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P-58-78

REPUBLIC OF KENYA

MINISTRY OF WORKS

ROADS DEPARTMENT

RURAL ACCESS ROADS PROGRAMME

EVALUATION OF ROADS IN SIAYA

REVISED

DECEMBER 1978

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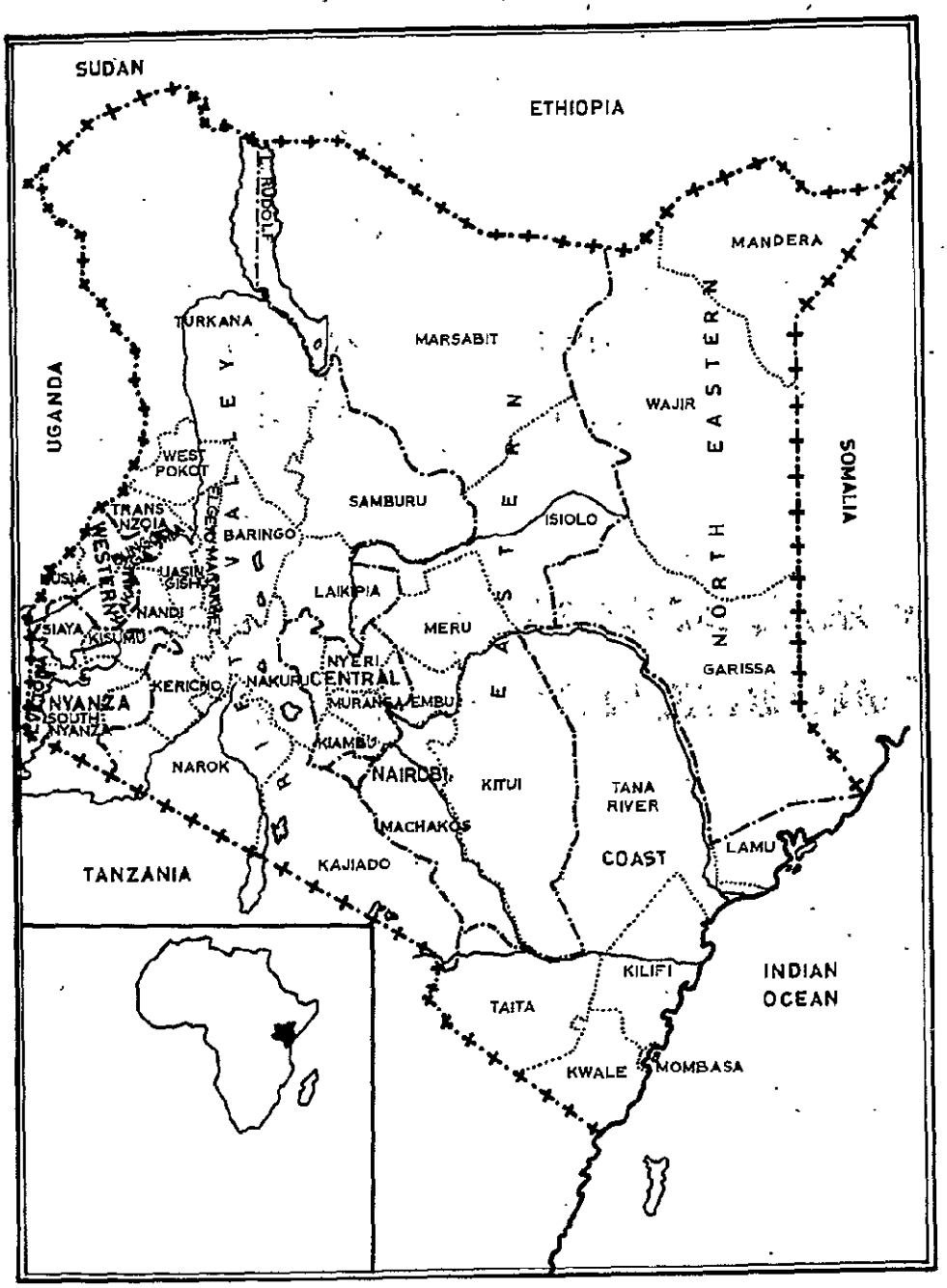
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WESTERN
NORTH EASTERN
EASTERN

P-58-78

RURAL ACCESS ROADS PROGRAMME

EVALUATION OF RURAL ACCESS ROADS IN SIAYA DISTRICT

FIRST PHASE-REVISED REPORT

MINISTRY OF WORKS ROADS DEPARTMENT

DECEMBER 1978

EVALUATION OF RURAL ACCESS ROADS IN SIAYA DISTRICT

I. INTRODUCTION

This report pertains to the evaluation of the first 66 km of rural access roads in Siaya District. These roads were selected by the District Development Committee (DDC) as being the top priority routes in terms of much needed access into economically high potential areas of the district.

In selecting the roads, the DDC complied with the set guidelines ensuring local 'grass-root' participation.

The roads proposed for inclusion in the Rural Access Roads Programme during 1978/79 have been found technically feasible. They are shown below in order of priority together with other relevant details such as locations, division and approximate lengths.

ROAD NO.	DESCRIPTION OF ROAD	APPROX. LTH.	DIVISION	LOCATIC
1	Malele Sch.-Agulu-Nyadhi Rangala bridge-Segere	14	Boro	C/Alego
2	Simenya-Togo-Hono-Ndere	12	Boro/Ukwala	C/Alego S/Ugen
3	Nyangoma-Tingwangi-Uganda-Malunga-Bar Olengo Road	17	Boro	E/Elego
4	Nyangera-Usire-Liloma	10	Bondo	N/Sakw
5	Ajigo-Lwala-Wagwa	8	Bondo	N/Sakw
6	Nyambenge-Saradidi	5	Yala/Bondo	S/Gem N/Sakw

II. A QUICK IMPRESSION

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

TABLE 1

ROAD NO.	LENGTH KM.	ZONE OF INFLUENCE (HA)	POPULATION DENSITY P/KM. 1978	POPULATION IN ZONE OF INFLUENCE 1978	AREA OF ZONE OF INFLUENCE HA/KM.	POPULATION PER KM. OF ROAD
1	14	1875	258	4838	134	346
2	13	1675	251	4204	129	323
3	17	3675	246	9041	216	532
4	10	1450	74	1073	145	107
5	8	1200	248	2976	150	372
6	5	700	296	2072	140	414

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 facilities for which road is relevant are taken into account. The social service 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 include:-

1. Hospital (H.)
2. Post Office (P.O.)
3. Divisional Headquarters (D.HQ.)
4. 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 frequency ratings are attached to each service facility. The scale is chosen between 1 to 10, higher rating indicating increasing frequency.

(a)	Hospital (low frequency)	- 2
(b)	Post Office (medium frequency)	- 5
(c)	Divisional Headquarters (higher 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-indicators for each selected road and within each zone of influence.

The location of the various social service facilities is also depicted on map No. 3.

TABLE 2.

ACCESS INDICATOR

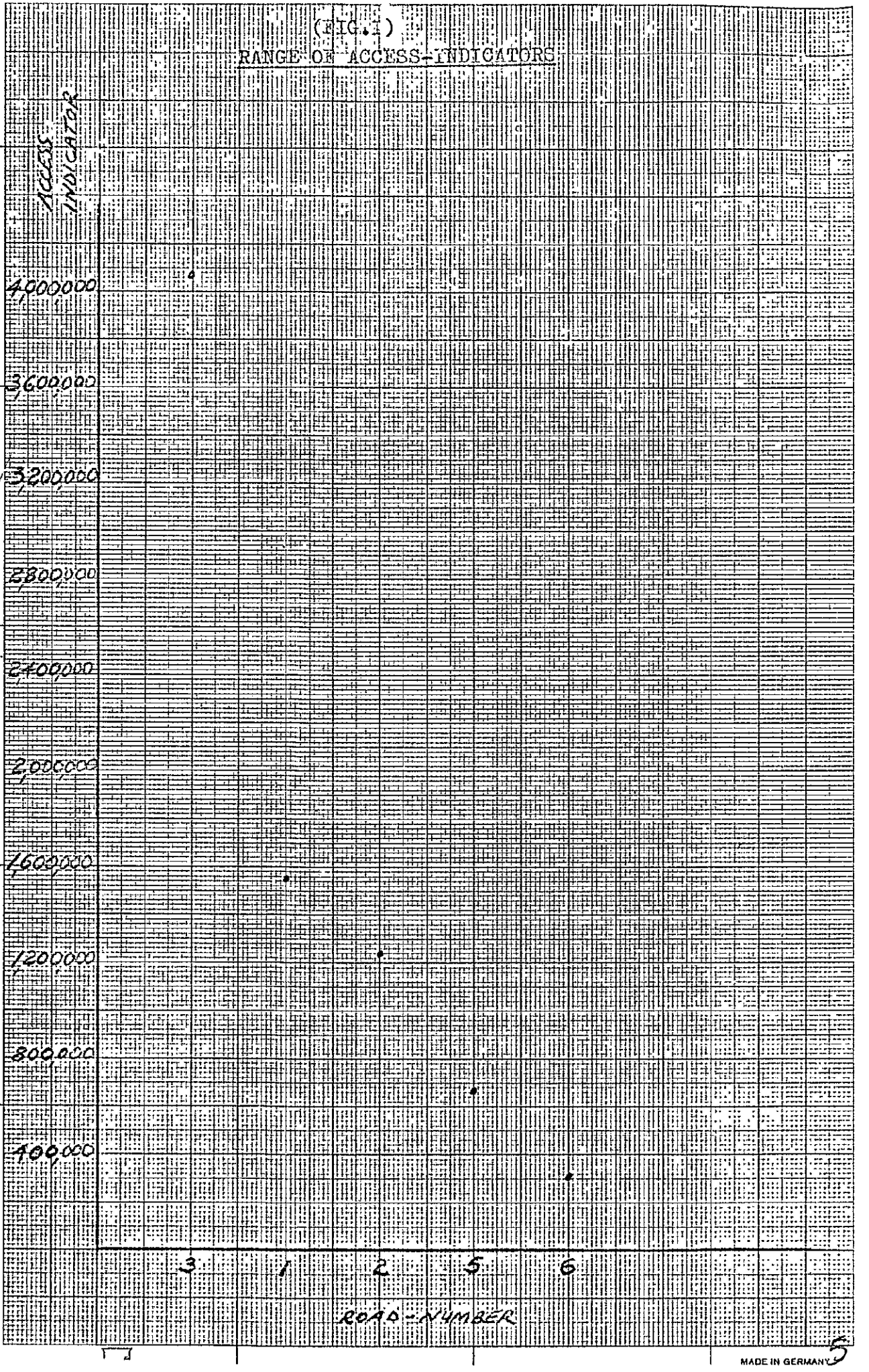
ROAD NO.	POPULATION IN ZONE OF INFLUENCE (T)1978	AVERAGE DISTANCE TO (KM)				WEIGHTED DISTANCE TO (KM)				TOTAL WEIGHTED DISTANCE II	ACCESS INDICATOR I & II	PRIORITY RATING
		H	P.O.	D.HQ	HC	H	P.O	D.HQ	HC			
1	4838	10	10	20	10	20	50	200	50	320	1,548,160	2
2	4204	12	12	15	12	24	60	150	60	294	1,235,976	3
3	9041	20	12	25	20	40	60	250	100	450	4,068,450	1
4	1073	24	12	12	12	48	60	120	60	288	309,024	6
5	2976	15	10	10	10	30	50	100	50	224	666,624	4
6	2072	20	5	16	16	40	80	50	80	250	518,000	5

