

With regard to the upland agricultural communities, their greater distance from the shoreline poses a much less problem of schistosome infection. It is desirable to minimize the exposed surface water in order to reduce habitats suitable for snail colonies. If open canals should be constructed, the flow velocity of water should be as high as 1.5 m/sec, and the sideslope of the canals be steep in order to prevent the proliferation of snails and weeds in the water. In this respect, the sprinkler irrigation method is most desirable.

(2) Control of Venomous Animals

The most dangerous accident for the fishermen and settlers around the lake is snake bites. A severe shock associated with local tissue damage and haemorrhage will occur and often result in death. Every settlement should be supplied with antitoxine, as its application is possible without a medical specialist as long as the antitoxine could be kept refrigerated. Scorpion stings are not so dangerous, while the immediate antitoxine treatment is required in the case of the snake bite.

(3) Prevention of Malaria

Human settlement around the lake may lead to the breeding of anophelin mosquito in the future. There is always a possibility that Anopheles gambia from the breeding place in the Sudan will invade the High Dam Lake Area. The control of Anopheles gambia was appended to the agreement of Health and Medical Cooperation between the Egypt and Sudan Governments, and a zone of 200 km length to the south of the lake must be kept free from the vector. However, the possibility of the mosquitos being carried by passengers and cargoes transported by boats cannot be neglected. Pyrethrum space spraying on passenger and cargo boats should be done at every port of call between the Sudan and Aswan. All north-bound ships from the Sudan should make a stop at Abu Simbel for this operation. If An.gambia does infiltrate in the lake area, immediate application of larvicides, such as Abate and Paris Green, should be used at the site of breeding.

4.7.2 General Requirements

A microwave communication network between the fishermen's camps and villages and the Fishery Management Center is essential for emergency cases during the early stage of development. A helicopter or speed boat may be also necessary to quickly reach the place where a patient is in need of first-aid treatment. Furthermore, mobile clinic boats, which provide regular medical services, will be necessary. At least three boats will be needed to cover the vast area from Aswan to Abu Simbel. In addition, two speed boats for transporting patients to a hospital should be provided.

As medical care facilities for the population in the Project Area, one rural health unit should be provided for villages with a population of 3,000 or over, one Rural Health Unit should be staffed with at least one doctor and one nurse, preferably one midwife and two to three

technicians, including an x-ray specialist. At Kalabsha and Abu Simbel District Development Centers, central hospitals with more than 100 beds will be required. Each of the three Sub-district Development Centers should also have a smaller hospital. In addition, each Development Center should have at least one health center. The rural health units should provide services for family planning and mother and child care, etc. in addition to the treatment of diseases, and their premises can be combined with community facilities for educational and cultural activities, as usually is the case in rural communities of Egypt.

4.7.3 Required Investment

To prevent the imminent outbreak of schistosomiasis and provide the necessary medical care for the settlers around High Dam Lake, the following investment will be required. The costs of rural health units and urban health centers are included in the community development costs in Section 4.8 of this chapter.

Project	Number	Total Cost (£E thousand)
1. Round Clinic Boats	3	420
2. Emergency Speed Boats	2	140
3. Microwave Communication System	10	140
4. Simple Medical Care Facilities in Selected Fishermen's Camps	100	700
5. District Center Hospitals with more than 100 Beds	2	14,000
6. Sub-district Center Hospitals with 50 Beds	3	10,500
7. Urban Health Centers	6	4,200
8. Rural Health Units	40	14,000
Total		44,100

4.8 URBAN AND COMMUNITY DEVELOPMENT

4.8.1 Bases for Planning

(1) Distribution of Population and Employment

Taking into account the resource bases of productive sectors and consequent development requirements for other sectors, it is estimated in Section 3.2 of Chapter III that the total population and employment of the Project Area would reach 700,400 and 284,300 respectively in the year 2000, of which a little over four-fifths would be distributed in urban areas. The six potential development areas as identified in Section 3.3 of Chapter III are assumed to offer the estimated employment in proportion to their respective sectoral development potentials and/or requirements and to absorb population in proportion to the respective size of employment. Given the assumptions and projections stated in Section 3.2 of Chapter III concerning the urban and rural composition of employment and population and the urban and rural structures of employment by sector, the employment and population can be broken down to the respective development areas and centers in the manners as follows:

- (i) The rural employment and population are distributed in the six development areas basically in proportion to the respectively available arable land areas, with due modifications in accordance with other local resource potentials;
- (ii) The population of Aswan City would increase to 500,000, considering its primacy not only vis-a-vis the Project Area but also the rest of Aswan Governorate and possibly Region 8; and
- (iii) The urban population other than of Aswan City is distributed in the remaining five development areas in proportion to the respective sizes of rural population.

With regard to upland agriculture, the average farm size per household is assumed to be 10 feddans. Supposing the crude labor participation rate of about 34%, the average family of 5 persons has 1.7 workers in conceptual terms. Therefore, the upland agriculture portion of the estimated agricultural employment can be distributed to the respective development areas at the approximate ratio of 6 feddans of upland arable land per worker. Concerning Kurkur where the large-scale commercial agriculture is being planned, 50 feddans per worker is assumed, with approximately 40% of the employment residing in the urban center of the Aswan development area.

The residual number of the agricultural employment pertains to foreshore agriculture. It is assumed that this type of agriculture is practiced by those families which engage in lake fisheries at the average farm size of 4 - 5 feddans per household, although all the fishing families do not engage in agriculture. In purely conceptual terms, a half of the prospective fishing families are assumed to practice foreshore agriculture with one out of 1.7 workers per household in charge of

agriculture, i.e., at the approximate ratio of 4 feddans per worker. The remaining half of the families are assumed to engage in fisheries alone. The breakdown of the employment in agriculture-cum-fisheries and in fisheries alone to the development areas is done in proportion to the respective size of available foreshore agricultural land. The wholly fishing families may have to be distributed in accordance with the locational distribution of fishery resource endowments in the lake, but more information on fisheries is necessary to do this. At any rate, it is thought more appropriate to suppose the proximate settlement of fishermen and farming fishermen in terms of viability and stability of their communal subsistence.

With regard to the other sectors, the rural employment is distributed largely in accordance with the structural requirements as projected in the economic framework. Due adjustment is made, however, to the distribution of the mining/manufacturing employment on the basis of the local mineral resource endowments.

The results of the breakdowns of employment and population are shown in Tables 4-8-1 through 4-8-3.

(2) Hierarchy and Functions of Development Centers

In the preceding paragraphs, each development area other than the Aswan area is supposed to have its urban center with a population distributed basically in proportion to the size of population absorbable by its rural hinterland. These urban centers, or development centers, are to provide the kinds of goods and services which are generally not readily available in the rural areas. It must be noted that the urban functions of these centers vary depending on the scale of development potentials in the areas where they are located, geographical characteristics of their spheres of influence, their locational relationships with one another, etc. As implicit in the way the population has been distributed, the size of the population in the respective development areas and their centers serves as a benchmark to classify urban and rural communities in a hierarchical order and to plan the scale and diversity of facilities to be provided accordingly.

As shown in Figure 4-8-1, Aswan City is at the apex of the hierarchy to provide center functions for the entire Project Area. This is obvious from the already existing agglomerations of population and urban functions. The flows of commodities and people to and from the Project Area are expected to converge in the City in the future and the provisions of various productive and service facilities related to such flows would be necessary. The City is consequently designated as the regional development center.

Below Aswan City, the development centers can be tentatively arranged as shown in Figure 4-8-1. The Kalabsha development center is expected to have a population of 36,000, the distant second to Aswan City, and to service the rural population of over 50,000. The Abu Simbel development center ranks in the third place with its population of nearly 20,000. Its importance as an urban center is assumed to be on a par

Table 4-8-1 Distribution of Employment in Rural Areas in the Year 2000

	Total ^{1/}	(%)	Aswan	Kalabsha	El Allaqi	Tomas/ Affia	Tushka	Abu Simbel	Others
Agriculture									
Upland	18,300		300	6,100	2,600	1,600	2,400	4,400	900
Foreshore	3,700	(75.2%)	190	2,150	510	-	370	480	-
Fishery	9,000		450	5,230	1,240	-	900	1,180	-
Mining/Manu- facturing	4,000	(9.7%)	100	1,800	600	180	460	860	-
Electricity	-	-	-	-	-	-	-	-	-
Construction	1,000	(2.4%)	20	460	140	40	120	220	-
Services	5,300	(12.8%)	130	2,430	750	240	610	1,140	-
Total	41,300	(100.0%)	1,190	18,170	5,840	2,060	4,860	8,280	900

Note: 1/ See Table 3-2-7.

Table 4-8-2 Distribution of Employment in Urban Centers in the Year 2000

	Total ^{1/}	(%)	Aswan	Kalabsha	El Allaqi	Tomas/ Affia	Tushka	Abu Simbel	Others
Agriculture	500		200	150	20	20	-	40	-
Fishery	1,000	(0.7%)	700	-	-	-	-	300	-
Mining/Manu- facturing	51,000	(24.6%)	44,120	3,180	1,020	360	870	1,450	-
Electricity	2,500	(1.2%)	2,150	160	50	20	40	80	-
Construction	23,000	(11.2%)	19,830	1,440	460	160	380	730	-
Services	129,000	(62.3%)	111,400	8,030	2,580	880	2,180	3,930	-
Total	207,000	(100.0%)	178,400	12,960	4,160	1,470	3,470	6,540	-

Note: ^{1/} See Table 3-2-7.

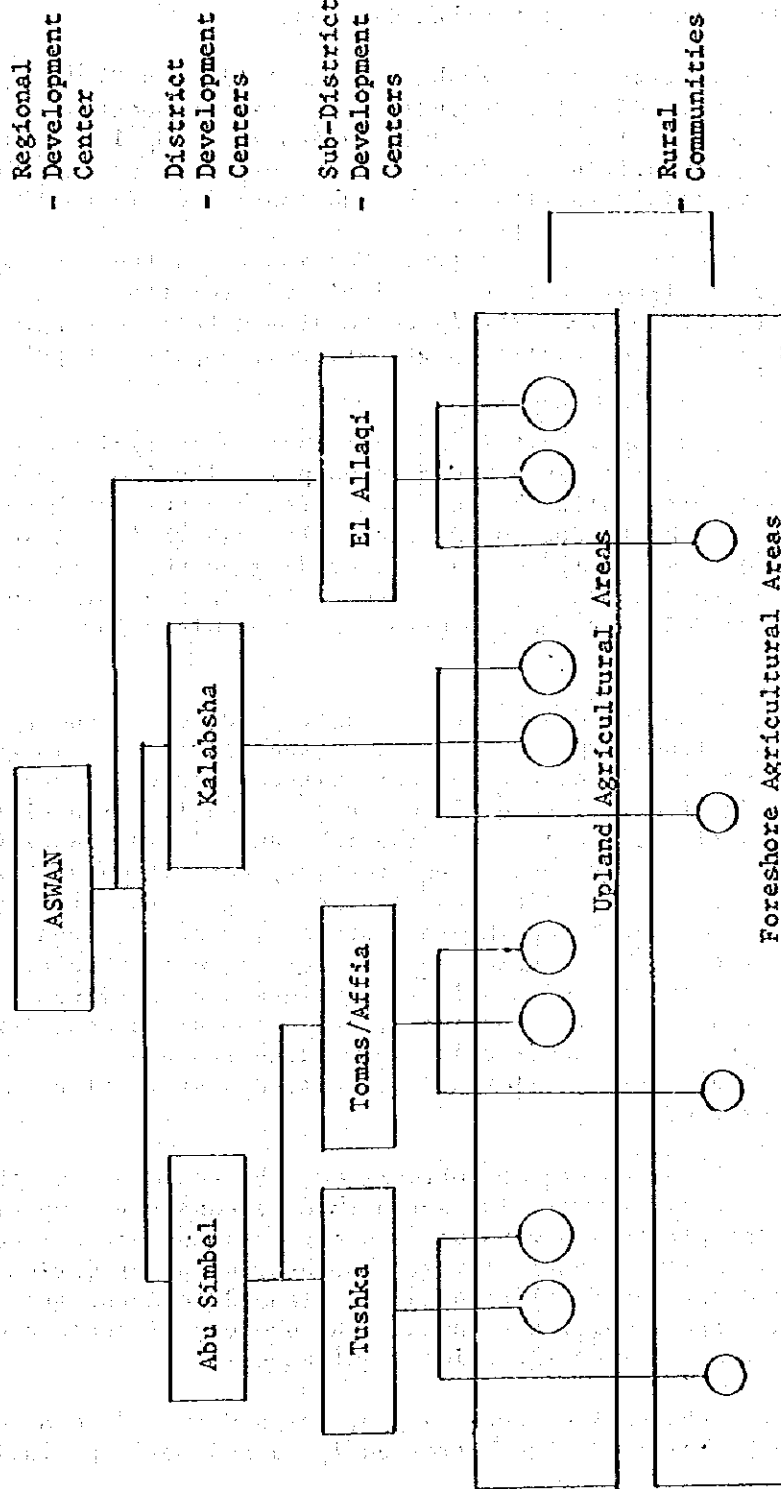
Table 4-8-3 Distribution of Employment and Population in Development Areas and Centers (2000)

	Total ^{1/}	Aswan	Kalabsha	El Allaqi	Tomas/ Affia	Tushka	Abu Simbel	Others
<u>Employment</u> ^{2/}								
Development Area	248,300	179,590	31,130	10,000	3,530	8,330	14,830	900
Urban Center	207,000	178,400	12,960	4,160	1,470	3,470	6,540	-
Rural Area	41,300	1,190	18,170	5,840	2,060	4,860	8,280	900
<u>Population</u>								
Development Area	700,400	503,470	89,250	28,660	10,120	23,860	42,420	2,620
Urban Center	580,100	500,000	36,320	11,660	4,120	9,700	18,300	-
Rural Area	120,300	3,470	52,930	17,000	6,000	14,160	24,120	2,620

Notes: 1/ See Tables 3-2-7 and 3-2-9 of Chapter III.

2/ Crude labor participation rates are assumed to be 35.68% for urban centers and 34.33% for rural areas.

Figure 4-8-1 Hierarchy of Urban Centers and Rural Communities



with the Kalabsha center, however, in view of its attraction of international tourists, its gateway status vis-a-vis the Sudan and the contiguity of its sphere of influence to the Tushka and Tomas/Affia areas to its north. The Kalabsha and Abu Simbel centers are designated as district development centers each servicing a population of approximately 50,000 outside their urban domains.

The three remaining centers in the Tushka, Tomas/Affia and El Allaqi areas are classed as sub-district centers, with their respective spheres of influence covering their immediate and less populated rural hinterlands. However, their urban functions are expected to vary in scale and diversity, mainly in view of the substantial differences in the size of population and the different degree of geographical isolation from other development centers. For instance, the development center of the El Allaqi area is more isolated from the other centers than the Tushka and Tomas/Affia centers, and therefore need be more self-sufficient in the provisions of services, especially public services.

With regard to the rural areas, it is assumed that their minimum population size be approximately 2,000 persons primarily from the viewpoint of providing basic public services and infrastructure such as education, public health, feeder roads, etc., although their settlement patterns may not be necessarily nucleated depending on the local terrains. Under certain circumstances, more or less permanent outposts will have to be provided near the shorefront as camp sites for fishermen.

