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At the request of Dubai Municipality, a comprehensive regional planning advisory team spent four weeks in the field examining the existing status of physical, economic and social development, collecting and reviewing available documentation and studying the current planning and development process. The intent was to develop terms of reference for a comprehensive regional plan and planning program for the Emirate of Dubai and to establish a continuing planning process that will guide growth as well as encourage it. This document includes a discussion of the historical setting, Dubai today, and a survey and analysis of the population and economic growth. The overall survey and analysis task is organized into four major phases: 1. The Arabian Gulf and Peninsula study will isolate and analyze those aspects of the middle east area's natural features and socio-economic features which will affect Dubai's future growth and development; 2. The Gulf States analysis will focus on the coastal area from Bahrain to Muskat, examining both natural and socio-economic features of significance to Dubai; 3. The Emirate of Dubai analysis will look at the Emirate as a whole and stress those aspects of Dubai which have an Emirate-wide concern; and 4. The Dubai municipality section will focus on the developed and developing area of Dubai. A detailed examination of all aspects of Dubai - physical, social and economic - is contemplated.

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DUBAI MUNICIPALITY

INTERNATIONAL PLANNING COMPETITION
FOR THE PREPARATION OF A COMPREHENSIVE
PLAN AND PLANNING PROGRAM
FOR THE EMIRATE OF DUBAI

PREPARED BY
OFFICE OF HOUSING
AGENCY FOR INTERNATIONAL DEVELOPMENT
U. S. A.
FEBRUARY 1977

CONTENTS OF REPORT

P R E F A C E

At the request of Dubai Municipality, the Agency for International Development provided a Comprehensive Regional Planning Advisory Team to advise and assist the Municipality in the preparation of Terms of Reference for the development of a Comprehensive Regional Plan and Planning Program for the Emirate of Dubai.

Beginning in April 1976, the Team began to work with Mr. Saadallah N. Saadallah, Chief Town Planner for Dubai Municipality. The Team spent four weeks in the field examining the existing status of physical, economic and social development, collecting and reviewing available documentation and studying the current planning and development process.

At the completion of its reconnaissance the team, while still in Dubai, prepared a draft of the Terms of Reference, reviewed it with local authorities and incorporated their comments and suggestions.

It is the sincere hope that the efforts of the Team in collaboration with the Chief Town Planner will result in laying the groundwork for the development of a Comprehensive Regional Plan for Dubai and the establishment of a continuing planning process that will guide growth as well as encourage it.

WILLIAM SORRENTINO	Chief Planner
EDWIN BAKER	Housing and Planning Specialist
EDWARD MUSE	Traffic and Transportation Specialist
DAVID PHELAN	Urban Economics Specialist
DAVID MCVOY	Team Coordinator

February 1977

Office of Housing, Agency for International Development

S E C T I O N 1

DESCRIPTION OF PROJECT AND CLIENT

Dubai Municipality proposes to enter into a contract with a consultant to prepare a comprehensive regional plan and planning program for the Emirate of Dubai. The consultant firm will be required to establish an office in Dubai and to work with the Dubai Municipality during the preparation of such a plan. Inherent in the contract will be the need to develop the implementation strategies necessary to ensure that the plan is of continuing value and not a document for historical files.

The consultant firm will begin its work with a thorough survey and analysis of Dubai, its role in the Gulf, and its needs, plans and potential for the future. This phase will require extensive field survey as data on existing conditions is severely limited. It is the intent of the Dubai Municipality that this comprehensive survey include physical, social and economic factors.

The second phase will require the formulation and presentation of alternative developmental strategies based on various assumptions and projections and their resultant economic

implications.

Interaction during this phase with the various elements of government in the Emirate of Dubai and Dubai Municipality will be required to ensure that the resultant policy statement is fully understood by all of the participants in the development decision process. Subsequent to an agreed upon policy statement, the plan itself will be formulated. In order for the plan to be effective it must be a plan for actions to be taken and not merely a static document. An implementation strategy and program are integral parts of the final plan. Due to rapid growth and change in the Gulf States as well as the more rapid growth of Dubai itself, the plan must have the flexibility required to change and develop with the times.

The client for this planning project will be the Dubai Municipality. The direct contact will be the Chief Town Planner but the firm will be responsible to the Director of Dubai Municipality. The Municipality is the local government for the developed and developing areas of the Emirate. H.H. Shaikh Hamdan Bin Rashid Al Maktoum, Chairman of Dubai Municipality, is the head of the Municipal Council and the administration. H.E. Kamal Hamza, the Director, has responsibility on an operating level for the management of all

functions of the Municipality. The Municipality is partially self sustaining; however, capital funding is provided directly from the Ruler's Office.

H.H. Shaikh Rashid Bin Said Al Maktoum, Vice President of the United Arab Emirates (U.A.E.) and Ruler of Dubai controls, through his office, Petroleum Affairs, Dubai Port Services, Dubai International Airport, Dubai Water Supply, Dubai Electricity Company, the new Dry Dock, and many of the proposed development projects which are critical to the growth of Dubai.

Crown Prince Shaikh Maktoum Bin Rashid Al Maktoum, Prime Minister of the U.A.E., is the head of the Lands Department, a separate entity accountable to the Ruler and responsible for property registration and regulation.

