

1973 Sudan Population Census  
Report on Census Cartography

by

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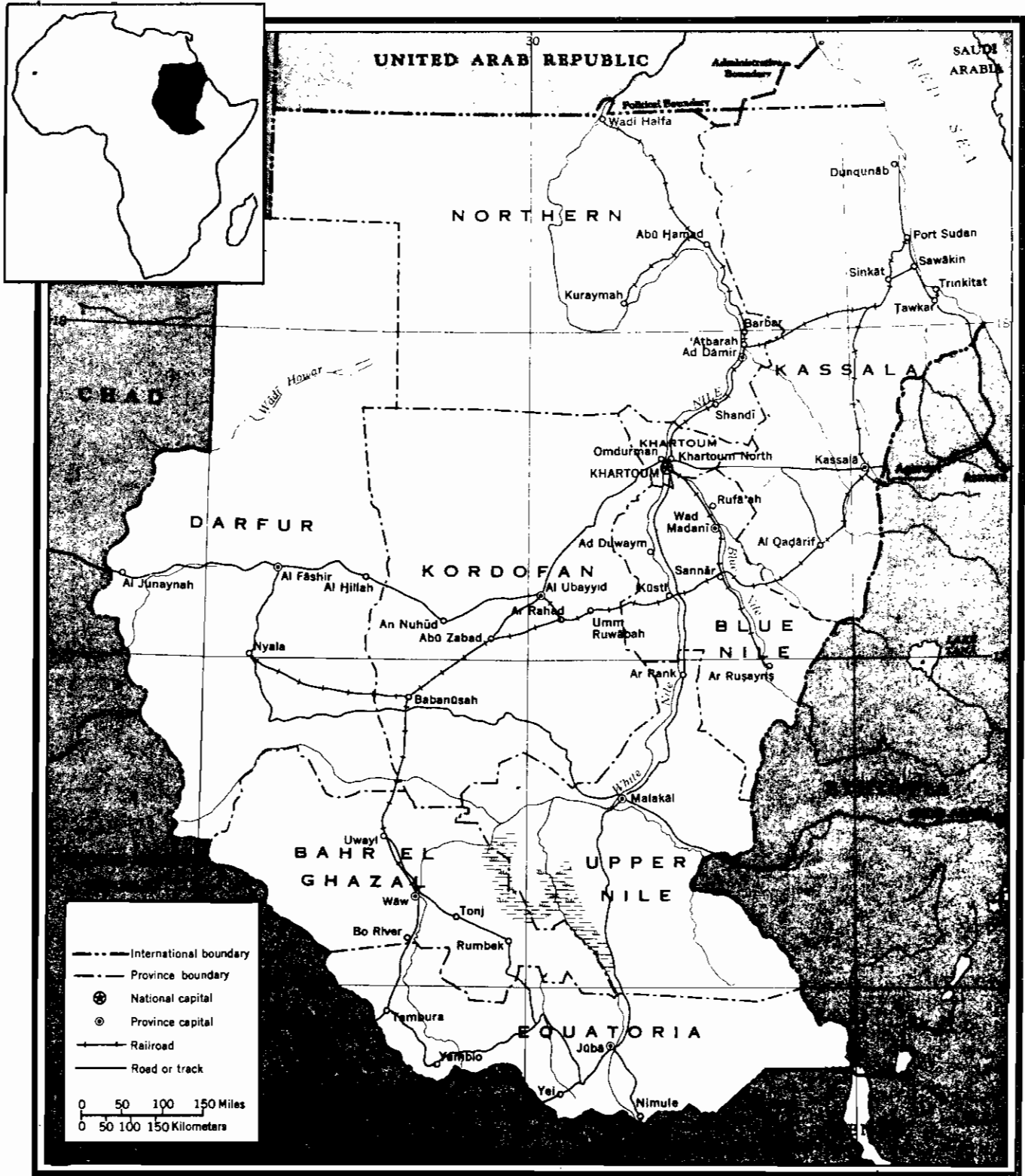
United Nations Economic Commission for Africa

African Census Programme

Addis Ababa, 15 April 1973

E73-862

# SUDAN



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Note: Early in 1973, the Kassala Province has been divided into two Provinces: The Kassala Province, capital Kassala and the Red Sea Province, capital Port Sudan.

## Introduction

1. This report summarizes the Census mapping activities for the 1973 Population Census of the Sudan.
2. At the request of the Sudanese Government and the United Nations Development Programme, I have undertaken five successive missions i.e.:

11-17 Octobre 1972

9-21 December 1972 ✓

8-25 January 1973 ✓

12 February - 6 March 1973 ✓

2-6 April 1973

3. The first advisory mission was headed by Mr. W.L. Booker, Chief, ECA Statistics Division and was composed of Mr. T. King, Inter-regional Advisor on Management Aspects of Computers, Mr. J.Z. Holzer, Regional Demographic Advisor, and myself. This mission was concerned with the immediate actions to be taken in respect of preparatory work for the census, and its recommendations are contained in the mission report. Items related to Census mapping are reproduced in the present report.

4. The four following missions were made at the request of the Sudanese authorities responsible for the Census. The reason for these missions was the delay in the recruitment of a UNFPA cartographer for the Sudan, who is now due to arrive two months after the census, i.e. end of May.

5. The work involved during these four missions was the supervision and preparation of the compilation of all the cartographic material required for the census. This report gives an account of the whole of the work accomplished during the four missions collectively, rather than for each individual mission.

### I. Situation of Census cartography at the time of the first ECA mission

6. The Census Office at that time (17 October 1972) consisted of only about 20 people, including senior staff dealing with cartography, demography and the preparation of field materials. A field organizer was expected to join shortly and it was stated that the office could be expanded quickly by drawing staff from other departments. Its financing and accounting arrangements are separate from those of the Department of Statistics.