Table 4-8-4 indicates selected examples of major functions to be performed or provided at the respective levels of the hierarchy. In the sphere of productive activities such as agriculture, fisheries and mining, direct production will take place close to the location of the resource endowments (i.e., arable land, the lake and mineral deposits), mostly in rural areas. But secondary and tertiary activities such as collection and shipping, processing and manufacturing of the primary products will be better performed in urban centers, where one can normally expect the economy of scale, better sectoral and subsectoral linkage effects, availability of specialized maintenance services, accessibility to mass transportation means, etc. In this sense, Aswan City will be the foremost locus of relatively large-scale and specialized manufacturing industries and associated distribution and other service industries.

In addition to the income earning opportunities, the residents of the communities must be provided with infrastructure necessary to support their productive activities and with various services and conveniences necessary for their daily domestic lives. The provisions of various infrastructural and service facilities can be planned in accordance with the hierarchy of communities to attain the economy of scale and thereby to reduce the total construction requirements.

In surface water transportation, for example, Aswan City and to a lesser extent Abu Simbel must have better-equipped and more specialized

Table 4-8-4 Major Functions of Development Centers and Rural Communities

	Agriculture	Fishery	Mining and Manufacturing	Tourism and Recreation	Transportation, Communication and Power	Environmental Health and Medical Services	Education and Administration
	<ul style="list-style-type: none"> - Collection and shipping of agricultural products - Regional headquarters of agricultural cooperatives - Main distribution center for fertilizer and agricultural pesticide 	<ul style="list-style-type: none"> - Regional fishery base (collection, storage and shipping) - Supply of fishing boats and gears - Lake fishery management and applied research - Headquarters of coops. 	<ul style="list-style-type: none"> - Manufacture of consumer goods for regional market - Manufacture of fishery- and agriculture-related industries - Manufacture of secondary construction materials - Large-scale repair workshops 	<ul style="list-style-type: none"> - Inter-national resort facilities 	<ul style="list-style-type: none"> - International port - Fishing port - National trunk roads - Inter-regional bus services - Railway - Main distribution center - Wholesale market - Telegraph and Telephone 	<ul style="list-style-type: none"> - General Hospital - Headquarters of mobile medical units 	<ul style="list-style-type: none"> - Government office - HUDA Headquarters - University - Police headquarters
Regional Development Center	<ul style="list-style-type: none"> - District of sub-district headquarters of agricultural cooperatives - Quarantine and grading of agricultural products - Intermediate distribution of agricultural inputs 	<ul style="list-style-type: none"> - Fishery surveillance and management units - Training services for fishermen - Repairs of fishing boats 	<ul style="list-style-type: none"> - Processing of agricultural products - Medium-scale repair workshops 	<ul style="list-style-type: none"> - International tourism - Rurban Culture Center - Parks and recreation facilities 	<ul style="list-style-type: none"> - Domestic airports - Feeder ports - Local market facilities - Post and telegraph offices - Petroleum storage tanks - Local distribution centers - Intra-regional bus terminals 	<ul style="list-style-type: none"> - Central hospitals - Health centers - Schistosomiasis treatment units - Urban water supply and sewage system - Town halls 	<ul style="list-style-type: none"> - Secondary schools - Police stations - Branches of HUDA and governorate offices - Town halls
District and Sub-district Development Centers	<ul style="list-style-type: none"> - Upland and foreshore irrigated agriculture - Agricultural coops. (collection of produce and distribution of inputs) - Experimental station 	<ul style="list-style-type: none"> - Cooperatives 	<ul style="list-style-type: none"> - Resource-based industries (esp. mining) - Small-scale repair workshops 	<ul style="list-style-type: none"> - Local recreation facilities - Playgrounds for children 	<ul style="list-style-type: none"> - Quays - Rural feeder roads - Gasoline stations - Mail boxes - Public telephone booths 	<ul style="list-style-type: none"> - Rural health units - Potable ground water supply systems 	<ul style="list-style-type: none"> - Primary and preparatory schools - Fire-fighting units - Police posts - Community centers
Rural Communities							
Camps		<ul style="list-style-type: none"> - Fishing camps - Temporary lodgings - Primary processing (salting and drying) 					

port facilities, while district or sub-district centers with access to the shorefront will be provided with feeder ports and foreshore rural communities with simple quays. The access to aviation and overland transportation will be also facilitated in accordance with the degree of agglomerations of population and productive and service activities.

In the sphere of public services such as education, public health, postage services, law and order and other administrative services, varying referral systems will have to be established in accordance with the hierarchy of communities. For example, primary and preparatory schools must be established at the level of rural communities to be accessible daily by small children. While the university education can be provided only in the regional center, general and vocational secondary schools must be established at the district and sub-district centers to give better access to rural youth. Likewise, rural communities must be given easy access to rural health units for treatment of relatively simple ailments, guidance on family planning, child and maternity care, etc., while urban centers have central, general and/or specialized hospitals which treat difficult medical cases of fewer occurrences in addition to health centers.

4.8.2 Community Development Planning

In the following paragraphs, the rough physical orientation of the community development pattern is suggested for each development area, based on the distribution of local resource potentials and the area's overall standing relative to the other development areas. In relation to the Aswan development area where Aswan City is expected to have the overwhelmingly dominant presence, somewhat detailed discussion is deemed necessary on the possible land use inside the City.

(1) Aswan Development Area

(a) Present Conditions and General Outlook

The Aswan development area at present consists of Aswan City and some scattered build-ups near the High Dam (Figure 4-8-2), with a total population of approximately 190,000 in 1979. The origin of Aswan is very old as it is known to have been the locus of the farthest outpost alternately of the ancient kingdoms of Lower Egypt and the indigenous kingdoms in Southern Nubia. Pink granite produced in the area traveled north in ancient times to be used for the ancient monuments in Luxor and the Nilometer was installed to measure the level of annual flooding. But the present agglomerations of Aswan City and its vicinity owe to the position as the southernmost midway connection between Egypt and Nubia along the Nile and to a much greater extent to the construction of Old and High Dams.

As seen from Figure 4-8-3, the build-up of the town area was closely along the east bank of the Nile in 1907 when the Old Dam was completed nearly to the present form. The town area continued to expand along the east bank mostly toward north up to 1949. In the 1950s and afterwards, the direction of expansion was mostly toward east, southeast and

Figure 4-8-2 Aswan Development Area

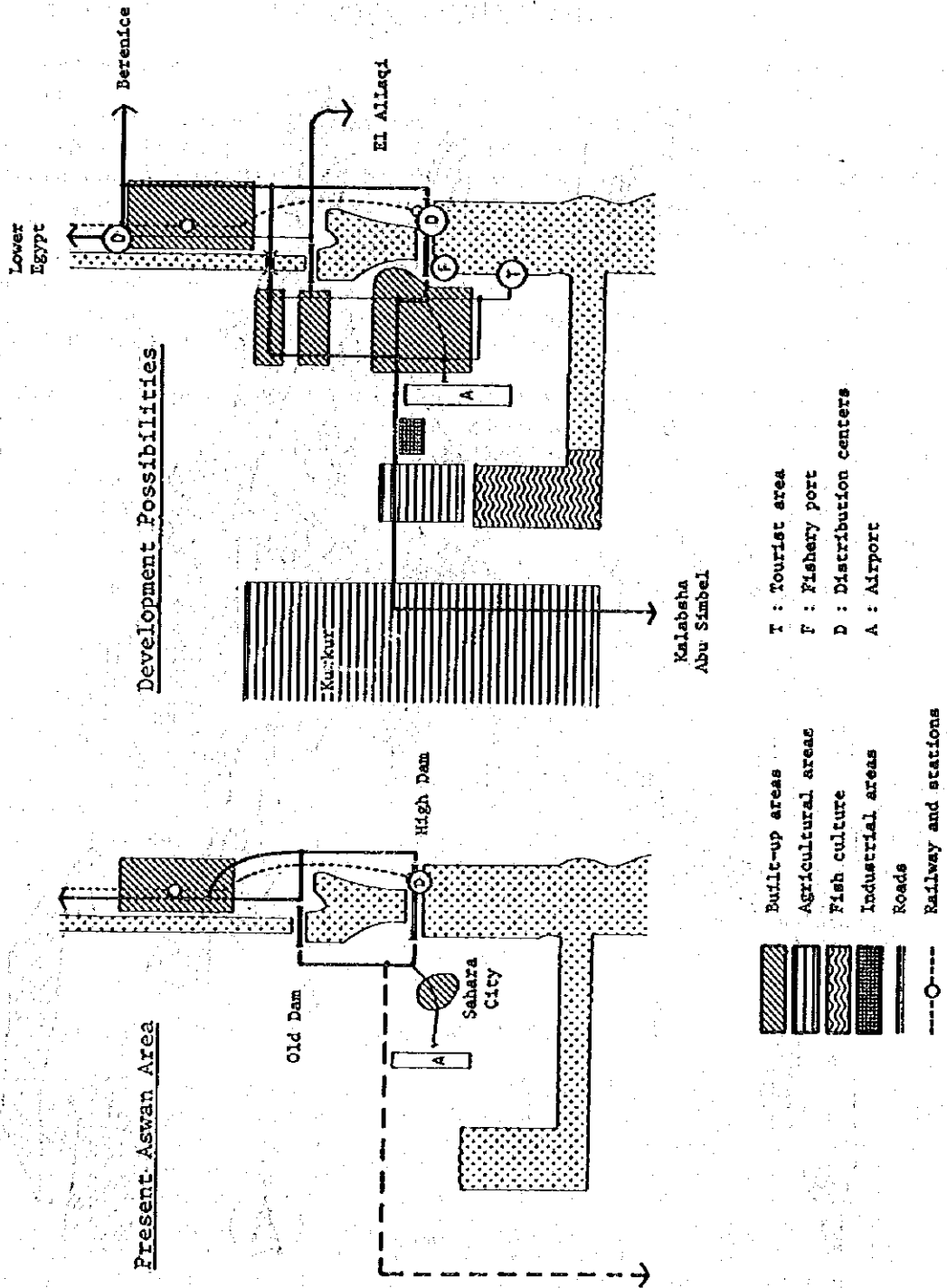
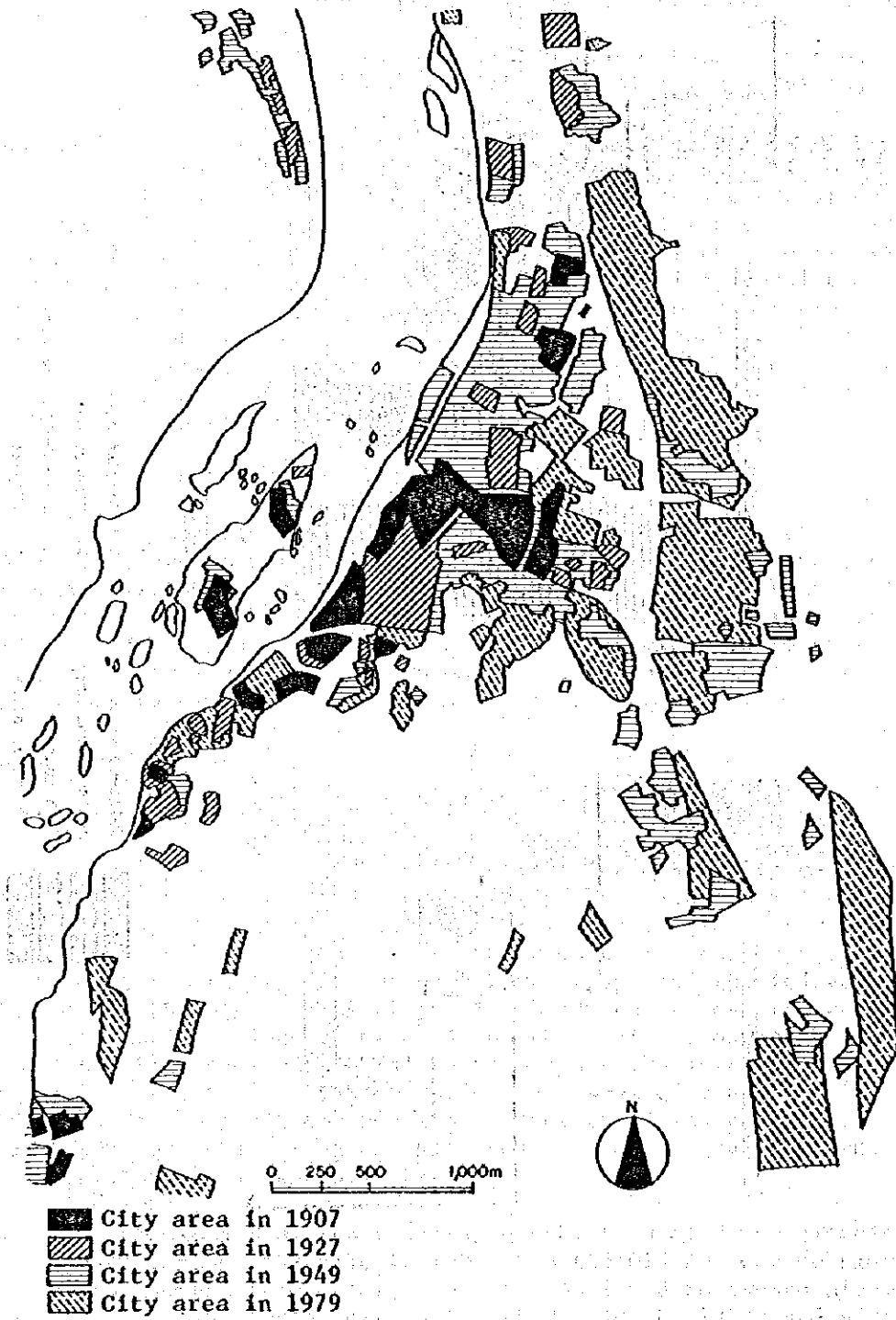


Figure 4-8-3 Expansion of Aswan City
(1907 - 1979)



Source: Regional Planning of Aswan.

southwest, with immediate south being left unoccupied, reflecting the rugged terrains hazardous for physical development.

The past extension of the road network in and around the City concurred with the direction of expansion in the town area (Figure 4-8-4). At present, the National Highway Route 2 from Cairo ends in the City, while the railway passes through the City to the terminal close to the eastern end of the High Dam as shown in Figure 4-8-2. On the west bank, to the southwest of the City, are located the airport and the port which service the traffic to and from further south. With the development in the rest of the Project Area, the north-south traffic volume to and from and through Aswan City will substantially increase, with consequent needs of expanding the city's distribution and commercial functions as well as transportation facilities.

As shown in Figure 4-8-2, the area has agricultural development potentials in the southwestern part; upland agriculture at Kurkur and foreshore agriculture around Khor El Ramla. A portion of the khor is expected to be utilized for some form of artificial fish rearing. A brick factory is currently under construction at a site between the airport and the foreshore agricultural development area and this place can be further developed to accommodate other construction-related and pollution-prone industrial establishments, notably a cement factory.

