,000) Ref. no : *75/3*

Co-ordinates X : *35° 01'* Y : *01° 01'*

Drainage Sub-basin : *18G*

Existing facilities

Source : *Nzoia River*

Type of Intake : *Weir*

Elevation : *1845 m*

(*2 No. T/Works - Koitobos and Nzoia*)

H : *m* Dia : *CI 200 Dia., AC 150 Dia., CI 550 Dia.*

Raw water system : *Pumping - 2 at T/Works*

Treatment Process : *Full Conventional Treatment*

2 No. Receiving Basins, 2 No. Mixing Chambers, 7 No. Sedimentation Basins, 7 No. Rapid Sand Filters,

2 No. Clear Water Tanks / Chlorination Chambers. Dosage Rates:- Chlorine = 10 kg/d, Alum = 300 kg/d, Soda Ash = 25 kg/d

Designed Capacity : *12,749 m³/d (10,320 m³/d for Nzoia T/Works, 2,429 m³/d for Koitobos T/Works)*

Treated water/Distribution system -

Area covered : *km²*

Distribution mains (80mm and above): *60 mm to 250 mm*

Total length : *14.3 km uPVC/AC*

UFW (Estimated) : *m³/d*

Consumers - Total no : *4,000*

Working Meters: *Not indicated*

Metered : *4,000*

Unmetered : *None*

Water production : *9,000 m³/d*

Remark : *Figures totals for both
treatment works*

Service area population : *70,000 - 1997*

Population served : *60,000 - 1997*

Financial/Revenue

O & M costs : *Kshs)*

Revenue earned : *Kshs)* *Information not readily available*

Revenue collected : *Kshs)*

Rehabilitation required/costs

Estimated Cost Kshs

i)

ii)

iii)

iv)

Total

Future development plan

Source : *Mt. Elgon Springs - by gravity*

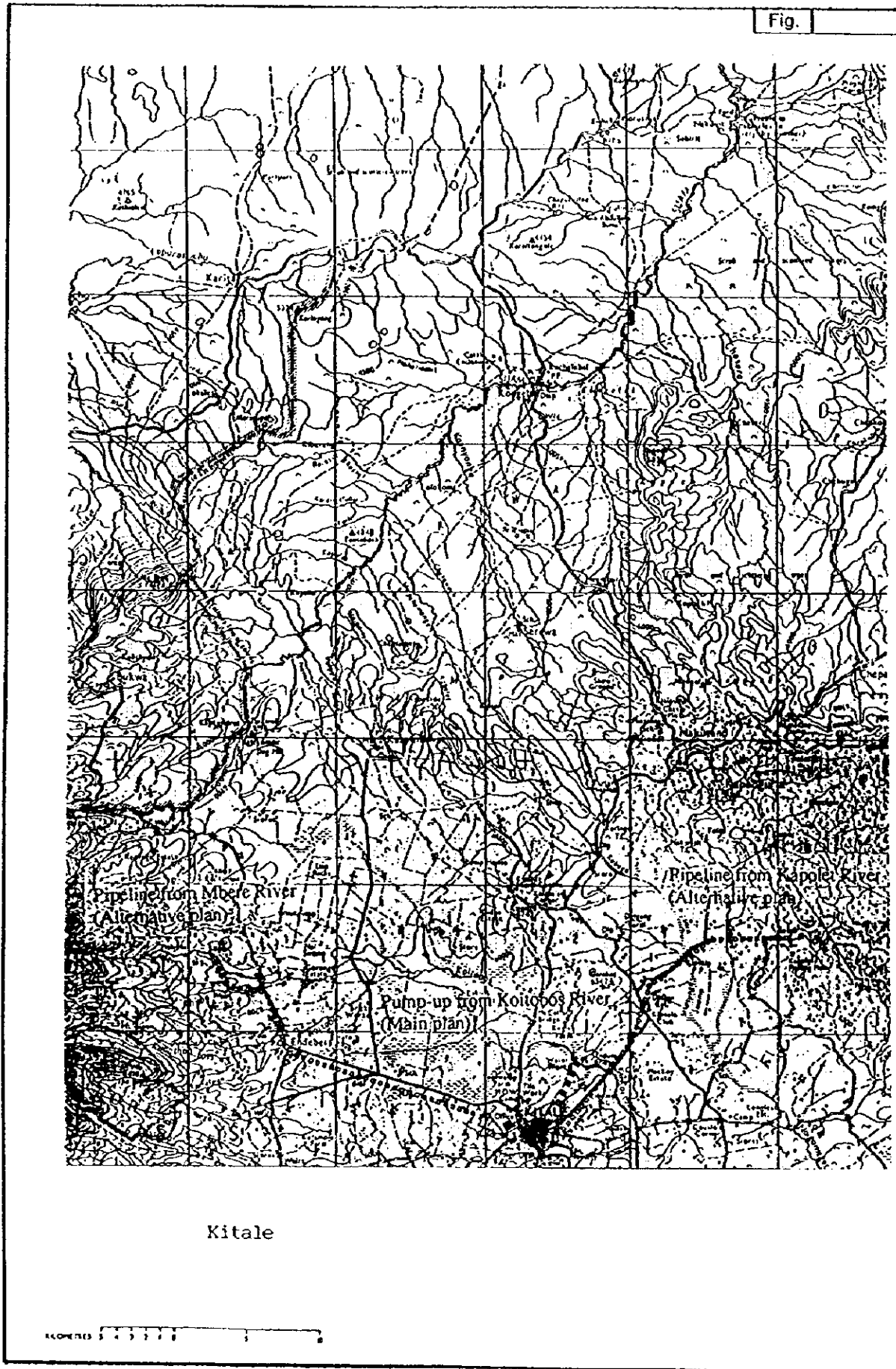
Treatment : *Full Treatment* Capacity : *7,500 m³/d*