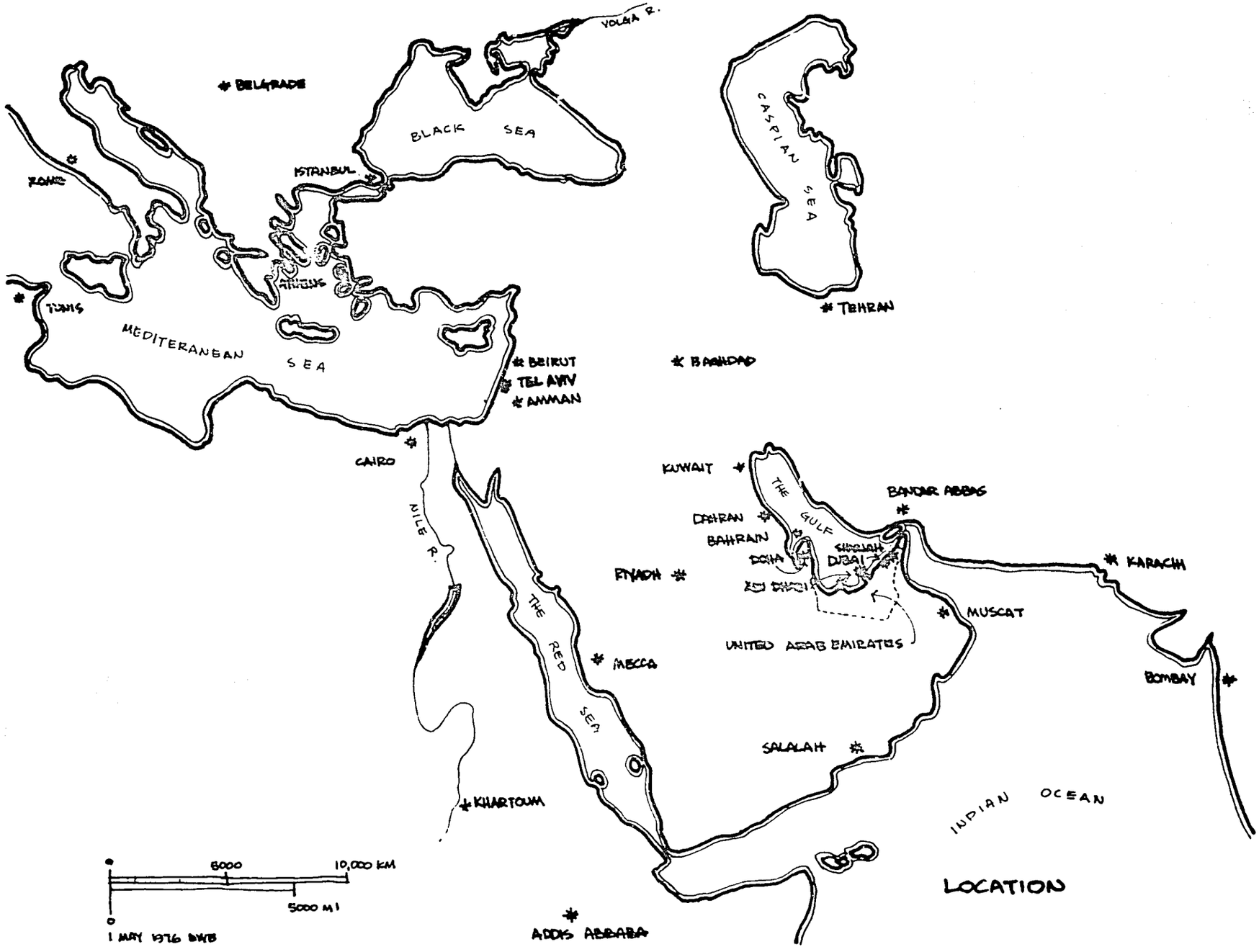
Public education in Dubai is the responsibility of the Ministry of Education of the United Arab Emirates and is one of the significant areas of federal responsibility within the Emirate of Dubai.

While this seemingly complex organization would suggest difficulty in decision making, the direct input of the Ruler is frequently seen and decisions are quickly made. Therefore, it is vital that the planning process be formulated in such

a way that it is understood by, and has the support of, the Ruler. Since the future growth and prosperity of Dubai are his ongoing concerns the plan must address the fiscal, physical and social issues in a way which makes clear the long term fiscal impacts of growth and its management in a form understood by the Ruler.

Being successful in this planning task will require a significant amount of time by key personnel of the consultant working with officials of Dubai Municipality and others in Dubai. The opportunities, however, to make significant contributions in shaping the growth of a rapidly growing region are great.

