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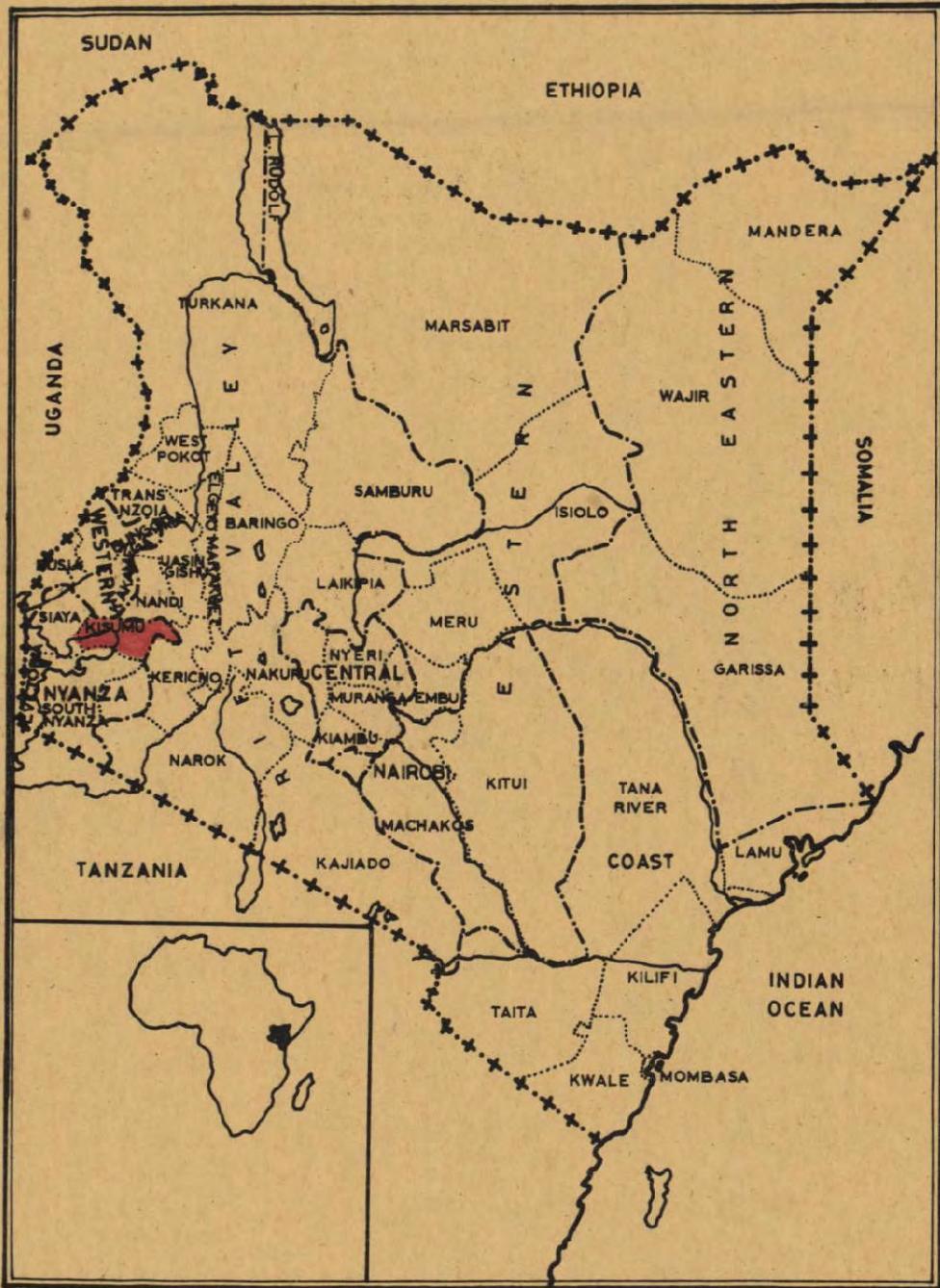
MINISTRY OF WORKS  
ROADS DEPARTMENT

**RURAL ACCESS ROADS PROGRAMME  
EVALUATION OF ROADS IN KISUMU  
REVISED**

MAY 1978

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RURAL ACCESS ROADS PROGRAMME

EVALUATION OF RURAL ACCESS ROADS IN KISUMU DISTRICT

Ministry of Works, Roads Department

Revised Report, April 1978

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EVALUATION OF RURAL ACCESS ROADS IN KISUMU DISTRICT

INTRODUCTION

This report pertains to the evaluation of 61 km of rural access roads within Kisumu district. These roads were selected by the D.D.C. as being roads needed to give access into economically high potential areas of the District.

The roads were inspected as from 23rd to 27th May 1977 by a member of the Planning section staff, roads department, Ministry of Works, Nairobi. During this inspection it was clearly stated to district officials that under this rural access roads programme no land compensation would be paid.

The roads proposed for inclusion in the rural access roads programme including other relevant details such as location and approximate lengths are as shown below.

ROAD NO	MAP NO.	DESCRIPTION OF THE ROAD	APPROXIMATE LENGTH OF THE ROAD (km)	DIVISION	LOCATION
1	IV	Ogado School-Kiboswa	6	Maseno	Kisumu/East
2	V	Magada River-Ojola Chief's Camp	4	Maseno/ Winam	Kisumu West Kisumu- Municipalit
3	V	Obambo School - Nyaridi School-Kaloka	10	Maseno/ Winam	East Seme
4	V	Mibanga School - Kitmikaye	3	Maseno	East Seme
5	V	Miranga school-Kondik	9	Maseno	East Seme
6	V	Kombewa-Got Odong	3	Maseno	East Seme
7	VI	Lela-Magwar	5	Maseno	East Seme Kisumu
8	VII	Awach-Nyalunya School	7	Maseno	West Seme
9	VIII	Ngere - Reru	3	Maseno	West Seme
10	VII	Ngere-Manuanda-Mayleka	5	Maseno	West Seme
11	VII	Angoga-Bodi	6	Maseno	West Seme

A description of the roads listed above is given in appendix I. Besides the above mentioned roads the D.D.C. has proposed as at the moment more roads which are listed in appendix II together with details as division and location and length, estimated by the D.D.C. Vicinity maps number III to VII depict the location

of the proposed roads. Map number 11 depicts the classified road network in Kisumu district. The proposed roads are in areas where the Integrated Agricultural Development Programme will be implemented.

Before construction work on road number 11 can start the local authorities would first have to contact the railway authorities to get their approval to cross the railway.

Furthermore funds should be made available by the local authorities for major bridge construction on road number 2, 7, and 11.

The above comments are copied from the original report dated August 1977. After submission of this report to the donor agency USAID, representatives of USAID inspected the alignments which resulted in the following comments.

Road No.	Kms Approved	Comments
1.	5	Rejected, too close to existing classified road, no major extension of zone of influence.
2.	5	Adjusted alignment approved, include first part and stop at school to avoid river crossing.
3.	10	Approved. <u>Comment:</u> both 2 and 3 are partly within the Kisumu municipality boundaries. The maintenance of these proposed RAR has to be guaranteed before construction can start.
4.		Rejected, no impact expected.
5.	9	Approved.
6.	3	Approved but considering the short length, additional justification is needed.
7.		Rejected, too little impact on development expected, as zones of influence of nearby classified roads leave little to be gained by the construction of this road.
8.	7	Approved,
9.		Rejected no impact expected as this road is within the zones of influence of existing classified roads.
10.		The status of this road has to be sorted out.

Road NO	(Km) Approved	Comments
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- (a) If classified as presently - rejected
- (b) if declassified, approved, but then also the first part of the road linking to C27 has to be included. This needs an official statement from the MOW. The road is classified so rejected.

11. 6. Approved.

Together with other more general remarks, the above comments are incorporated in this revised report.

The roads evaluated in the report, together with relevant information are shortlisted below:

ROAD NO	MAP	DESCRIPTION OF THE ROAD	APPROX. LENGTH	DIVISION	LOCATION
2	V	Magada River- Ojala Chief's Camp	5	Maseno/ Winam	Kisumu West/ Kisumu Municipality
3	V	Obambo School-Nyaridi School-Kaloka	10	Maseno/	East Seme/
5	V	Miranga School-Kondik	9	Winam	Kisumu Municipality
6	V	Kombewa-got Odong	3	Maseno	East Seme
8	VII	Awach-Nyalunya School	7	Maseno	West Seme
11	VII	Angoga-Bodi	6	Maseno	West Seme.

Where applicable the description of these roads in appendix I has been amended,

The roads are shown on the original maps together with eventual changes in alignment and zone of influence.

For other relevant information pertaining to the rural access road programme in Kisumu District see Appendix IV, containing a letter : from the DDO Kisumu.

II. A QUICK IMPRESSION

In order to get a quick impression of the selected 6 rural access roads some indicators which are useful for comparison, are given in the table below:

TABLE 1

ROAD NO	LENGTH KM	ZONE OF INFLUENCE (ha)	POPULATION DENSITY, P/km 1978	POPULATION IN ZONE OF INFLUENCE	ZONE OF INFLUENCE IN HA/KM	POPULATION PER KM ROAD
2	5	550	197	1084	110	217
3	10	875	229	2004	88	200
5	9	1175	292	3431	131	381
6	3	250	257	643	83	214
8	7	675	229	1546	96	221
11	6	775	180	1395	129	233

### III. ACCESS - INDICATOR

The Access Indicator is a criterion by which the adequacy of the access system to the local residents and Government administrative officers is measured.