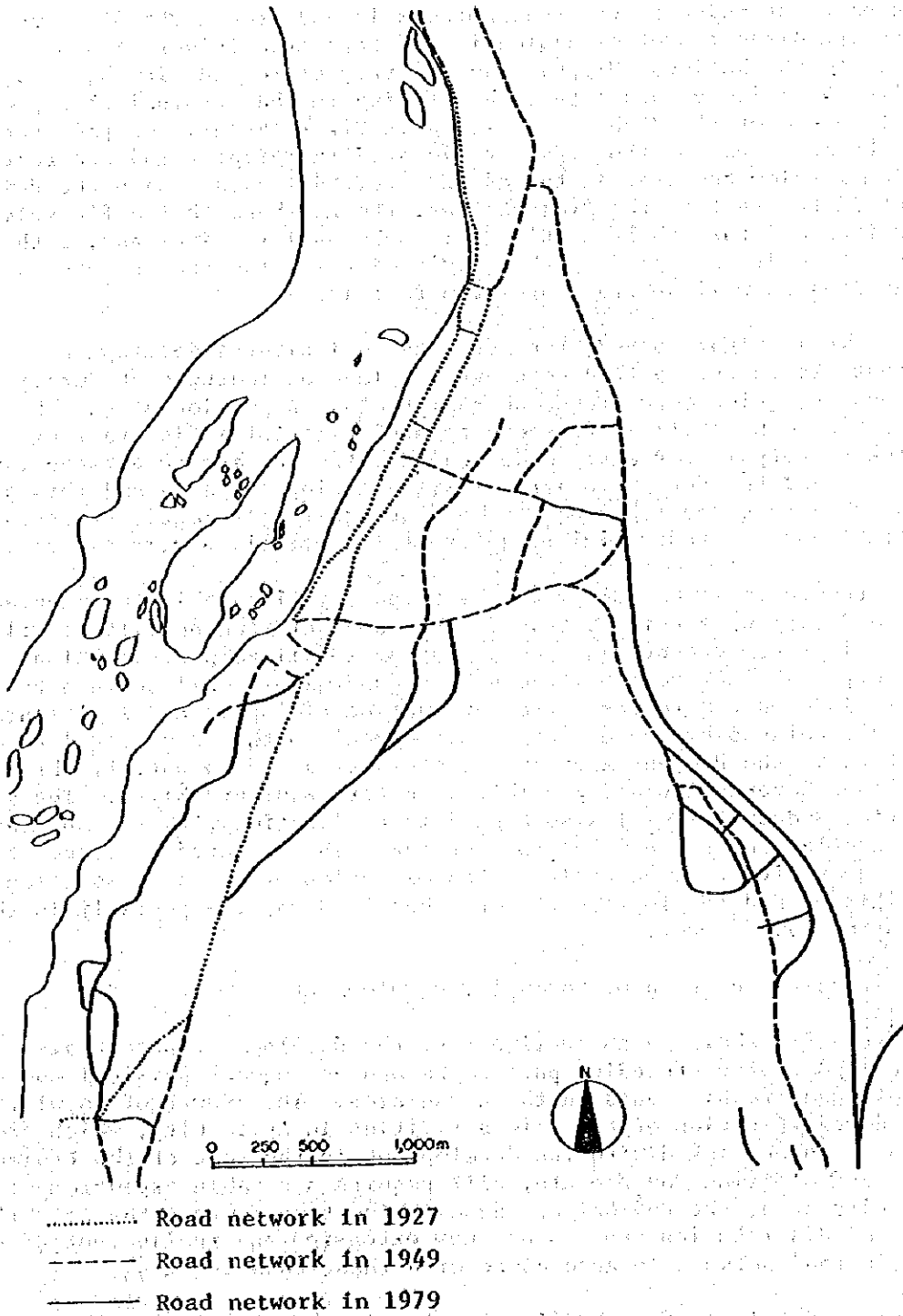
With respect to Aswan City, the major potentials are in the manufacturing and various service sectors. The manufacturing activities will diversify from the present production of fertilizers at the Kima Factory and minor consumer goods by a handful of small-scale establishments into much more variegated production of inputs and implements closely related to the expected development in the primary and secondary sectors in the Project Area and of consumer goods to satisfy the demands in Aswan Governorate and possibly in entire Southern Egypt. The various service industries will also expand in conjunction with the manufacturing development and population increase. The expected increase of tourist visits will necessitate the expansion of the accommodating facilities and the improvement of urban landscape, especially in the existing town center.

(b) Physical Pattern of Community Development

Figure 4-8-5 shows in an outline form the development potentials described in the preceding paragraphs and consequent physical community development requirements in the Aswan area. The growth of population and diversification of economic activities in Aswan City, which are closely inter-linked with the development in the rest of the Project Area and of Aswan Governorate, will require a sizable expansion of the city area, the renewal of the existing town center, the establishment of distribution centers and new extension and realignment of the city's road network in accordance with these changes.

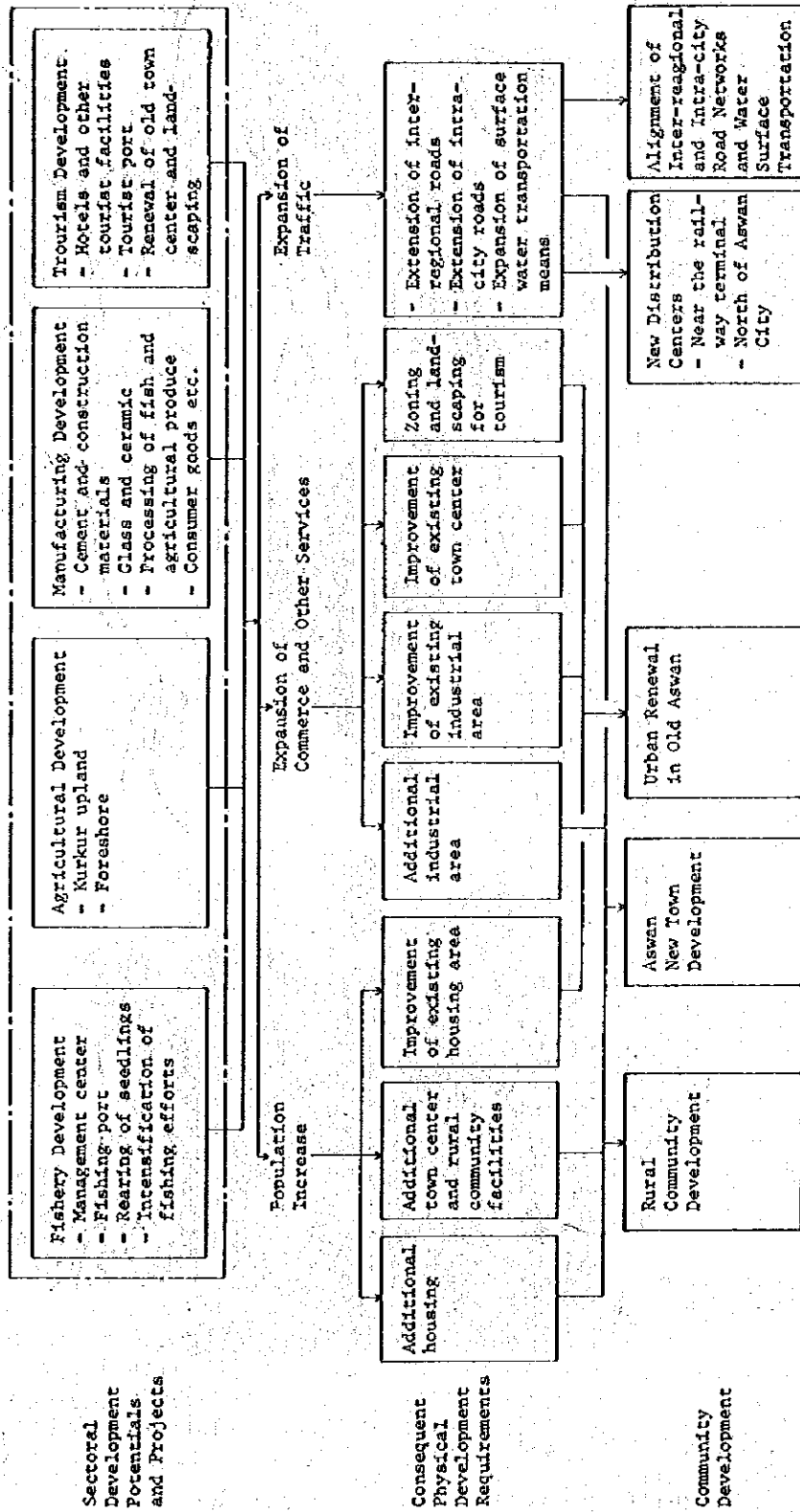
Figure 4-8-6 indicates the distribution in the vicinity of the existing built-up areas of unused land which might be used for the expansion of the City. The coarse-dotted areas on the figure indicate land with more

Figure 4-8-4 Changes of Road Network in Aswan City
(1927 - 1979)



Source: Regional Planning of Aswan.

Figure 4-8-5 Sectoral Development Potentials and Community Development Requirements in Aswan Development Area



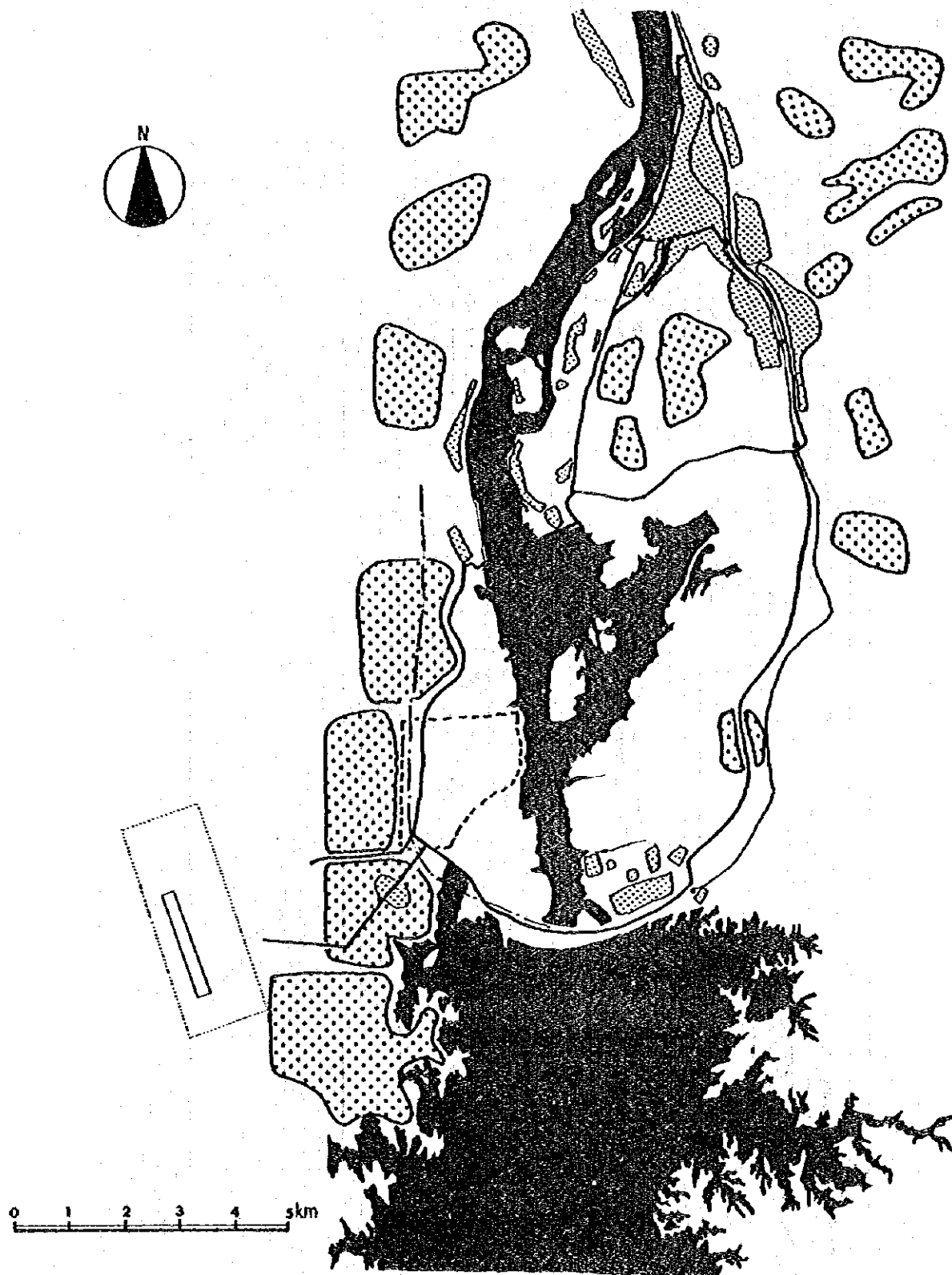


Figure 4-8-6 Distribution of Unused Flat-surfaced Land in Aswan

	Built-up areas		Airport
	University campus (under construction)		
	Unused land with more or less flat surface (regardless of elevation)		

or less flat surface regardless of elevation, which will accordingly require less land-levelling works. On the whole, the areas immediately to the east and south of the existing town area have rugged terrains and are reported to contain pockets of baga, extremely fine clay silt hazardous to build permanent structures on. Since Aswan City is expected to play the primary development center in the Project Area, the orientation of its future expansion is better directed toward south, especially toward the western shore of High Dam Lake where most of the development potentials exist. On the west bank near the High Dam, Sahara City was already established as a residential area for officials and workers employed for the operation of the Dams, an extensive area is being developed for the university campus, and the construction of the intra-regional trunk road connecting Aswan City and Abu Simbel has been already started. Coupled with the expected conversion of the West Harbor into a fishing port and the plan to construct a fish processing plant behind the harbor, the area around the western end of the High Dam will be suitable to develop a sizable urban agglomeration.

The population of Aswan City in the year 2000 is projected to be about 500,000. This population increase is estimated to require land development amounting to 1,950 - 2,300 ha in total. The standards used for this estimation are tentatively determined as shown below, by taking into account those used at the General Organization of Physical Planning of MODANC concerning land requirements of urban development.

- (i) Residential space: approximately 1,200 ha (assuming population increment of 300,000 and the average density of 250 persons/ha, ranging 100 - 300 persons/ha)
- (ii) Industrial space: 400 - 500 ha (including the redevelopment of the existing industrial area)
- (iii) Service industry space: 50 - 100 ha
- (iv) Public facilities space: 100 - 200 ha (including the existing schools and other public service facilities but excluding the university campus)
- (v) Public space: 200 - 300 ha (mostly roads and ports)

Assuming that the City's expansion requires approximately 2,000 ha and is to be directed mostly toward the High Dam on the west bank of the Nile, two alternative patterns of physical development can be suggested, as shown in Figure 4-8-7.

Alternative A (Figure 4-8-7a) can be called the dispersed type of urban development, wherein new communities on the west bank are severally developed by noting their linkage with the existing town center, the already planned bridge across the Nile downstream of the Old Dam and the expected development around the shorefront near the western end of the High Dam. The residents could be roughly classified into a group which has closer ties with the old town center and the other which is associated with activities expected around the western and eastern ends of the High Dam. In relation to the former group, the area immediately to the southwest of the City along the east bank of the Nile, the area near the railway station and a new industrial zone

and the area on the west bank just across the causeway on the Old Dam will be developed first, and with the completion of the new bridge downstream of the Old Dam, new communities would be developed on the west bank near this bridge. The area on the west bank extending from behind the planned university campus to Sahara City would be developed to settle the other group of residents who will be associated with various activities around the western end of the High Dam (the fishing port, the fish processing plant, the fishery management center, the tourist port and associated tourist facilities, the servicing of agricultural communities at Kurkur and around Khor El Ramla and even further southwest, etc.) and with the distribution center around the eastern end of the Dam where the railway terminal and the port for goods traffic are located. Small-scale industrial sites could be developed respectively close to these clusters of new communities.