Design year : *2000*

Design population : *100,000*

Remarks

The scheme has 2 treatment works from 2 different intakes as above. Nzoia intake has serious siltation problems, hampering supply. Frequent pump breakdowns have resulted in intermittent functioning of the T/Works. A search for another supply source has therefore been proposed.



Aftercare Study on
the National Water Master Plan

KIMININI (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : *Kimini*

Organisation/Water Undertaker : *Ministry of Water Resources*

District : *Trans Nzoia* Location :

Map (1/50,000) Ref. no : Co-ordinates X : Y :

Drainage Sub-basin :

Existing facilities

Source : *Spring* Type of Intake : *Weir* Elevation : m

Raw water system : *Pumping @ 12 m³/hr* H : *130 m* Dia : *80 mm*

Treatment Process : *None*

Water is considered to be potable but it is proposed to provide chlorination in the near future

Designed Capacity : *m³/d*

Treated water/Distribution system -

Area covered : *km²*

Distribution mains (80mm and above): *mm to mm*

Total length : *km*

UFW (Estimated) : *m³/d*

Consumers - Total no : *58*

Metered : *53*

Unmetered : *26*

Working Meters:

Water production : *24 m³/d*

Remark :

Service area population : *3,000*

Population served : *2,000*

Financial/Revenue

O & M costs :Kshs

Revenue earned :Kshs *51,981*

Revenue collected :Kshs *49,172*

Rehabilitation required/costs

i) *Standby diesel engine*

ii) *FRO doser for chlorination*

Estimated Cost Kshs

500,000

90,000

Total *590,000*

Future development plan

Source : *Sosio River*

Treatment : *Full Conventional* Capacity : *480 m³/d*

Design year :

Design population : *1,900*

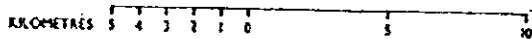
Remarks

At present, the pump is driven by a diesel engine which is costly and prone to frequent breakdown. Electrification is proposed at a cost of KShs. 1,000,000.

Fig.



Kiminini/Saboti+Spr.Kital



**Aftercare Study on
the National Water Master Plan**

ENDEBESS (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Endebess*

Organisation/Water Undertaker : *Ministry of Water Resources - Kwanza-Kolongolo Water Supply*

District : *Trans Nzoia* Location : *Endebess*

Map (1/50,000) Ref. no : *75/3*

Co-ordinates X : *34° 52' E* Y : *01° 05' N*

Drainage Sub-basin : *1BE*

Existing facilities

Source : *Ngenge + Asega Dams fed by spring*

Type of Intake : *Dam*

Elevation : *1900 m*

Raw water system : *Pumping*

H : *106m and 132m*

Dia : *150mm and 100mm*

2 No. @ 17 m³/hr and 14 m³/hr

Treatment Process :

No Treatment

Designed Capacity : *m³/d*

Treated water/Distribution system -

Area covered : *3 km²*

Distribution mains (80mm and above): *80 mm to 150 mm*

Total length : *8.7 km*

UFW (Estimated) : *m³/d*

Consumers - Total no : *93 - 1997*

Working Meters: *47 No.*

Metered : *47 - 1997*

Unmetered : *46 - 1997*

Water production : *m³/d*

Remark : *O&M costs much higher than revenue collected*

Service area population : *23,000 - 1996*

Population served : *1,800 - 1996*

Financial/Revenue

O & M costs :Kshs *322,148 - 1996*

Revenue earned :Kshs *5,927 - 1996*

Revenue collected :Kshs *4,041 - 1996*

Rehabilitation required/costs

	Estimated Cost	Kshs
i) Replacement of pumping sets		2,000,000
ii) Construction of store		800,000
iii) Construction of extra 3.6 km 100mm dia. GS line		15,000,000
iv) Rehabilitation of Ngenge dam embankment		500,000
v)		
vi)		
Total		18,300,000