7. The Census field organization would be based on the existing administrative structure and the intention was to divide the country in the following way for enumeration purposes:

- Provinces 9
- Census Regions (municipal and rural Councils, with sub-divisions of 10 of the larger councils) 94

- Enumeration areas (based on the former Omodias)	950
- Enumeration sectors	3,500
- Enumeration zones	22,500

8. Locality listing had already been completed for the six northern provinces by regional staff of the Department of Statistics, and a considerable amount of additional supplementary information had been gathered, including data on the whereabouts of rural localities. Work had also begun on the demarcation of urban enumeration zones and it was likely that 11 large and 120 small towns would need special treatment.

9. No work had as yet been undertaken in the three southern provinces.

10. For the rural areas, instructions were given to list localities in geographical sequence, but no specific request was made for their grouping in a manner suitable for the establishment of enumeration zones. Also, most of the material was compiled from council records; the Census officials believe it to be less than adequate. Some improvements were being made by comparison with other records available in Khartoum.

11. The established sub-committee on mapping requested that the following base maps be prepared by the Sudan Survey Department:

- (a) Base map of the Sudan at scale 1:1,000,000;
- (b) Base map of the Sudan showing the boundaries of the local councils at scale 1:1,000,000;
- (c) For each province, one map at scale 1:250,000 (or 1:500,000) showing the rural councils;
- (d) Up-to-date maps for each of the big towns (11) at scale 1:2,500;
- (e) Up-to-date maps for each of the small towns (120) at scale 1:2,500.

Items 4 and 5 were requested both as wall maps and as separate sheets.

12. The status of implementation is as follows:

Items 1 and 2 had already been received; item 3 had been partially received, i.e. the coverage of the six northern provinces only; item 4: 7 wall maps had been received and the remaining 4 were expected by the end of October, none of the requested sheets had been received, and they were all expected by December 1; item 5: 5 wall maps had been received and the remaining 115 were expected by November 1, none of the map sheets had been received and the date of delivery was not yet fixed.

13. If the requested maps were delivered without delay, it appeared that the basic cartographic requirements for the preparation of the enumeration zone maps, in urban areas would be met adequately.

14. In rural areas, the requested maps at scale 1:250.000 could be used for showing the approximate locations of enumeration areas, enumeration sectors and enumeration zones. It had to be borne in mind that, at scale 1:250.000 mapping, an average enumeration zone of some  $111 \text{ km}^2$  is represented on the map by an area of some  $16 \text{ cm}^2$  only, and that therefore the plotting of the localities alone (natural features excluded), would be difficult within such a small area.

15. With only five months to go until the Census enumeration date, the task facing the Census Office regarding its cartographical needs was considerable and the following mapping was required urgently:

- (a) To establish a basis for controlling the locality listing and mapping operation, the Census enumeration itself and, later, the data processing, it is first necessary to prepare a detailed list of provinces, regions, and enumeration areas, showing for the number of enumeration sectors and zones in each area. A comprehensive geographical code can then be devised for the identification of all area units within the field organization;
- (b) Urban mapping: the tracing of towns (131) should be started as soon as possible and copies (ozalid prints) be made and Enumeration zones delineated. Priority should be given to the 11 big towns and then to the largest of the 120 small towns. If enough copies of the town plans can be obtained and if the size of sheets does not call for too much glueing, this tracing could be avoided.
- (c) Rural mapping:
  - (i) On the maps at scale 1:1.000.000, demarcation of the census regions (94) has already been completed. Enumeration areas and enumeration sectors should be started;
  - (ii) On the map series at scale 1:250.000, the same procedure should be followed as in (i) above, but in addition, the approximate location of the enumeration zones should be plotted;
  - (iii) The tracing of the individual enumeration area maps (950) should be started. These maps should be drawn preferably at a scale around 1:100.000 so as to enable a more precise delineation of the enumeration sectors and zones. Copies of the map covering the relevant area should be given to each census supervisor;

For a good number of enumeration areas, planimetric base maps at scale 1:100.000, or even in some cases at larger scales, are available from the Sudan Survey Department. Ozalid copies of the planimetric plate should be requested for all enumeration areas falling within densely populated areas. If scales larger than 1:250.000 are not available for a required area, enlargements (photographic or manual) should be made to the appropriate scale;

- (iv) Whenever possible, these enlargements should be given to regional statistical personnel in an attempt to obtain sketch maps of the enumeration sectors and zones showing at least the position of the localities. The addition of important natural features will be advantageous. This arrangement would involve the use of the locality list for each Enumeration zone to show the detailed content of the zone.

16. In order to start the processing and the compilation of the basic material already collected and to come, and to meet the minimum cartographic requirements needed for the census, the following recommendations are made:

- (a) As a matter of priority, an expert in census cartography should be recruited without delay by the United Nations and his arrival in Khartoum scheduled for November 15.
- (b) A Census Cartographic Unit should be established without delay, preferably within the Census Office itself. This Unit should be composed of a statistician-geographer (Mr. Abdalla Osman), one draftsman (Mr. Mohamed El Said), several senior draftsmen (to be drawn from the Sudan Survey Department) and one Census cartographer (expert to be provided by the United Nations). This also entails the actual allocation of a suitable office for compilation and drafting, as well as storage facilities for printed maps and original drawings. The question of borrowing senior experienced draftsmen for a period of four months from the Sudan Survey Department has been discussed with Mr. M.A. Rahman, (Chief Survey Officer), who has promised full cooperation within the limits of departmental resources.
- (c) In order to ensure the adequate and speedy production of the enumeration area maps, it is essential that the use of an ozalid copy machine be secured, together with ample supply of ozalid paper.
- (d) A request for the supply from the Sudan Survey Department of prints of the planimetric sheets at scale 1:100 000 should be made as soon as possible.
- (e) Special emphasis should be placed at this stage on obtaining the basic maps and locality listing in the three southern provinces.

17. The cartographic requirement for the dissemination of the Census results was not treated at this early stage.

## II. Implementation of ECA's mission recommendations

18. The cartographic component of the 1973 Sudan Census was designed to provide the necessary geographic frame to insure suitable area divisions for the collection of the data and to avoid overlapping or omissions. It also plays a major role in the delineation of enumeration zones and consequently in the planning of the number of field staff required in any specific area.