H=HOSPITAL
HC=HEALTH CENTRE

D.HQ=DIVISIONAL HEADQUARTERS
P=POST OFFICE

(FIG. 1)

RANGE OF ACCESS-INDICATORS



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IV. POTENTIAL FOR DEVELOPMENT

The potential for development is di
related to the agricultural development
within each zone of influence. The pres
future land utilization are shown in the

MZ - MAIZE
CA - CASSAVA
CT - COTTON
ML - MILLET
SG - SERGHVM

CB - BEEF CATT
L - LIVESTOCK
O - OTHERS (m
T - TOTAL
P - FUTURE WI
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F - FUTURE WI
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TABLE 3.

	ROAD NO.1				ROAD NO.2				.3	
	P ha	F ha	P %	F %	P ha	F ha	P %	F %	P %	F %
MZ	375	525	20	28	201	302	12	18	20	21
CT	94	169	5	9	-	-	-	-	1	5
ML	19	56	1	3	-	-	-	-	-	-
SG					-	-	-	-	-	-
CA					84	167	5	10	4	5
CB	187	187	10	10	-	-	-	-		
O	768	768	41	41	687	687	41	41	59	39
L	432	169	23	9	703	519	42	31	36	30
T	1875	1975	100	100	1675	1675	100	100	00	100

TABLE 4.

	ROAD NO. 4				ROAD NO.5				ROAD NO.6			
	P ha	F ha	P %	F %	P ha	F ha	P %	F %	P ha	F ha	P %	F %
MZ	261	406	18	28	180	180	15	15	28	112	4	16
CT	29	102	2	7	48	84	4	7	-	-	-	-
ML	-	-	-	-	-	-	-	-	-	-	-	-
SG	-	-	-	-	-	-	-	-	-	-	-	-
CA	-	-	-	-	72	72	6	6	-	-	-	-
CB	102	145	7	10	-	-	-	-	84	35	12	5
O	261	261	18	18	480	480	40	40	336	336	48	48
L	797	536	55	37	420	384	35	32	252	217	36	31
T	1450	1450	100	100	1200	1200	100	100	700	700	100	100

V. CONSTRAINTS ON DEVELOPMENT

1. TYPES OF CONSTRAINTS

The constraints on agricultural development fall into two categories:

(a) Natural Constraints

These constraints such as soil, rainfall and topography characteristics cannot be removed by man.

(b) Resource Constraints

Examples of these constraints are land registration, agricltural credit, agricultural inputs marketing of produce, agro-industry, road infrastructure, attitude of people towards modernisation of agriculture. They can be removed when enough capital is available.

2. CONSTRAINTS AS THEY EXIST NOW

(a) Soil

The soils are largely red-brown friable clays, sandy loams and in the lower areas near the lakeshore, "black cotton". Except for the latter they are relatively easily worked with high fertility.

(b) Rainfall

The mean annual rainfall in the Northern fifth of the district exceeds 1500mm falling away to under 750mm in a small area of the Uyoma peninsular.

Nowhere in the district does rainfall exceed evapotranspitation. Furthermore the distribution of rainfall over the year is not ideal and the occurence of a yield reducing period of water stress is well established. The rainfall distribution is shown on map 2.

(c) Topography

Most cultivated land is at risk of soil erosion which is encouraged by the prevailing topography. A process of afforestation to check erosion is, however, being carried out.

(d) Land Registration

As at June 30th 1974, a total of 105,300 hectares of the total area of 253,500 hectares was registered in Siaya District.

(e) Agricultural Extension Service

The potential of the Agricultural Extension Service in the district has not been fully realised. Closer supervision and intensified in-service training of existing staff and recruitment of additional field is contemplated.

(f) Mechanisation on the farms

Farmers are ploughing their lands using ox-ploughs. Other activities such as planting, weeding and harvesting are mainly manual.

(g) Marketing of Produce

The main problem in reaching the markets is the existing poor conditions of the access roads which render the transportation of agricultural produce quite difficult especially during the rainy season.

(h) Road Infrstructure

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

(i) Attitude of the People

There appears to be a positive attitude on the local population towards modernization of their agricultural production except for the lack of agricultural input. Agricultural input, can however, be increased by providing the borrowing facilities for the farmers.

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VI. IMPACT OF THE ROAD ON RURAL DEVELOPMENT

Cost estimates of the selected rural access roads have not yet been prepared. Based on past experience for similar roads the following assumptions have been made:-

Cost per kilometre is approximately K£2,000. A breakdown of this total cost into different components will roughly comprise of the following items:-

COST COMPONENTS	%	COST £/KM ROAD
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
Total	100%	£2000

- 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 expenditure are estimated at K£120/km road. Out of this amount 75% is paid to the casual labour force each year. Table 7 shows a breakdown of the relevant cash component for the selected access roads.

TABLE 4.

BREAK DOWN OF THE RELEVANT CASH COMPONENT FOR THE SELECTED ROADS

ROAD NO.	CONSTRUCTION COSTS £.	MAINTENANCE E/YEAR	CONSTRUC-TION WAGES £.	CASUAL LABOUR MAN-DAYS	MAINTENANCE WAGES £.	MAN-DAYS	PERMANENT STAFF WAGES CONSTRUCTION £.
1	28,000	1680	11200	33040	1260	3640	2240
2	24,000	1440	9600	28320	1080	3120	1920
3	34,000	2040	13600	40120	1530	4420	2720
4	20,000	1200	8000	23600	900	2600	1600
5	16,000	960	6400	18880	720	2080	1280
6	10,000	600	4000	11800	450	1300	800
TOTAL	132000	7920	52800	155760	5940	17160	10560

2. SHORT TERM EFFECTS OF THE RURAL ACCESS ROADS

The opening of the rural access roads will increase the mobility of the divisional officers such as the agricultural, education and health officers. It will provide them with an all-weather mobility to the areas, which will enable them to carry out their duties more effectively.

3. LONG TERM EFFECTS ON THE RURAL ACCESS ROADS

The long term effects stem from the development of the agricultural potential within the zones of influence. With the opening of the roads, improved seeds, fertilizers, improved tools and field extension officers will get easy access to the areas thus increasing the output.

The potential for the expansion of cash crops within the zones of influence is shown in table 5.

The gross margin for the production of maize, cotton, cassava, millet, sorghum have been obtained from the table shown in appendix II.

The present value of the agricultural production is calculated over 20 years period between 1979 and 1998 It is assumed that the prices will remain constant.

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

VII. DISCOUNTED COSTS AND BENEFITS OF THE PROPOSED INVESTMENTS

The road construction has many impacts on rural economy and welfare. Many of these impacts cannot (yet) be measured let alone quantified in monetary terms. For this reason, the present monetary evaluation cliteria 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 for 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 1979. The project gestation period has been assumed as 20 years (upto and including 1998.)

The total costs shadow prices for the construction of the roads are:-

66x2000x0.83 = K£.109560 to be spent wholly in 1979.

The yearly maintenance costs are in shadow prices:-

66x80x0.61 = K£.3221 annually starting in 1980.

The total increment in agricultural production to be discounted is K£.70090. Therefore the yearly increment to be discounted in the first 10 years is K£.7009. From 1988 onwards the full benefit of K£. 70090 will be gained annually. In Table 8 are indicated the discounted costs and benefits for four discounting rates. Also given is the benefit/cost ratio.

The IRR for the whole package of roads is 30%.

In the basis of analysis, the calculated internal rate of return is over two times the opportunity cost of capital and as such the investment is beneficial to undertake.

TABLE 8.

DISCOUNTING RATE (%)	14	20	30	35
COST	131323	125647	120553	119017
BENEFITS	298064	200668	120527	98387
B/C RATIO	2.27	1.60	1	0.83

POTENTIAL FOR CASH CROP EXTENSION

TABLE 5.

ROAD NO.	MAIZE	COTTON	MILLET	CASSAVA	BEEF CATTLE	TOTAL
1	150	75	37	-	-	262
2	101	-	-	83	-	184
3	37	147	-	37	-	221
4	145	73	-	-	43	261
5	-	36	-		-	36
6	84	-	-		-49	35
TOTAL	517	331	37	120	-6	999

TABLE 6

EXISTING AND FUTURE CASH CROP AREAS.

ROAD NUMBER	EXISTING CASH CROP AREA UNDER					FUTURE CASH CROP AREAS				
	MAIZE	COTTON	MILLET	CASSAVA	BEEF CATTLE	MAIZE	COTTON	MILLET	CASSAVA	BEEF CATTLE
1	375	94	19	-	187	525	169	56	-	187
2	201	-	-	84	-	302	-	-	167	-
3	735	37	-	147	-	772	184	-	184	-
4	261	29	-	-	102	406	102	-	-	145
5	180	48	-	72	-	180	84	-	72	-
6	28	-	-	-	84	112	-	-	-	35
TOTAL	1780	208	19	303	373	2297	539	56	423	387

TABLE 7

EXISTING AND FUTURE GROSS MARGINS.

ROAD NUMBER	EXISTING GROSS MARGINS(K£.)						FUTURE GROSS MARGIN(K£.)						TOTAL INCREMENT (K£.
	MAIZE	COTTON	MILLET	CASSAVA	BEEF CATTLE	TOTAL	MAIZE	COTTON	MILLET	CASSAVA	BEEF CATTLE	TOTAL	
1	11363	5320	509	-	1533	18725	27615	16917	2229	-	1964	48725	30000
2	6090		-	2209	-	8299	15885	-	-	5127	-	21012	12713
3	22271	2094	-	3866	-	28231	40607	18418	-	5649	-	64674	36443
4	7908	1641	-	-	836	10385	21356	10210	-	-	1522	33088	22703
5	5454	2717	-	1894	-	10065	9468	8408	-	2210	-	20086	10021
6	848	-	-	-	689	1537	5891	-	-	-	368	6259	4722
TOTAL	53934	11773	509	7969	3059	77244	120822	53954	2229	12986	4064	194055	116813

VIII. DEVELOPMENT OF RURAL INCOME

Given the development of the agricultural potential and growth of the population within the zones of influence of the roads, the rural cash income per capital can be calculated.