Dubai Municipality is anxious to establish a long term relationship with a qualified, reputable planning consultant firm. It is estimated that the scope of work required to produce a comprehensive regional plan for Dubai will take approximately two years. At the end of this period it is the intention of the Municipality to retain one or more planning consulting firms to provide ongoing services to both assist in implementation and maintain planning as a continuing process.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BLACK SEA
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AMMAN
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BAHRAIN
DOHA
SHARJAH
DUBAI
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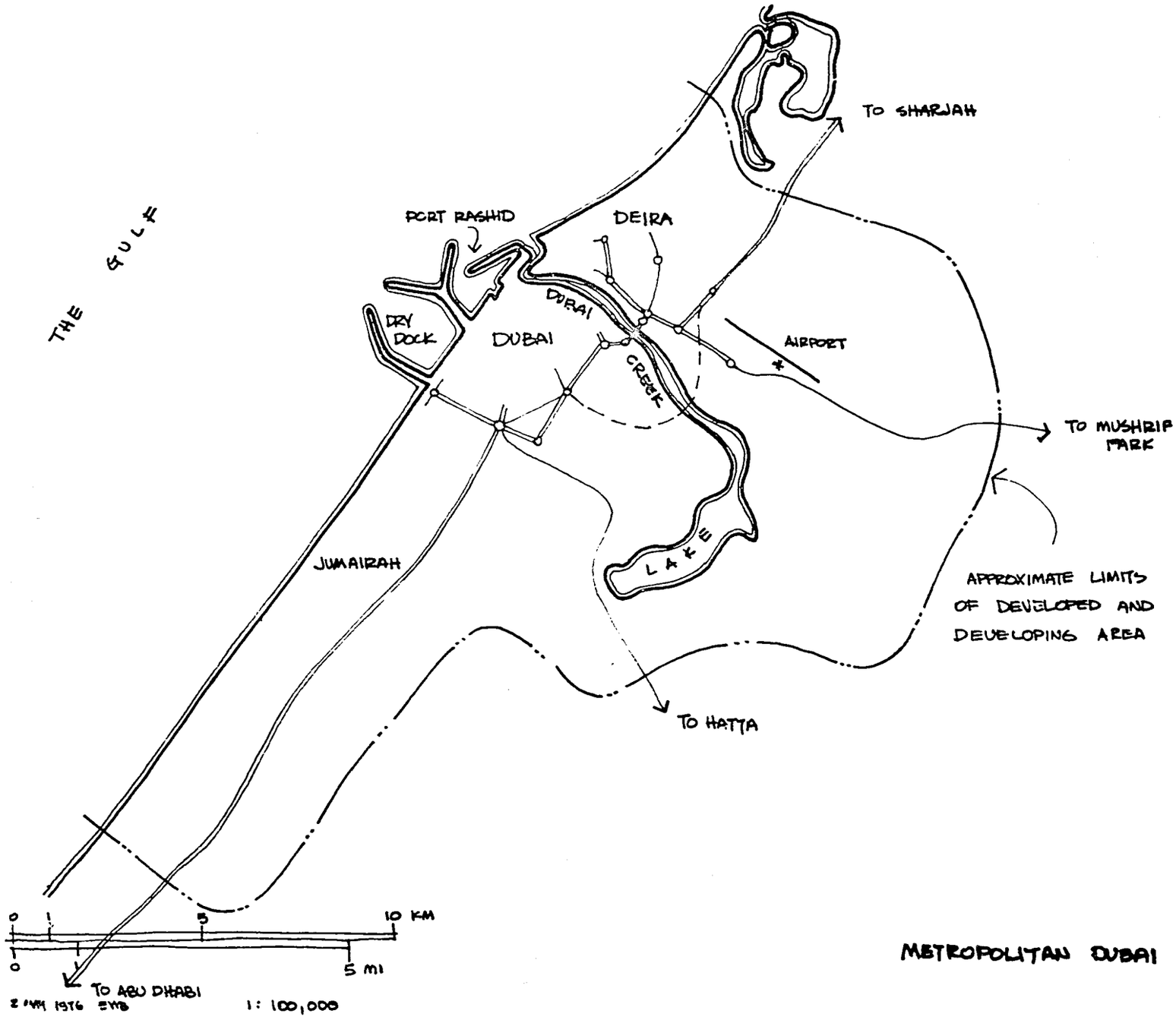
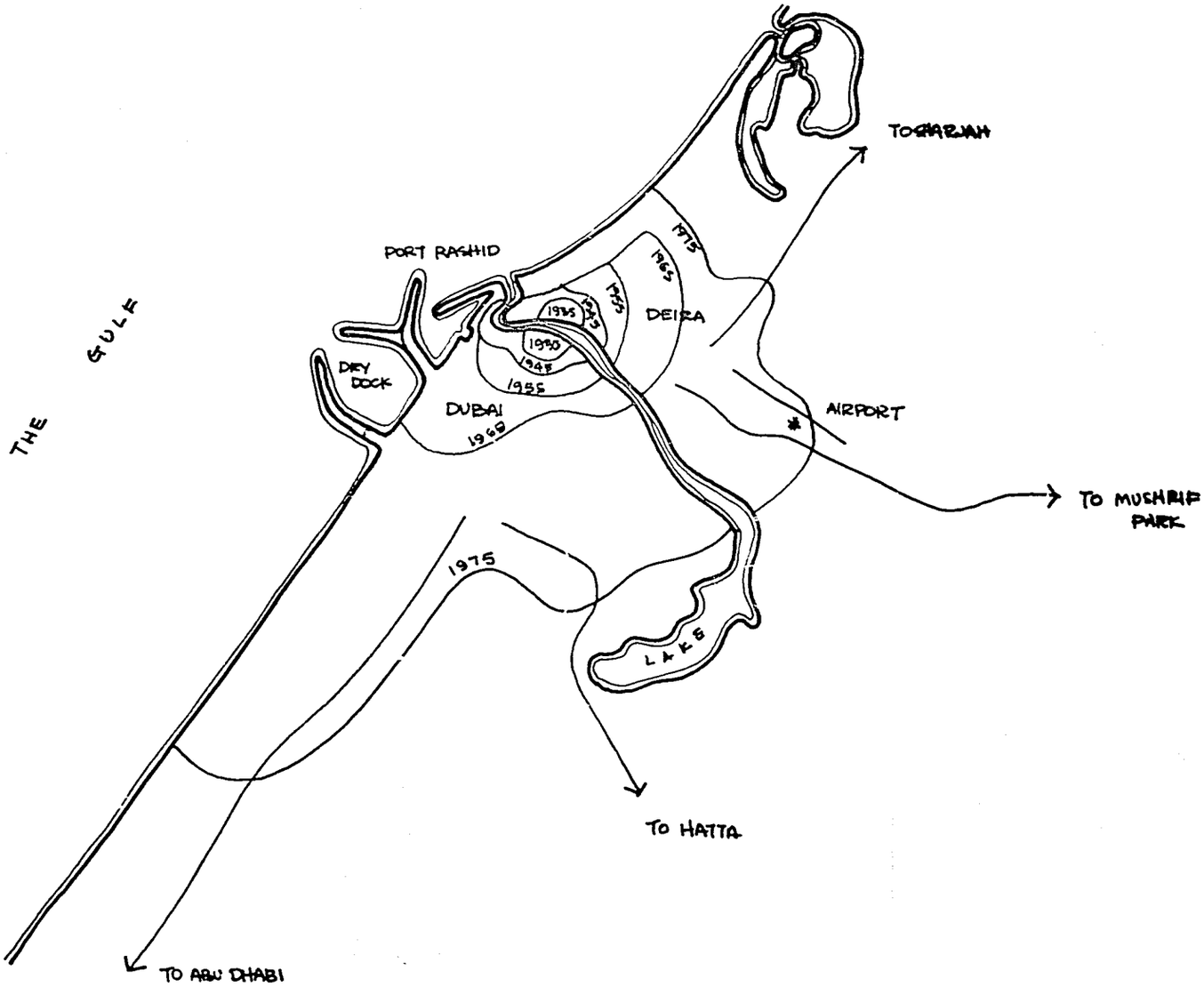
1 MAY 1976 DWB
LOCATION