19. For the detailed study of the Census cartographic requirements, a sub-committee on mapping was formed within the Population Census Technical Committee, and basic guidelines and needs were established.

20. A Census Cartographic Unit was established within the Census Office in Khartoum. This unit, headed by Mr. Abdalla Osman, is composed of a team of eleven draftsmen and aerial photo interpreters, as well as clerical staff.

21. For Census administrative purposes (see Annex III, general census map), the Democratic Republic of the Sudan was divided into 105 census regions, following the existing provincial and council boundaries. In some cases however, councils were subdivided into more than one census region. At the time of census preparations (November-December 1972), the Sudan was divided into nine administrative provinces 1/ comprising in all 84 councils 2/, of which 67 were rural and 17 urban. (See Annexes I and II).

22. One of the first tasks undertaken by the Census Cartographic Unit was the establishment of a list of all localities within each council, together with the number of households.

23. From these lists, within each census region, localities were grouped into enumeration zones, each containing an average of 150 households; further grouping into enumeration sectors, and then into Census areas was carried out. For the country as a whole this led to the following administrative breakdown:

Provinces	9
Census regions	150
Census areas	950
Enumeration sectors	3,500
Enumeration zones	22,500

24. The location of each enumeration zone was plotted on maps of local councils, together with the number of households. This operation was carried out by the provincial Census headquarters. The detailed mapping of each enumeration zone in the rural areas was not carried out. This deficiency should not prove to be unduly serious, as enumeration in rural areas will be conducted under the supervision of local authorities.

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1/ In January 1973, the Province of Kasala was officially divided into two provinces, the Red Sea and the Kasala Provinces. As soon as the exact delineation of the boundaries is known, the census data will be grouped accordingly for the final publication.

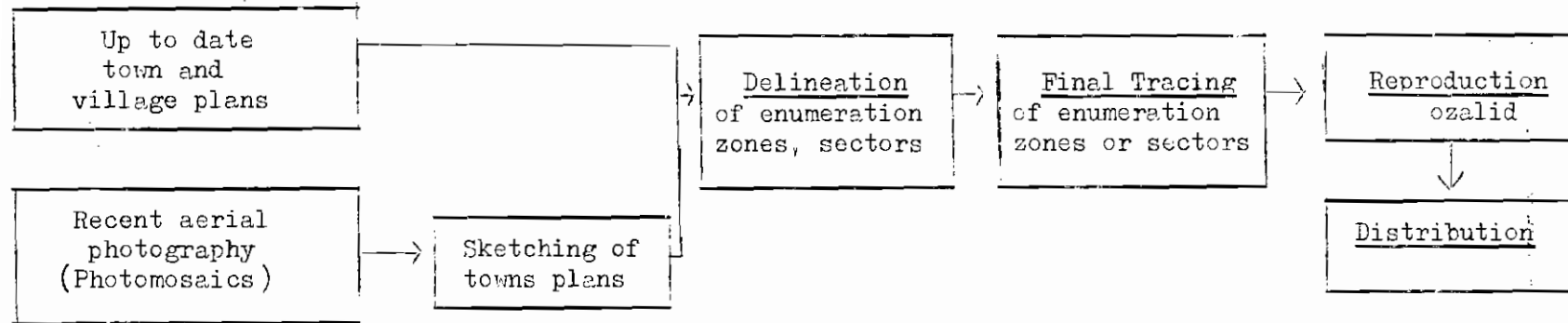
2/ 10 of which are sub-divided into sub-councils.





Basic material provided  
by the Sudan Survey Dpt.

Work performed by the Census Cartographic Unit



### III. Recommendations for post-census activities of the Census Cartographic Unit

28. The activities of the Census Cartographic Unit (CCU) should be continued after the census enumeration and all efforts should be made to carry out the following main tasks:

- (a) The finalization of all the census maps;
- (b) The preparation of census maps and graphics for the census report;
- (c) The maintenance of the Geographical frame.

29. The implementation of this programme will require a limited number of staff (Mr. Osman and two draughtsmen), in addition to the UNFPA Census Cartographer, who is scheduled to arrive in May 1973 for a six month assignment. During this short period, the expert will not be able to finalize the maps and graphic illustrations, required for the publication of the census report, as the necessary data will not be available at that time. Should some of the projects, such as the census atlas be implemented, the length of the experts assignment should be extended accordingly.

#### 1. Finalization of Census maps

30. After the Census enumeration, all the maps of the urban areas which have been made by the CCU will be returned to this unit, and they will contain corrections made by the enumerators. These maps will have to be finalized accordingly.

31. The most important aspect will be the finalization of all the rural maps, prepared by each of the local census headquarters, for which no record will have reached the Khartoum Census headquarters before the end of the enumeration. It is therefore essential that these maps, showing the various rural census enumeration areas, sectors and zones be finalized and standardized. These maps will be the base on which the census data will be given.

#### 2. The preparation of Census maps and graphics for the Census Report

32. The publication of data in maps and other graphic forms is an advantageous way to illustrate some of the most important results of the census. Maps, in particular, are invaluable in showing special characteristics of population distribution, description and analysis of internal and external migration, racial, ethnic and age composition. It is of course impossible to list all the various possibilities, and the proper selection of the best-suited type of representation, as well as the subject to be represented, can be made only when the results of the census become available.

33. Some of the most important illustrations (density of population, growth, migration etc.) could be also enlarged and printed separately in the form of a series of posters for their distribution in schools.

34. The elaboration of a census atlas could also be considered with a view to providing a graphic tool for economic and social planners. This atlas could contain base maps of each province with transparent coloured overlays, containing all the desired data and thus allowing the immediate visual analysis of the problems of transportation, electricity, water supply, school and health facilities etc., in relation to population distribution.