The income per capital has been calculated for the year 1989 when the agricultural potential is assumed to be 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 rate over the period 1979 to 1989 is assumed to be 4%. The results are shown in table 9.

Given the 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 subsistence crops at the expense of the area under cash crops.

TABLE 9.

RURAL PER CAPITA INCOME 1998.

ROAD NO.	GROSS MARGIN AGRICULTURAL PRODUCTION K£. (1989)	POPULATION IN ZONE OF INFLUENCE		INCOME PER CAPITA IN 1989
		1979	1989	
1	48725	4838	7161	6.8
2	21012	4204	6223	3.4
3	64674	9041	13383	4.8
4	33088	1073	1588	20.8
5	20086	2976	4405	4.6
6	6259	2072	3067	2.

APPENDIX I

DESCRIPTION OF THE ROADS

1. MALELE SCHOOL-AGALU SCHOOL-NYADHI-RANGALA BRIDGE. (3)

This road follows an existing track except for the portion between Agalu and Nyadhi where no track exists. It crosses streams at varicus points where culverts will be required. The alignment is parallel to Wuroya River (tributary of River Nzoia). The soil all along - is red coffee with varying contents of murram and sand.

2. SIMENYA-YOGO-HONO-NDERE. (5)

The road follows an existing track and crosses four small streams which will require culverts. The soil is as for road No.1. It joins all weather classified roads at both ends.

3. NYANGOMA-TINGWANGI-UPANDA-MALUNGA TO JOIN BAR-OLENGO ROAD (6)

The alignment runs parallel to River Yala. It crosses several streams which will require culverts.

4. NYANGERA-USIRE-ULOMA. (7)

Nyangera is on the all weather road C501 to the West of Usire hills. The road follows an existing track from Nyangera and runs parallel to river Yala in the North. The soil is red coffee with varying amounts of murram. The road crosses two streams which will necessitate use of culverts. The area near Nyangera is swampy and may have to be slightly realigned.

5. AJIGO-LWALA-WAFWA. (8)

The road follows an existing track all the way. It does not cross any streams and will not need culverts except at occassional gullies.

6. NYAMBENGE-SARADIDI.(10)

The track the road follows is totally impassable during wet weather.

* All these roads join to all weather classified roads.

* The numbers in brackets indicate the priority given by the DDC.

From the DDC list, the following roads were omitted in the first phase evaluation.

ROAD NO. (DDC LIST)	DESCRIPTION OF ROAD	COMMENT
1	Ebusonga-Sidok	Too close to existing classified road.
2	Gangu-Apate-Osoro Sch.	The road is divided by classified roads into segments too short to be included.
4	Mulaha-Urim-Obambo Dam-Bar Olengo	Too close to an existing classified road.
9	Ajigo-Ambom Road	Too close to an existing road.

Vicinity maps No. 5 to 9 depict the location of the proposed roads. It is worthwhile to stress that road No. 6 is situated in an area where the Integrated Agricultural Development Programme will be implemented.

APPENDIX II

GROSS MARGINS

PRODUCT	FUTURE WITHOUT	FUTURE WITH		REMARKS
		RARP	RARP+ IADP	
MAIZE	30.3	52.6	74.9	A
CASSAVA	26.3	30.7	35.0	C
COTTON	56.6	100.6	143.6	A
MILLET	26.8	39.8	52.7	C
CATTLE BEEF	8.2	10.5	12.8	B

SOURCE:

A=.District Farm management guidelines M.O.A. 1977.

B=Commercial Farming Project M.O.A. 1976.

C=M.O.A. 1977 (Unpublished.)

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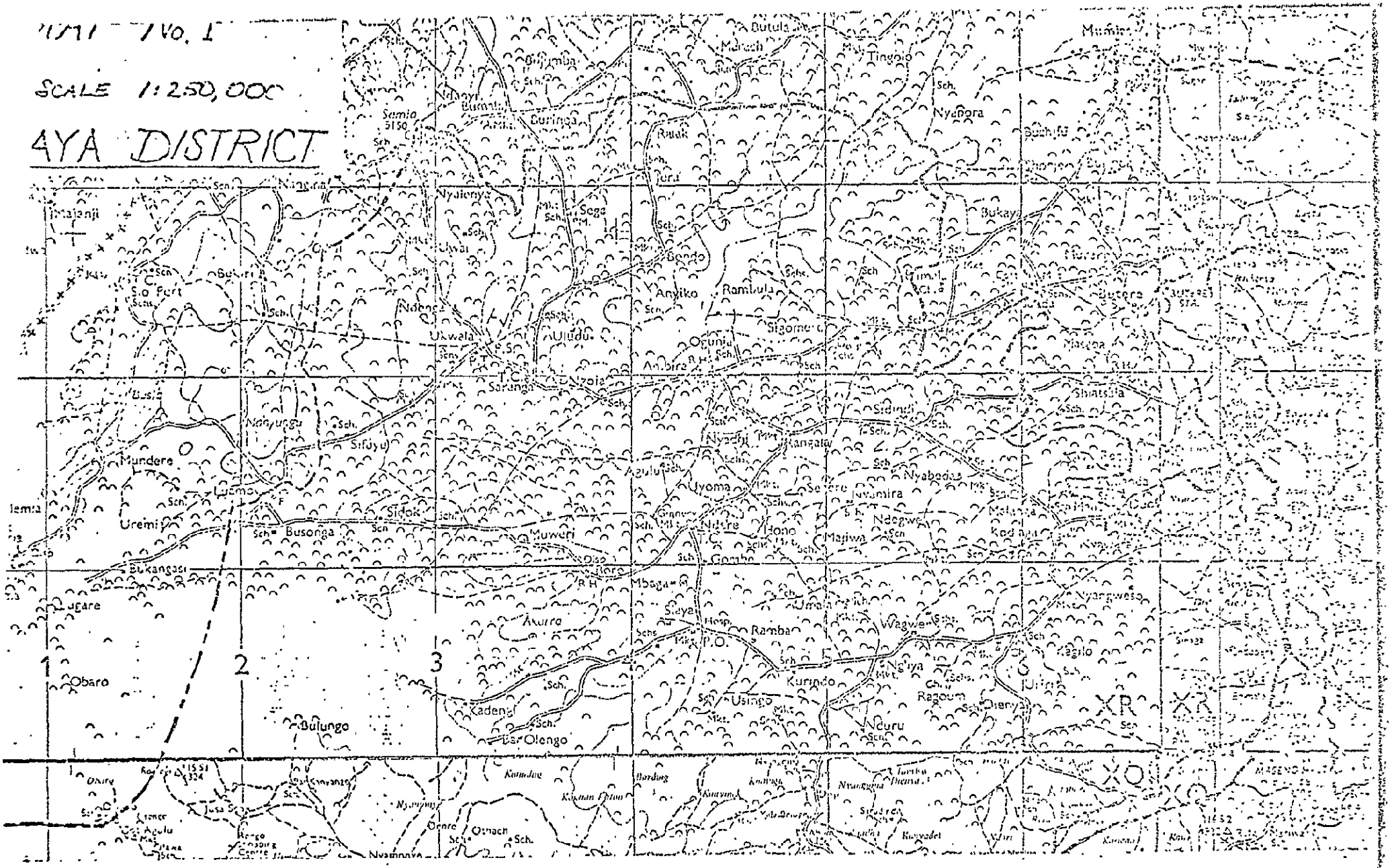