Alternative B (Figure 4-8-7b) can be called the concentrated type of community development. As shown in the figure, most of the population increment expected through the year 2000 would be settled in this case in the area on the west bank from the Old Dam to the High Dam, incorporating the university campus, Sahara City, the fishery complex and so forth. Large-scale industrial areas could be developed at one end of this new town area. Compared with Alternative A, this type of new town development could expect advantages of larger agglomerations of population and various productive and service activities.

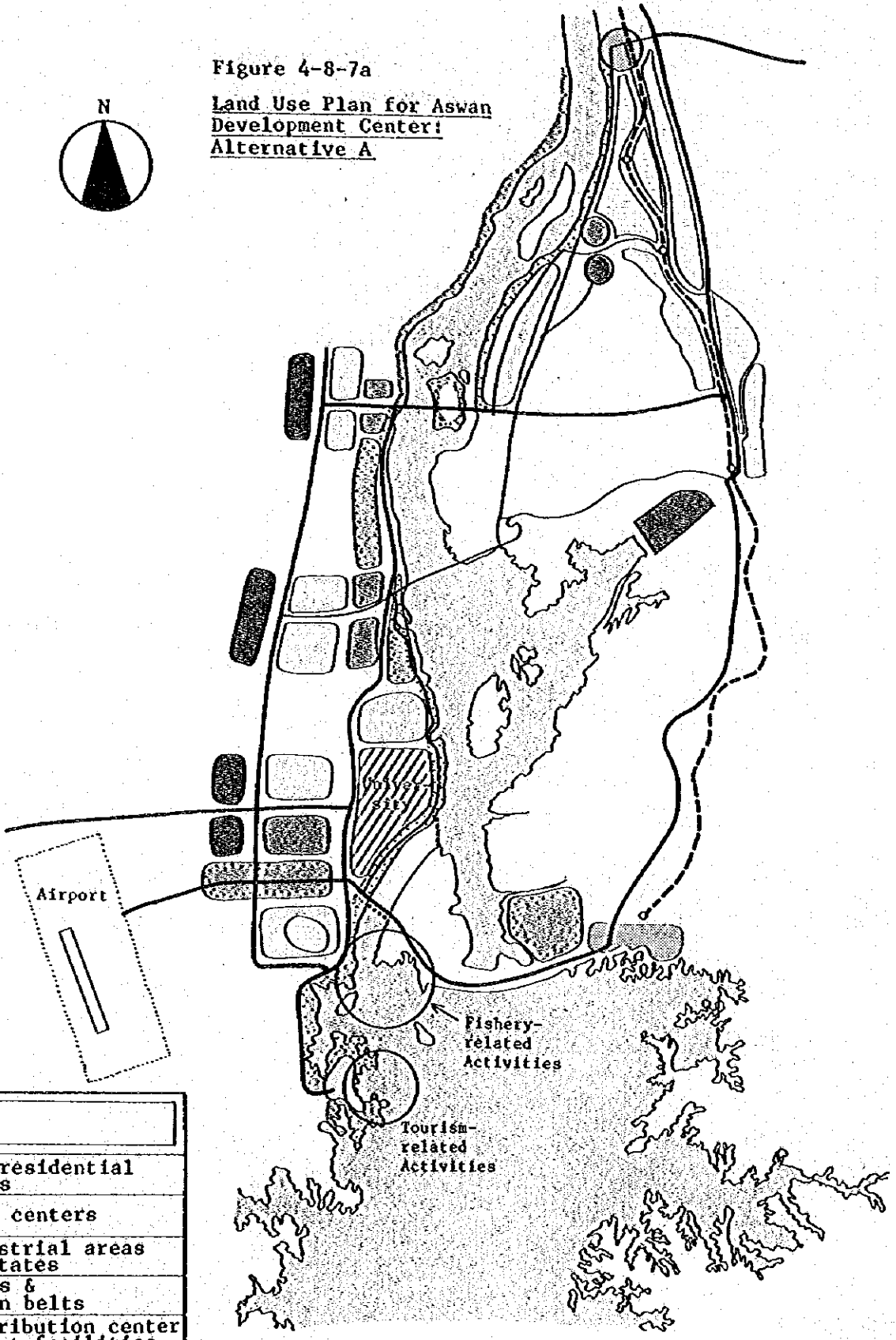
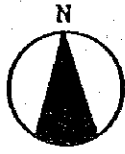
It will be indispensable in either case to undertake a more detailed study in order to determine the appropriate urban form Aswan City should assume in the future. Especially important will be the site survey to examine the base rock formation on the west bank.

(2) Abu Simbel Development Area

(a) Present Conditions and General Outlook

The area includes Ballana near the Sudan border and Quastal/Adendan on the eastern shore of the lake as well as the immediately outlying area around Abu Simbel City. Some development has already taken place in this area with a population of 1,000 centering in the City. The present town area of Abu Simbel grew out of the camps that accommodated the workers during the rescue works of the Great Temples of Ramses II and Nefertari. With the increase of Western tourists, the airport, Hotel Nefertari, the power and water supply stations and a chain of streets have been established. In the beginning of the 1970s, the pilot farm was established to the north of the airport by FAO/UNDP assistance and another pilot farm has recently started some operation at El Salam. Elementary port facilities exist at the shorefront to service passenger and cargo ships plying between Aswan and Wadi Halfa just across the Sudan border. To accommodate for the construction works of the Tushka Spillway, the paved road has been recently completed from Abu Simbel to the site up north. In the last couple of years, some 50 Nubians from Kom Ombo have begun foreshore agriculture experimentally in Quastal/Adendan.

Figure 4-8-7a
Land Use Plan for Aswan
Development Center:
Alternative A

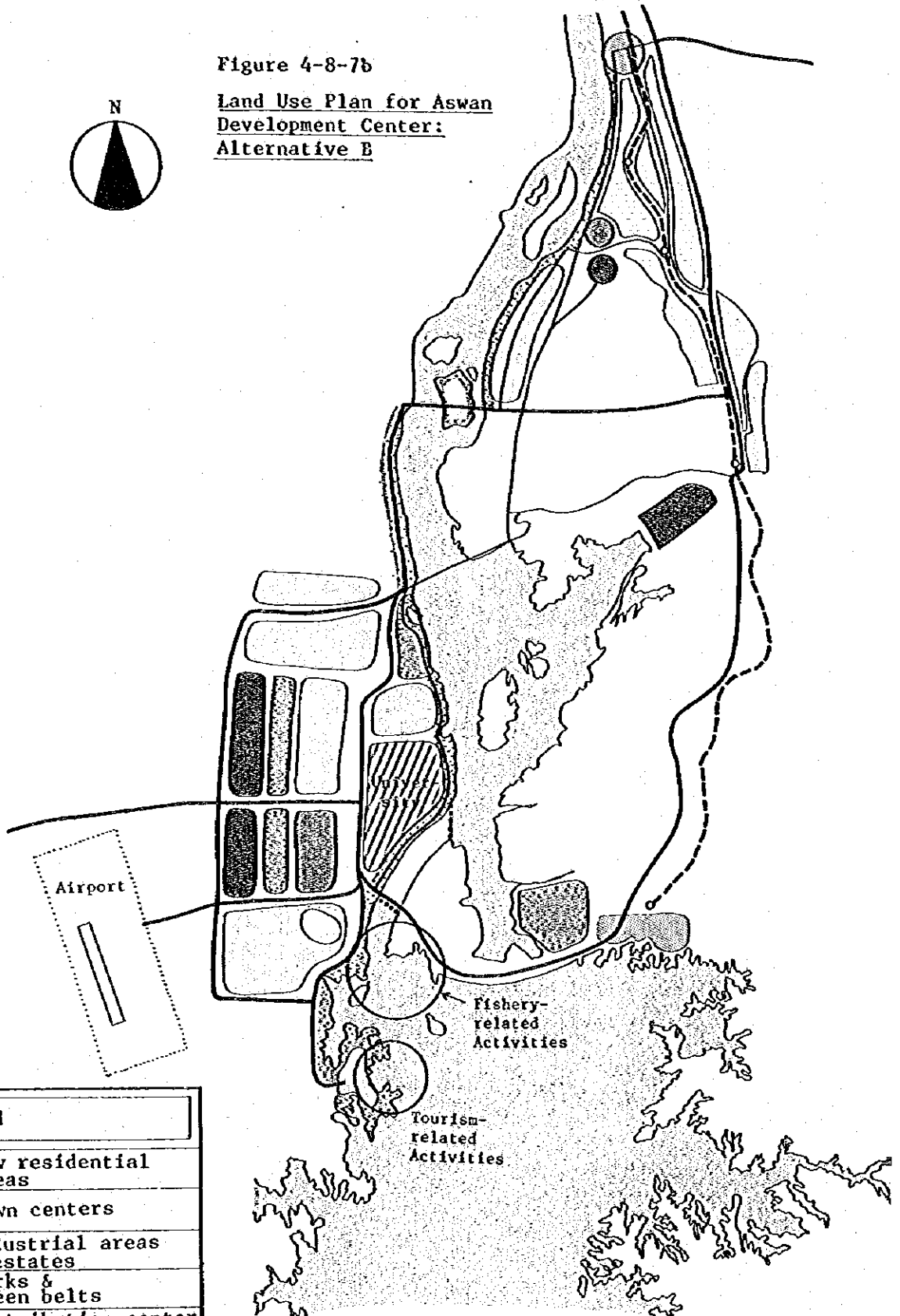
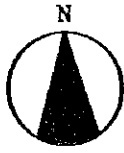


Legend	
	New residential areas
	Town centers
	Industrial areas & estates
	Parks & green belts
	Distribution center & port facilities
	Existing built-up areas
	Tourist areas
	Roads
	Railways



Figure 4-8-7b

Land Use Plan for Aswan
Development Center:
Alternative B

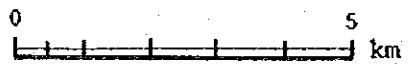


Airport

Fishery-related Activities

Tourism-related Activities

Legend	
	New residential areas
	Town centers
	Industrial areas & estates
	Parks & green belts
	Distribution center & port facilities
	Existing built-up areas
	Tourist areas
	Roads
	Railways



The development of the Abu Simbel area is expected to proceed from the tourism sector and agriculture beginning in Quastal/Adendan and then fisheries. Abu Simbel City is expected to grow into a sizable urban agglomeration as the gateway city to and from the Sudan and as the district center servicing the two other development areas in the north as well as its own rural hinterland.

(b) Physical Pattern of Community Development

As shown in the chart of Figure 4-8-8, the development potentials in the area's tourism, agriculture and fishery sectors would require the expansion of Abu Simbel City (including the zoning and landscaping of the tourist-oriented area around the Great Temples and Hotel Nefertari), rural community development at six locations and the transportation network in and around the City, notably ferry services between Abu Simbel and Quastal/Adendan and a section of the international road connection with the Sudan passing through Ballana where upland agriculture is expected to be started jointly by Egypt and the Sudan. As for the Ballana area which is rather isolated from Abu Simbel City, it is desirable to plan its own urban center after the turn of the next century. The major part of the area's general layout is shown in Figure 4-8-9.

The total land requirement for the expansion of Abu Simbel City is estimated to be approximately 100 - 150 ha as shown below.

- (i) Residential space: 70 - 80 ha
- (ii) Industrial space: 15 ha
- (iii) Service industry space: 10 - 25 ha
- (iv) Public facilities space: 4 - 10 ha
- (v) Public space: 10 - 20 ha

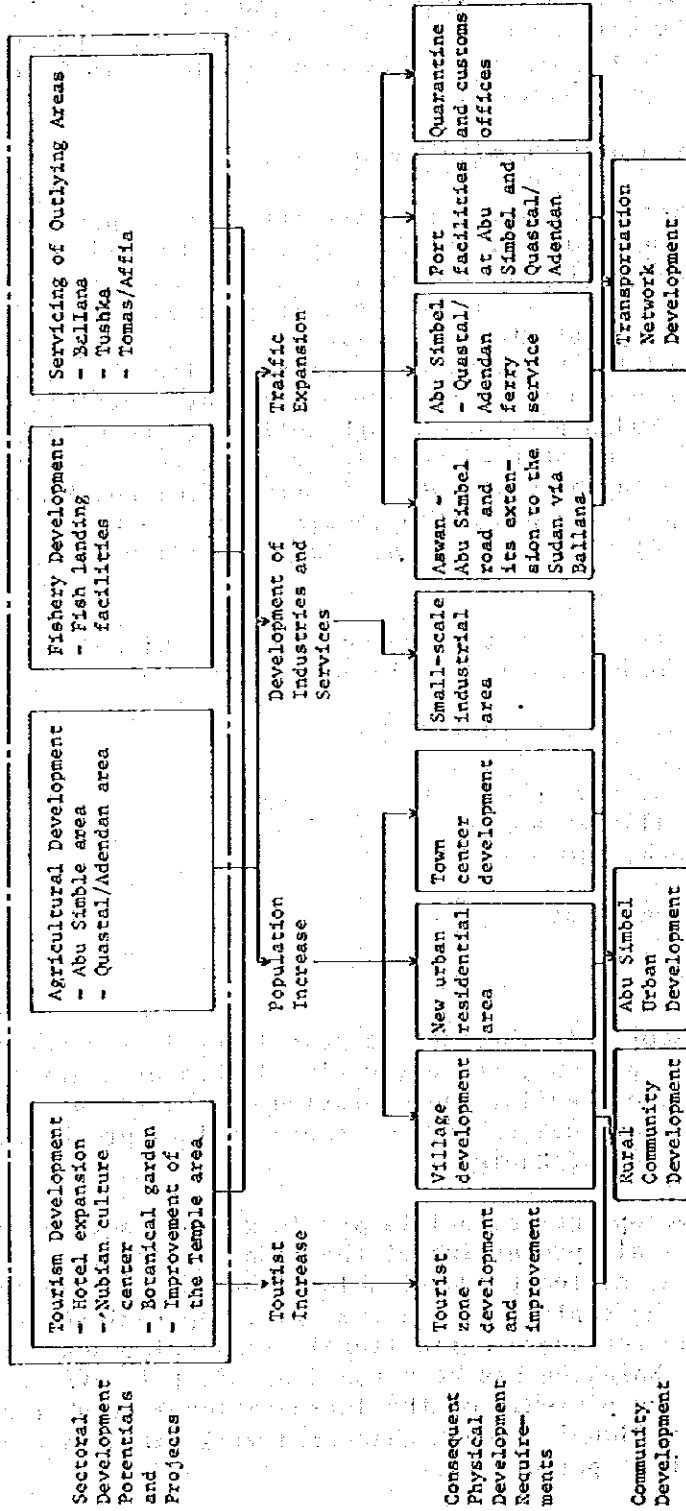
(3) Kalabsha Development Area

(a) General Outlook

The area surrounds Khor Kalabsha, the largest inlet in the northwest of High Dam Lake. At present, the activities in the area are limited to small-scale mining of kaolin, the operation of the recently established pilot farm and rudimentary foreshore agriculture being experimented by a number of Nubians.

The area's major development potentials are in mining, agriculture, fisheries and small-scale processing of the local primary products. In addition to kaolin, at least two sizable deposits of high-quality clay are reported to be exploitable in the area. Approximately 46,600 feddans of upland and foreshore agricultural areas exist scattered at six locations. Khor Kalabsha has been found abundant in off-shore fishery resources. The passage of the intra-regional trunk road between Aswan and Abu Simbel through this area will serve to accelerate the realization of these potentials.