Future development plan

Source : *Kimothon River*

Treatment : *Full Treatment* Capacity : *1982 m³/d*

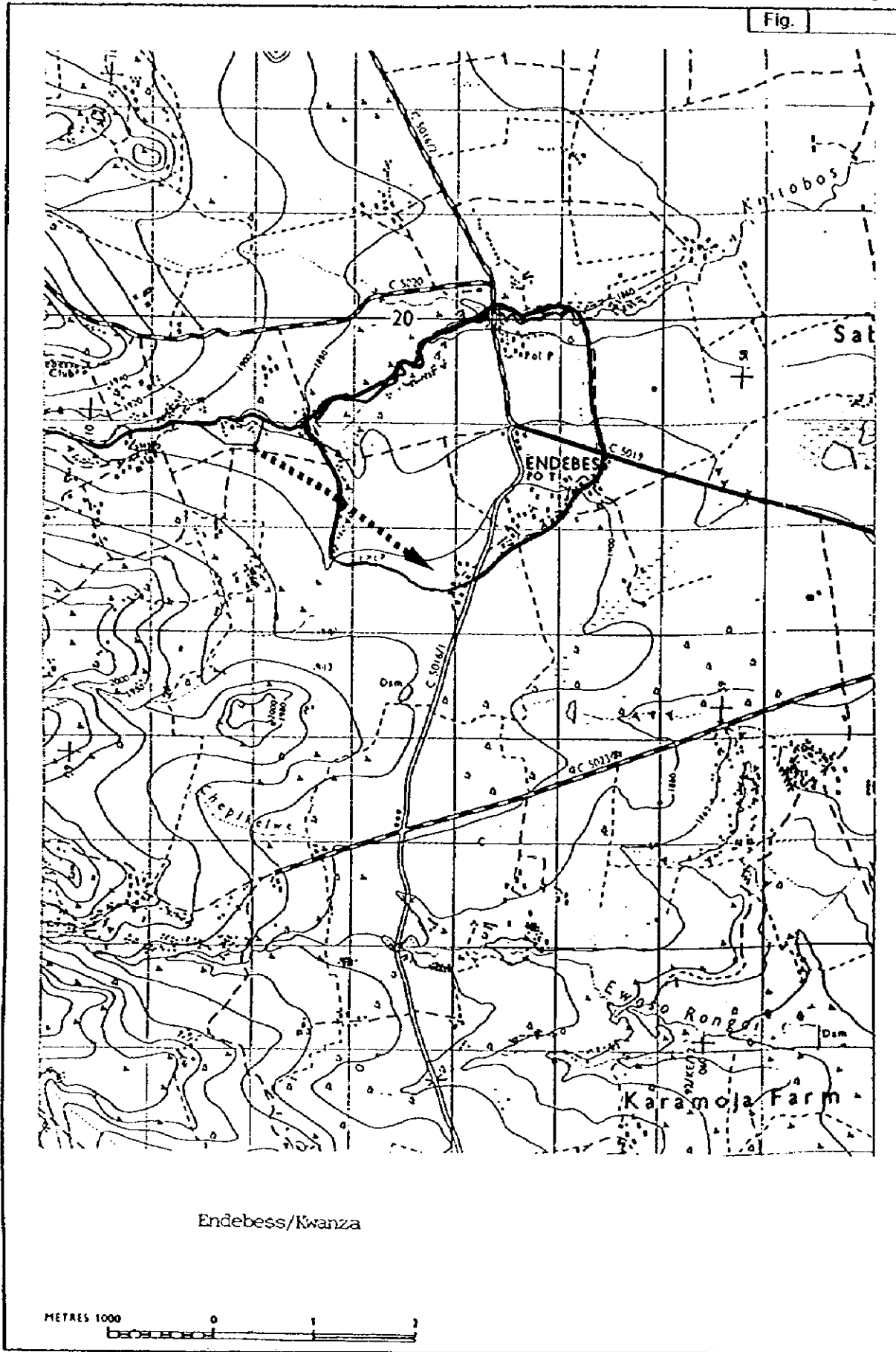
Design year : *2002*

Design population : *27,840*

Remarks

This scheme serves only Kwanza/Kolongolo centres and not Endebess. Pumps run by diesel Lister engines and therefore expensive to run. No treatment at present as spring water quality is good but only in dry weather.

Future development is designed to include Endebess in supply and construction of full treatment works.