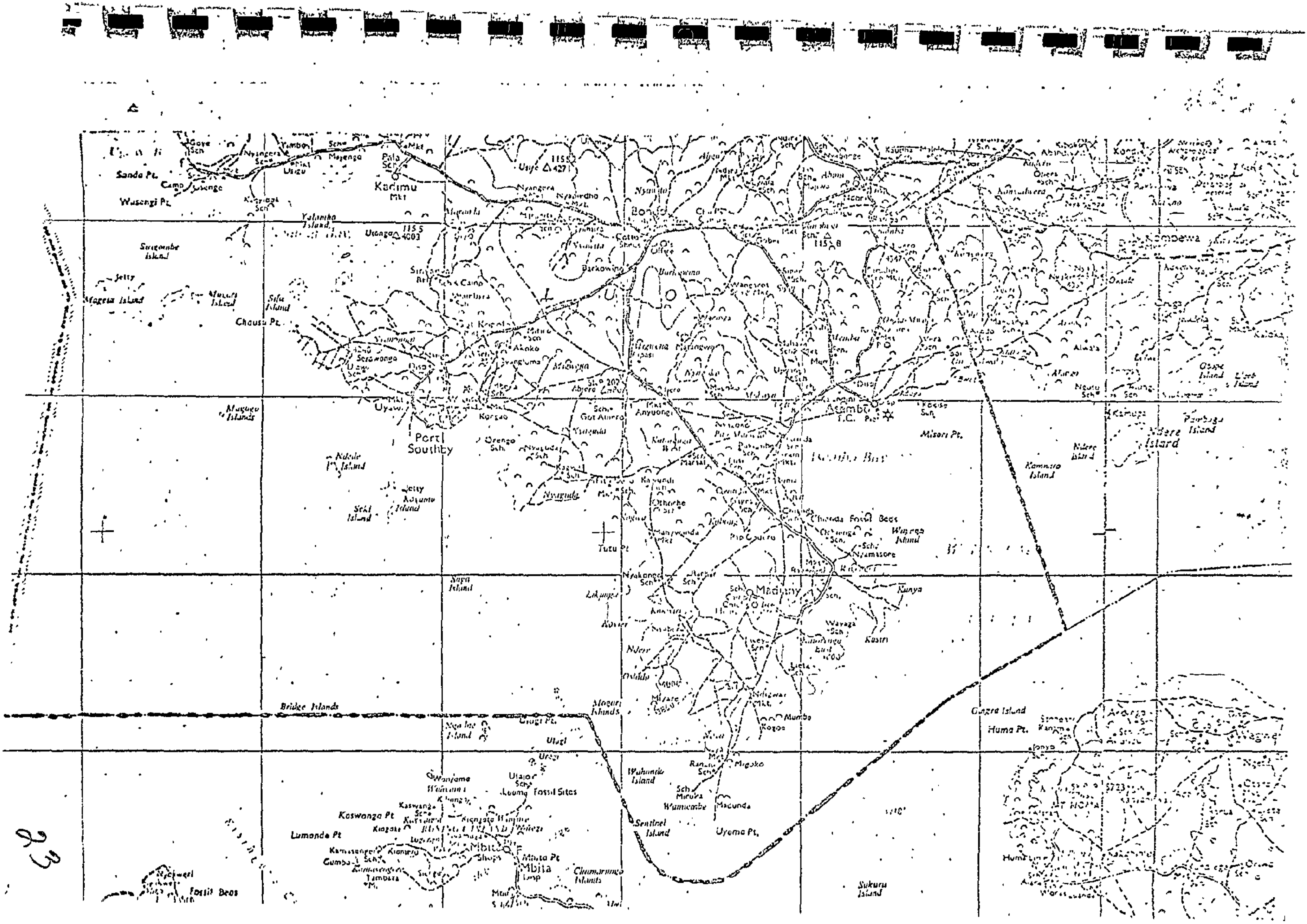
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Tutu Pt.
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Uyoma Pt.
Kaswanga Pt
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Sukuru Island
Gingra Island
Huma Pt.
Ndere Island
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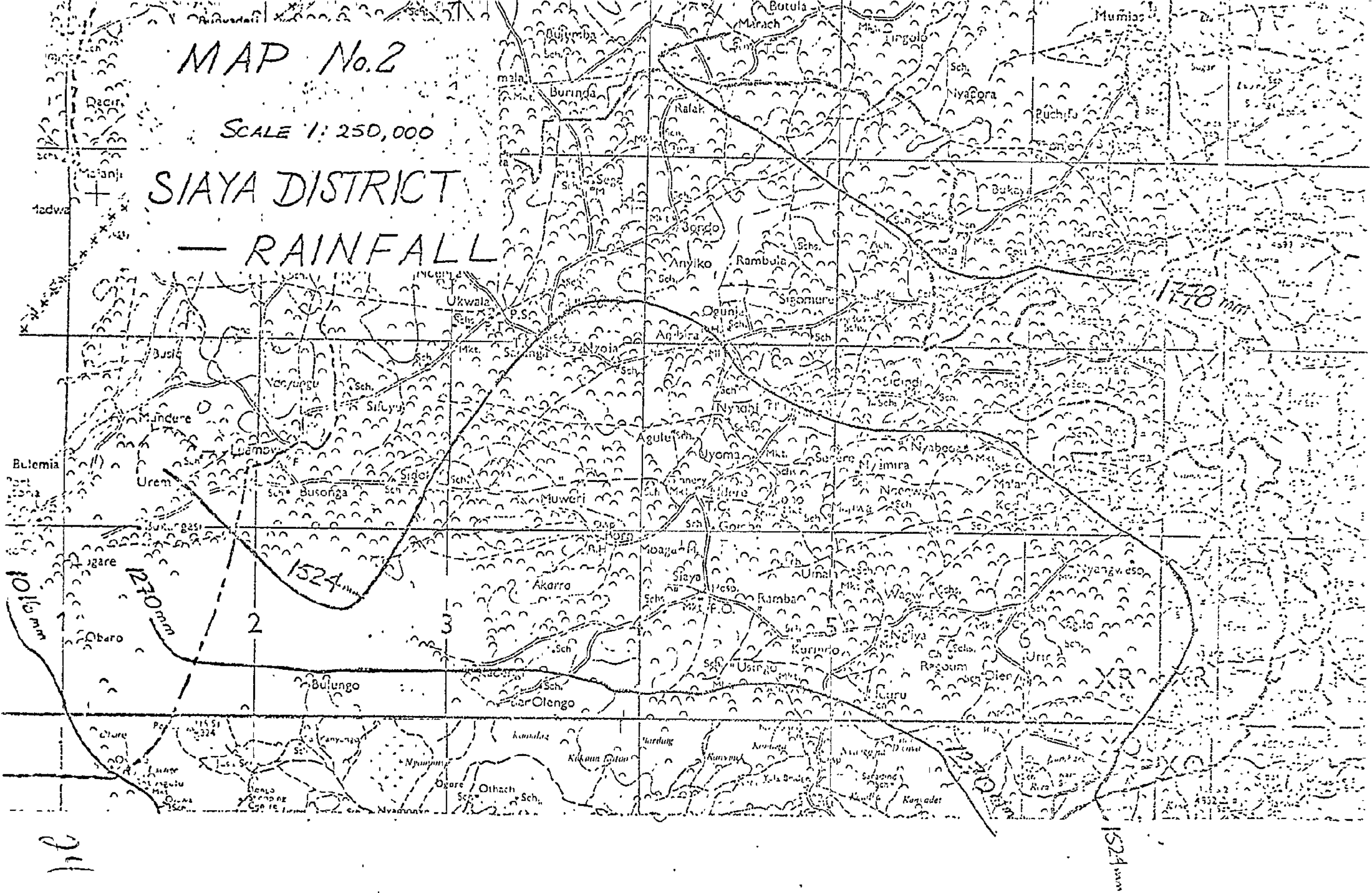
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SIAYA DISTRICT
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Ramba
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Obaro
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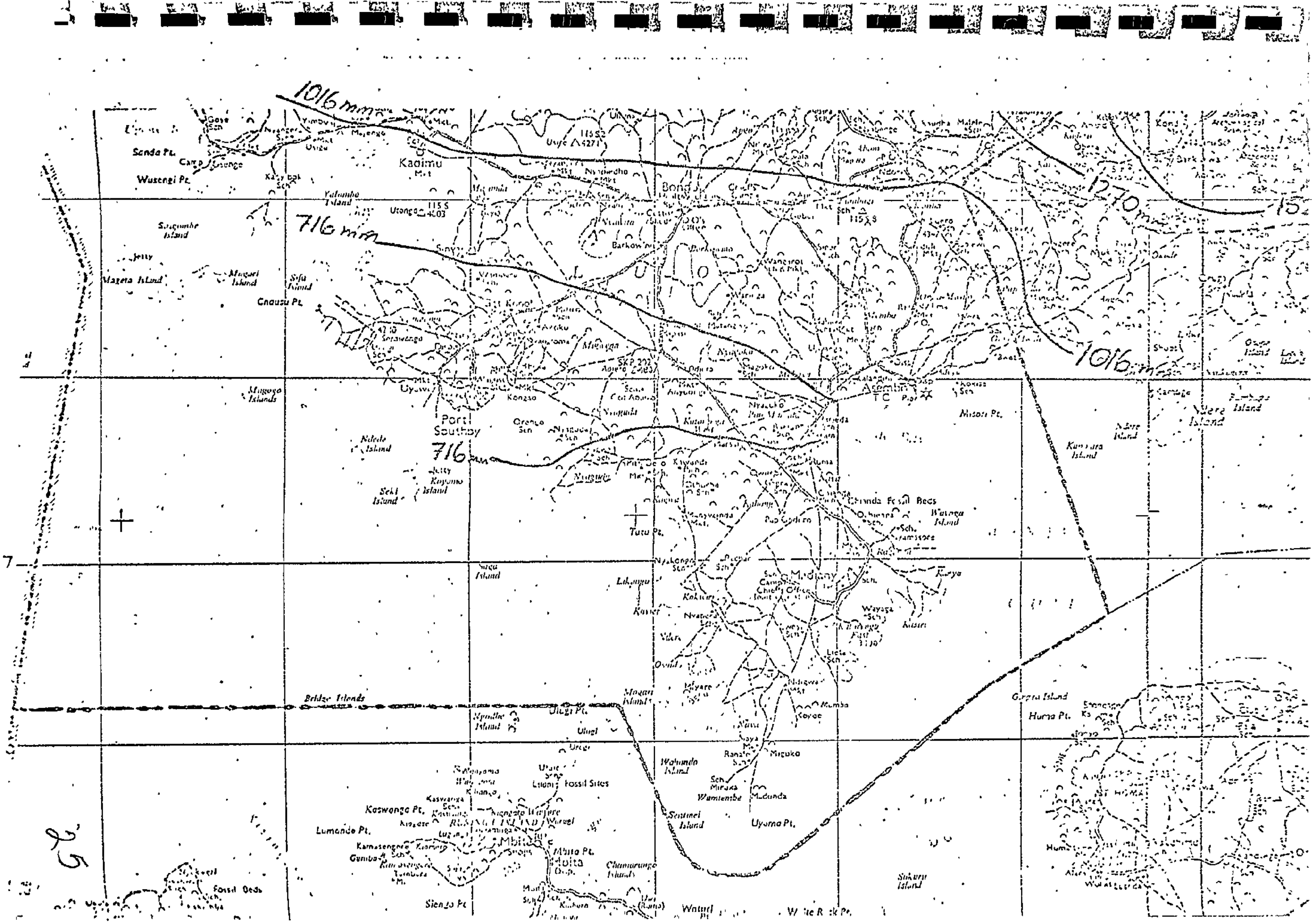

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Bridge Islands
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Lumondo Pt.
Kaswanga Pt.
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Fossil Beds
Huma Pt.
Misori Pt.
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MAP No. 3.