Figure 4-8-8 Sectoral Development Potentials and Community Development Requirement in Abu Simbel Development Area



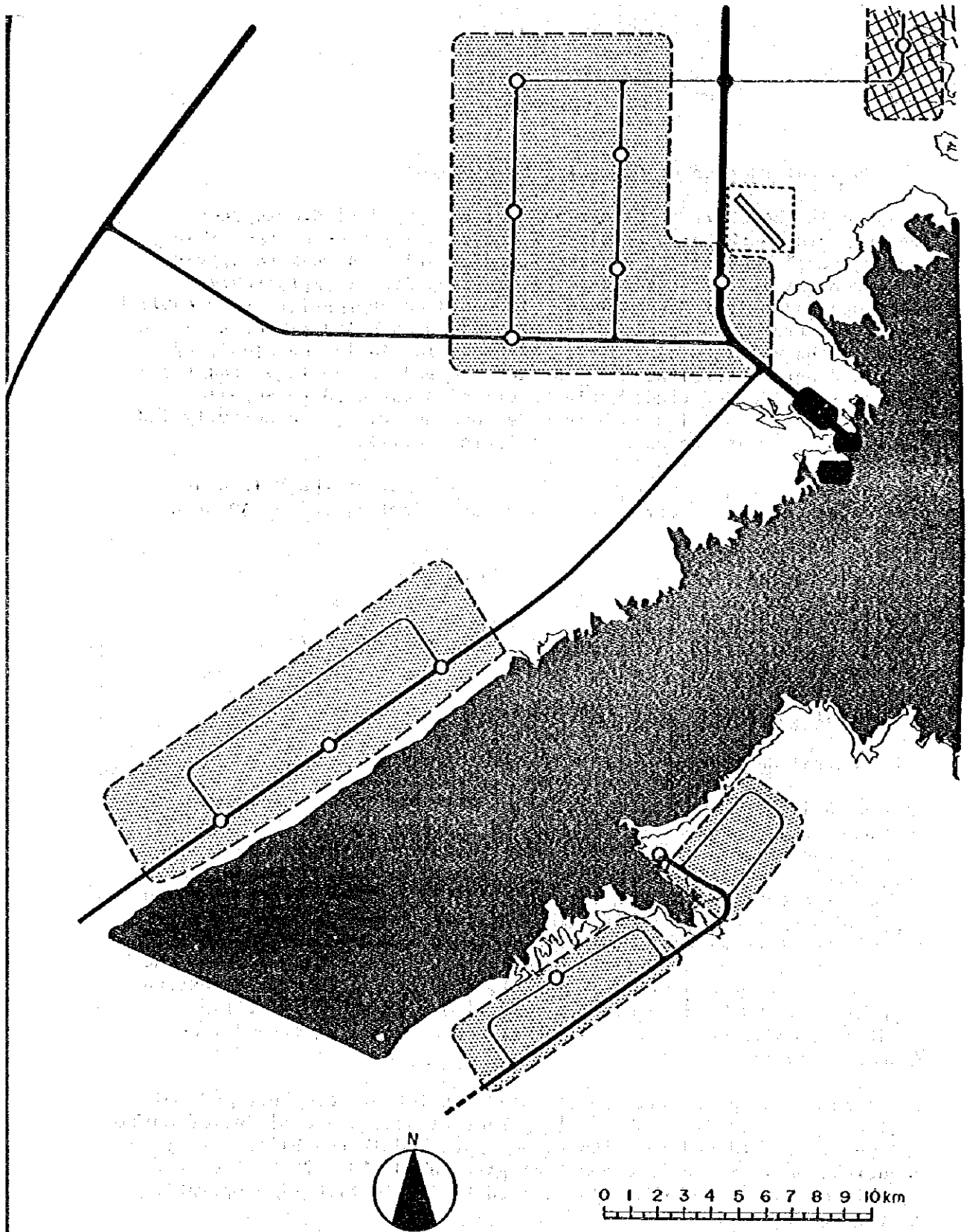
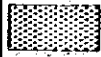

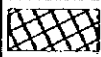
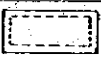

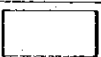


Figure 4-8-9 Abu Simbel Development Area (Part)

	Upland agriculture		Village settlements
	Foreshore agriculture		Airport
	Development center		

(b) Physical Pattern of Community Development

As shown in the chart of Figure 4-8-10, the physical development requirements in the area consist of the establishment of the urban center, rural communities and the transportation network to service these communities. Considering the distribution of exploitable resources and existing activities, it would be appropriate to establish the area's urban center along the planned Aswan - Abu Simbel road and close to the kaolin mining site. Its location is in the middle of an upland agricultural area at the western end of the inlet and two sets of rural feeder roads would be extended eastward to service agricultural communities on both sides of the inlet, respectively ending with a quay at the shorefront (Figure 4-8-11).

The total land requirement for the establishment of the Kalabsha development center is estimated to be approximately 220 - 250 ha as shown below.

- (i) Residential space: 140 - 150 ha
- (ii) Industrial space: 30 ha
- (iii) Service industry space: 20 ha
- (iv) Public facilities space: 7 - 18 ha
- (v) Public space: 20 - 35 ha

(4) El Allaqi Development Area

(a) General Outlook

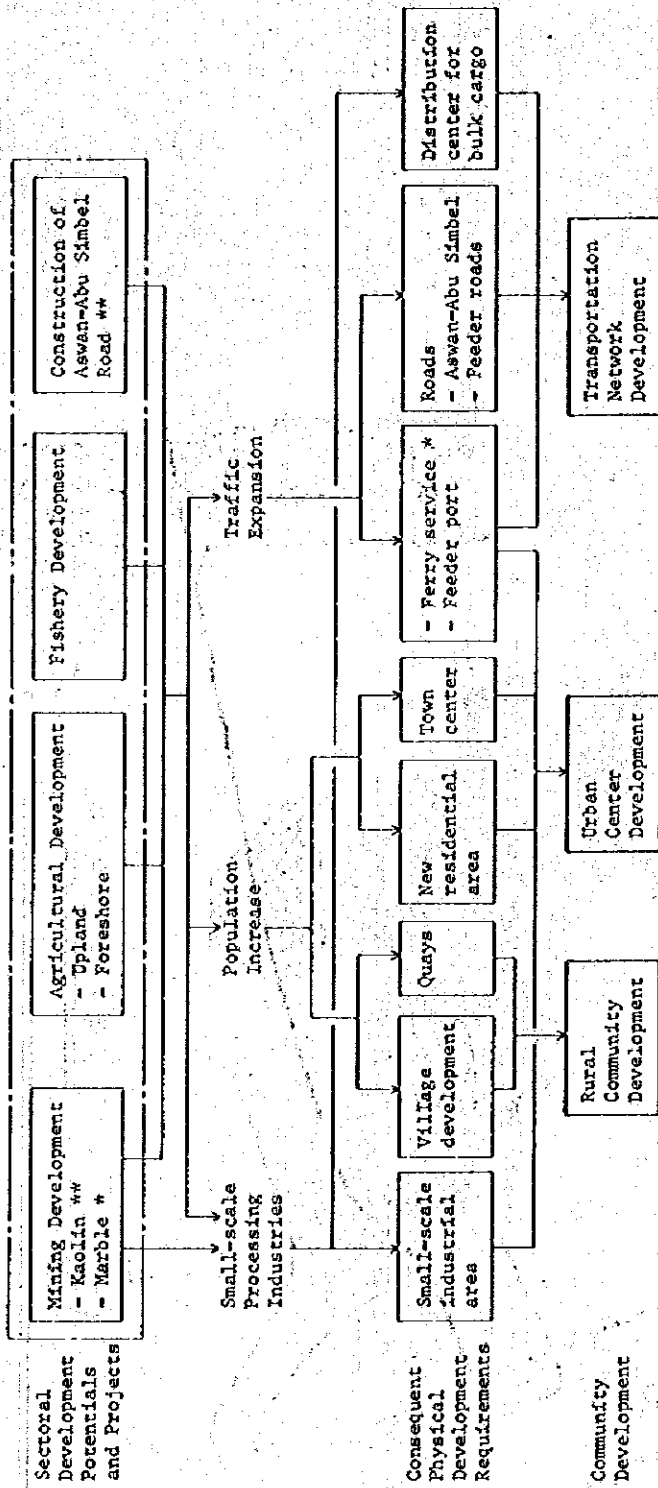
This area lies in the eastern shore of High Dam Lake, about 140 km southeast from Aswan City. Before the construction of the High Dam, most of the eastern shore with scattered Nubian villages used to be frequented by bands of nomads who led a more or less transhuman life in the area between the Red Sea and the Nile. After the shore which supplied summer pastures for their herds was submerged under the water, the visits of these nomads sharply declined. At present, it is reported that about a hundred of nomads are now settling down in the area behind the end of Khor El Allaqi. The narrow khor which extends approximately 50 km from east to west is one of the major tilapia fishing grounds, and many camps of fishermen dot its northern and southern shorelines.

The development potentials in the area consist of foreshore and upland agriculture to be distributed along Khor El Allaqi and mining of marble and possibly gold and chromium found scattered in the hills cut by the dendritic wadis in the southeastern part, about 50 - 70 km from the end of the khor. There is also a need to settle fishermen operating in the khor.

(b) Physical Pattern of Community Development

The area's development will be preceded by the mining activities, notably exploitation of marble, then followed by foreshore agriculture to settle fishermen, with associated development of access roads and

Figure 4-8-10 Sectoral Development Potentials and Community Development Requirements in Kalabsha and El Allaqi Areas



* El Allaqi only.
** Kalabsha only.

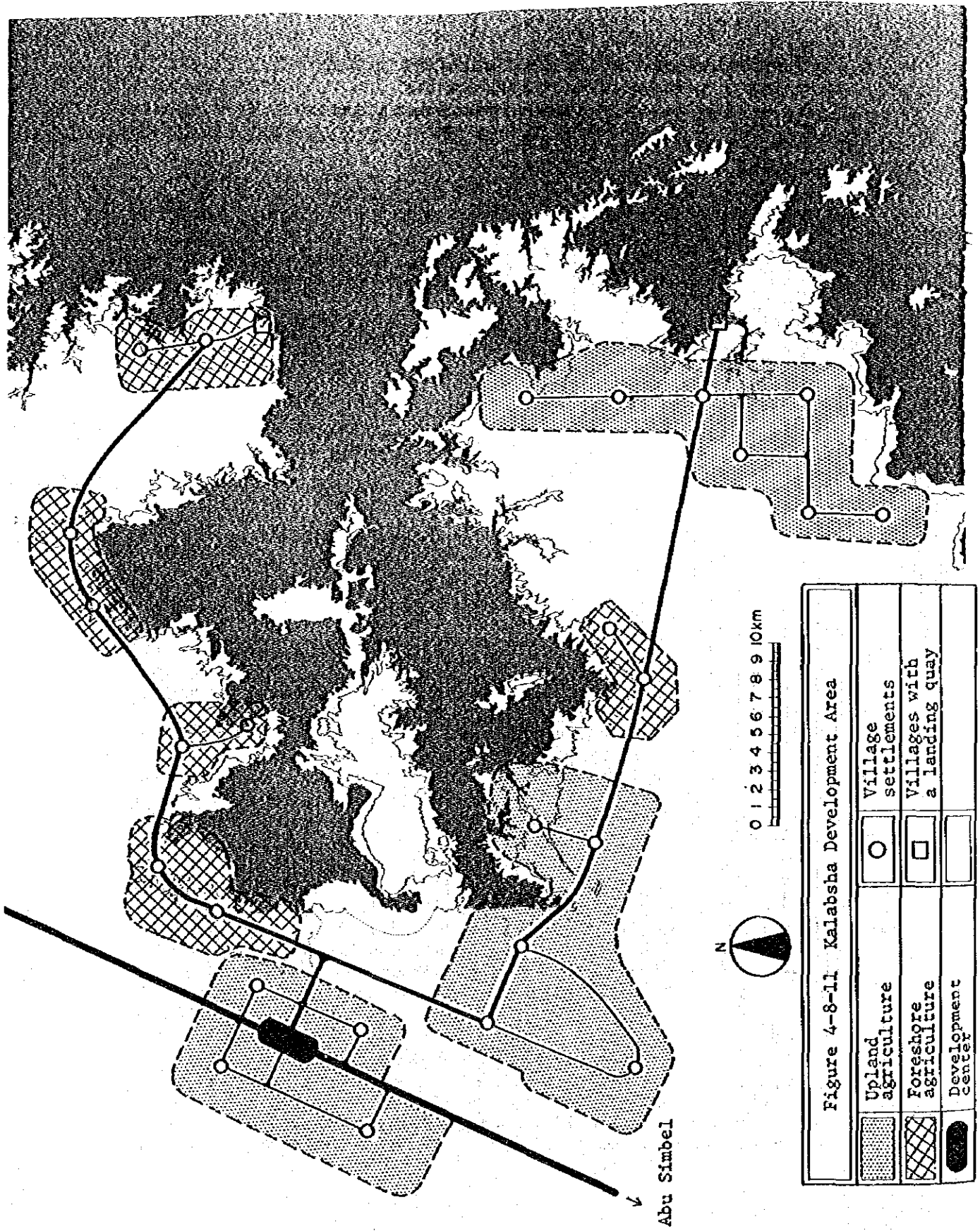


Figure 4-8-11 Kalabsha Development Area

	Upland agriculture		Village settlements
	Foreshore agriculture		Villages with a landing quay
	Development center		

the port facilities at the end of the khor to ship bulky marble to Aswan. The development of upland agriculture starts in the early 1990s, with concurrent development of the urban center and the road connecting to Aswan City.

The community development requirements are similar to the Kalabsha area as shown in Figure 4-8-10. In order to service the agricultural communities along the khor in the northwestern part of the area and the mining sites in the southeast, it would be appropriate to locate the urban center at the end of the khor near the feeder port (Figure 4-8-12). After the turn of the next century, the Aswan - El Allaqi road could be extended as far south as Wadi Halfa in the Sudan.

The total land requirement for the urban center is estimated to be 60 - 80 ha as shown below.