**Aftercare Study on
the National Water Master Plan**

MOI'S BRIDGE (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : *Moi's Bridge*
 Organisation/Water Undertaker : *Ministry of Water Resources*
 District : *Uasin Gishu* Location : *Moi's Bridge*
 Map (1/50,000) Ref. no : *89/1* Co-ordinates X : *35° 08' E* Y : *00° 53' N*
 Drainage Sub-basin : *1BE*

Existing facilities

Source : *Nzoia River* Type of Intake : *Weir* Elevation : *1790 m AOD*
 Raw water system : *Pumping* H : *15 m* Dia : *80 mm G.S.*

Treatment Process : *Full Treatment*

1 No. Composite Unit Consisting of receiving Basin Mixing Chamber, Sedimentation Chamber and Filtration Chamber (RSF); 1 No. 25 m³ Chlorination/Clear Water Reservoir. Dosage: Chlorine = 1 kg/d, Alum = 20kg/d, Soda Ash = 4 kg/d.

Designed Capacity : - *600 m³/day*

Treated water/Distribution system -

Area covered : - *km²*

Distribution mains (80mm and above): - *mm to - mm*

Total length : - *km (No records available)*

UFW (Estimated) : - *m³/d*

Consumers - Total no :

Working Meters: *Info. unavailable*

Metered :

Unmetered :

Water production : *105 m³/d - 1996*

Remark :

Service area population : *4200*

Population served : *1010*

Financial/Revenue

O & M costs : *Kshs 468,000*

Revenue earned : *Kshs - Not Available*

Revenue collected : *Kshs 108,500 - 1996*

Rehabilitation required/costs

i) *Purchase of Standby Pumps, 2 No.*

Kshs

1,200,000

ii)

iii)

iv)

v)

vi)