METROPOLITAN DUBAI



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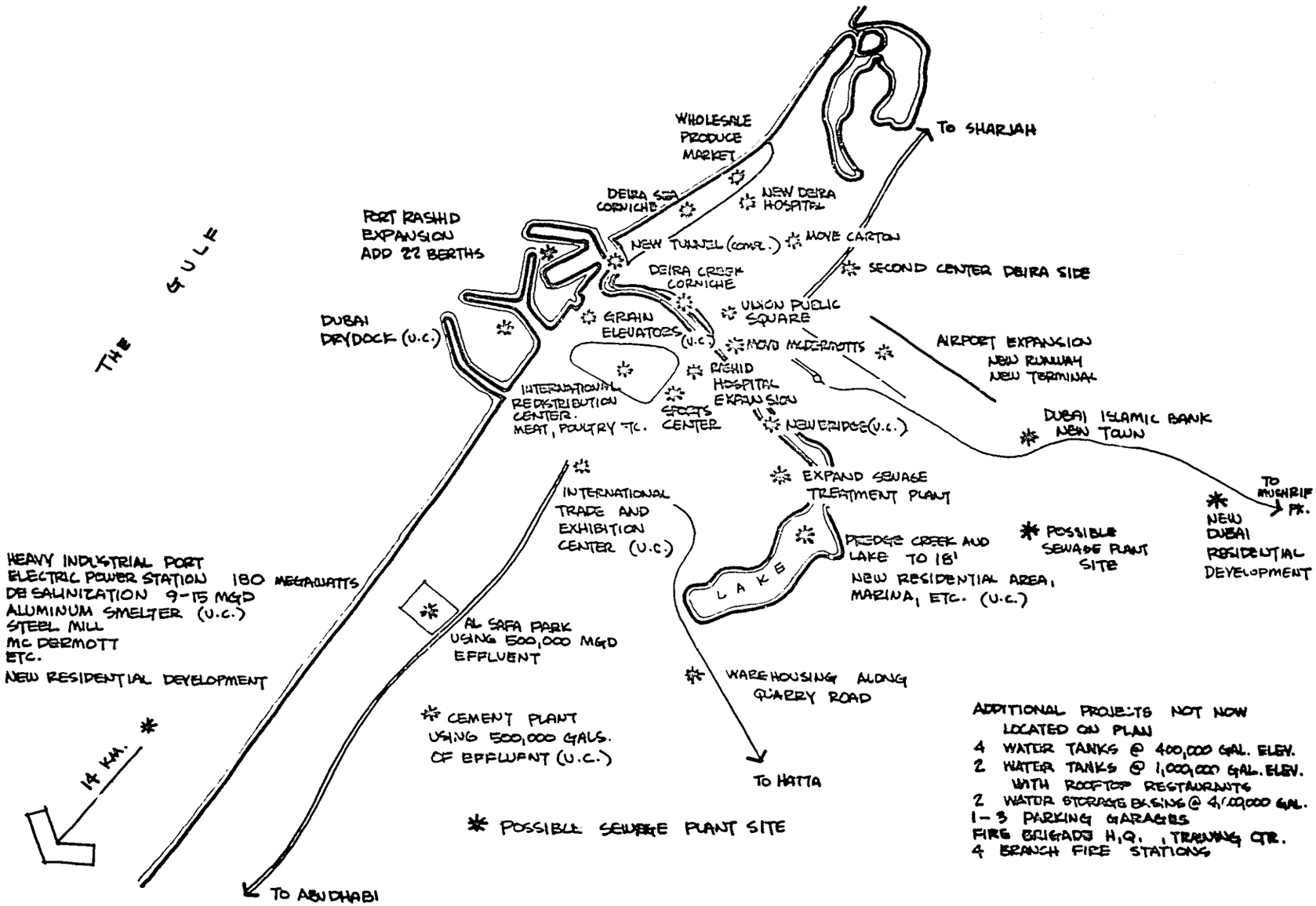
GROWTH OF DUBAI