- (i) Residential space: 40 - 50 ha
- (ii) Industrial space: 10 ha
- (iii) Service industry space: 5 ha
- (iv) Public facilities space: 3 - 6 ha
- (v) Public space: 6 - 10 ha

(5) Tushka Development Area

(a) General Outlook

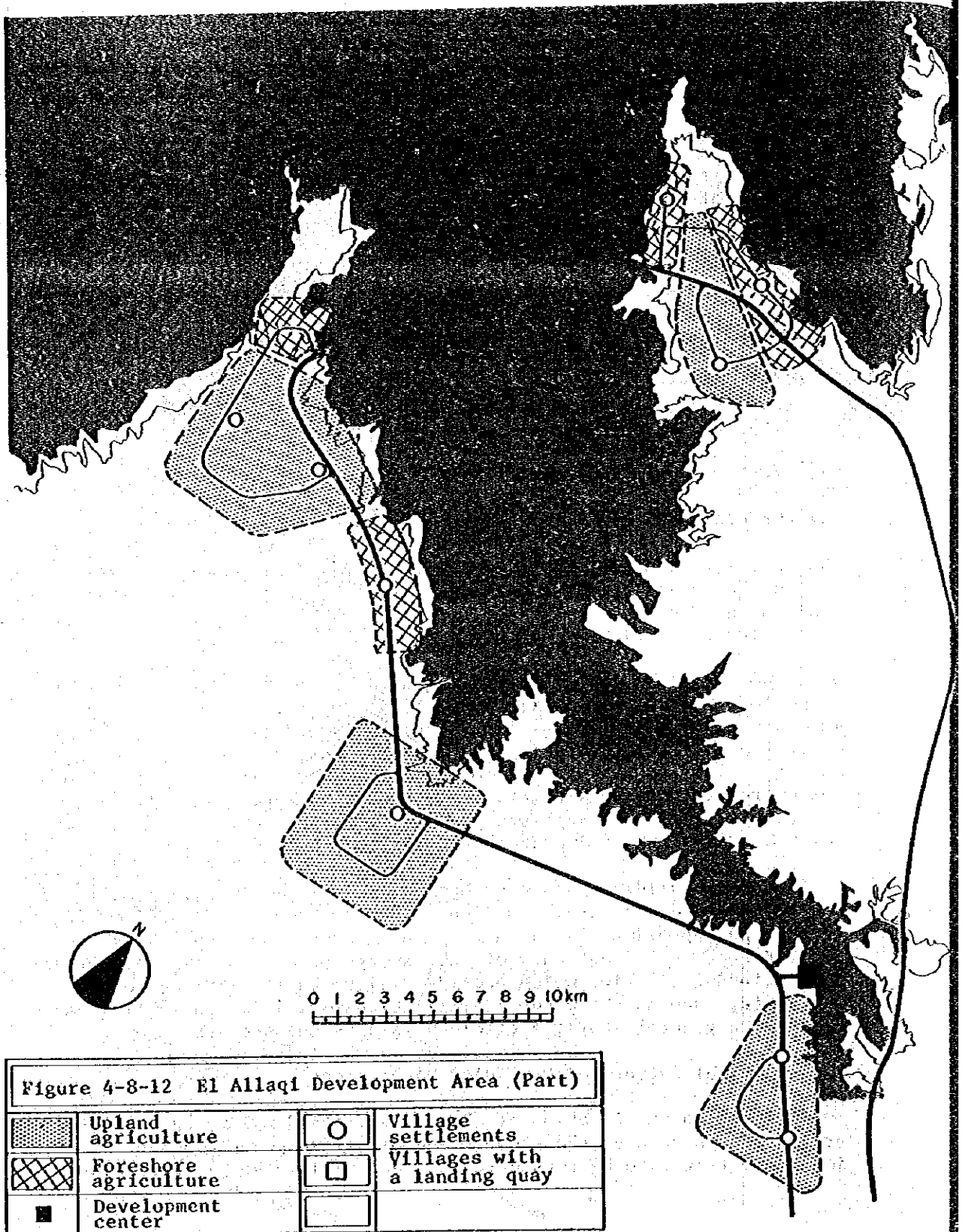
The area surrounds Khor Tushka and the development potentials are limited to agriculture and fisheries. At present, there is no permanent resident and the only existing activity is the on-going construction of the Tushka Spillway.

Some 800 engineers and laborers are currently engaged in the construction works of the Spillway, which is to extend approximately 20 km westward with a width of 125 m (to be widened later to 350 m). In order to control sands during the construction, a water pipeline has been installed on the north side of the planned spillway, about 500 m apart from the center line of the spillway. The pipeline will supply water to the belt of sapplings planted along the spillway which will serve as windbreaks and protect the spillway from blown sands.

A cluster of buildings has been built near the end of the recently completed paved road from Abu Simbel. Because the construction site is located approximately 40 km from the nearest Abu Simbel City, the cluster consists of not only offices and temporary housing for workers but various facilities which provide minimum basic services to the residents, such as the water sterilization facilities, a small bread factory, a general store, a clinic with an ambulance, etc.

(b) Physical Pattern of Community Development

In addition to the location of the foreshore and upland agricultural areas, the passage of the Aswan - Abu Simbel road would be an important factor to be considered in determining the general layout



of the community development requirements as shown in Figure 4-8-13. Taking advantage of the skeleton build-up for the construction works of the spillway, it would be appropriate to locate the area's urban center near the spillway and the intra-regional trunk road connecting Aswan and Abu Simbel (Figure 4-8-14). The development of upland agriculture could start from the areas near the urban center and then proceed northward.

The total land requirement for the urban center is estimated to be 50 - 80 ha as shown below.

- (i) Residential space: 30 - 40 ha
- (ii) Industrial space: 10 ha
- (iii) Service industry space: 5 - 15 ha
- (iv) Public facilities space: 2 - 5 ha
- (v) Public space: 5 - 10 ha

(6) Tomas/Affia Development Area

(a) General Outlook

At present, there is no population and on-going activities in this area. The known development potentials are limited to upland agriculture and fisheries and the Temple of Amada will become one of the sight-seeing spots for the tourist cruisers over the lake.

(b) Physical Pattern of Community Development

The agricultural development of this area will be in the earlier half of the 1990s and requires the construction of feeder roads to reach agricultural communities after the completion of the Aswan - Abu Simbel trunk road, which is to pass about 20 km northwest of the area. With the settlement of rural communities, the urban center will be established with the feeder port facilities at the shorefront (Figure 4-8-15).

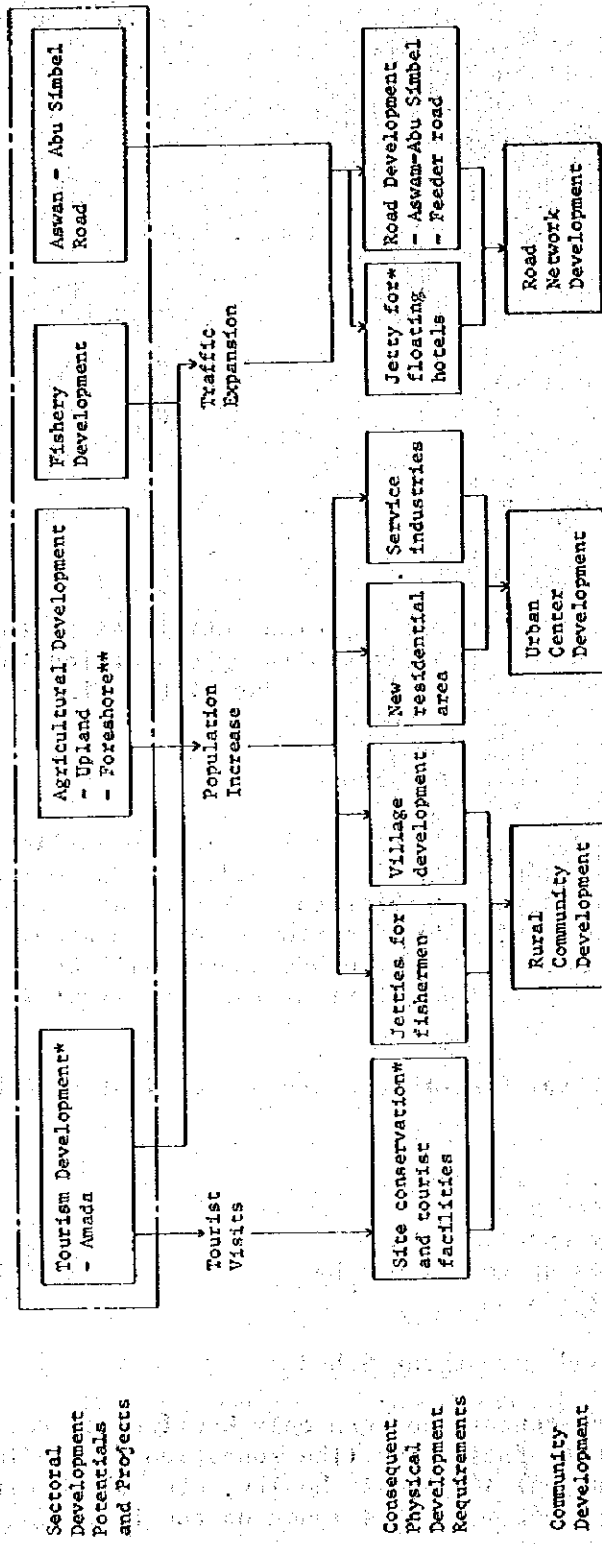
The total land requirement for the urban center is estimated to be 20 - 40 ha as shown below.

- (i) Residential space: 15 - 20 ha
- (ii) Industrial space: 5 ha
- (iii) Service industry space: 5 ha
- (iv) Public facilities space: 1 - 2 ha
- (v) Public space: 2 - 5 ha

4-8-3 Development Costs and Investment Schedule

Development costs for urban centers concern only housing and related utilities and basic community facilities like education (excluding secondary and higher education) and public health, etc. which service local residents. The rough estimation is based on the following assumptions.

Figure 4-8-13 Sectoral Development Potentials and Community Development Requirements in Tushka and Tomas/Affia Areas



* Tomas/Affia only.
** Tushka only.

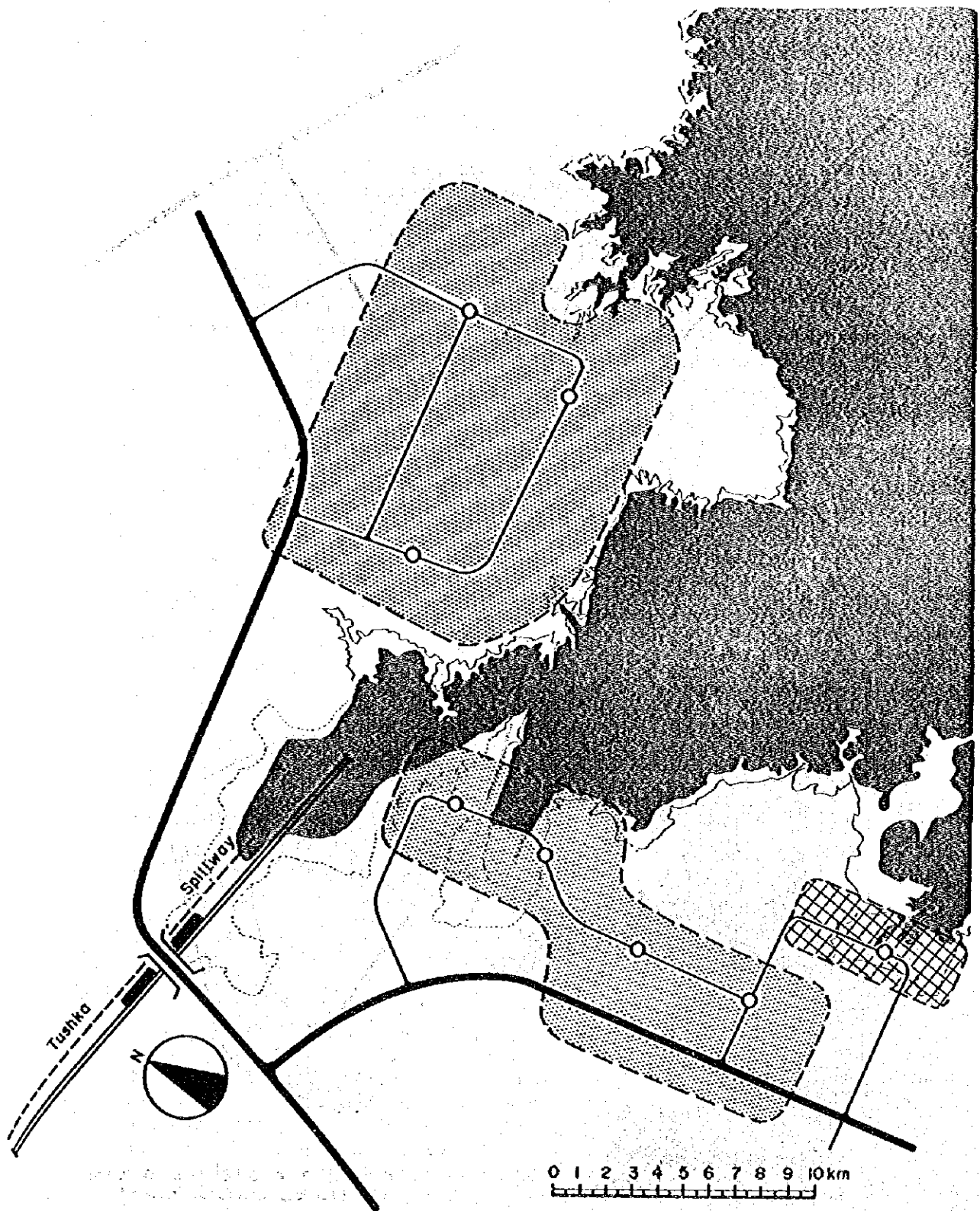








Figure 4-8-14 Tushka Development Area			
	Upland agriculture		Village settlements
	Foreshore agriculture		
	Development center		

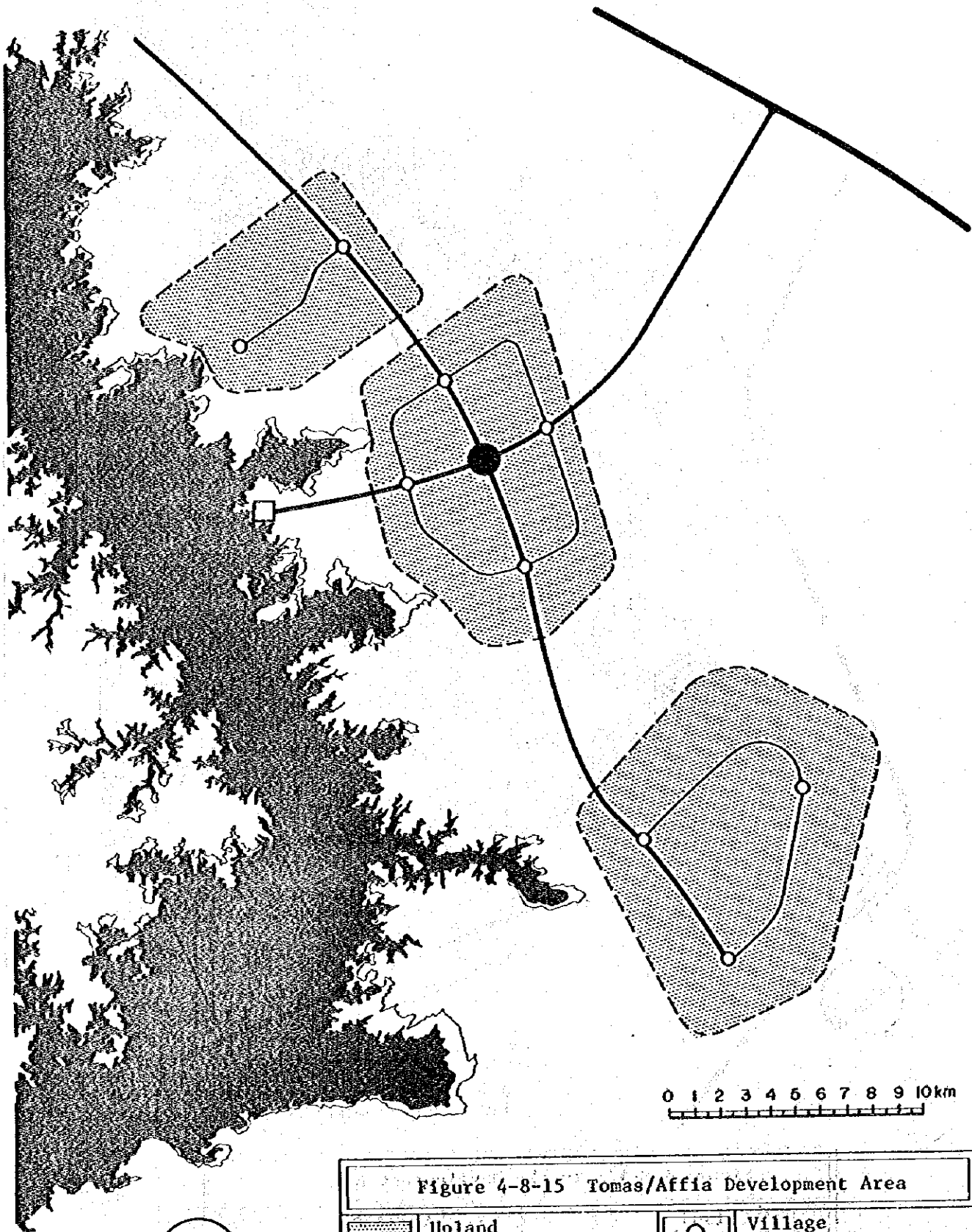







Figure 4-8-15 Tomas/Affia Development Area			
	Upland agriculture		Village settlements
	Development center		Village with a landing quay
			

- (i) One dwelling per average family of 5 members is assumed for the incremental population during the period of 1983 - 2000.
- (ii) Dwellings are classified into three categories to house different economic strata of low-, middle- and high-income families and the proportion of the required numbers of dwellings in three categories is assumed to be 150:45:5.
- (iii) Taking into account the current local construction costs which are substantially higher than in Lower Egypt and the standards used by the GOPP, the construction costs of housing and related utilities and community facilities are adjusted per unit of dwelling in each category as shown below.