Total estimated cost

1,200,000

Future development plan

Source : *River*

Treatment : *Full Treatment* Capacity : *270 m³/d*

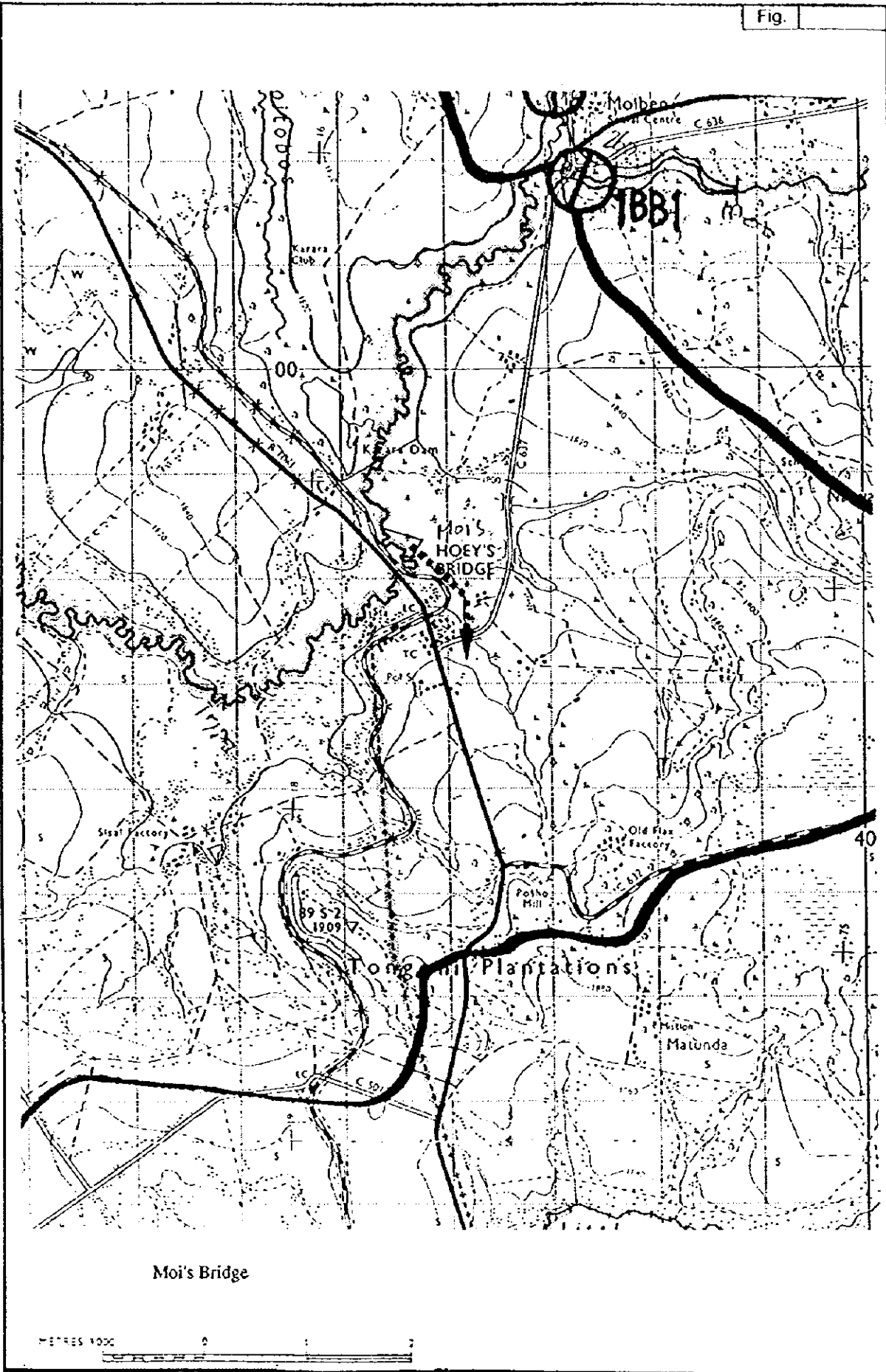
Design year : *2000*

Design population : *4,500*

Remarks

Scheme constructed in 1989. Both Raw Water and Clear Water pumps have no standby.

Fig.



Moi's Bridge

Aftercare Study on
the National Water Master Plan

TURBO (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : Turbo

Organisation/Water Undertaker : MOWR

District : Uasin gishu Location: Turbo

Map (1/50,000) Ref. no : 89/3

Co-ordinates X 35° 03' Y N 00° 38'

Drainage Sub-basin : 1CB

Existing facilities:

Source: Confluence of Sergoit and Sosiani rivers

Type of Intake : Submersed, Elevation : 1730m

Raw water system : Pumping

H : m Dia : 200mm

Treatment Process : Conventional horizontal, operational all day.

Flucculation tanks - 2 No also act as grit settling tank. Sedimentation tanks - Horizontal flow - 2 No sand filters - 2 No clear water tank where chlorination is carried out.

Designed Capacity: m³/day

Treated water/Distribution system -

Area covered: 6 km² of Isiolo urban

Distribution mains (80mm and above): 150mm to 80 mm

Total length : 8 km

UFW (Estimated) : m³/d

Consumers - Total no : 245

Metered : 245

Unmetered :

Working Meters: 245

Water production : 300 m³/d

Service area population : 4,600

Population served : 2450

Remark : The treatment works is not fully utilised due to breakdown of raw water and treated water pumps. Only one pump at each location is operational.

Financial/Revenue 1996

O & M costs : Ksh 1,189,052

Revenue earned : Kshs 1,118,952

Revenue collected : Kshs 1,118,952

Rehabilitation required/costs

- i) Repairs of pumps or new pumps and motors
- ii) Retention tanks to remove sediments
- iii) Distribution system improvement and extension
- iv) Repair of standby generator
- v) Laboratory equipment
- vi) Repair of mechanical dosing system

Kshs Estimated

1,000,000

2,000,000

20,000,000

350,000

250,000

2,000,000

Total

23,800,00

Future development plan (None Presently)

Source :