Only those social service facilities for which a road is relevant are taken into account. The social services which will be supplied as part of another service (e.g. telephone services which is part of Post Office) have not been taken into account.

Four social service facilities have been selected. These services include:

- Hospital (H)
- Post Office (P.O.)
- Divisional Headquarters (D.HQ.)
- Health Centre (H.C.)

The relative importance of the above stipulated services are determined by the frequency with which they are utilized. The following subjective weights are attached to each facility of service. The scale is chosen between 1 to 10 indicating higher rating for increasing frequency.

- |  |      |
|--|------|
| (a) Hospital (low frequency)           | - 2  |
| (b) Post Office (medium frequency)     | - 5  |
| (c) Div. Headquarters (high frequency) | - 10 |
| (d) Health Centre (medium frequency)   | - 5  |

The actual distance from a Zone of influence to a social service facility will be multiplied by the weight attached to that facility. The sum of the weighted distances gives the total weighted distance for the Zone of influence and this total weighted distance gives the access-indicator for the zone.

Table 2 below shows the calculated Access Indicator for each selected road and within each zone of influence.

The location of the various social service facilities is also depicted on Map No. 8.

TABLE 2

ROAD NO.	POPULATION IN ZONE OF INFLUENCE	AVERAGE DISTANCE TO				WEIGHTED DISTANCE TO				TOTAL WEIGHTED DISTANCE II	ACCESS INDICATOR I X II	PRIORITY RATING BASED ON ACCESS INDICATOR
		H	P.O.	D.HQ.	H.C.	H.	P.O.	D.HQ.	H.C.			
2	1084	16	16	16	16	32	80	160	80	352	381568	5
3	2004	23	23	23	23	46	115	230	115	506	1014024	2
5	3431	16	16	16	16	32	80	160	80	352	1207712	1
6	643	20	20	20	20	40	100	200	100	440	282920	6
8	1546	26	26	26	26	52	130	260	130	572	884312	3
11	1395	26	26	26	26	52	130	260	130	572	797940	4

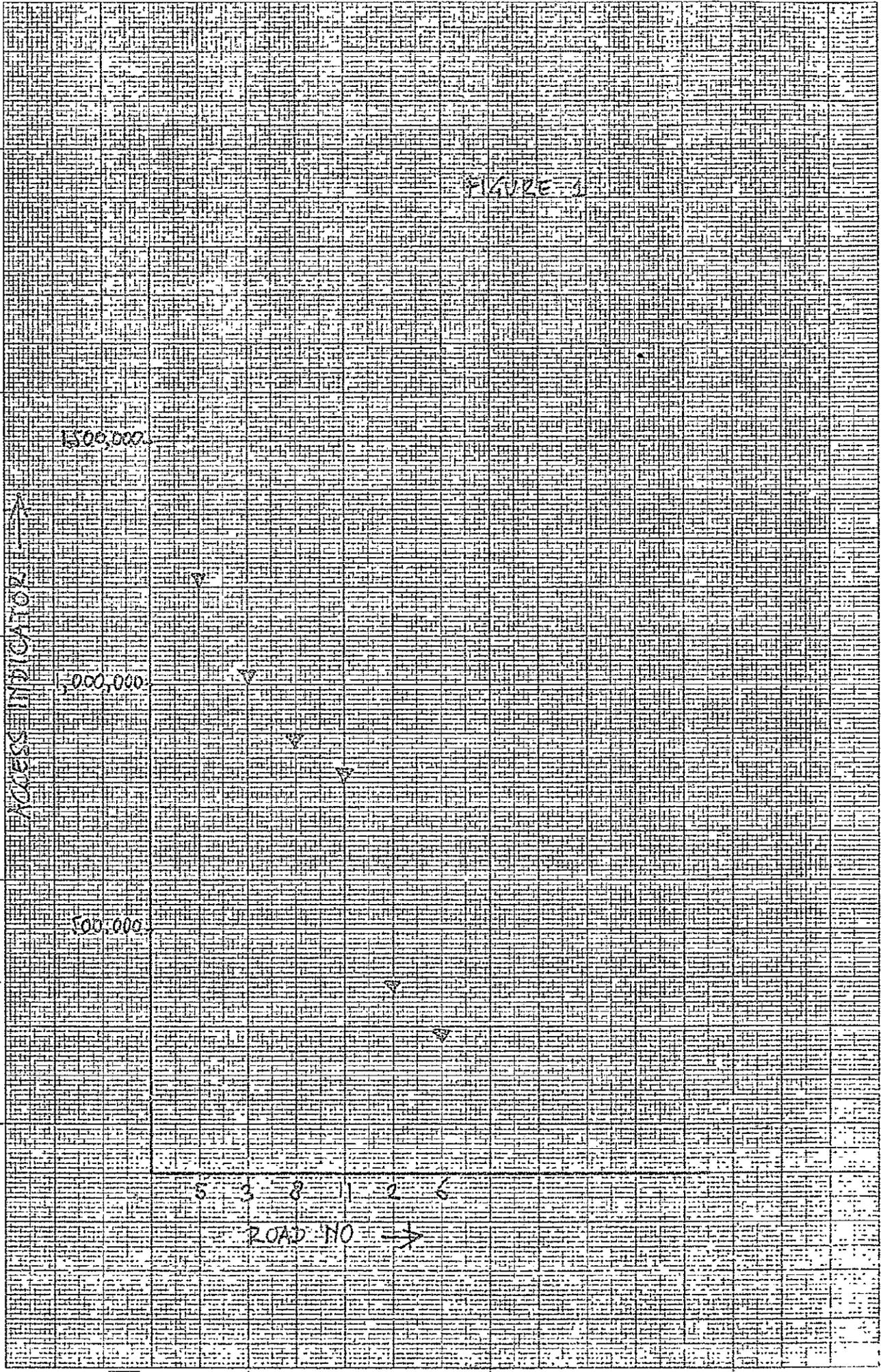
H. = HOSPITAL

P.O. = POST OFFICE

D.HQ. = DIVISIONAL HEADQUARTER

H.C. = HEALTH CENTRE

FIGURE 4



ACCESS INDICATOR ↑

ROAD NO →

IV. POTENTIAL FOR DEVELOPMENT

The potential for development is directly related to the agricultural development projects within each zone of influence. The present and future land utilization are shown in the table below and were mainly provided by the District Agricultural Officer in Kisumu district

- |                  |                                      |
|------------------|--------------------------------------|
| BA = Bananas     | GN = Groundnuts                      |
| BE = Beans       | MZ = Maize                           |
| CB = Cattle Beef | SF = Sunflower                       |
| CF = Coffee      | O = Other crops (mostly subsistence) |
| CT = Cotton      | L = Livestock                        |
| GG = Green Grams | P = Present land utilization         |
|                  | F = Future land utilization          |

TABLE 3

PRESENT AND FUTURE LAND UTILIZATION

	ROAD NO 2				ROAD NO 3				ROAD NO 4			
	P ha	F ha	P %	F %	P ha	F ha	P %	F %	P ha	F ha	P %	F %
BA												
CB		28		5					82	106	7	9
CF												
CT	22	82	4	15	44	175	5	20	35	94	3	8
GN	33	49	6	9	44	88	5	10	106	200	9	17
MZ	83	77	15	14	88	88	10	10	12	70	1	6
SF		33		6								
Q	148	149	27	27	275	275	31	31	472	472	40	40
L	264	132	48	24	424	205	49	24	468	174	40	15
TOTAL	550	550	100	100	875	875	100	100	1175	1175	100	100

TABLE 4

	ROAD NO 6				ROAD NO 8				ROAD NO 11			
	P ha	F ha	P %	F %	P ha	F ha	P %	F %	P ha	F ha	P %	F %
BE					54	101	8	15				
CB						101		15	116	116	15	15
CF					7	54	1	8				
CT	20	32	8	13					23	101	3	13
GN	12	20	5	8								
MZ	30	47	12	19	88	74	13	11	23	62	3	8
SF					20	74	3	11	31	70	4	9
Q	88	88	35	35	212	212	31	31	192	192	25	25
L	100	63	40	25	294	59	44	9	390	234	50	30
TOTAL	250	250	100	100	675	100	100	140	775	775	100	100

## V. CONSTRAINTS ON DEVELOPMENT

### 1. TYPES OF CONSTRAINTS

The constraints on (agricultural) development fall into two categories:

#### (a) Natural Constraints

- the constraints which cannot be removed by man (such as soil, rainfall and topography characteristics).

#### (b) Resource Constraints

- the constraints which can be removed when enough capital is available (such as land registration, agricultural credit, agricultural inputs, marketing of produce, agro-industry road infrastructure, attitude of the people towards modernisation and agriculture).

### 2. CONSTRAINTS AS THEY EXIST NOW

#### (a) Soil:

The soil along the proposed roads is mostly a red clay/sandy type of soil.

The Kano plain is of dark-loams while the uplands have residuals of brown volcanic soils.