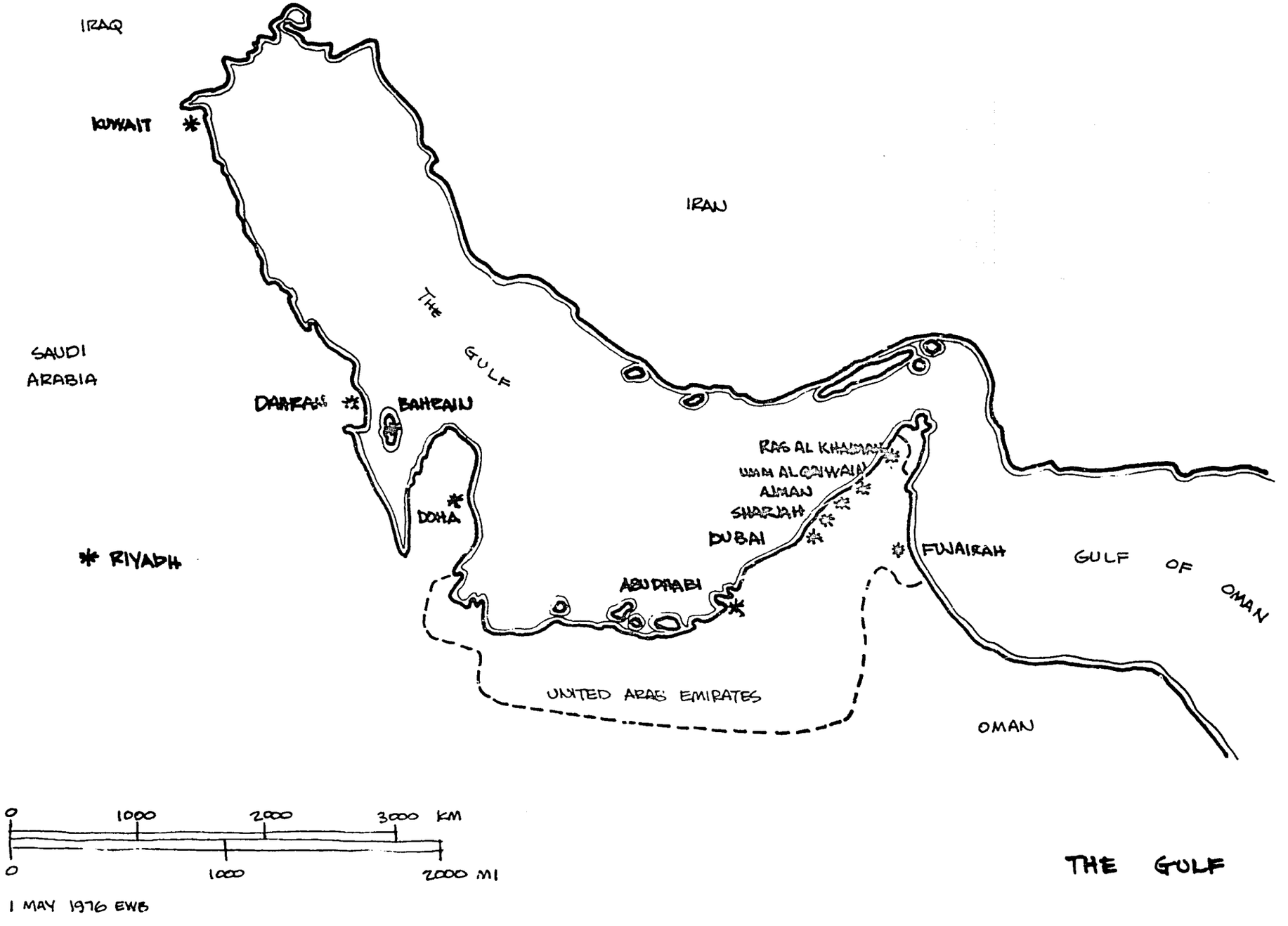


ADDITIONAL PROJECTS NOT NOW LOCATED ON PLAN

4 WATER TANKS @ 400,000 GAL. ELEV.
2 WATER TANKS @ 1,000,000 GAL. ELEV. WITH ROOFTOP RESTAURANTS
2 WATER STORAGE BASINS @ 4,000,000 GAL.
1-3 PARKING GARAGES
FIRE BRIGADE H.Q. & TRAINING CTR.
4 BRANCH FIRE STATIONS

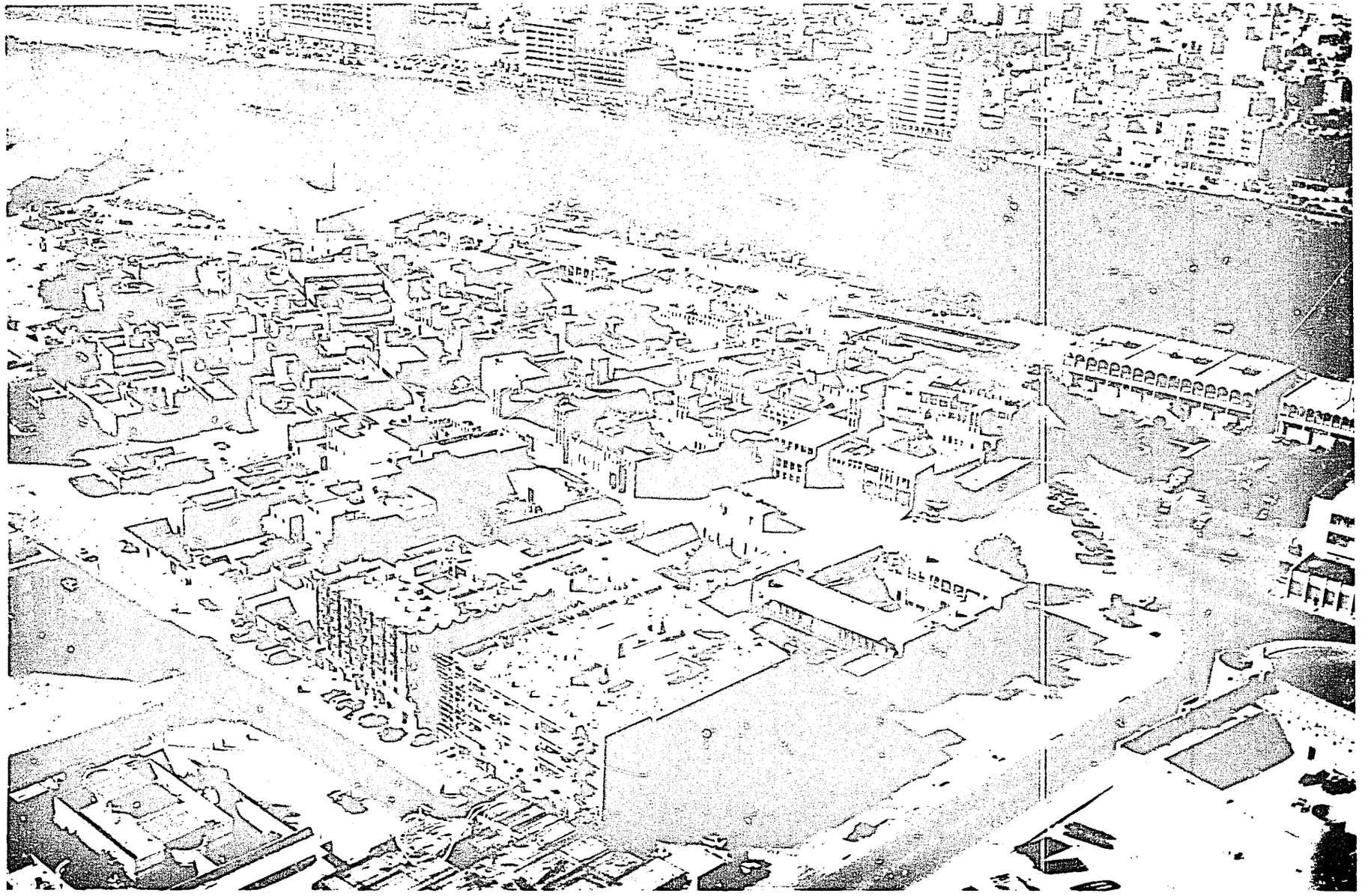
NOTE (U.C.) UNDER CONSTRUCTION

MAJOR PROJECTS



THE GULF

1 MAY 1976 EWB



OLD DUBAI: THE MUSEUM FORT IN THE LOWER LEFT, H. H. SHAIKH RASHID'S OFFICE IS FRONTING ON THE CREEK. THE BASTAKIA (WIND TOWER) NEIGHBORHOOD IS IN THE CENTER.

S E C T I O N 2

HISTORICAL SETTING

A. BRIEF HISTORY OF THE PERIPHERAL STATES

Dubai is one of seven members of the United Arab Emirates. It lies on the southeastern coast of the Arabian Gulf, covers an area of 1500 square miles and has a coast line on the Gulf of about 45 miles.