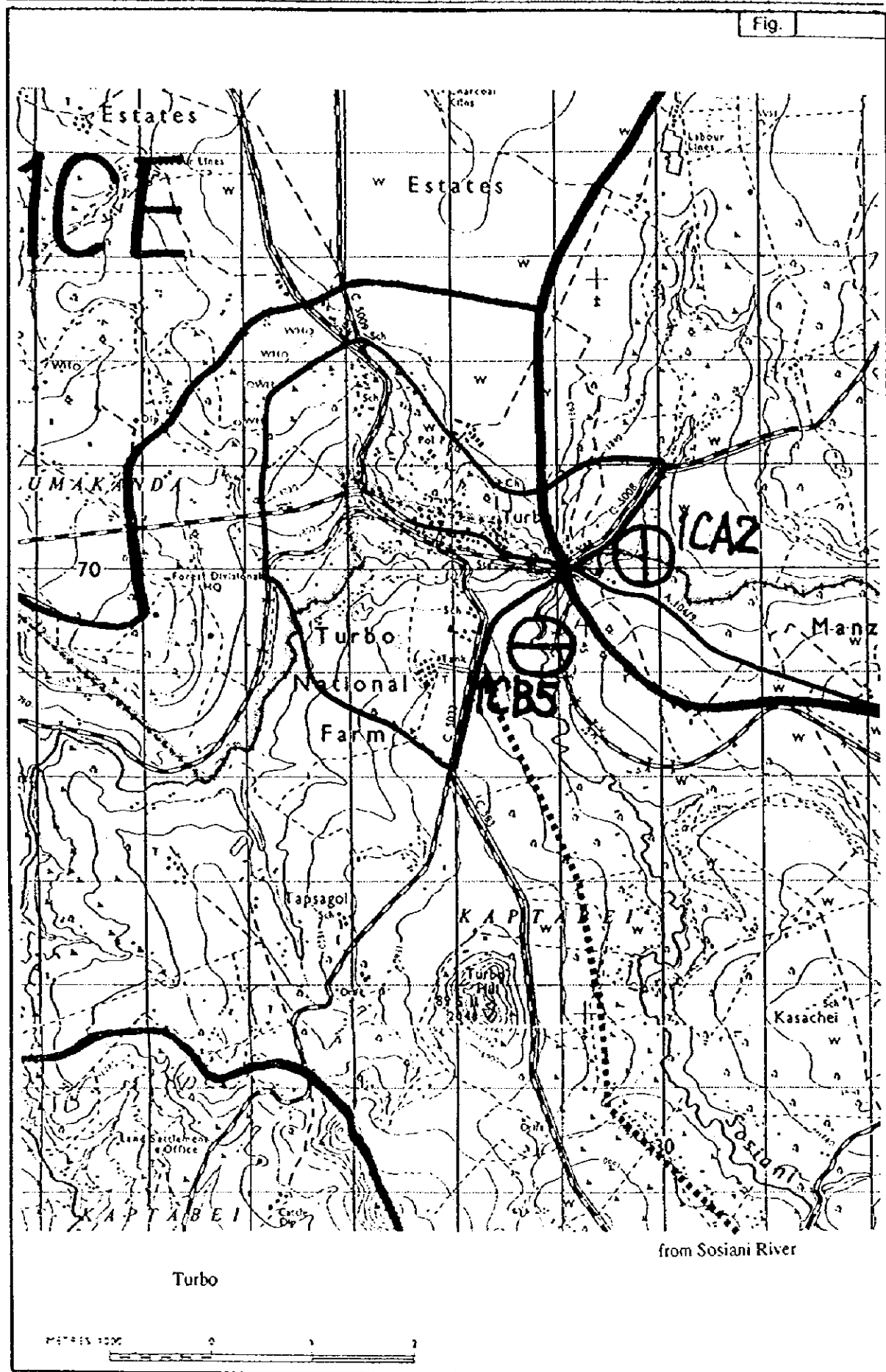
Treatment : Capacity : m³/d

Design year :

Design population:

Remarks

Most of the connections are meters. Turbo treatment is producing turbid water due to large amount of sediments in water and adequate Alum dosage. No tests are carried out in the laboratory.



**Aftercare Study on
the National Water Master Plan**

ELDORET (1/1)

**Urban Water Supply
System Survey**

General

Name of Urban Centre : Eldoret (Sosiari T' works)

Organisation/Water Undertaker : Eldoret Municipal council

District : Uasin Gishu Location: Eldoret

Map (1/50,000) Ref. no : 89/4

Co-ordinates X 35° 17' Y N 00° 31'

Drainage Sub-basin : ICB

Existing facilities:

Source: 1 Elegirini 2. river dam (Chebara T' works) Type of Intake : 1. Earth dam Elevation : 2149.5m at T' works

Raw water system : 1. Gravity 2. pumping. H : m Dia : 600 & 375mm

Treatment Process : Full conventional.

2 No mixing chamber - 7 No sedimentation tank - 11 No rapid filters - 2 No clear water tank - Full testing for quality control is carried out.

Designed Capacity: 37,400 m³/day for all 3 No T' works

Treated water/Distribution system

Area covered: 150 km²

Distribution mains (80mm and above): 500 mm to 100 mm

Total length : 477km

UFW (Estimated) : m³/d

Consumers - Total no : 10,279 - 1997

Working Meters:

Metered : 9250

Unmetered : 1029

Water production : 25,000 m³/d 1996

Remark :