#### (b) Rainfall

Mean annual rainfall varies with altitude and with proximity to the highlands of Nandi escarpment and the Tinderet area.

There is a sharp decline in annual rainfall in the lakeshore areas and the central portions of the Kano plain.

The rain-peak falls between March and May, when half the total rainfall can be expected, with a smaller, secondary, peak in September-November.

Map 9 gives a rough indication about the rainfall distribution.

#### (c) Topography

The altitude varies from 1140 meter on the Kano plain to 1520 meter in the Masenc and South Nyakach areas. The mean annual maximum temperatures from 30°C to 20°C and mean annual minimum temperatures from 18°C to 9°C

(d) Land Registration

Land adjudication is gradually taking place in Kisumu district. This enables the farmers to register and to get land title deeds which qualify them for loans.

(e) Agricultural Extension Service

The existing extension staff experiences a lot of difficulties in reaching the farmers due to the lack of enough transport facilities.

(f) Mechanization of Farms

Besides of the tractor hire service there is a scheme enabling farmers to buy their own tractors.

(g) Marketing of Produce

The existing poor condition of access roads render the transportation of agricultural produce quite difficult especially during the rainy season.

(h) Road Infrastructure

All the proposed rural access roads will be linked with all weather classified roads in fair condition.

(i) Attitude of the People

There appears to be a positive attitude on the part of the local population towards modernizing their agricultural production and they seem to realize the great advantages of cash cropping as a new way of life.

VI IMPACT OF THE ROAD ON RURAL DEVELOPMENT

1. THE RURAL ACCESS ROAD CONSTRUCTION COST COMPONENTS

Cost estimates of the selected roads have not yet been prepared by the Rural Access Roads engineer. Based on past experience for similar roads the following assumptions have been made:- cost per kilometer is approximately £2,000. A break down of this total cost into the different components will roughly comprise of the following items:

<u>COST COMPONENT</u>	<u>%</u>	<u>COST £/KM ROAD</u>
Wages Permanent staff	8	160
Wages casual labour force	40	800
Tools and equipment	27	540
Sand, Ballast and Cement	6	120
Construction materials	7	140
Transport	10	200
Others	2	40
	<u>100%</u>	<u>£2000</u>

- Wages of the casual labour force will all be spent in the rural area adjacent to the selected access roads;
- Wages of the permanent staff will be spent within the district at large;
- Sand, ballast are available within the district
- Tools, equipment, vehicles for transportation will all be imported and as such have little bearing on the rural and district economy;
- The maintenance expenditures are estimated at £ 80/km road. Out of this amount about 75% is paid to the casual labour force each year. Table 5 shows a breakdown of the relevant cash component for the selected access roads.

TABLE 5

ROAD NO.	CONSTRUCTION COSTS £	MAINTENANCE PER ANNUM £	CONSTRUCTION WAGES £	CASUAL LABOUR MAN DAYS	MAINTENANCE WAGES £	MAN DAYS MAINTENANCE	PERMANENT STAFF WAGES CONSTRUCTION £
2	8,000	400	3200	9450	300	1030	640
3	20,000	800	8000	23620	600	2580	1600
5	18,000	720	7200	21260	540	2322	1440
6	6,000	240	2400	7085	180	775	480
8	14,000	560	5600	16500	420	1800	1120
1	12,000	480	4800	14175	360	1550	960

2. SHORT TERM EFFECTS OF THE RURAL ACCESS ROAD

The short term effects of opening up of rural access roads will be substantial for the mobility of the divisional officers. The roads will provide the agricultural, educational, and health officers etc. an all weather mobility to the areas which will enable them to carry out their duties more effectively.

3. LONG TERM EFFECTS OF THE RURAL ACCESS ROADS

The long term from the development of the agricultural potential for the zones of influence.

The potential for the expansion of cash crops within the zones of influence is shown in table 6.

The gross margins for the production of bananas, beans, cattle, beef, coffee, cotton, green grams, groundnuts, maize and sunflower have been taken from the target budgets of these products as calculated in different publications.

The gross margins and their respective source are shown in appendix III. It is worthwhile to stress that all the selected roads are situated in areas where the I.A.D.P. will be implemented.

The present value of the agricultural production is calculated over a 20 years period between 1979 and 1997. It is assumed that the prices over this period will remain reasonably constant.

The development of the agricultural potential will take 10 years. It is assumed that the potential will develop equally during the 10 years, starting in 1979. Moreover the value of the subsistence crops has not been taken into account in the economic analysis.

The total increment in agricultural production will be. K£ 1980173  
It is assumed that during the first 10 years the increment in agricultural production will be K£ 19802 every year.

Whereas only part of the increment can be set against the investments in rural access roads, from the increment only 60% will be discounted. The total increment to discount will be K£ 118810. During the first 10 years (from 1979 up to 1989) This agricultural potential will develop equally with an increment of K£ 11881 annually.

TABLE 6  
POTENTIAL FOR CASH CROP EXPANSION (HA)

ROAD NO.	BANANAS	BEANS	CATTLE BEEF	COFFEE	COTTON	GREEN GRAMS	GROUND NUTS	MAIZE	SUNFLOWER	TOTAL
2			28		60		16	-6	33	131
3			44		131		44			219
5		24	59				59	94	58	294
6					12		8	17		37
8		47	101	47				-14	54	235
11					78		39	39		156
TOTAL		71	232	47	281		166	130	145	1072

EXISTING AND FUTURE CASH CROP AREAS

TABLE 7 a

ROAD NO	BANANAS	BEANS	CATTLE BEEF	COFFEE	COTTON	GREEN GRAMS	GROUND NUTS	MAIZE	SUN FLOWER	TOTAL
2					22		33	83		138
3					44		44	88		176
5		82					35	106	12	235
6					20		12	30		62
8		54		7				88	20	169
11			116		23		23	31		193
TOTAL		136	116	7	109		147	436	32	973

EXISTING AND FUTURE CASH CROP AREAS

TABLE 7 b

ROAD NO.	FUTURE CASH CROP AREA							TOTAL		
	BANANAS	BEANS	CATTLE BEEF	COFFEE	COTTON	GREEN GRAMS	GROUND NUTS			
2			28		82		49	77	33	269
3			44		175		88	88		395
5		106	59				94	200	70	529
6					32		20	47		99
8		101	101	54				74	74	404
11			116		101		62	70		349
TOTAL		207	348	54	390		313	556	177	2045

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EXISTING AND FUTURE CROSS MARGINS

TABLE 8 a

ROAD	EXISTING GROSS MARGIN					K£				
	BANANAS	BEANS	CATTLE BEEF	COFFEE	COTTON	GREEN GRAMS	GROUND NUTS	MAIZE	SUNFLOWER	TOTAL
2					726		1191.3	4830.6		6747.9
3					1452		1588.4	5121.6		8162
5		1927					1263.5	6169.2	297.6	9657.3
6					660		433.2	1746		2839.2
8		1269		3880.1				5121.6	496	10766.7
11			777.2		759		830.3	1804.2		4170.7
TOTAL		3196	777.2	3880.1	3597		5306.7	24793.2	793.6	42343.8

EXISTING AND FUTURE GROSS MARGIN

TABLE 8 b

ROAD NO.	FUTURE GROSS MARGIN							TOTAL	TOTAL INCREMENT		
	BANANAS	BEANS	CATTLE BEEF	COFFEE	COTTON	GREEN GRAMS	GROUNDNUTS			MAIZE	SUNFLOWER
2			358.4		15416		5581.1	8570.1	3263.7	33189.3	26441.4
3			563.2		32900		10023.2	9794.4		53280.8	45113.8
5		9020.6	755.2				10706.6	22260	6923	49665.4	40008.1
6					6016		2278	5231		13525.1	10685.9
8		8595.1	1292.8	29932.2				8236.2	7318.6	55374.9	44608.2
11			1484.8		18988		7061.8	7791		35325.6	31154.9
total.		17615.7	4454.4	29932.2	73320		35650.7	61882.8	17505.3	240361.1	198017.3

VII. DISCOUNTED COSTS AND BENEFITS OF THE PROPOSED INVESTMENTS

The road construction has many impacts on the rural economy and rural welfare. Many of these impacts cannot (yet) be measured, let alone quantified in monetary terms. For this reason the present monetary evaluation criteria for rural access road investments can be considered as an art rather than a scientific approach.

Since it is rather unrealistic to calculate the internal rate of return of each road in view of the very short lengths involved the internal rate of return of the whole package of roads has been calculated. The cost of road construction and maintenance and the benefits of agricultural development are discounted to the base year 1978. The project gestation period has been assumed as 20 years up to and including 1997.

The total costs shadow prices for the construction of the roads are  $40 \times 0.83 \times \text{K}\text{£} 2000 = \text{K}\text{£} 66400$  to be spent wholly in 1978.

The yearly maintenance costs are in shadow prices  $0.61 \times 40 \times \text{K}\text{£} 80 = \text{K}\text{£} 1952$  annually, starting in 1979.

The yearly increment in agricultural production during the first 10 years to be discounted is  $60\% \times \text{K}\text{£} 198017.3/10 = \text{K}\text{£} 11881$ .

From 1989 onwards the full benefits of  $60\% \times \text{K}\text{£} 198017.3 = \text{K}\text{£} 118810$  will be gained annually.