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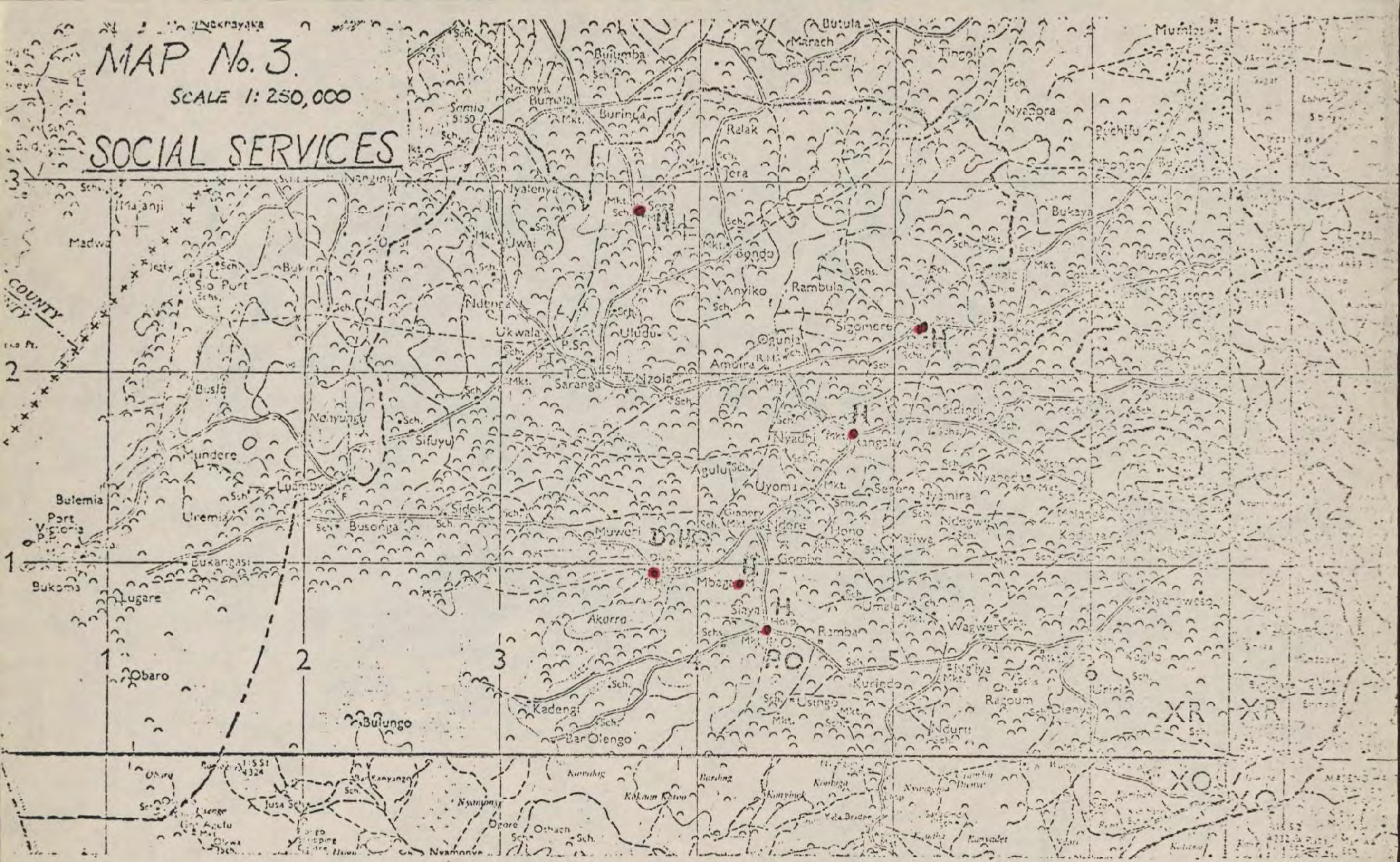
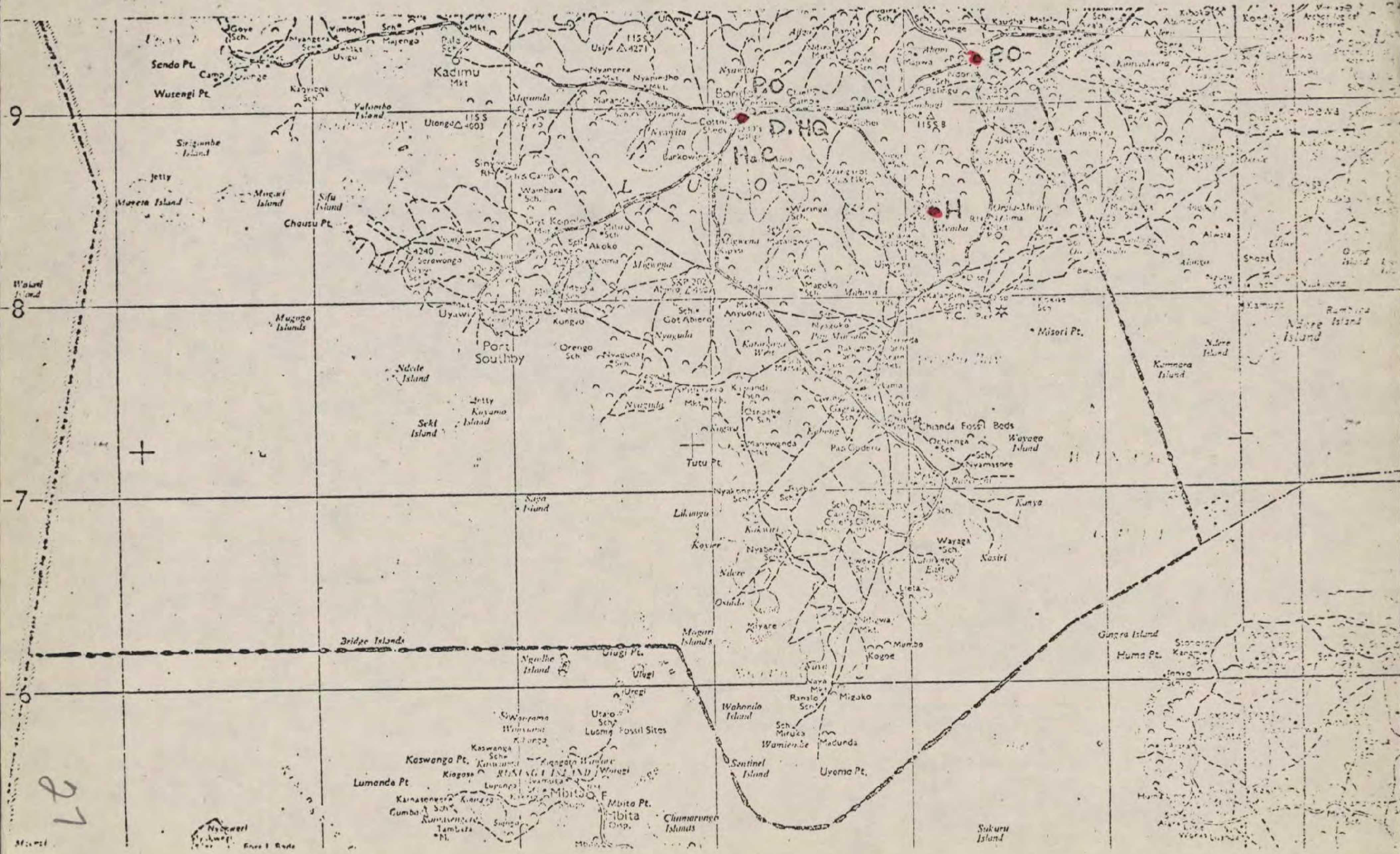
SOCIAL SERVICES

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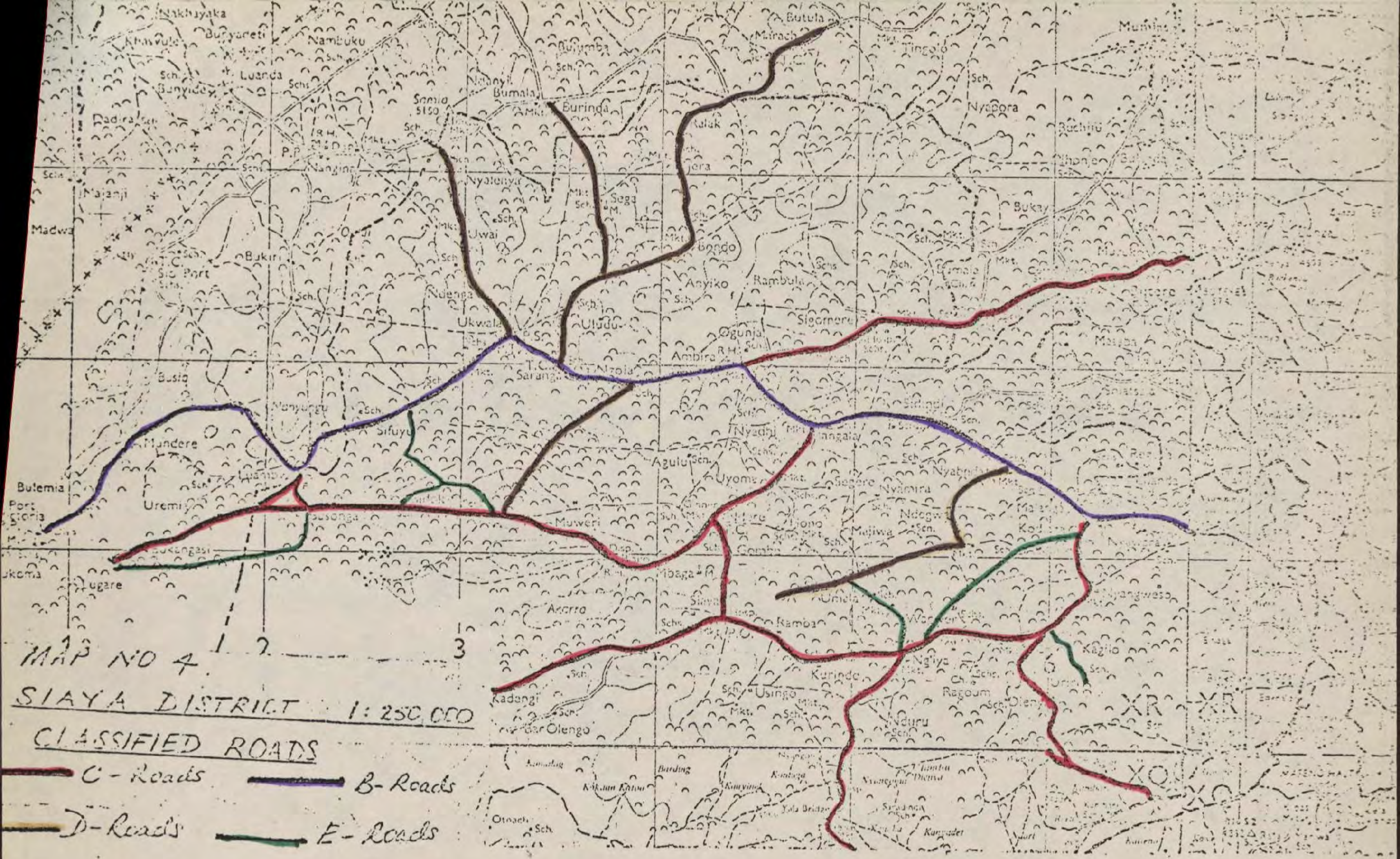
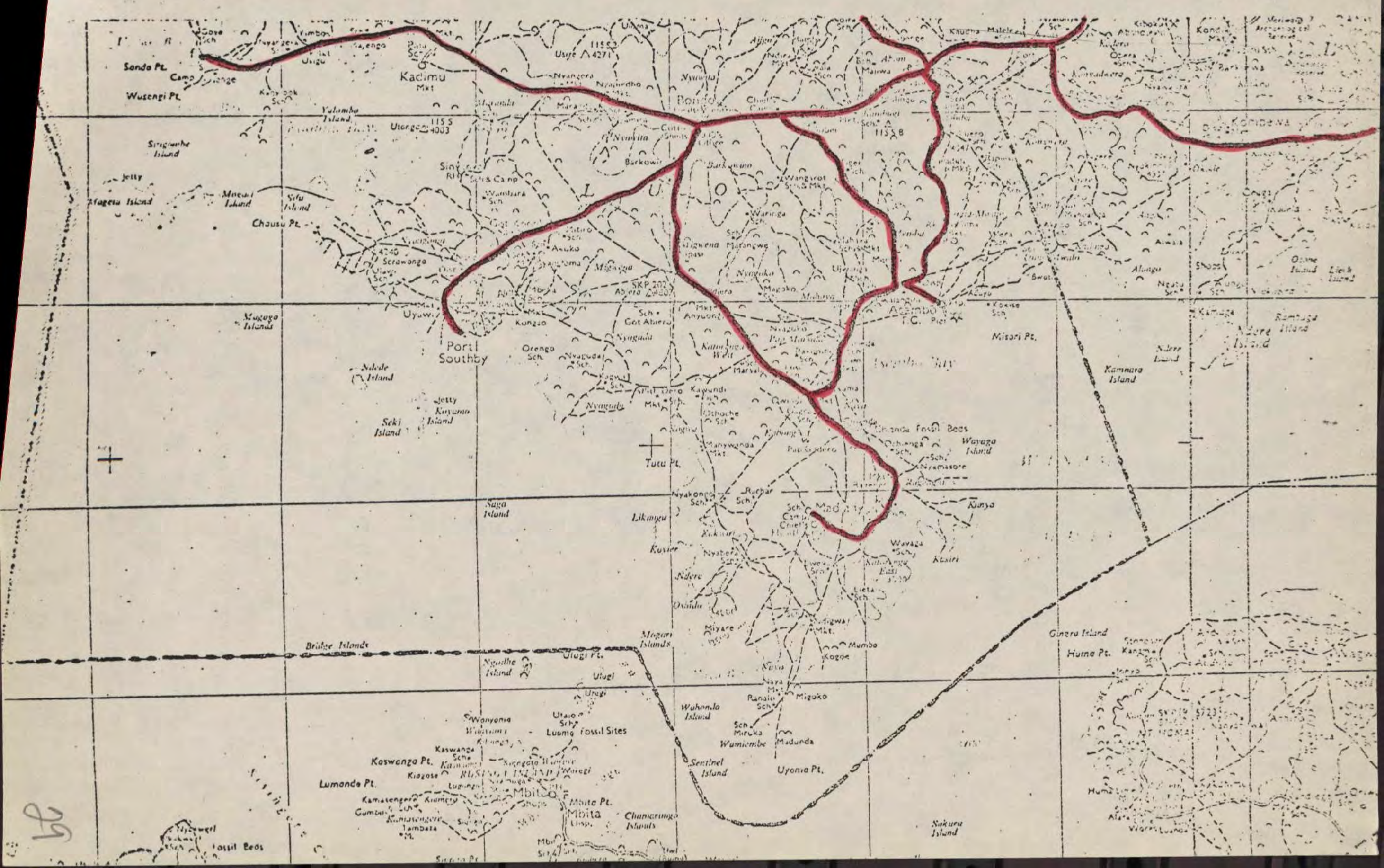