	(£E/unit)				
	Building	On-site utility	Off-site utility	Community facilities	Total
Low-income housing	3,000	230	400	1,000	4,630
Middle-income housing	4,500	340	500	1,000	6,340
Upper-income housing	more than 5,250	390	500	1,000	7,140

From the three assumptions, per-person cost of urban development is calculated to be £E 1,015. This unit cost can be used to estimate rough urban development costs at six development centers as shown below.

	(£E million)					
Total	Aswan	Abu Simbel	Kalabsha	El Allaqi	Tushka	Tomas/Affia
734	647	19	41	13	10	4

With regard to rural community development, the construction costs of housing and related utilities and community facilities per dwelling for low-income families are used uniformly. The per-person costs of dwelling and related facilities are calculated to be £E 600 and 326 respectively. Excluding the costs of dwellings for those families who engage in upland and foreshore agriculture which are already included in the costs of agricultural development, the rural community development costs in six development areas are roughly estimated to be as follows.

	(£E million)					
Total	Aswan	Abu Simbel	Kalabsha	El Allaqi	Tushka	Tomas/Affia
68	2	14	32	9	8	3

The suggested investment schedule for new community development is shown in Table 4-8-5. It is necessary for the future development of the urban centers to carry out detailed surveys and planning in advance. It is particularly urgent to carry out the following surveys for Aswan and Abu Simbel Cities.

(i) Aswan Urban Planning

- Urban surveys on the existing part of Aswan City,
- Land-use planning
- Surveys for identification of suitable sites for the New Town

(ii) Abu Simbel Urban Planning

- Preparation of a plan for tourism district development
- Surveys for identifying appropriate locations of the port and the City's expansion

In addition to the projects proposed for the period of 1982 - 1997, the followings are proposed as "urgent projects" to promote population migration:

(1) Construction of a fishermen's model village:

Purpose: The proposed model village is to serve as a model case for future settlement of fishermen and farmers.

Details: i) Identification of the appropriate site. The Team suggests an area around the mouth of Khor Kalabsha. The site should be determined where the soil condition is found suitable for future agricultural development.

ii) Construction of; (a) facilities for foreshore agriculture, (b) a jetty for fishing boats, medical-care boats, etc., and (c) facilities for minimum requirements for community development.

Costs: Under the following assumptions, the estimated costs of this project is approximately £E 2 million.

- a) 560 feddans of farm land are to be developed,
- b) 140 fishing families are to be settled, and
- c) One simple jetty is to be provided.

(2) Improvement of the Existing Fishermen's Camps:

Purpose: Expansion of the on-going program by CARE for the improvement of fishermen's living conditions.

Details: Provision of a rest house furnished with beds, a meeting room, a store room, a kitchen and a latrine at each camp as minimum requirements. Fishermen's camps are mostly located on small islands in the Lake and numbers 300 - 400, each used by 20 fishermen on the average.

Unit Costs: £E 15,000 per camp.

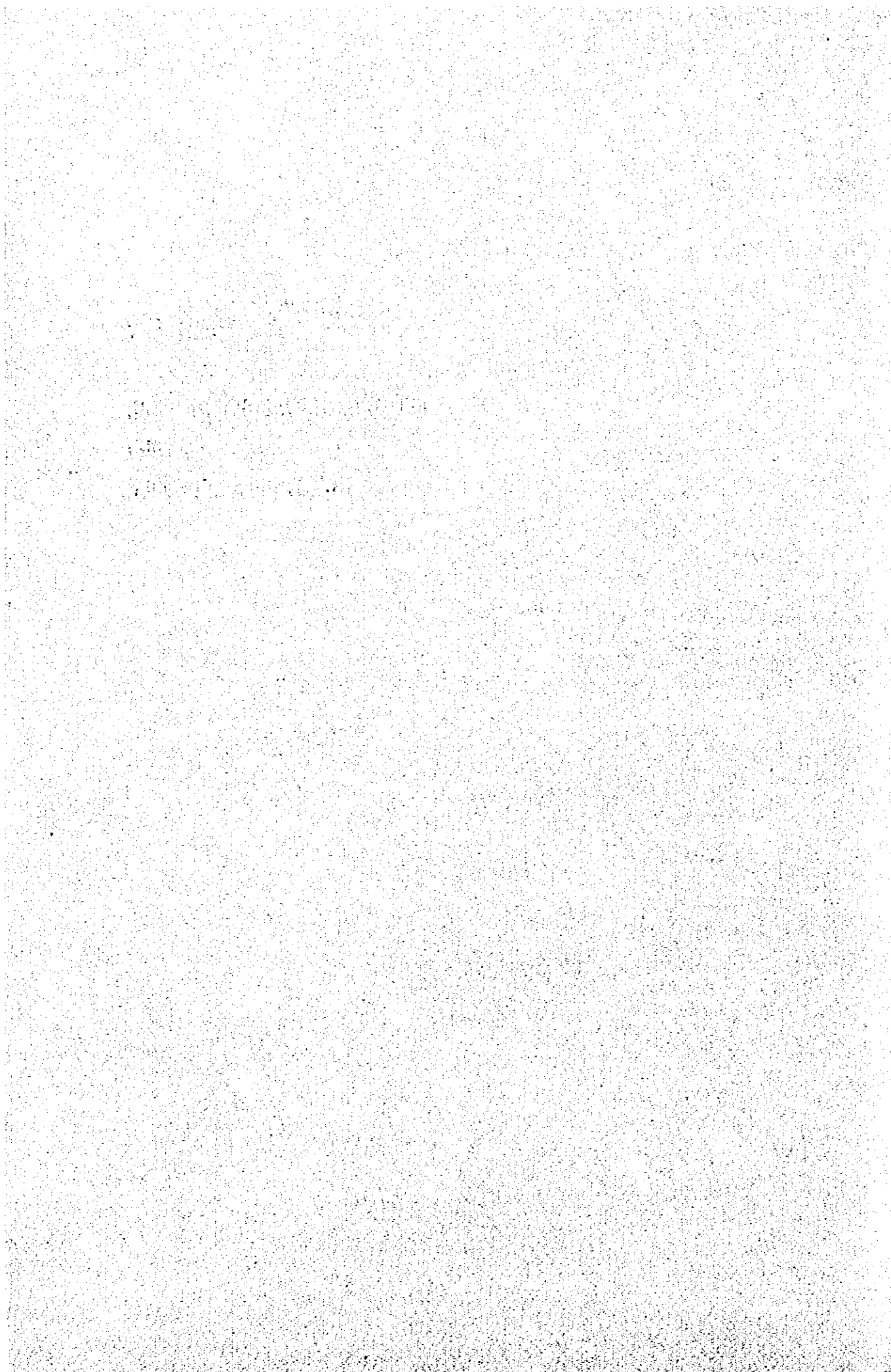
Table 4-8-5 Investment Schedule for Urban and Rural Community Development

Projects	Project Cost (LE mil.)	'82	'87	'92	'97
<u>Aswan</u>					
Aswan New Town	647	000	3/	4/	5/
City Renewal	*1/	000	6/	7/	8/
Rural Communities	2	00			
<u>Abu Simbel</u>					
New Town	19		00000		
Rural Communities	14	00			
<u>Kalabsha</u>					
Urban Center	41		00000		
Rural Communities	32	00			
<u>El Allaqi</u>					
Urban Center	13			000	
Rural Communities	9		00		
<u>Tomas/Affia</u>					
Urban Center	4			000	
Rural Communities	3			00	
<u>Tushka</u>					
Urban Center	10		00000		
Rural Communities	8	00			
Total Costs	Urban 734 Rural ^{2/} 68		128 13	330 28	276 27

- Notes: 1/ Unestimated.
2/ Excludes the costs of dwellings of those families who engage in upland and foreshore agriculture.
3/ Housing and new town center.
4/ Housing.
5/ Industrial estates, tourism districts, CBD and housing.
6/ Renewal of industrial areas.
7/ Improvement of environment in residential areas.
8/ Renewal of downtown area.

CHAPTER V

**REGIONAL DEVELOPMENT PLAN
AND
INVESTMENT SCHEDULE**



CHAPTER V
REGIONAL DEVELOPMENT PLAN AND
INVESTMENT SCHEDULE

5.1 REGIONAL DEVELOPMENT PLAN

5.1.1 Staging of Development Activities

The development of six Development Areas and their respective Development Centers will progress apace with the economic development and population growth as foreseen in the economic framework through the year 1997. Agricultural development will lead the overall community development program, but it is necessary to stage development activities in such a way as to achieve economy in infrastructural investment and to cluster related service facilities effectively. The initial step is, for instance, to provide basic needs services to a small number of people already working in the Project Area but this is to be followed up by development of additional community facilities to be able to service gradually increasing economic activities and population by noting advantages of proximity and functional linkage.

The basic steps for staging development activities can be stated as follows.

- (A) Improvement of services for fishermen and Nubians living on the High Dam Lake shore.
- (B) Development of supportive facilities for the already existing industries, notably fisheries, tourism and mining.
- (C) Infrastructure development to improve accessibility to Development Areas, which is indispensable to initiate other sectoral development efforts.
- (D) Implementation of projects envisaged for productive sectors in the respective Potential Areas.
- (E) Planning for greater and greater urban agglomerations as the implementation of sectoral projects start to yield in the way of agricultural products, fish hauls, mined ores, etc.

As indicated in Table 5-1-1, for example, the development activities can be ordered in the following manner.

Step A Projects: These projects have the purpose of providing and improving various services for fishermen and Nubians who have been trying to settle at scattered locations in the lakeshore. Central facilities for medical care and other emergency cases could be located

in the new town area of Aswan City on the western side of the High Dam, which would eventually expand to service the entire Project Area. The provision of services from Aswan City will be useful for mining development (Step B projects) and foreshore agricultural development (Step D projects), since miners and farmers concerned must settle in the project sites when the local infrastructure and basic needs services are still insufficient. At an early stage there should also be improvement of the fishermen's camps on the lakeshore and model settlement projects to encourage and facilitate the settlement of fishermen.

Step B Projects: These projects would involve promotion of fisheries, through improving fishing techniques and instituting fishery management. Facilities for these purposes, such as the establishment of the Fishery Management Center, would be located in the new town area of Aswan City. In addition, improvement of tourism facilities in Aswan and Abu Simbel, and mining development in Kurkur, Kalabsha and El Allaqi may be mentioned. The Agricultural Experiment Station will be set up in Kalabsha.

Step C Projects: These would primarily comprise the trunk road in the western shore linking Aswan and Abu Simbel, and, as a project closely related to Step A projects in Quastal/Adendan, ferry services across the lake from Abu Simbel. The construction of the trunk road will gradually extend from both ends, i.e., Aswan and Abu Simbel. In consideration of mining development at Kalabsha and construction of the Tushka Spillway, the extension of rural feeder roads should be carried out earlier at Kalabsha and Tushka than elsewhere.

Step D Projects: The agricultural development would start from Kurkur (upland) and Quastal/Adendan (foreshore) and then foreshore agricultural development at Kalabsha/Dakka, Abu Simbel and Tushka would follow. The large-scale upland agriculture at Kalabsha, Abu Simbel and Tushka would start following the foreshore agricultural development in their respective vicinity.

Step E Projects: These projects would comprise the establishment of central cities in the respective Development Areas. With respect to Aswan City, development of housing in the new town area of Aswan City will have to proceed apace with the expansion and diversification of economic and social activities based in the City. With respect to other Development Centers in the Project Area, it will be appropriate that the development be implemented in accordance with the tempo of agricultural development, or in other words, settlement of farming population in the respective Development Areas these central cities are expected to service.