In table 9 are indicated the discounted costs and benefits for various discounting rates.

The internal rate of return is 50% on the basis of the analysis, the calculated internal rate of return is over three and a half times the opportunity costs of capital and as such the investment is highly beneficial to undertake.



VIII. DEVELOPMENT OF RURAL INCOME

Given the development of the agricultural potential and the growth of the population within the zones of influence of the roads, the rural cash income per capita can be calculated. The income per capita has been calculated for the year 1989 when the agricultural potential is fully developed. For the purpose of this submission it is assumed that the gross margin of the agricultural output is equal to the income of the farmers. The population growth over the period, 1978 - 1989 is calculated based on 4% annual increase in population. The results are as shown in the table below.

TABLE 10  
RURAL PER CAPITA INCOME IN. 1989

ROAD NO	GROSS MARGIN IN 1989	POPULATION IN ZONE OF INFLUENCE		INCOME PER CAPITA 1989 KE
		1978	1989	
2	331189.3	1084	1605	20.7
3	533280.8	2004	2966	18.0
5	49665.4	3431	5079	9.8
6	13525.1	643	952	14.2
8	55374.9	1546	2288	24.2
11	35325.6	1395	2065	17.1

Given constant prices for agricultural products, the income per capita will diminish after the year 1989 at a rate equal to the population growth rate. In addition, more land will be needed for the cultivation of subsister crops, at the expense of the area under cash crops.

APPENDIX I

DESCRIPTION OF THE PROPOSED AND SELECTED ROADS

Other relevant information on the roads is contained in appendix IV.

1. Ogada School - Kiboswa

This road branches off from the classified road C86 and rejoins it again at Kiboswa. The road follows an existing track and is very difficult to pass even with a landrover. The soil is of a red clay type and stony. Some culverts are needed near Dago School.

As most of the proposed alignment is within the zone of influence of C 86, the expected impact on agricultural development is low. The road has been rejected on the basis of these reasons.

2. Pau Akuche - Magada School:

The original proposed RAR starts at Magada River and ends at Ojola Chief's Camp. The part between the School and the Chief's Camp had to cross one river and one railway.

As not many agricultural activities were going on it was decided that the road should stop at the School and begin at Pau Akuche.

The existing bridge on the Magada river however has to be reconstructed. Many small holdings border the alignment which runs through relative flat country side. The soil is of a red sandy clay type.

3. Obambo School-Nyarindi School - Kaloka:

This road branches off from the classified road C27. It follows an existing track. The last part along the lakeshore has three small streams for which culverts would be sufficient. The soil is of a red clay/sandy type mixed with stones. This road would also serve the promotion of fishery in the area.

Parts of road No 2 and No 3 are within the municipal boundaries of Kisumu. The maintenance of these parts however is guaranteed the MOW who will provide funds.

4. Miranga School-Kitmikaye

This road branches off the proposed road No 5 and joins the C27 near Kitmikaye School. It follows an existing track. The soil is of a sandy type mixed with stones and boulders.

The additional impact on agricultural development will be very low, The only ~~function~~ secondary will be a shortcut between CC27 and E 245 The road has been rejected on these grounds

5. Miranga School -- Kondik

This road connects the E245 from Miranga School with Kondik situated on the D24. Some bush clearance has already been carried out under the rural works programme but that part of the road is still not up to rural access road standard. Some 8 stream crossings have as well to be uplifted to a better standard. The soil is of a sandy type coupled with stones.

Certain parts of the road are bordered by numerous smallholding.

6. Kombewa -- Got Odong

This road follows an existing track. The soil is of a red clay/sandy type. The track branches off from the C27. This road doesn't cross any stream.

The end of the road is within forest area which explains the short length and the shape of the zone of influence.

7. Lela -- Magwar

This road branches off from the B1 at Lela and joins the E 245 near Magwar market. Bush clearance has already been carried out along this road under the rural works programme. The proposed road would cross the railway line near Lela at an existing railway crossing. Two rivers have to be crossed from which the river crossing near Lela will cost almost K£ 15,000. This money would be made available by local authorities. The road is on a sand/clay type of soil.

The road has been rejected on the ground that only minor additional impact on agricultural development can be expected; as the road is within the zones of influence of several classified roads in good condition.

8. Awach-Nyalunya School:  
This road branches off from the C27 and joins the road D247. The road follows an existing track and the soil is of a sandy/clay type.
  
9. Ngere-Reru  
This road branches off from the C27 and joins again the E129. The road follows existing tracks and the soil is of a sandy/clay type.  
Also this road has been rejected as two classified roads in good condition cover already most of the possible zone of influence.
  
10. Ngere-Manuanda-Manyieka  
This road follows the E129 and crosses the road D245. The road follows existing tracks and the soil is of a sandy/clay type.  
As the road is already classified, inclusion in the RAR Programme is not justified.
  
11. Angoga-Bodi  
This road branches off from the D245 and joins again the road E137. The road follows an existing track and the soil is of a sandy/clay type.

## Appendix II

## Kisumu District

## List of Roads Suggested By D.D.C. for Construction

Description	Division	Location	Length
Ogada School-Mamboleo Mkt.	Maseno	East Kisumu	6
Obambo School-Osiri-Lakeshore	"	West Kisumu	6
Lela-Magwar	"	" "	5
Kombewa-Got Odong	"	East Seme	4
Holo-Abol-Kondik-Kaila-Otwaro Kipasi	"	" "	16
Reru-Aora-Kwoje	"	West "	3
Reru-Ngere School-Mayieka	"	" "	5
Wang Arot-Bodi market	"	" "	9
Awach-Nduru School/mirieri	"	" "	5
Pap Onditi-Kipugi-Bodi	Nyakach		11
Ragen-Kusa-Rangai	"		10
Sondu-Kajimbo-Nyakwere	"		9
Pap Onditi-Kapsorok-Usunare	"		
Manyata-Usunare	"		9
Rae-Kibogo-Nyabonla	"		9
Canelands Roads total km			26
Amilo-Miwani-Nyakocho School			3
Akira-Cbumba			4.2
Kaluore-Anywuro			5
Disi-Onyiro			2
Ombei-Mugirango Block			5.8
Ahero-Alara-Kahola			3
NSRS-Karumba			9.6
Chana Block Ombei-Mugirango Block			2.
Olembo-Kibos			4.2
Masogo-Oroba			2.6
Ranjira-Okana			4
Angoga mkt.-Mayieka	Maseno		5
Reru-Aora Rech-Opapla mkt.	"		5
Dok Okore School-Riat Road mkt.	"		9
Nyahera Chief's camp-Kadiaga	"		3
Lolwe mkt.-Manyanda Chief's camp	"		5
Opasi mkt.-Kondik mkt.			2.9

APPENDIX III  
GROSS MARGIN FOR AGRICULTURAL PRODUCTION

CROP	GROSS MARGIN K£/ha		SOURCE
	PRESENT	FUTURE	
BANANAS	46.6	130.4	A
BEANS	23.5	85.1	B
CATTLE BEEF	6.7	12.8	A
COFFEE	554.3	554.3	C
COTTON	33.-	188.-	C
GREENGRAMS	49.8	106.1	C
GROUNDNUTS	36.1	113.9	C
MAIZE	58.2	111.3	B
SUNFLOWER	24.8	98.9	C

A = COMMERCIAL FARMING PROJECT (1976)

B = I.A.D.P. (1976)

C = MINISTRY OF AGRICULTURE (1977)

APPENDIX IV

OFFICE OF THE PRESIDENT

Telegrams: "DISTRICTER", Kisumu  
Telephone: Kisumu 2341-2203-2209



OFFICE OF THE DISTRICT COMMISSIONER  
KISUMU DISTRICT

P.O. Box 1921  
KISUMU

BEST  
AVAILABLE

When replying please quote

Ref. No. NOV. 3/6/VOL.1/90  
and date

23rd March, 1978

*SSR (RAR)*

*Accepted*

The Chief Engineer (Roads),  
Roads Department,  
Ministry of Works,  
P.O. Box 30260,  
NAIROBI.

*Noted  
10/4/78  
M/W*

ROADS DEPARTMENT
RECEIVED
9 MAR 1978
No. 2866
NAIROBI

Att: Mr. G. Linden

Dear Sir,

RE: RURAL ACCESS ROADS PROGRAMME - KISUMU DISTRICT

I wish to refer to our conversation (Mr. G. Linden/Anthony Owiti conversation refers).

29

I had earlier on wrote a letter to the chief Engineer Roads Nairobi for your attention ref: no. NOV.3/6/VOL.1/89 in which I clarified a few points.

The District Agricultural Officer in his letter ref. no. R/3/AR/24 of July 12th, 1977 had earlier on given Chief Engineer Roads a detailed report on potential and actual land utilization. In cases where I felt that the information given by the District Agricultural Officer is adequate, I felt that it would be repetitive to give you similar if not same information.

13

According to the District Development Committee the Road covers only a part of Maseno and a very small part of Winam Divisions.

The laid down procedures and guidelines for Rural Access Roads have been followed and there has been no departures at all.