Dubai's natural harbor and strategic position have made it a popular port of call since the 4th century B.C. Dubai became well known for its traditional pearling industry and for 1500 years (until the introduction of cultured pearls) the high quality pearls found in the waters of the Gulf were a valuable trading commodity.

During the 16th century the Gulf came under the influence of Europeans. Portuguese traders were the first of the Europeans to establish settlements and to build forts for their protection. For more than a century the Portuguese were not seriously challenged by other European traders.

In the 18th century traders from France, Holland and Britain began to infiltrate the Gulf and to attack the Portuguese monopoly in furtherance of their trade with India.

Relations between the Dutch and the British appear to have been cordial during the earlier part of the 18th century, but during the second half of that century relations became hostile. By 1776 the Dutch influence in the Gulf came to an end. Thereafter, Britain was practically unchallenged by other European powers. However, there were other contenders for trade and influence in the Gulf including Persians in the north-east, Ottomans in Mesopotamia and Arabs in the west and south.

During the 18th century the attack by coastal Arab tribes on European ships became so prevalent that the area came to be called "The Pirate Coast." The southern coast of the Gulf with its numerous creeks provided shelter for the attacking ships.

Dubai Creek was one of several such creeks. The attacks on shipping became so serious that in 1820 the British dispatched a large naval and military force to destroy the pirate fleets and their bases. The town of Ras al Khaimah, then the most important pirate stronghold, was attacked, its ships burned and the fort demolished. Other pirate lairs on the coast were then destroyed or threatened with destruction. Fearing such reprisals, the Shaikh of Dubai and other rulers signed a treaty agreeing not to interfere with the freedom of navigation.

Dubai Creek had attracted settlements for many centuries. In 1833, led by Obaid Bin Said and Maktum Bin Buti, 800 members of the Beni Yas tribe left Abu Dhabi and settled in Dubai and in 1835 signed the first in a series of maritime truces agreeing to refrain from all quarrels during the summer pearling season.

Ties with Britain became even closer in 1892 with the signing of the Exclusive Agreement under which the Shaikhs of the Trucial Coast, as it was then known, undertook to entrust all of their foreign affairs to Britain and not allow other foreign representatives to live on their territory.

Dubai became a regular port of call for shipping from 1902 onward and thus acquired the position it still retains as the main commercial center of the lower Gulf.

Iranian traders settled in Dubai early in the 20th century and much of the settlement still is influenced by the Iranian culture.

Since 1900 the prosperity of Dubai has fluctuated greatly due to the effects of the two world wars, economic recessions and revivals. With the discovery of oil, population and trade have increased rapidly. The rapid rate of growth of Dubai has been as great or greater than in any city in the Gulf.

B. THE EMERGENCE OF THE UNITED ARAB EMIRATES

British relationships with the Gulf Emirates were of a special nature. The states were never colonies and no foreign government was ever established or even contemplated. Britain's interests were in trade, freedom of the seas, suppression of piracy and slave trading. The Trucial States were free to handle their own internal affairs. British interests demanded some form of state organized on a territorial basis rather than by a fluctuating tribal organization and encouragement was given to those rulers who could speak with authority for their own area. The next logical step lay in federation as an early goal.

When it appeared that Britain might withdraw from the Gulf, the Shaikhdoms had to begin considering some sort of federation, especially the smaller states which were not politically or economically viable.

With the advent of oil, the concept of the state with its territorial sovereignty assumed great importance and further strengthened the British idea of federation.

The first step towards implementing the idea of a federation was taken at a meeting held in Dubai on February 18, 1968, during which agreement was reached between the Rulers of

Abu Dhabi and Dubai to form a union between the two emirates covering foreign affairs, security, defense, social services and immigration. The two Rulers further agreed to invite the Rulers of the other Trucial States to participate in the federation and to invite the Rulers of Bahrain and Qatar to join their discussions on the future of the area.

These invitations were accepted and all nine rulers met in Dubai on February 28, 1968 and signed an agreement for setting up a federation under a supreme council of rulers. This council in June 1968 appointed a constitutional expert to draft a constitution and nominated a temporary federal council as the executive branch of the supreme council.

As the date for the British withdrawal approached and as it became obvious that the British decision was final, a sense of urgency arose. Envoys were sent to all the Rulers urging them to make a final decision about the Federation.

During July 1971 agreement was reached among the Rulers, and six of the states announced their intention to establish the United Arab Emirates (U.A.E.). The seventh state, Ras al Khaimah, deferred its decision but subsequently made an application to join the six and was formally admitted on February 10, 1972.

The U.A.E. officially came into being on December 2, 1971 and later in the same month was admitted to membership in

the Arab League.

Early in 1972 the U.A.E. was elected to membership and became the 132nd member of the United Nations.

DEIRA CREEK WHARF. S.!OWS ALONGSIDE THE WHARF, THE CREEK LANDFILL AT THE TOP. DEIRA SOUK IS IN THE LEFT FOREGROUND.

S E C T I O N 3

DUBAI TODAY

To appreciate the great strides made by Dubai during the past five years, one must realize that as recently as 1970, a large portion of the housing stock was mud brick or barasti. Oil production was only 31 million barrels per year, generating relatively modest revenue for the government of Dubai. Rashid Port had just opened with a two berth capacity. The population of Dubai had been officially estimated at approximately 60,000 in 1968, two years before.

Early in 1976 a population census indicated a total population of 207,000. The total housing stock, as indicated by water and electricity connections, had grown to approximately 35,000. Port Rashid had a total of 16 operating berths servicing ships with waiting times of 3 to 6 days, despite the increasing trend toward larger ships.

Looking toward the future development of the Dubai economy, large increases in economic development and employment levels are anticipated as a direct result of new projects designed to increase Dubai's share of the trade, industrial and service industry sectors in the Gulf area and beyond. To develop the trade potential of Dubai, for example, the current 16 berth capacity of Port Rashid will be increased

by 22 berths in 1978, and a new dry dock currently under construction will service very large crude carriers of up to 500,000 tons (two docks) or 1,000,000 tons (one dock) as well as other types of vessels, beginning in 1978. Also, a new Industrial Port is being considered to serve manufacturing plants already under construction and other industrial projects. To develop the industrial potential of Dubai, construction has begun on an aluminum smelter plant to open in 1979, a cement plant of 500,000 ton annual capacity is to be completed by 1978, and a 30,000 ton capacity flour mill opened in 1976. Other industrial projects being considered include an aluminum extrusion plant, a refinery project, a sponge iron and steel mill and a poultry farm.