5.1.2 Development Programs by Time Sequence

1983 - 1987: Major developments in this period are the infrastructure projects, notably the Aswan-Abu Simbel trunk road, to connect the principal development areas in the Project Area, agriculture and mining development projects in the vicinity of Aswan City and the fishery development projects at High Dam Lake. Among projects to

Table 5-1-1 A Model Illustrating the Steps for Development

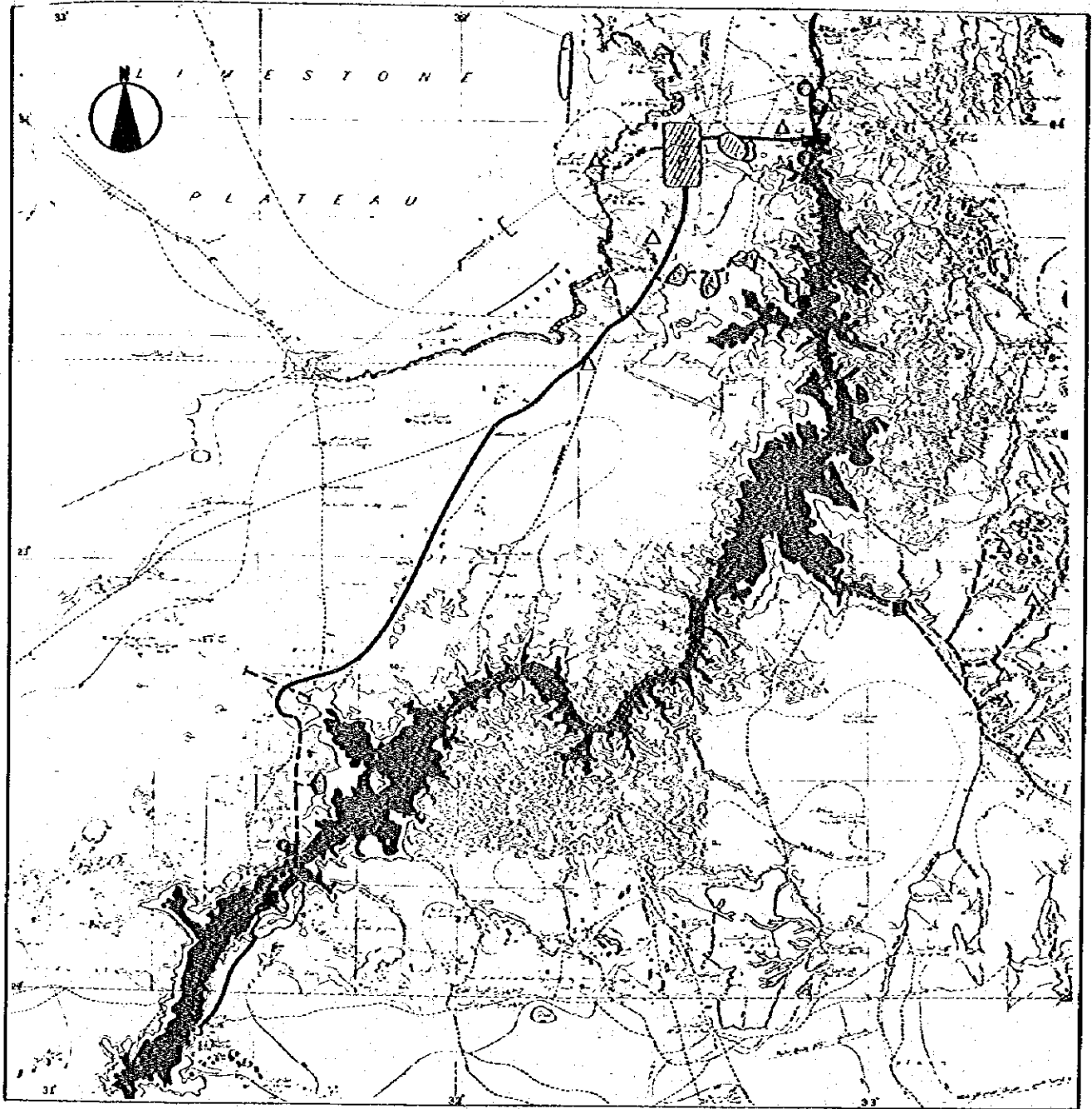
Steps of Plan Implementation	Study Area					
	Aswan	Kalabsha	El Allaqi	Tomas/Affia	Tushka	Abu Simbel
Present Status	Population 190,000	A few scattered and Nubians	number of fishermen	Spillway	Population 1,000	
Urgent projects	Mobile medical care facilities Daily necessities service center	Improvement of jetties for clinic boats				
Projects to support existing industries	Fishery management center Tourism development	Mining development Agricultural experimental station	Mining development			Tourism development Agricultural experimental station
Basic infrastructure development projects	Aswan - Abu Simbel Road Aswan port facilities development	East Road Navigation route development	Abu Simbel - Aswan Road			
Agricultural projects	Kurkur ↓ Kalabsha Foreshore ↓ Upland	↓ El Allaqi Foreshore ↓ Upland	↓ Tomas/Affia Upland	↓ Tushka Foreshore ↓ Upland	↓ Quastal/Adendan Foreshore ↓ Upland	
Urban and community development	Community development space with development of foreshore agriculture and mining. Establishment of development centers space with development of upland agriculture.					

be implemented in the new town area of Aswan City, the construction of facilities for medical care and public health, hotels in the old town and the lakeshore to the west of the High Dam, port facilities, and the renovation of the existing industrial zone will be executed.

1988 - 1992: The agricultural development in the northern and southern ends of the Project Area will proceed apace with the extension of the Aswan-Abu Simbel road. The development areas of Kalabsha and Tushka will have their Development Centers function as service centers for the respective rural hinterlands. In Aswan the construction works of housing in the new town area will be at its peak, as well as construction of the City's road system. In Abu Simbel, the establishment of new tourism facilities and the construction of the new town area, though still small in scale, are to be started.

1993 - 1997/2000: By the turn of the next century, the construction of the new town area of Aswan City and the renewal of the built-up area in its Old Town will be completed, and Aswan will function in full scale as Regional Development Center in Southern Upper Egypt. In the rural area, the agricultural development of Tomas/Affia and El Allaqi and the construction of their Development Centers will be executed.

The development processes in relation to three consecutive five-year periods are shown in Figures 5-1-1 through 5-1-3. Following these processes, the development of Project Area will proceed and be completed by the end of this century. However, more detailed studies are needed for the execution of these projects which are components of an overall Regional Master Plan. Particularly, a detailed study on the urban development of Aswan City, which is the primary core of the entire Project Area, must be conducted at the earliest possible opportunity. The feasibility studies for Abu Simbel City and other Development Centers will be also required in accordance with the detailed development schedules in respective agricultural development areas.













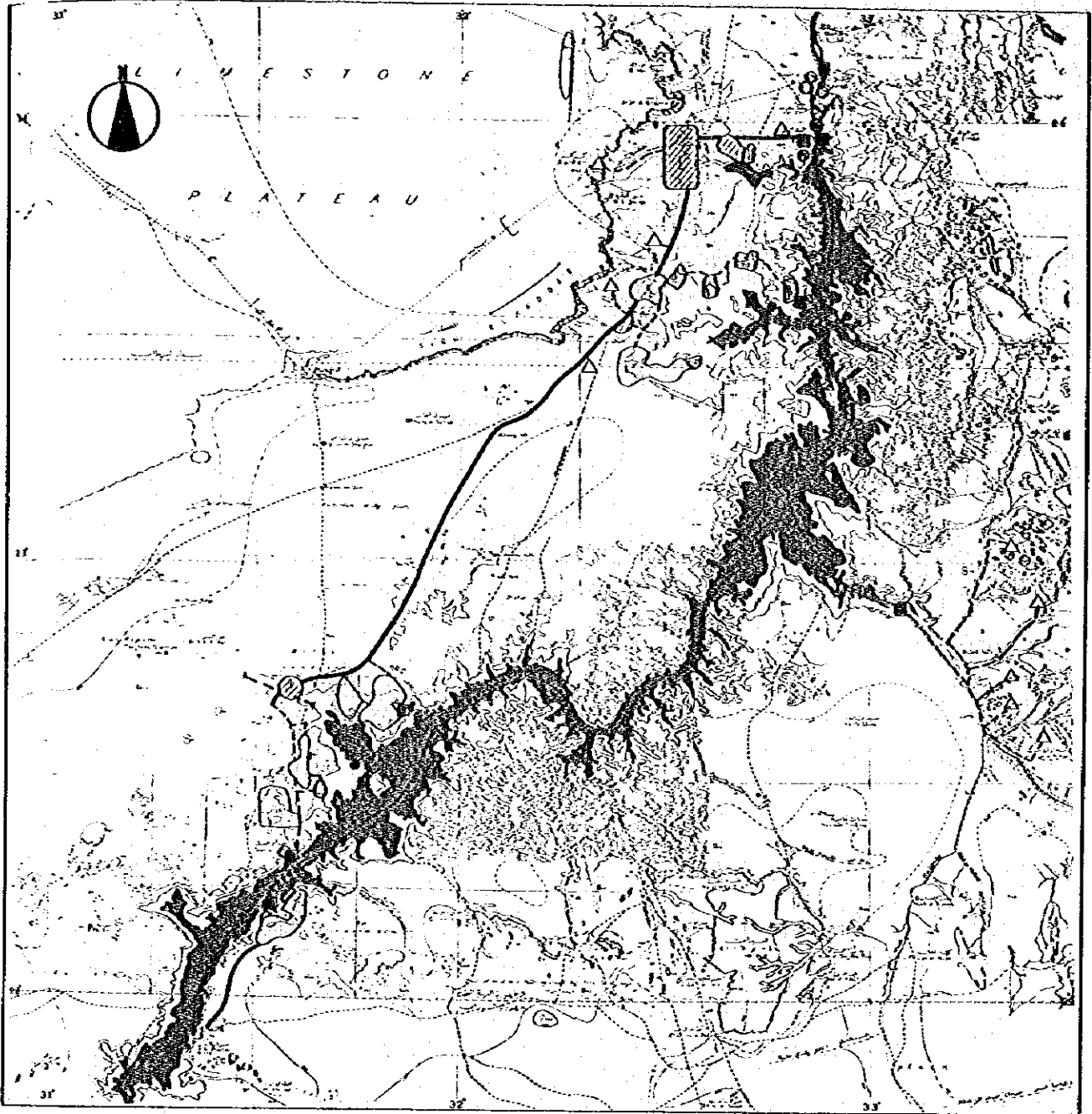
INTEGRATED REGIONAL DEVELOPMENT PLAN OF THE HIGH DAM LAKE AREA

Figure 5-1-1

Expected Development by 1987



	On-going Upland Foreshore	} Agriculture
		
	Port facilities	
	Mines	
	Tourism	
	Trunk roads	
	Feeder roads	
	Tushka Spillway	
	Navigation route	
	ferry service	



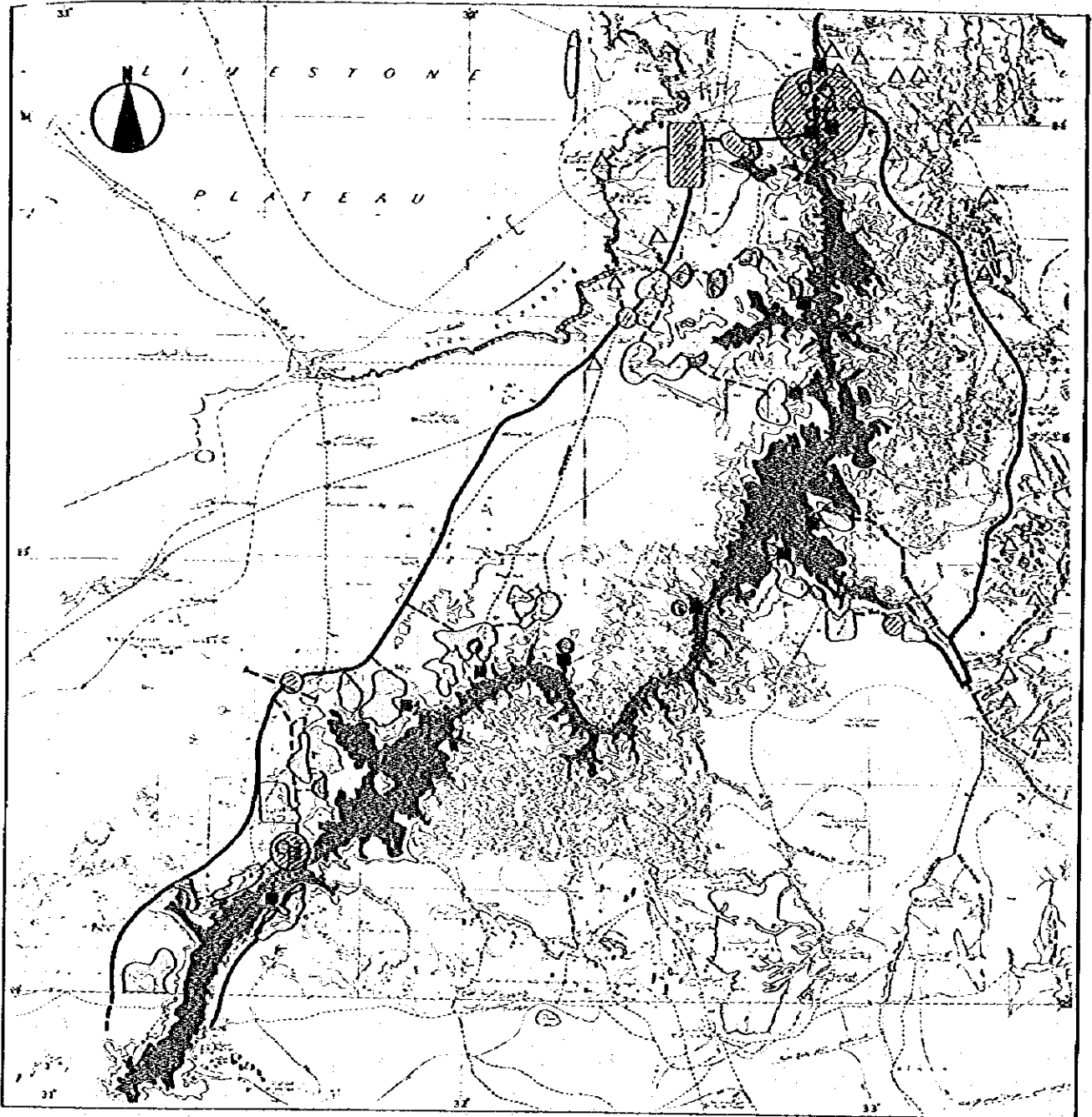
INTEGRATED REGIONAL DEVELOPMENT PLAN OF THE HIGH DAM LAKE AREA

Figure 5-1-2

Expected Development by 1992



	Development centers
	On-going Upland Foreshore } Agriculture
	Distribution centers & port facilities
	Fish culture
	Mines
	Tourism
	Trunk roads
	Feeder roads
	Navigation route Ferry service



INTEGRATED REGIONAL DEVELOPMENT PLAN OF THE HIGH DAM LAKE AREA

Figure 5-1-3

Expected Development by 2000



	Development centers
	On-going Upland Foreshore } Agriculture
	Distribution centers & port facilities
	Fish culture
	Mining
	Tourism
	Trunk roads
	Feeder roads
	Navigation route Ferry service

5.2 INVESTMENT SCHEDULE

5.2.1 Basic Framework

(1) Introduction

Estimation of development costs is based on, without saying, proposed sectoral development plans, which in turn should conform in essence to the national development objectives. Among the development objectives, over which detailed discussions have already been presented in Chapter III, the following objective sets the basic framework for the sectoral development plans: to create a sufficient number of job opportunities in the Project Area so as to absorb an estimated increase of some 500,000 population in the Project Area by the end of this century. If sufficient job opportunities are not made available to them, however, most of the anticipated population increment will choose to move to other places such as Cairo and other major cities in the delta area. Development costs necessary for implementing the proposed sectoral development plans to absorb the projected population increment into the Project Area are estimated on the basic assumptions as described below.

(2) Technology

The time span for the present regional development plan is demarcated from 1983 through 1997. The periods of present-1982 and 1998-2000 are also taken into account, covering approximately 20 years as a whole. Consequently a great deal of technological progress can be anticipated during the given time span, such as breakthroughs in harnessing solar energy or discovery of energy substitutes for oil. A development plan, however, cannot be formulated on the basis of technologies which are not presently available, or the future availability of which one is not certain of. For instance, much attention has been given to the exploitation of solar energy, yet no one can say when and at what cost the technologies will become available. Likewise, other technological breakthroughs may not go beyond speculation in the future, and, therefore, a development plan must be considered within the framework of currently available technologies.

(3) Financial Sources

In estimating the costs for implementing the proposed regional development plan, the question of who would bear the costs will naturally arise. The Egyptian Government obviously expects to bear most of the estimated costs. The Government also intends to encourage the participation of the private sector in the development of the Project Area. In Egypt, however, the private sector has not been sufficiently developed as a consequence of the socialist economic policies pursued so far. Moreover, financial channels, through which private savings are mobilized into investment, have neither been well-established. And although the private sector is hoped to take part in the future economic development, the extent of its participation cannot be estimated precisely at present. For the above reasons, a discussion on