The development projects in the area which are related to the Rural Access Roads are Small Holder Production Services and Credit Projects, Integrated Agricultural Development Programmes. Main crops in the two semes are Cotton, Hybrid Maize, Groundnuts, Bee-Keeping, Beans and Poultry Projects. Most of the projects in Seme also operate in Maseno area except in Maseno there is also Grade Cattle and Coffee

OFFICER	ACTION	INFO	DATE	UNITS
C. E. (R)				
C. S. -				
S. S. S.				
ICCTC				
L. D.				
Secy				

.....2/.....

28

All the roads have top priority ranking and in fact during our submission of 200 Km of roads we will include further roads in this area. This will provide farmers with access to send their farm produce to the markets. They are also good access to Service Centres, Schools, Health Centres, Cattle Dips and Water Projects.

The existing roads are not in all that good condition, but the D.D.C. has a firm commitments from Ministry of Works that the roads shall be thoroughly maintained. Some will be upgraded.

The District Agricultural Officer emphasizes that Integrated Agricultural Development Programme and Agricultural Finance Corporation will intensify their activities in the area to improve both livestock and Crop Development in the areas affected by the Roads.

The Comparative Density of the area could be rated high Maseno and West Seme Area and Winam, but Medium in East Seme.

Present Land utilization and agricultural potential is contained in the District Agricultural Officers letter ref. no. R/3/AR/24 of July 12th 1977 which was addressed to the Chief Engineer Roads.

Maseno and most part of West Seme and Winam are high with undulating hills. This is however, moderate.

These roads mostly originate from classified roads. They have quite a great developmental significance because economic and social infrastructures this area can be to a large extent be boosted by the construction of these Rural Access Roads. Definitely, lets say, in Agriculture, a farmer will have easy access to markets. If there is Water, Cattle Dips, Bee-keeping Poultry Projects to constructed, definitely Rural Access Roads will be mandatory. Rural Access Roads are also required to Health Units, Markets, Schools etc.

These access roads are of necessity, very urgently required to be constructed. The high density of population in the area warrants immediate constructions.

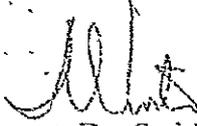
I must express my sincere thanks to you for informing me that in Kisumu District alone the Rural Access Roads can be constructed on Black Cotton Soil, depending, of course on economic viability of the projects around. I was also glad to hear from you that the length of the Road can be more than ten

.....3/.....

kilometers (10) depending on the economic and/or social need.

May I thank you in advance for your co-operation in seeing to it that work starts immediately.

Yours faithfully

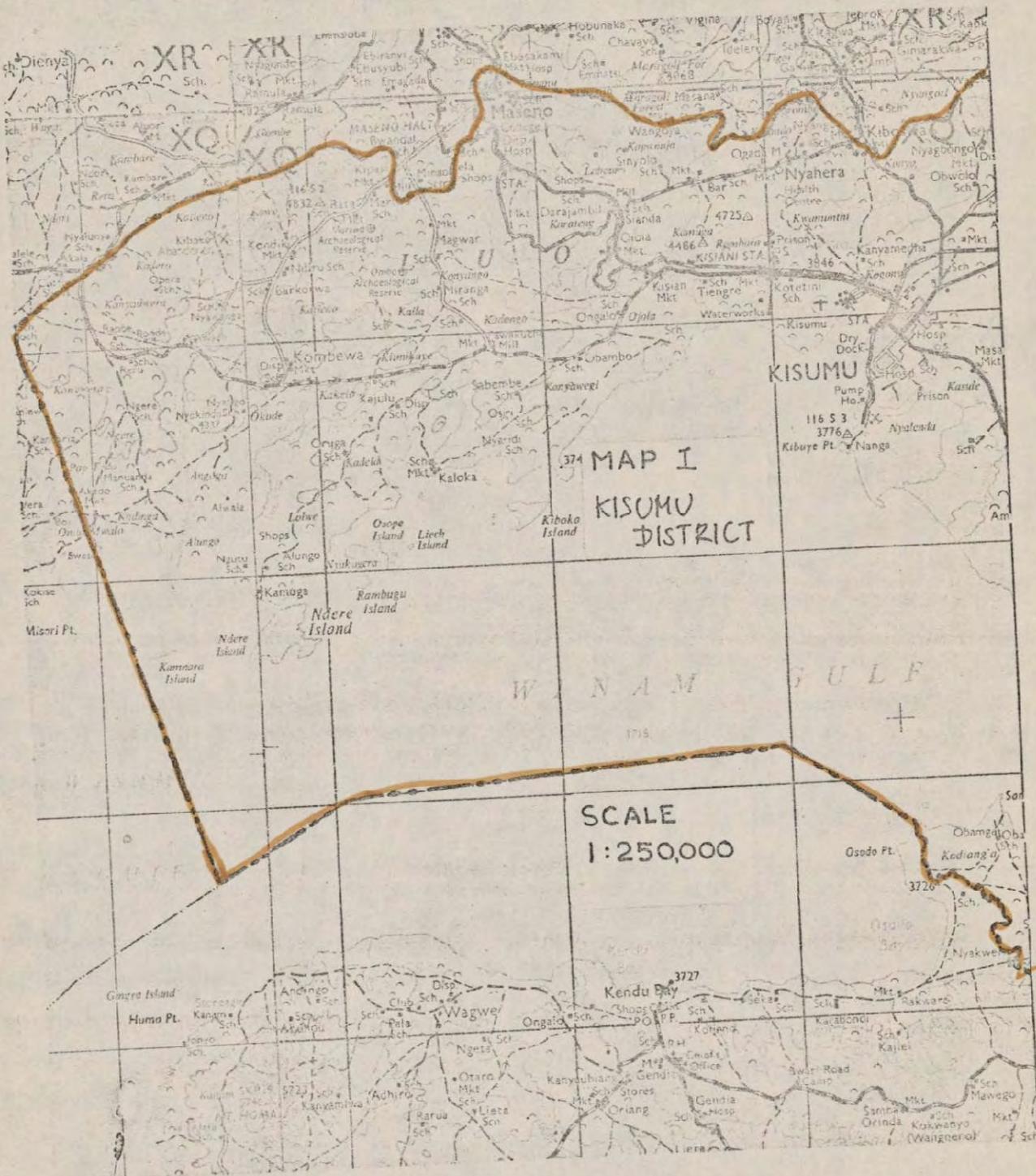


Anthony P. Owiti  
District Development Officer  
for District Commissioner

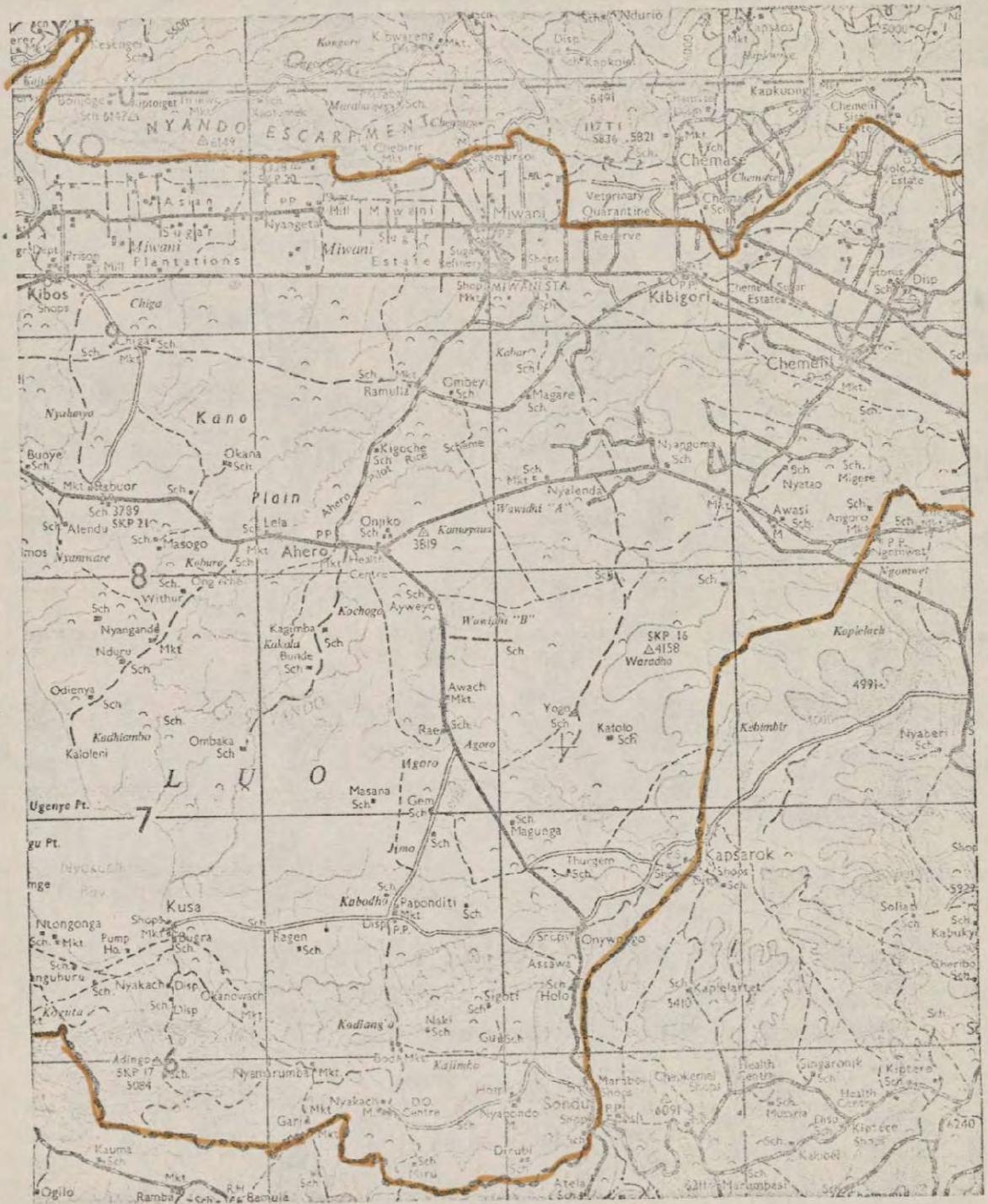
cc. Provincial Commissioner,  
P.O. Box 1912,  
KISUMU.