MAP NO 4.
SIAYA DISTRICT 1:250,000
CLASSIFIED ROADS
C - Roads
B - Roads
D - Roads
E - Roads
Nakhayaka
Bunyadeti
Nambuku
Luanda
Bunyide
Dadira
Majanji
Madwa
Bukiri
Sio Port
Busia
Mundere
Bulemia
Port Victoria
Uremi
Bukangasi
Ugare
Nanguba
Sifuyo
Nzoia
Sigomere
Ambira
Ogunja
Anyiko
Rambula
Ndenga
Ukwala
Uluda
Uwai
Nyalenya
Bumala
Burinda
Bulumba
Butula
Marach
Tingolo
Nyapora
Buchifu
Bukaya
Bondo
Sega
Kalak
Nyadhi
Nyabondo
Agulu
Uyoma
Segere
Ndegwa
Majiwa
Mwiweri
Mbaga
Ramba
Kagilo
Kurindo
Usingo
Nduru
Ragoum
Kadangi
Olengo
Nyangweso
Ngiya
Sch.
Mkt.

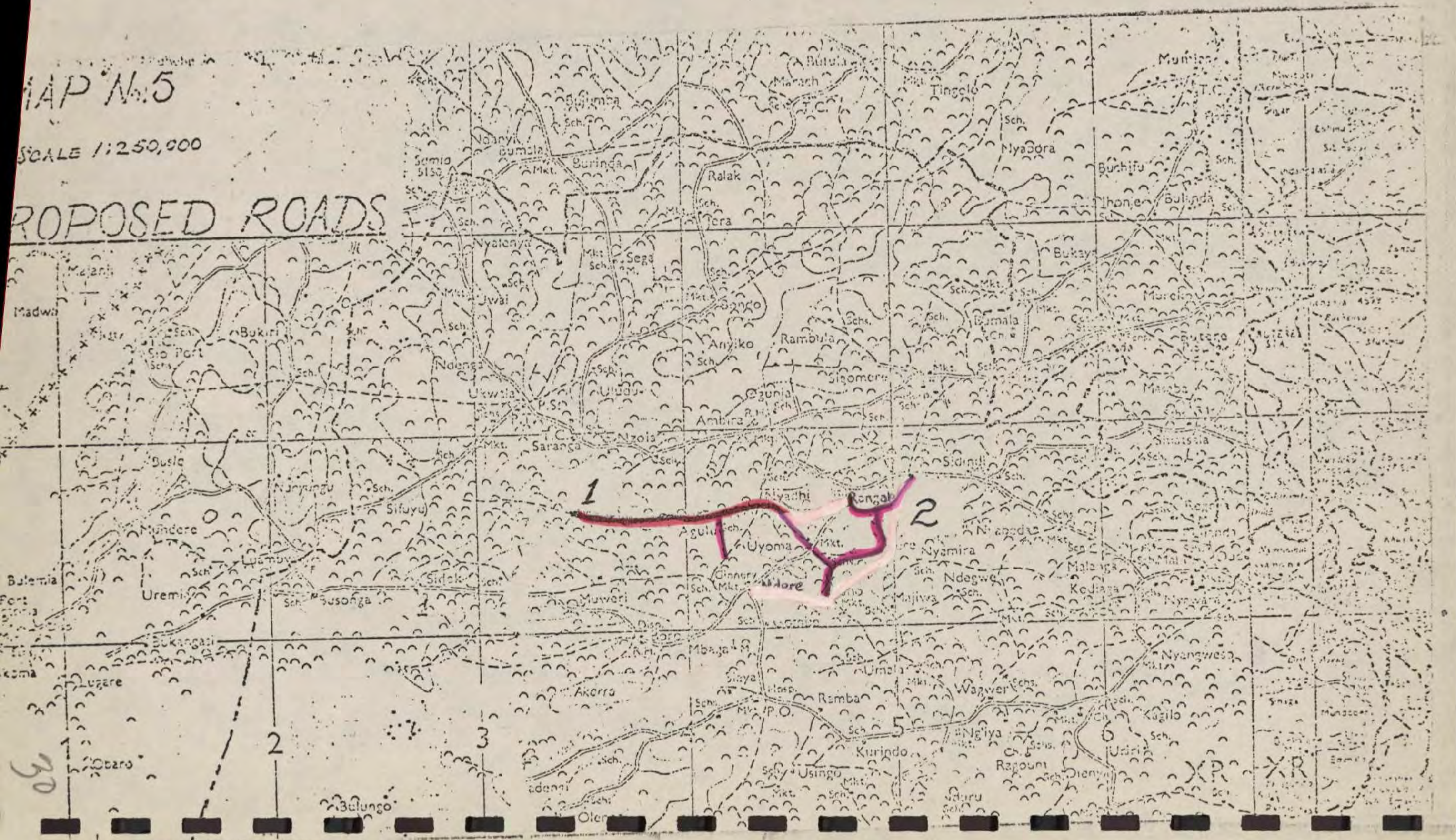


Sonda Pt.
Wusengi Pt.
Kadimu
Mkt
Usije 4271
Bondo
Barkowir
Chausu Pt.
Jetty
Port Southby
Uyawi
Kongao
Seki Island
Tutu Pt.
Madiany
Asembo
Kombewa
Misori Pt.
Kamnara Island
Wayaga Island
Ndere Island
Kunya
Likungu
Kusier
Ndere
Bridge Islands
Ulugi Pt.
Ulugi
Sentinel Island
Uyoma Pt.
Wumiembe
Madunda
Mumbo
Kogoe
Migoko
Luomo Fossil Sites
Koswanga Pt.
Lumonde Pt.
Mbita Pt.
Mbita
Fossil Beds
Ginera Island
Huma Pt.