To develop further the service industry potential of Dubai, construction has begun on an International Trade and Exhibition Center comprising office, hotel and other facilities; plans have also been announced for new hotel capacity of 1800 beds, and for a large amount of office, shopping and residential space. Fueling this growth in future economic development and employment are the continuing revenues from oil production, currently averaging about 300,000 barrels per day, and expected to increase gradually over the next few years.

However, it is also important to note that similar economic

development investments are being made and are planned in other Emirates in the U.A.E. and other nations in the Gulf area. With the current great uncertainty about the ultimate size of the markets to be served by these facilities, it is possible that some Gulf area economic development projects may not be economically viable. It will be important, therefore, to assess Dubai's competitive advantages and disadvantages in the Gulf economy as a vital part of planning the future economic growth of Dubai.

Dubai's average annual population growth rate of approximately 20% since 1968 has not been achieved without significant economic disruptions and recurring shortages. The inflation experienced in all economic sectors has been as severe as elsewhere in the Gulf area. The capacity limits of major infrastructure components have been repeatedly strained during this period of rapid growth, including the road, water, sewer and electricity systems.

Inflation, as measured by retail price movements during 1974 and 1975, resulted in more than 50% increase in the retail price index at the end of the two year period. Individual index components where some of the largest increases were recorded included food (70% plus), durable household goods (40% plus), housing and house services (35% plus) and transport and vehicles (27% to 40%, depending on the consumer income

range). Inflation estimates for major capital investment items are not available at this time. It is generally anticipated that high rates of inflation will continue during at least the next two or three years.

Much of this inflation is attributable to worldwide inflation, particularly since Dubai and the Gulf area generally are heavily dependent on imports for much of the region's economic activity. However, there is also significant inflation attributable to the local excess of demand over supply of certain goods in Dubai. While no statistics are available at this time, anecdotal evidence indicates that this local inflation is most pronounced in real estate transactions, including both rents or prices charged for developed commercial and residential space and the rapidly increasing prices of unimproved land. There is some uncertainty as to short term future real estate price levels as the large supply of developed residential and commercial space currently under construction comes on the market during the next two years.

Dubai has also experienced problems in expanding infrastructure rapidly enough to keep pace with population growth. The road systems have been congested, particularly in the area surrounding the (then) only bridge crossing the creek. While the recent opening of two additional lanes on the bridge and of a tunnel near the mouth of the creek have alleviated the most

severe congestion, continued increases in car registrations and truck traffic, in addition to Dubai traffic from motor vehicles registered elsewhere, is expected to strain once again the capacity of the road system. Also, there remain significant local traffic congestion points in the road network in the older parts of Dubai and Deira, because of narrow roads and buildings in close proximity to one another. Finally, the handling capacity of the roundabout intersections appears to have been reached and exceeded at several points in Dubai, necessitating selective future replacement of roundabouts with signalized intersections.

The water system has similarly been strained to its capacity limits and beyond, under the pressure of an historic long term 30% annual increase in water consumption. Major recurring water system problems have included those of providing new sources of fresh water via 25 mile trunk lines to Dubai, undersize mains and feeder lines as residential development densities exceed the densities planned, of responding to the problems created by low water pressures, and of responding to contamination problems attributable to indequately supervised septic tank siting and to consumer negligence in cleaning storage tanks. Future system development plans to respond to the anticipated continuation of 30% annual growth in water consumption include development of additional well

capacity and initiation of desalination facilities.

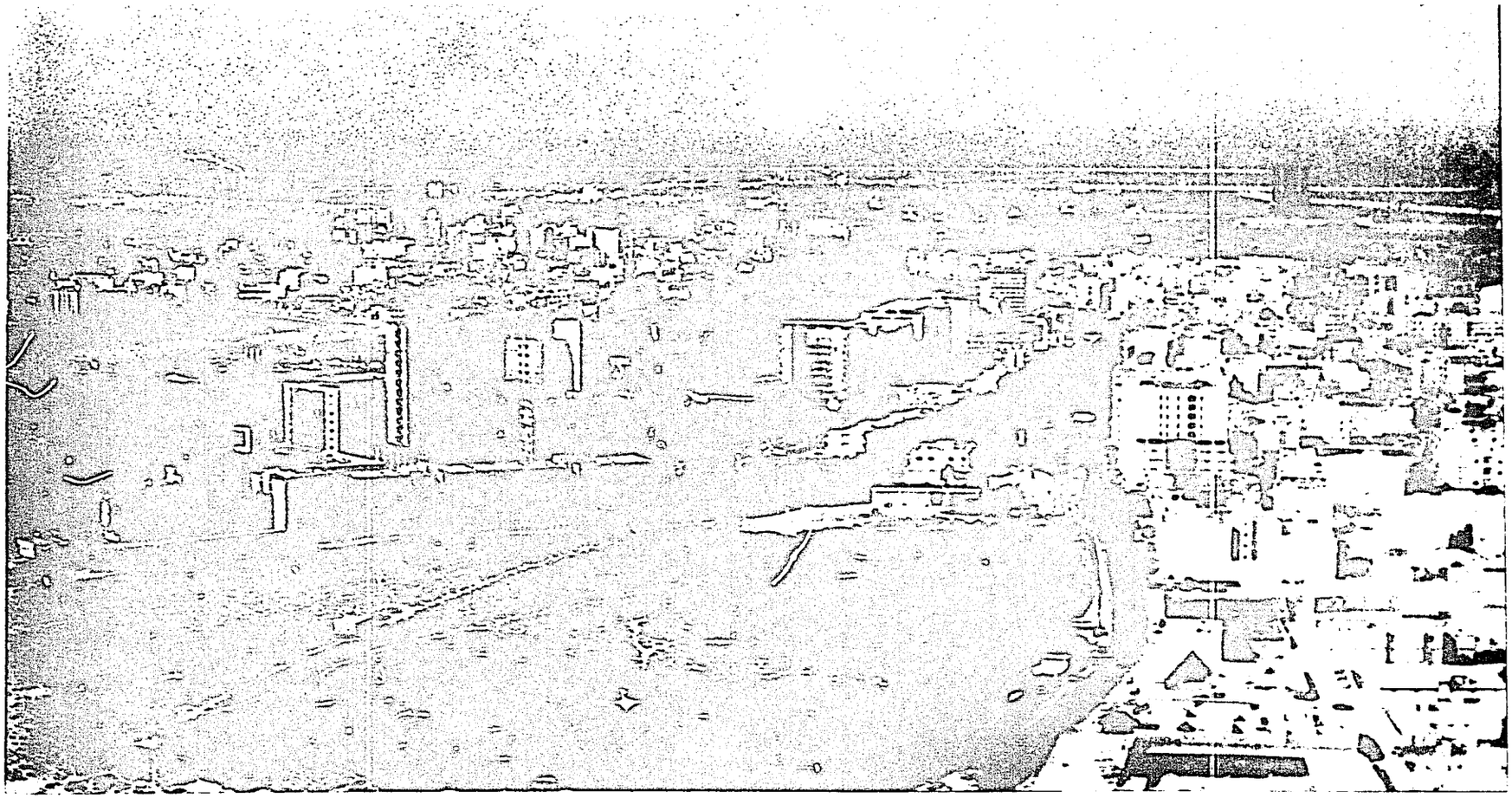
The sewerage system has been perhaps the most strained of all the major infrastructure components in Dubai because the treatment facility which was originally designed to serve only 25,000 persons, now serves about one-half the current population. Severe problems have been encountered in the use of septic tanks because of inadequate drainage fields of typically small plots of land and because of the high water table. While extensive planning has been completed and is continuing on the expansion of the treatment plant and sewer lines, the timing and phasing of these expansions has not yet been determined.