Provincial Planning Officer  
P.O. Box 1912,  
KISUMU.

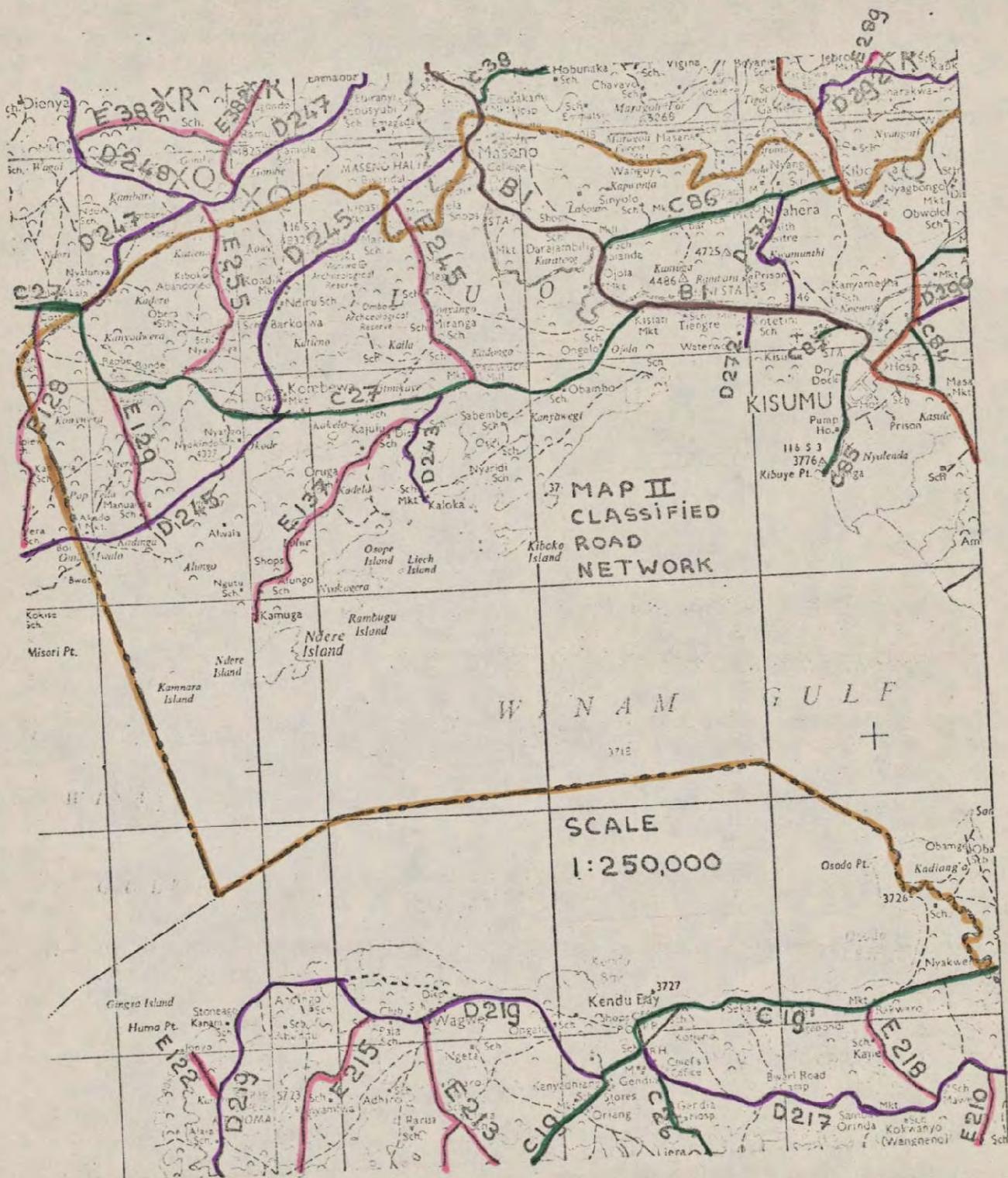
District Agricultural Officer,  
P. O. KISUMU.