3. Maintenance of the Geographical frame

35. After the considerable effort involved in the preparation of the population census, it is essential to ensure that the material relating to the enumerator zone frame be placed on permanent record. It is suggested that a nucleus of the present CCU be permanently established either within the Census Office, if it is to be continued, or within the Statistical Office.

36. The first task will be to adopt an efficient filing system for maps, locality listing and other material related to the geographical frame. This should include the maps used by the census enumerators and any other information arising from the census field operation likely to be useful in the future. It might be desirable to place all the data on punched cards.

37. The maintenance of an enumerator zone frame will be fully justified in terms of cost saving in future censuses alone. In addition, it has to be borne in mind that a satisfactory geographical frame should be available at all times if effective statistical surveys are to be developed.

## 1973 SUDAN POPULATION CENSUS

## TOWNS + URBAN MAPPING

1 BAHR EL GHAZAL PROVINCE			
	ORIGIN	SCALE	DATE
AWEIL	*	1#5000	1963
RUMBEIK	*	1#10000	1962
TONJ	*	1#5000	1962
WAU	*	1#12500	1972
YEROL	*	1#10000	1962

2 BLUF NILE PROVINCE			
	ORIGIN	SCALE	DATE
ED DUEIM TOWN	**	1#2500	1972
KOSTI TOWN	**	1#2500	1972
RUFAYA TOWN	**	1#2500	1972
WAD MEDANI TOWN	**	1#5000	1972
ARU HIGAR	*	1#10000	1962
ARU NIAMA	**	1#2500	1972
DINDER(GUEISI)	**	1#5000	1965
EL DAMAZIN	*	1#6000	1968
EL GETEINA	**	1#5000	1972
EL GEZIRA ABA	*	1#10000	1971
EL HASAHEISA	**	1#2500	1972
EL HOSH	**	1#2000	1972
EL HUDA	**	1#2000	1972
EL KAMLIN	**	1#2500	1972
EL KAWA	**	1#2500	1972
EL MANAGIL	*	1#5000	1965
EL MEDINA ARAB	**	1#2000	1972
EL MESEAMIYA	**	1#2500	1972
ER ROSFIRES	**	1#2500	1972
ES SUKI	*	1#10000	1971
GALGANI	*	1#10000	1963
KARKUG	*	1#10000	1963
KURMUK	**	1#10000	1972
MAIRNO	**	1#5000	1972
RABAK	**	1#5000	1972
SENNAR	**	1#2500	1972
SINGA	**	1#10000	1972
TENDEFTI	**	1#2500	1972
UMM SHOKA	*	1#5000	1962
WAD EN NEIL	*	1#1000	1964

3 DARFUR PROVINCE			
	ORIGIN	SCALE	DATE
ED DAFIN	**	2#2500	1972
EL FASHER	**	1#2500	1972
GENEINA	*	1#13000	1969
KUTUM	*	1#11000	1968
NYALA	*	1#10000	1972
UMM KEDDADA	*	1#5000	1962
ZALINGI	*	1#5000	1962

4 EQUATORIA PROVINCE			
	ORIGIN	SCALE	DATE
JURA TOWN	*	1#10000	1961
KATIRF	*	1#10000	1959
MARIDI	*	1#10000	1963
TORIT	*	1#10000	1964
YAMBIO	*	1#5000	1963
YEI	*	1#5000	1963

## 5 KASSALA PROVINCE

	ORIGIN	SCALE	DATE
GFDAREF TOWN	**	1#2500	1972
KASSALA TOWN	**	1#5000	1972
AROMA	**	1#2500	1972
DOKA	*	1#10000	1965
EL HAWATA	*	1#10000	1966
KHASHM EL GIRBA	**	1#2500	1972
NEW HALFA	**	1#2500	1972
QALAA EM NAHAL	*	1#10000	1966
SHOWAK	*	1#10000	1966
WAGER	*	1#10000	1967

## 6 KHARTOUM PROVINCE

	ORIGIN	SCALE	DATE
OMDURMAN TOWN	**	1#5000	1972
KHARTOUM NORTH TOWN	**	1#5000	1972
KHARTOUM TOWN	**	1#5000	1972
ABU DFLEIG	*	1#10000	1965
EILAFON	*	1#10000	1965
EL GEREIF SHARO	*	1#5000	1970
HALFAYAT FL MULUK	*	1#5000	1970

## 7 KORDOFAN PROVINCE

	ORIGIN	SCALE	DATE
EL OBEID TOWN	**	1#2500	1972
EN NAHUD TOWN	**	1#2500	1972
ABU GEREIDA	*	1#10000	1966
ABU KERSHOLA	*	1#5000	1969
ABU ZABAD	*	1#5000	1962
BARANUSA	*	1#9500	1959
BARA	*	1#5000	1962
DILLING	**	1#10000	1972
EL ABBASSIYA	*	1#5000	1962
EL FULA	*	1#9500	1959
FR RAHAD	*	1#5000	1962
KADUGLI	**	1#2500	1972
MUGLAD	*	1#5000	1962
RASHAD	*	1#10000	1966
SODORI	*	1#10000	1970
TALODI	**	1#2500	1972
UM RUWARA	**	1#5000	1972

## 8 NORTHERN PROVINCE

	ORIGIN	SCALE	DATE
ATPARA TOWN	**	2#2500	1972
BERBER TOWN	**	1#2500	1972
ED DAMER TOWN	**	1#2500	1972
APRI	*	1#6500	1957
ABU HAMED	**	1#2500	1972
ARGO	**	1#2500	1972
DFLGO	*	1#6500	1957
DONGOLA	*	1#5000	1961
ED DEBRA	*	1#10000	1961
EL RAHGA	*	1#5000	1966
EL KHANDAQ	**	1#2000	1972
KABUSHIYA	*	1#10000	1965
KARIMA	**	1#2500	1972
KERMA	*	1#10000	1961
MEROWE	**	1#2500	1972
SHENDI	**	1#2500	1972
WADI HALFA	*	1#5000	1968