Service area population : 250,000

Population served : 127,500

Financial/Revenue: 1996

O & M costs : Ksh 33,961,248

Revenue earned : Kshs 143,700,000 billed

Revenue collected : Kshs

Rehabilitation required/costs

Kshs Estimated

i) Improve existing reticulation

51,000,000

ii) Extension of Chebarat T' works

39,000,000

Total

90,000,000

Future development plan

Source : Moiben river dam

Treatment : Full conventional. Capacity : 45,00 m³/d

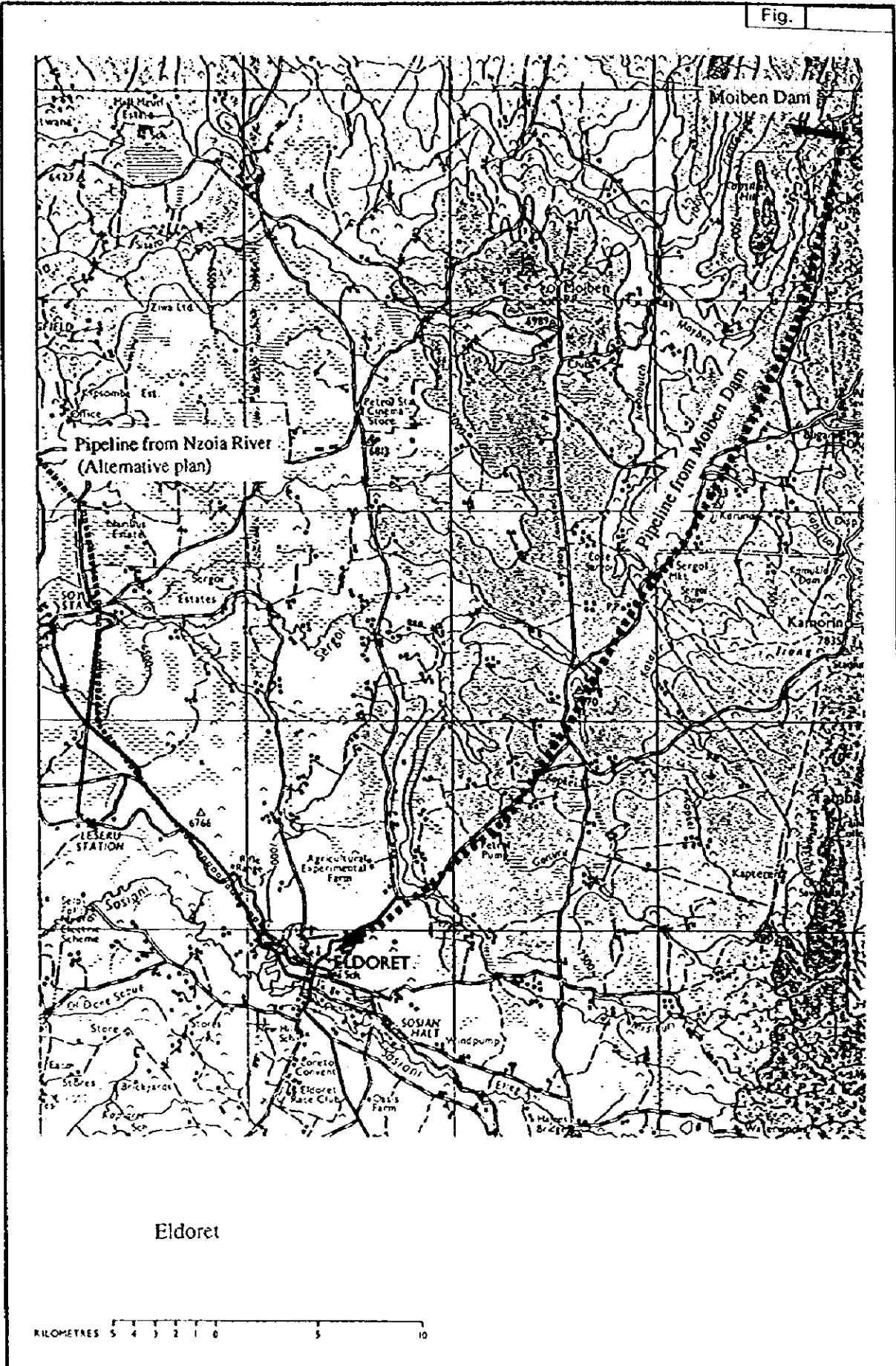
Design year : 2005

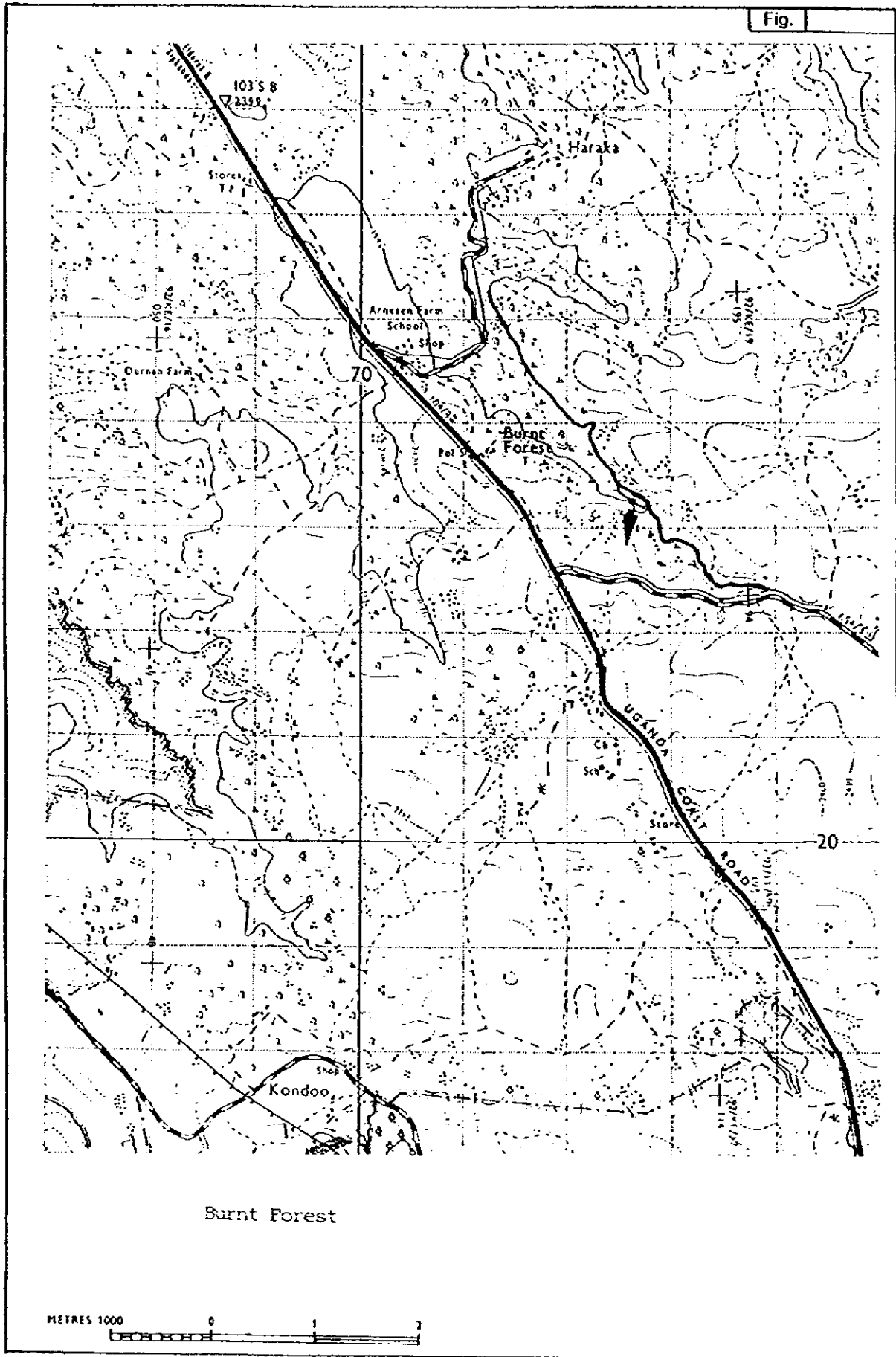
Design population: 360,000

Remarks

Moiben dam and T' works are a recent construction.

Fig.





Aftercare Study on
the National Water Master Plan

KABARNET (1/1)

Urban Water Supply
System Survey

General

Name of Urban Centre : Kabarnet

Organisation/Water Undertaker : NWCPD

District : Baringo

Location: Kabarnet

Map (1/50,000) Ref. no : 104/1

Co-ordinates X 35° 46' Y N 00° 29'

Drainage Sub-basin : 2EH

Existing facilities:

Source: Kapchemuswo dam + 2 No boreholes

Type of Intake : Dam

Elevation : 2080 Kabarnet town.

Raw water system : Pumping - 2 No - 20m³/hr+30m³/hr

H : 26 m

Dia : 100 - 50mm

Treatment Process :

Currently the main supply is from borehole . No chlorination is done. Testing is rarely done Borehole No. C4722 has master meter.

Designed Capacity:

Treated water/Distribution system

Area covered: km²

Distribution mains (80mm and above): mm to mm

Total length : km - information not available.

UFW (Estimated) : m³/d

Consumers - Total no : 750

Metered : 596

Unmetered : 154

Working Meters: Data not available.

Water production : 960 m³/d

Service area population : 250,000

Population served : 127,500

Remark :

Total production calculated at pumping rate of 40m³/hr for 24hrs.

Financial/Revenue: 1996

O & M costs : Ksh 2,377,123

Revenue earned : Kshs

Revenue collected : Kshs 2,060,788

Rehabilitation required/costs

Kshs Estimated

Total

Future development plan

Source : Kirandich dam is under construction

Treatment : Full

Capacity : 14,00 m³/d

Design year :

Design population:

Remarks

Kirandich dam and other components of this scheme are under construction. They are:-

1). Raw water pumping rate 150 L/S 2). Rising main dia. 400m mild steel

3). Storage tank 6,000m³ + 800m³ 4). Booster pump delivery rate 14 L/S.

The existing scheme is supplied from the 2 Nos boreholes with a maximum production capacity of 90m³/d. With

completion of Kirandich Dam, water supply will improve by augmenting the future demand by 14,000m³/d. The

Kapchemuswo Dam acts as a reliable source during the wet season, but fails short during dry season or prolonged drought.