31



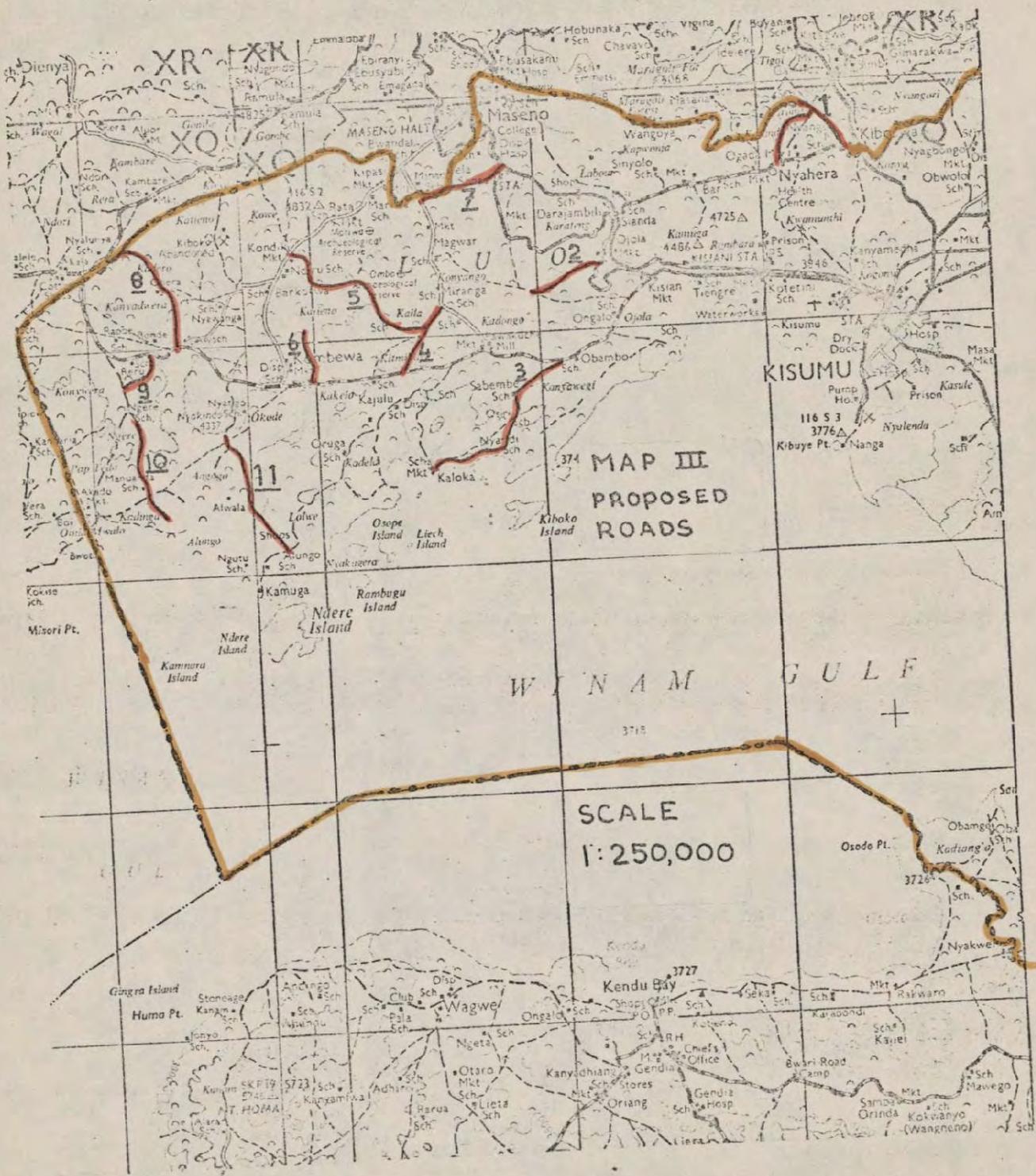




- A-ROADS
- B-ROADS
- C-ROADS
- D-ROADS
- E-ROADS
- DISTRICT BOUNDARY



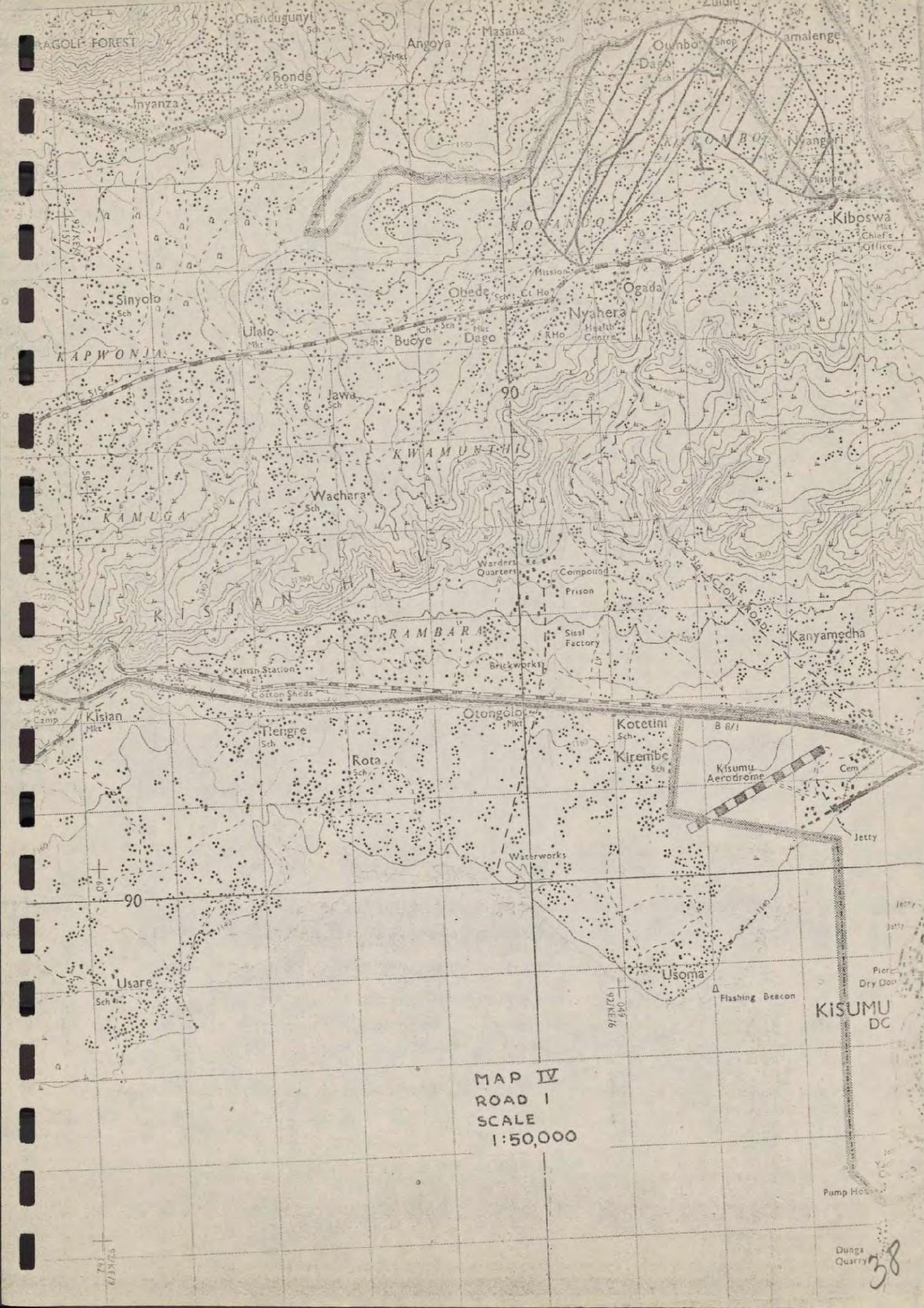




MAP III  
PROPOSED  
ROADS

INDIAN OCEAN GULF

SCALE  
1:250,000



KAGOLI FOREST

Uandugunyi Sch

Angoya

Masana Sch

Ounbo Sch

Dabo Sch

Malenge

Inyanza

Bonde Sch

Nyangari

Kiboswa  
Mkt  
Chief's Office

Sinyolo Sch

Ujalo Mkt

Obede Sch

Mission

Ogada

KAPWONJA

Buoye Sch

Dago

Nyahera

Health Centre

KAMUGA

Wachara Sch

KWAMUNTHI

90

KRISJAN

RAMBARA

Warders Quarters

Compound

Prison

ACRON ROAD

Kanyamecha

Kisian Station

Cotton Sheds

Otongolo Mkt

Kotetini Sch

Kirembe Sch

Kisumu Aerodrome

Cem

Jetty

90

90

Waterworks

Flashing Beacon

KISUMU DC

MAP IV  
ROAD I  
SCALE  
1:50,000

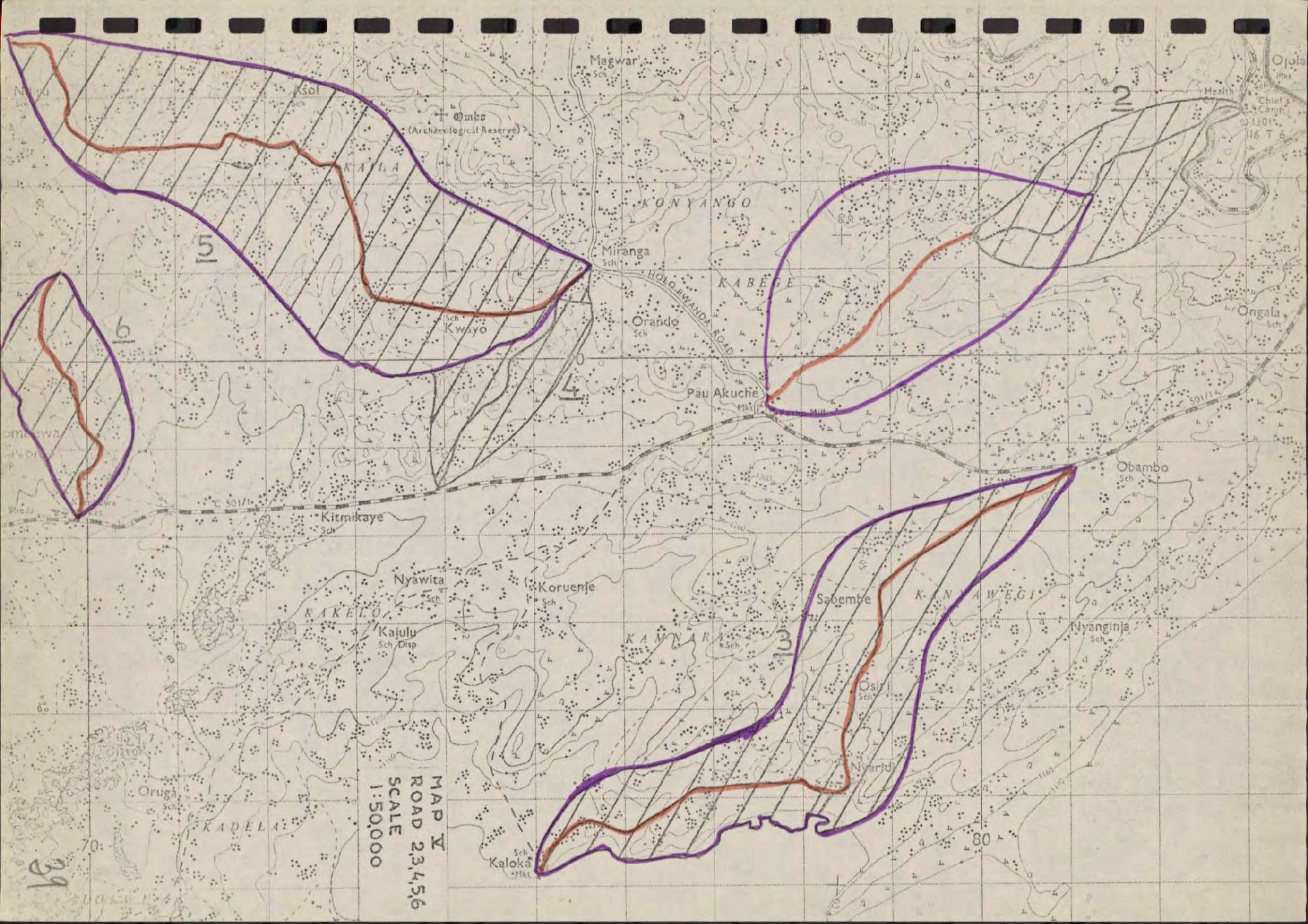
Pump House

Dunga Quarry

38

92/K/6

92/K/6



Magwar Sch

KSOI Sch

Ombo (Archaeological Reserve)