9 UPPER NILE PROVINCE

	ORIGIN	SCALE	DATE
MALAKAL TOWN	*	1#10000	1963

0 RED SEA PROVINCE

	ORIGIN	SCALE	DATE
PORT SUDAN TOWN	**	1#2500	1972

GEREIT	*	1#10000	1971
SINKAT	**	1#2500	1972
SUAKIN	*	1#10000	1971
TOKAR	**	1#2500	1972

TOTAL	105	TOWN PLANS	
OF WHICH	57	FROM PHOTOMOSAICS	*
AND	48	FROM SSD TOWN PLANS	**

## 1973 SUDAN POPULATION CENSUS

## TOWNS + URBAN MAPPING

## 1 BAHR EL GHAZAL PROVINCE

	ORIGIN	SCALE	DATE
AWEIL	*	1#5000	1963
RUMBEIK	*	1#10000	1962
TONJ	*	1#5000	1962
WAU	*	1#12500	1972
YEROL	*	1#10000	1962

## 2 BLUE NILE PROVINCE

	ORIGIN	SCALE	DATE
ED DUEIM TOWN	**	1#2500	1972
KOSTI TOWN	**	1#2500	1972
RUFAYA TOWN	**	1#2500	1972
WAD MEDANI TOWN	**	1#5000	1972
ABU HIGAR	*	1#10000	1962
ABU NIAMA	**	1#2500	1972
DINDER(GUEISI)	*	1#5000	1965
EL DAMAZIN	*	1#6000	1968
EL GETEINA	**	1#5000	1972
EL GEZIRA ABA	*	1#10000	1971
EL HASAHEISA	**	1#2500	1972
EL HOSH	**	1#2000	1972
EL HUDA	**	1#2000	1972
EL KAMLIN	**	1#2500	1972
EL KAWA	**	1#2500	1972
EL MANAGIL	*	1#5000	1965
EL MEDINA ARAR	**	1#2000	1972
EL MESELEMIYA	**	1#2500	1972
ER ROSEIRES	**	1#2500	1972
ES SUKI	*	1#10000	1971
GALGANI	*	1#10000	1963
KARKUG	*	1#10000	1963
KURMUK	**	1#10000	1972
MAIRNO	**	1#5000	1972
RABAK	**	1#5000	1972
SENNAR	**	1#2500	1972
SINGA	**	1#10000	1972
TENDELT	**	1#2500	1972
UMM SHOKA	*	1#5000	1962
WAD EM NEIL	*	1#1000	1964

## 3 DARFUR PROVINCE

	ORIGIN	SCALE	DATE
ED DAEIN	**	2#2500	1972
EL FASHER	**	1#2500	1972
GENEINA	*	1#13000	1969
KUTUM	*	1#11000	1968
NYALA	*	1#10000	1972
UMM KEDDADA	*	1#5000	1962
ZALINGI	*	1#5000	1962

## 4 EQUATORIA PROVINCE

	ORIGIN	SCALE	DATE
JUBA TOWN	*	1#10000	1961
KATIRE	*	1#10000	1959
MARIDI	*	1#10000	1963
TORIT	*	1#10000	1964
YAMBIO	*	1#5000	1963
YFI	*	1#5000	1963

5 KASSALA PROVINCE		ORIGIN	SCALE	DATE
GEDAREF TOWN	**	1#2500	1972	
KASSALA TOWN	**	1#5000	1972	
AROMA	**	1#2500	1972	
DOKA	*	1#10000	1965	
EL HAWATA	*	1#10000	1966	
KHASHM EL GIRBA	**	1#2500	1972	
NEW HALFA	**	1#2500	1972	
QALAA EN NAHAL	*	1#10000	1966	
SHOWAK	*	1#10000	1966	
WAGER	*	1#10000	1967	

6 KHARTOUM PROVINCE		ORIGIN	SCALE	DATE
OMDURMAN TOWN	**	1#5000	1972	
KHARTOUM NORTH TOWN	**	1#5000	1972	
KHARTOUM TOWN	**	1#5000	1972	
ABU DELEIG	*	1#10000	1965	
EILAFON	*	1#10000	1965	
EL GEREIF SHARQ	*	1#5000	1970	
HALFAYAT EL MULUK	*	1#5000	1970	

7 KORDOFAN PROVINCE		ORIGIN	SCALE	DATE
EL OBEID TOWN	**	1#2500	1972	
EN NAHUD TOWN	**	1#2500	1972	
ABU GEBEIDA	*	1#10000	1966	
ABU KERSHOLA	*	1#5000	1969	
ABU ZAHAD	*	1#5000	1962	
BABANUSA	*	1#9500	1959	
BARA	*	1#5000	1962	
DILLING	**	1#10000	1972	
EL ABBASSIYA	*	1#5000	1962	
EL FULA	*	1#9500	1959	
ER RAHAD	*	1#5000	1962	
KADUGLI	**	1#2500	1972	
MUGLAD	*	1#5000	1962	
RASHAD	*	1#10000	1966	
SODORI	*	1#10000	1970	
TALODI	**	1#2500	1972	
UM RUWARA	**	1#5000	1972	

8 NORTHERN PROVINCE		ORIGIN	SCALE	DATE
ATBARA TOWN	**	2#2500	1972	
BERBER TOWN	**	1#2500	1972	
ED DAMER TOWN	**	1#2500	1972	
ARRI	*	1#6500	1957	
ABU HAMED	**	1#2500	1972	
ARGO	**	1#2500	1972	
DELGO	*	1#6500	1957	
DONGOLA	*	1#5000	1961	
ED DEBRA	*	1#10000	1961	
EL BAUGA	*	1#5000	1966	
EL KHANDAQ	**	1#2000	1972	
KABUSHIYA	*	1#10000	1965	
KARIMA	**	1#2500	1972	
KERMA	*	1#10000	1961	
MEROWE	**	1#2500	1972	
SHENDI	**	1#2500	1972	
WADI HALFA	*	1#5000	1968	