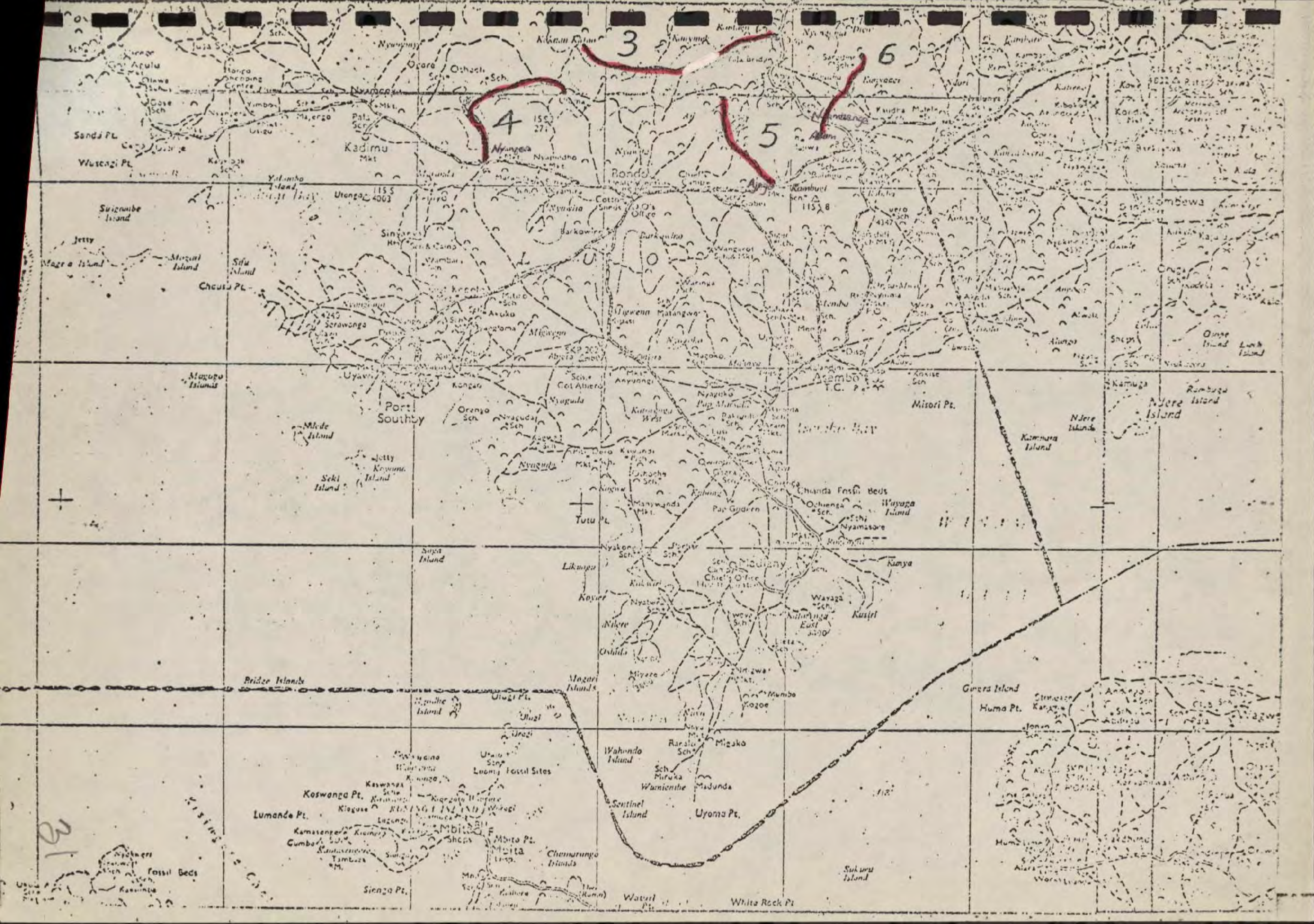
MAP No.5

SCALE 1:250,000

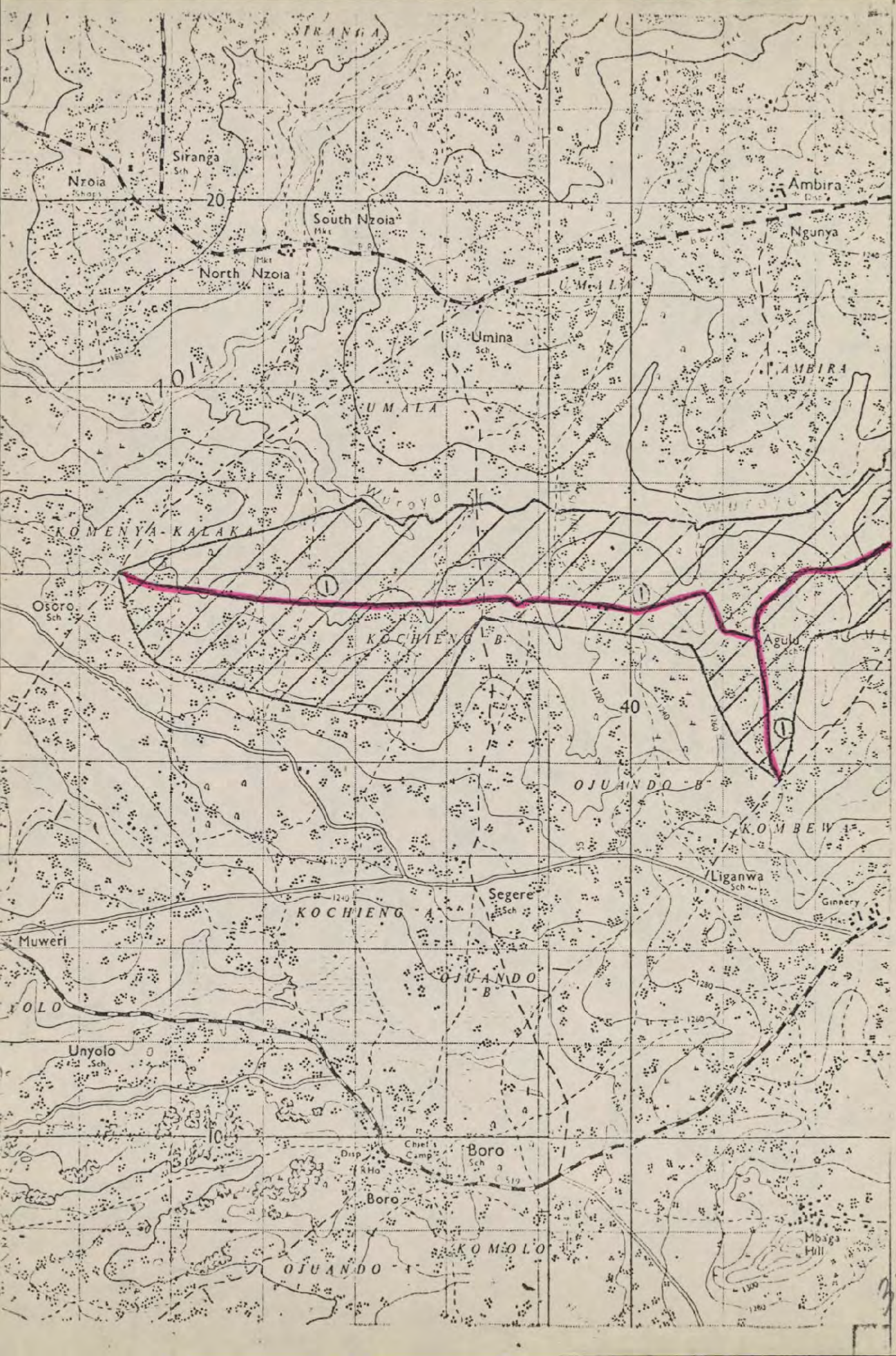
PROPOSED ROADS

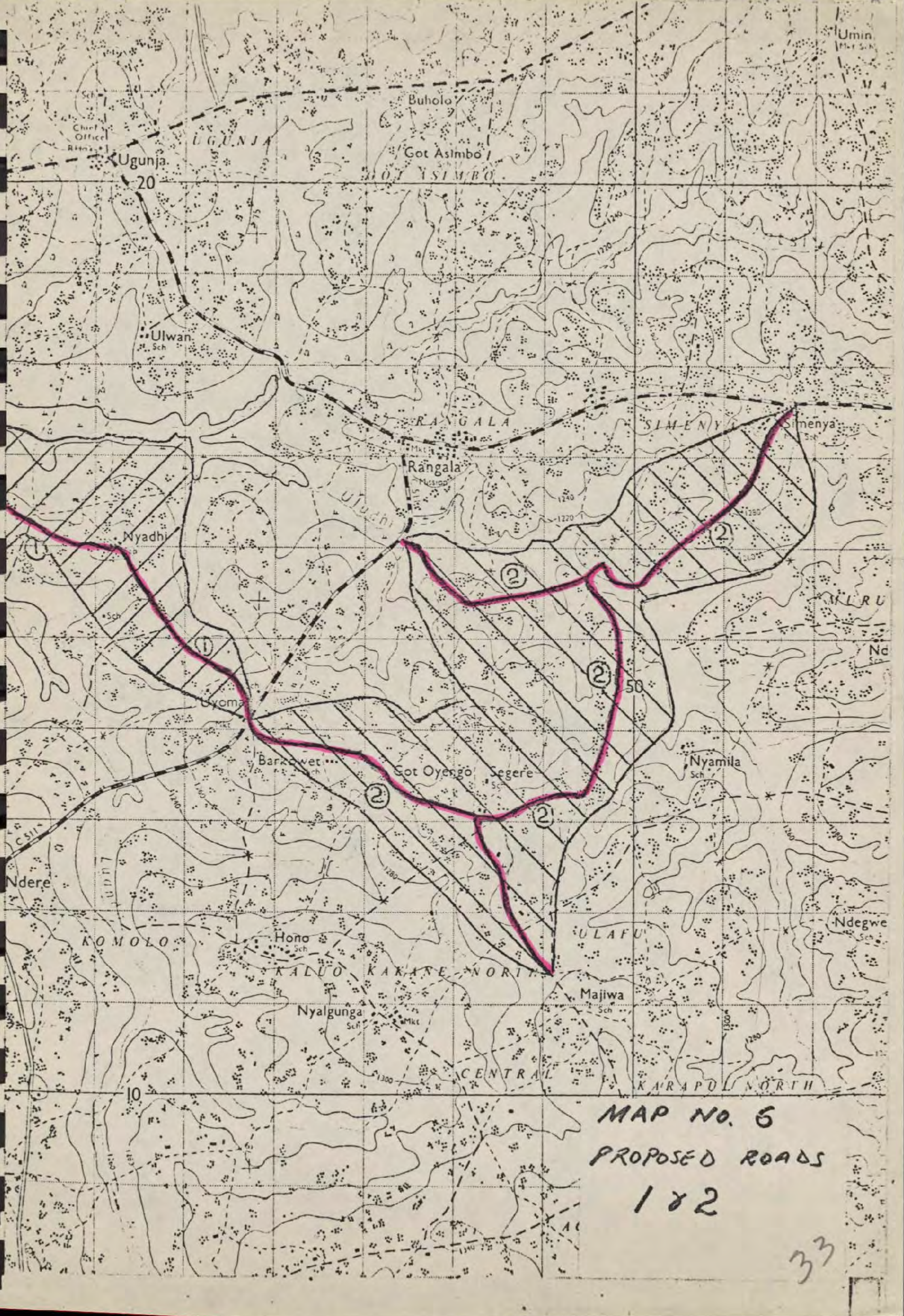


30

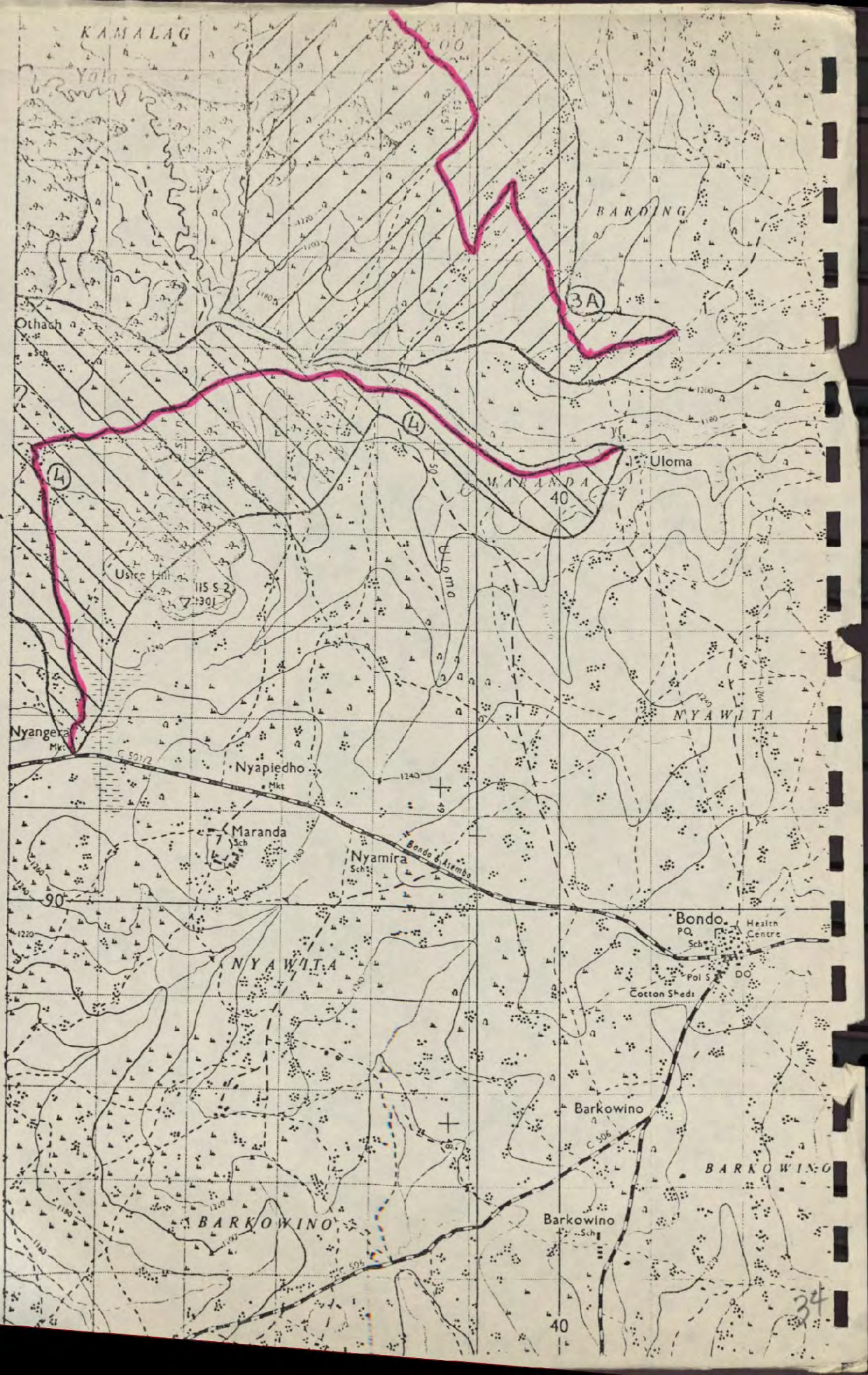


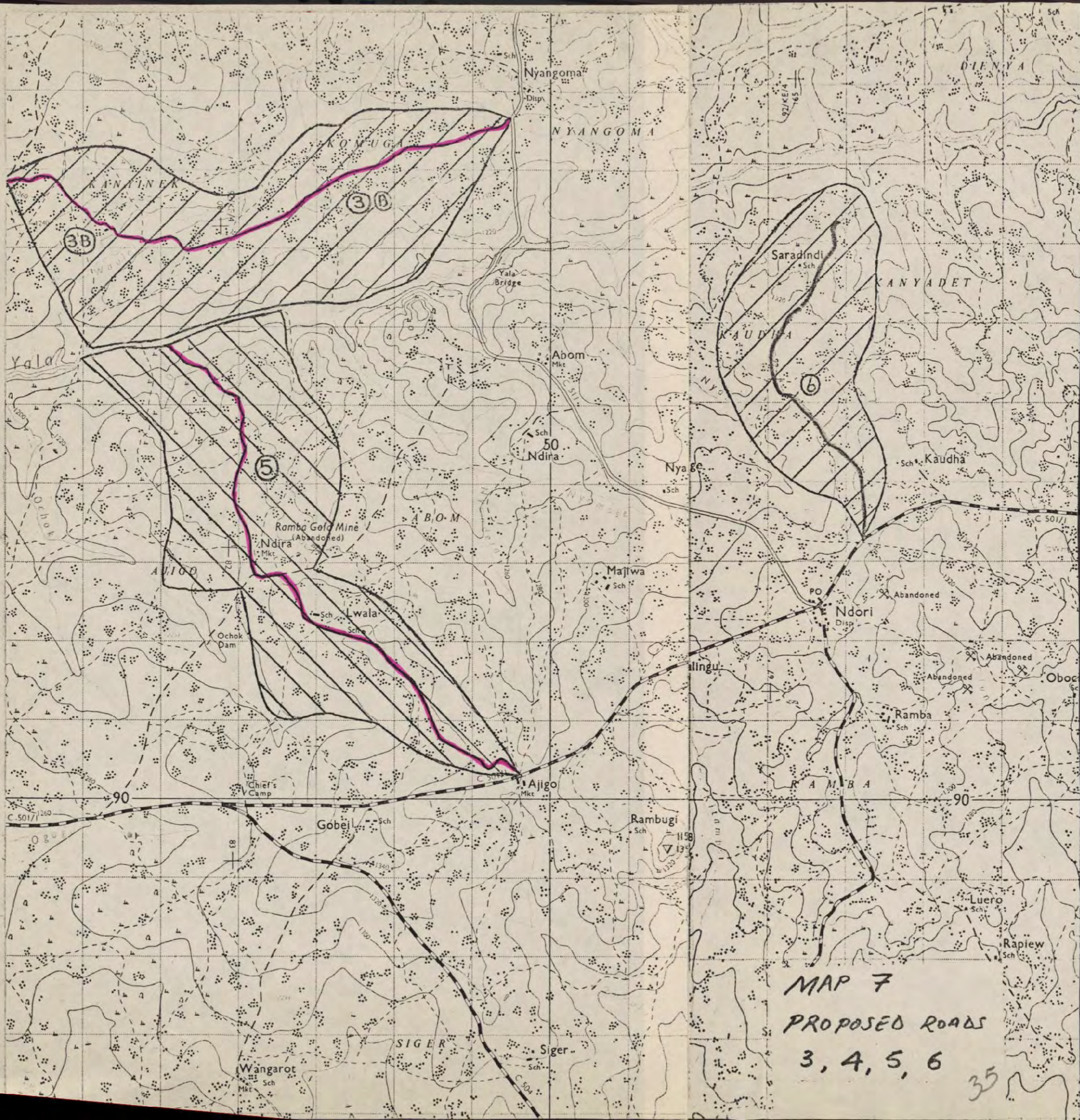
3
4
5
6
Nyamonye
Kadimu
Mkt
Sanda Pt.
Wusengi Pt.
Nyangera
Bondo
Ajigo
Kombuol
Kombewa
Suigombe Island
Jetty
Mageta Island
Mogusi Island
Sifu Island
Chewasi Pt.
Serawonga
Uyawi
Port Southby
Mageta Islands
Misori Pt.
Kimmura Island
N'Jere Island
Ndere Island
Ramboga Island
Onyee Island
Lurk Island
Atembo T.C.
Kongaro
Orengo Sch.
Mkede Island
Jetty
Koyome Island
Seki Island
Tutu Pt.
Chianda Fossil Beds
Wayaga Island
Nyamasore
Madiany
Kimya
Wayaga Sch.
Kusiri
Likungu
Koyire
Nikere
Oshida
Migwena
Saga Island
Bridge Islands
Magari Islands
Ulugi Pt.
Ulugi
Girera Island
Huma Pt.
Wahondo Island
Migako
Mfangano
Mirukaa
Wumiondhe
Madunda
Kaswanga Pt.
Lumande Pt.
Kiagusa
Kamasengere
Cumbo
Tambuza
Mbita
Mbita Pt.
Mbita Tnsp.
Chamarungo Islands
Sentinel Island
Uyoma Pt.
Sukuru Island
Fossil Beds
Sienza Pt.
Wakula
White Rock Pt.