KAPLA

K'ONYANGO

Miranga Sch

Orando Sch

Pau Akuche Mkt

HOLO WANDA ROAD

KABESE

Ojola Mkt

Health

Chief's Camp

1101 116 T 6

Ongala Sch

2

5

6

4

Kitmikaye Sch

Nyawita Sch

Koruenje Sch

KAKELO

Kajulu Sch Disp

KAMNARA

Sabembe

KANAWEGI

Nyanginja Sch

Obambo Sch

39

MAP V  
ROAD 23,456  
SCALE  
1:50,000

70

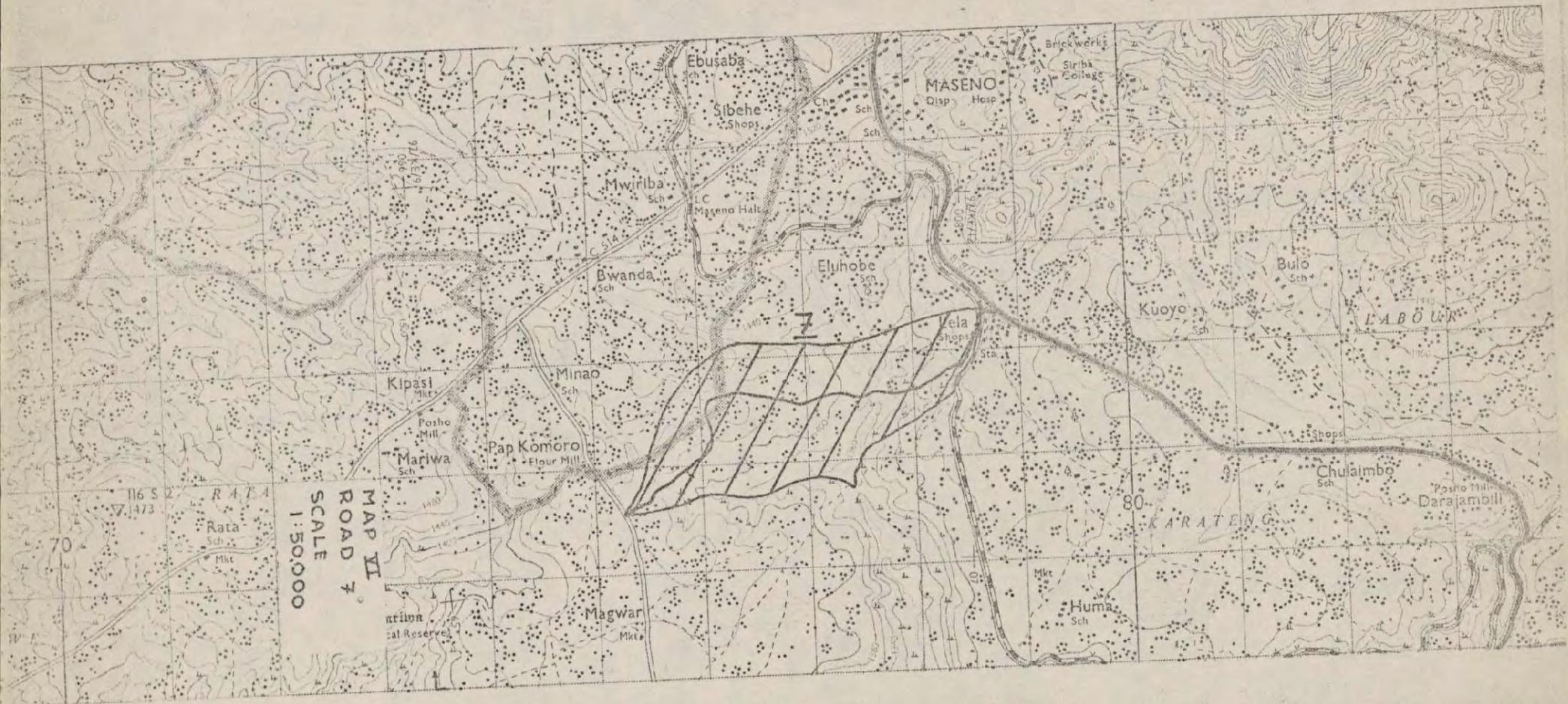
KADELA

Sch Kaloka Mkt

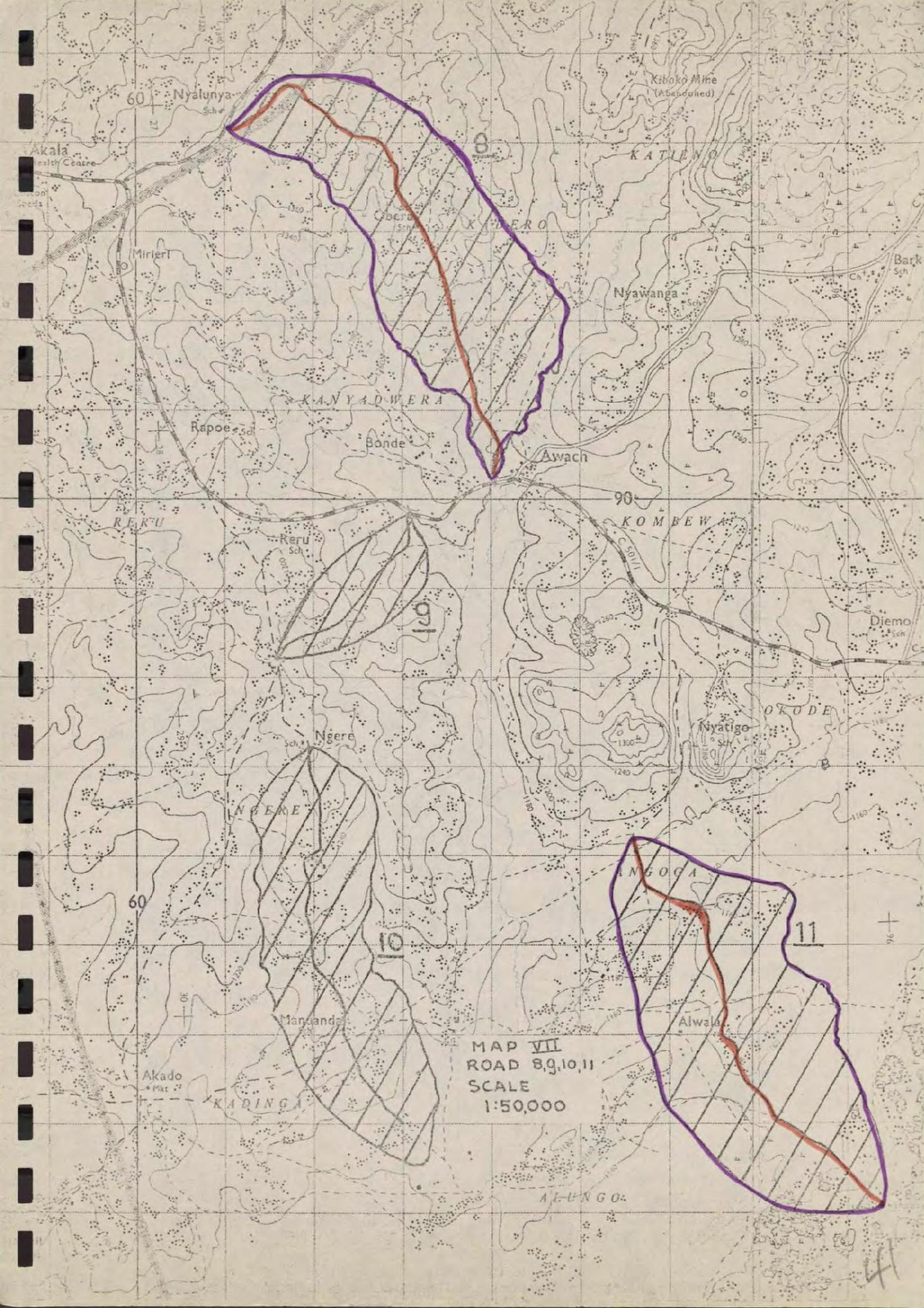
Osizi Sch

Nyaridi

80



F



60

Nyalunya

Akala  
Health Centre

Miriert

Rapoe Sch

REKU

Reku Sch

Ngere Sch

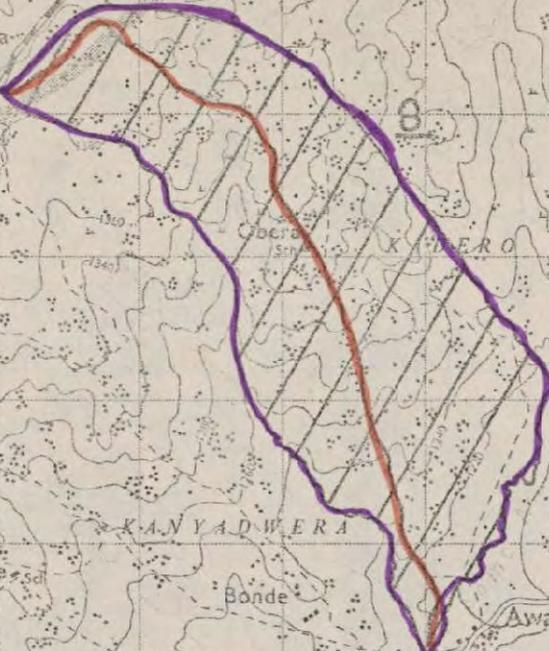
NGERE

Manganda

KADINGA

60

Akado  
Mkt



8

Cocora Sch

KYHORO

KATLENO

Nyawanga Sch

KANYADWERA

Bonde

Awach

90

KOMBEW

Diemo Sch

OKODE

Nyatigo Sch

ANGOGA

Alwala

11

MAP VII  
ROAD 8,9,10,11  
SCALE  
1:50,000

ALUNGO

96

47