9 UPPER NILE PROVINCE

	ORIGIN	SCALE	DATE
MALAKAL TOWN	*	1#10000	1963

0 RED SEA PROVINCE

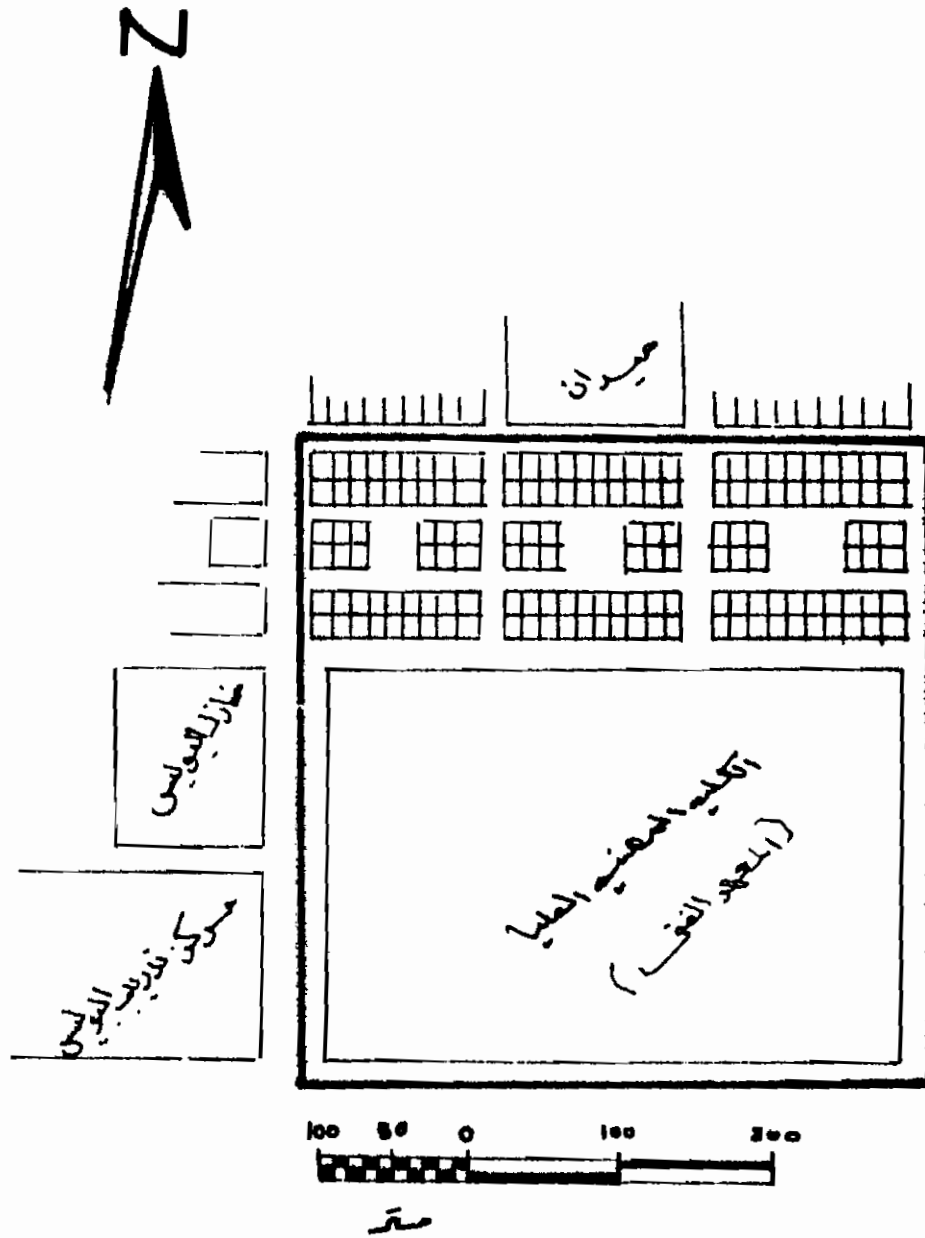
	ORIGIN	SCALE	DATE
PORT SUDAN TOWN	**	1#2500	1972

GEBEIT	*	1#10000	1971
SINKAT	**	1#2500	1972
SUAKIN	*	1#10000	1971
TOKAR	**	1#2500	1972

TOTAL	105	TOWN PLANS	
OF WHICH	57	FROM PHOTOMOSAICS	*
AND	48	FROM SSD TOWN PLANS	**

EXAMPLE OF ENUMERATORS' MAP

Khartoum town.



## ANNEX 5

INSTRUCTIONS TO THE USERS OF THE URBAN ENUMERATOR'S MAP

1. The map you have received is to be used as a tool. It will help you in the collection of the data and especially it will prevent overlapping and avoid commission and duplication of work and data. The map will help you in locating places and it will be used to define boundaries for census purposes. It will also be useful in planning your route for canvassing. It should be emphasized that whenever boundaries are plotted, these are only for statistical purpose. They do not convey any legal or administrative authority.
2. Though every efforts have been made to give you the most accurate and up to date map of your town as possible, you might find unfortunately that some buildings, roads or even a complete new extention are missing. Don't be disturbed by this and just complete the map as accurately as you can. The maps have been produced mainly from aerial photography and therefore they are as up to date as the photography was, which in certain cases is several years old. Another draw back of using aerial photography is that many buildings have not been identified by name. You are requested to write on your map the proper identification of the main buildings such as mosques, schools, hospitals, military camps, industrial areas and street names whenever applicable.
3. The first task you will have to do is to delineate the boundaries of the town, as accurately as possible. This is most important as it will establish the boundary between the rural and the urban area, and your task is to enumerate the urban area only. Once the limits of the town are established, disregard any information on your map outside of the town demarcation. It could perhaps happen that the limits of the town go beyond the map you have. In this case add the necessary piece of paper to your map and plot as accurately as possible the town boundaries together with other missing features.
4. Once the limits of the town have been delineated on your map, you will have to divide the town into enumeration zones of approximatively 150 households which represent an average of some 800 persons. One enumeration

zone will be assigned to one enumerator. The boundaries of each zone should be very clearly defined and easily recognisable on the ground by such features as roads, footpaths, streams, or railroad tracks. An exception to this rule will be the established boundaries (imaginary lines) of local administration. You will group four or five enumeration zones to form one enumeration sector and finally you will group four or five enumerations sectors into one enumeration area. You will then assign numbers to each of the enumeration zones, sectors and areas.