Kiwanga Fossil Sites


SIRANGA
Siranga
Sch
Nzoia
Rhos
20
South Nzoia
Mkt
North Nzoia
Ambira
Dsp
Ngunya
UMALA
Umina
Sch
AMBIRA
UMALA
Nzoia
KOMENYA-KALAKA
Osoro
Sch
KOCHIENG' B
Agulu
Sch
40
OJUANDO B
KOMBEWA
Liganwa
Sch
Segere
Sch
Ginnery
KOCHIENG' A
Muweri
OJUANDO
B
OLO
Unyolo
Sch
10
Chief's
Camp
Boro
Sch
Disp
Rho
Boro
KOMOLO
OJUANDO
Mbaga
Hill



MAP NO. 6
PROPOSED ROADS
1 & 2


KAMALAG
Yala
BARONG
3A
Othach
4
Uloma
MAYANDA
40
Usige hill
115 S 2
Uloma
NYAWITA
Nyangera
Mkt
C 501/2
Nyapiedho
Mkt
1240
Maranda
Sch
Nyamira
Sch
Bondo & Ariemba
90
Bondo
P.O.
Sch
Health Centre
Pol S
DO
Cotton Sheds
NYAWITA
Barkowino
C 506
BARKOWINO
Barkowino
Sch
BARKOWINO
40
34


Nyangoma
Disp
NYANGOMA
KOMUGA
KANYINEK
3B
3B
Yala Bridge
Yala
Abom
Mkt
50
Ndira
Nyage
Sch
Kaudha
Saradindi
KANYADET
KAUDHA
6
5
Ramba Gold Mine
(Abandoned)
Ndira
Mkt
ABOM
AJIGO
Majiwa
Sch
Lwala
Sch
Ochok Dam
PO
Ndori
Disp
Abandoned
Abandoned
Abandoned
Ramba
Sch
RAMBA
Ajigo
Mkt
Chief's Camp
90
90
C 501/1
Gobei
Sch
Rambugi
Sch
1158
13
Luero
Sch
Rapiew
Sch
SIGER
Siger
Sch
Wangarot
Mkt
Sch
MAP 7
PROPOSED ROADS
3, 4, 5, 6
35