This is shown on the enumerator's map attached and each step is described in details below:

Step one:

Define accurately the limits of the town. These limits (which in the attached example are purely imaginary) are shown in black by the symbol ( - . . - ).

Step two:

Divide the town into enumeration zones. In the case illustrated, the town of Ms Shuki has an estimated population of 18,500 persons. This represents therefore 23 enumeration zones of 800 persons. You have to divide the town into 23 zones of approximately the same number of persons. This is shown on the map by the red dashed line ( - - - - ).

Step three:

Group enumeration zones into enumeration sectors, comprising four or five enumeration zones. This is shown on the map by the solid red line ( ----- ).

Step four:




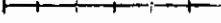

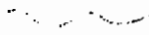
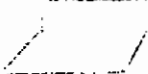
Group enumeration sectors into enumeration areas, comprising four or five enumeration sectors. This is shown on the map by the red dotted line ( .... ). In the case illustrated, only one enumeration area was necessary,

but should the town have been larger, two or more enumeration area would have been made.

5. Your map is the representation of the town on a piece of paper and therefore the town has been "reduced" to fit the size of the paper, this is the scale of the map. This scale is always printed on your map in graphic form, depicting distances by means of a line which is divided into standard length. The length is expressed in meters.

6. As your map represents a town, a certain number of symbols have been used.

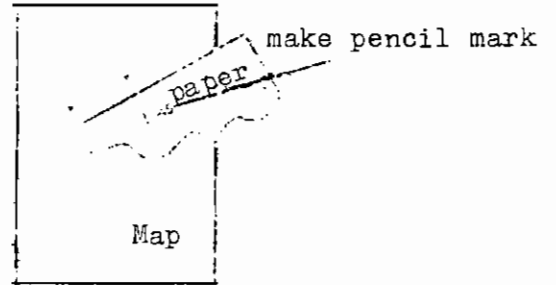
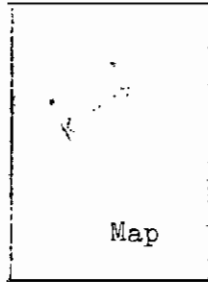
They are:

Main road, street	
important path .....	
trail .....	
railroad tracks .....	
bridge .....	
stream, river .....	
building block or limit of compound .....	

7. Your map also has a "North Arrow". This arrow indicates the direction to which the map should be oriented in order to have the map features placed as they are actually in the town. If you extend your right hand in the direction of Mecca (East) and your left hand in the direction of the setting sun, (West), you are facing North. So, to orientate your map properly, place it on your table so that the arrow points toward the North.

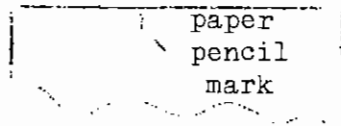
8. To find the distance between the two points on the map, place a piece of paper on the map so that the edge of the paper touches one point. Place a pencil mark on the paper opposite the other point as shown below:

Distance ?



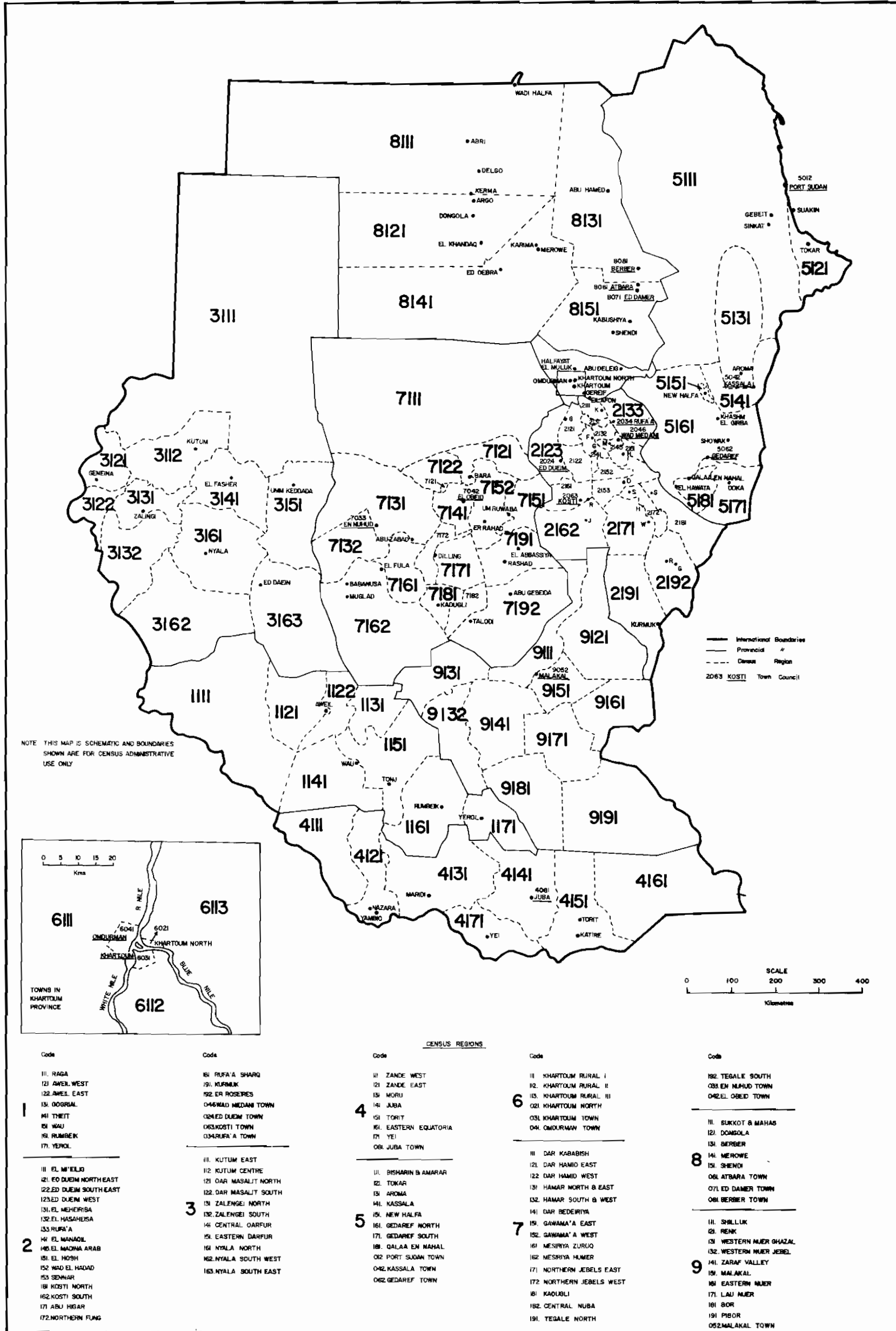
Then place the piece of paper next to the scale. The distance in this example is approximately 175 metres.

0 100 200 300 400 500 metres



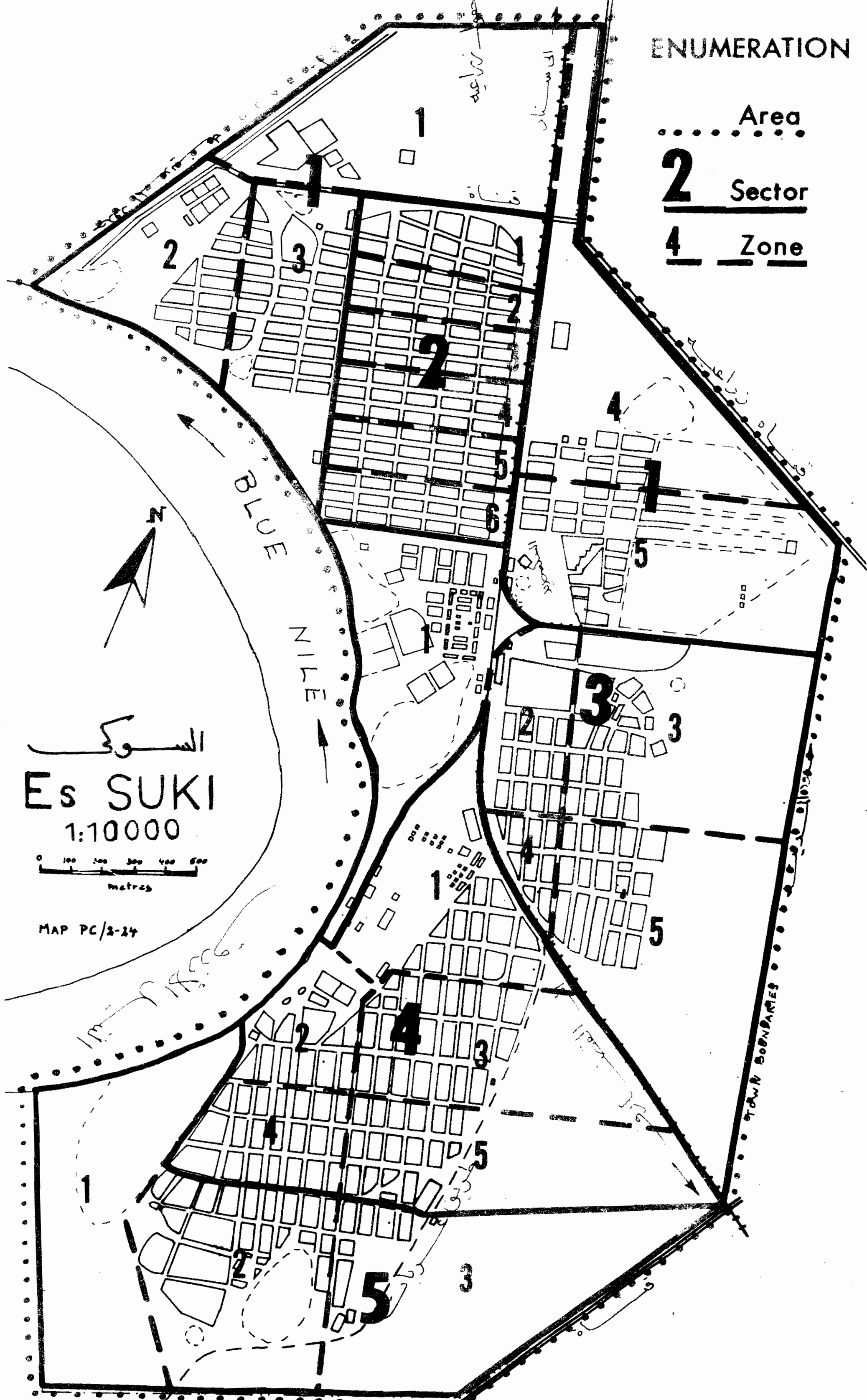
9. After the enumeration, return your map with all the additions or deletions you have made. We thank you for your kind cooperation.

# 1973 SUDAN POPULATION CENSUS CENSUS REGIONS

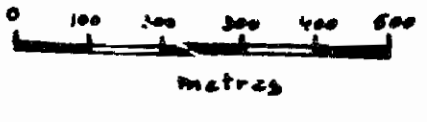


ENUMERATION

- ..... Area
- 2** Sector
- 4** Zone



السوكي  
**Es SUKI**  
 1:10000



MAP PC/3-24

TOWN BOUNDARIES