The electricity generation and distribution system has also been strained in recent years, as evidenced by periodic power failures particularly during peak consumption hours in the summer months. Major recurring problems have included those of insufficient sub-station capacity as development densities exceed planned densities, of lagging generating capacity as residential and industrial development increases demand for electrical power, and of the difficulty in installing new cables in older, more densely developed parts of Dubai. Future plans for increasing the capacity of the electric power system include construction of three major 600,000 kw

generating stations, beginning in 1976, and realignment of substations to better match demand with supply.

There are other areas where increases in utility capacities and city service capabilities are lagging behind the growth of consumer demand increases, including such services as telephone, public safety (police, fire and ambulance) refuse disposal and storm drainage. The performance and projected requirements of these services are discussed further in Section 4.

Despite the magnitude of the problems created by growth in Dubai it appears that, generally, these problems are more severe in other areas of the Gulf region. It seems that Dubai's relative success in responding to these problems is responsible for attracting so much economic and population growth in Dubai. It is anticipated that the proposed comprehensive planning effort will assist Dubai in continuing to attract this growth in the future.



DUBAI CREEK: NEW OFFICE CONSTRUCTION ALONG THE CREEK DEIRA SIDE, CONSTRUCTION ON DRY DOCK IS IN THE BACKGROUND. THE VACANT LAND IN FOREGROUND IS A GRAVEYARD.

S E C T I O N 4

TERMS OF REFERENCE

A. SURVEY AND ANALYSIS

To plan for growth, one must first anticipate what rate of growth is likely to occur.

Dubai's recent spectacular population and economic growth have been achieved both because of its rapidly increasing oil income and because of the rapid growth in its role as the commercial and transportation (especially shipping) center of the Gulf region and beyond. Now that Dubai's oil production and income are likely to increase at a significantly lower rate compared with the increases of recent years, the economic stimulation for future economic growth must come even more from its commercial and trading activities.

Accordingly, Dubai must plan not only to meet the infrastructure requirements to be created by future growth, but must also set priorities for its infrastructure and other development programs to stimulate this economic and population growth.

It is important, therefore, to begin the proposed comprehensive planning effort with an intensive review of Dubai's historic and existing relationships with other Emirates and nations in the Gulf region, focusing particularly on those areas which are actually or potentially customers of, or

competitors to, Dubai.

It is important also to perform an intensive review of the historic and likely future demand for goods and services within Dubai, including both the demand experienced during this period of rapid economic development and the demand to be experienced when some economic equilibrium is achieved.

The customer nations served by merchants, shippers and others currently using the ports and other facilities of Dubai are not known in any systematic detail, in part because of the absence of both record keeping requirements and trade restrictions which have made Dubai so attractive to many trading-oriented private sector enterprises. The information which is available indicates that customers of Dubai merchants and traders extend well outside the Gulf region as far as Lebanon, Syria and Jordan; that they include such Gulf nations as Iran, India, Bahrain, Kuwait and Qatar, and also include such neighboring Emirates as Abu Dhabi and Sharja.

Many of these customer nations are themselves undergoing rapid social and economic changes which are likely to influence current and future demand in those nations for the goods and services supplied by Dubai. For example, large quantities of building materials are shipped through Dubai because other nations are also implementing massive programs

of constructing infrastructure and developing residential and commercial buildings; the port and other facilities of Dubai are frequently used today to serve these customers because of harbor and port facility capacity constraints in these other nations. But future demand is dependent both on the future construction programs and on port capacity expansion programs in these nations. Other factors influencing future demand for Dubai goods and services in other nations include such factors as projected future income from oil and other mineral extraction, future governmental policy decisions either encouraging or inhibiting population growth from immigration by foreign workers, future political stability or instability, future government social policy decisions which increase or decrease consumer demand through the redistribution of the nation's oil or other wealth, and future government policy decisions concerning the skill improvement of the indigenous labor force through education and training programs.

Simultaneously with Dubai's rapid expansion of harbor and port facilities, airport facilities, internal and external highway systems, power and water facilities and industrial development activities, other nations in the Gulf area and beyond are initiating similar ventures and expansion programs. The world financial press has repeatedly expressed

concern that future regional demand for these facilities may be insufficient to assure economic viability for all of these facilities and ventures.

In the event not all of these facilities prove economically viable, the competitive position of some of these facilities will be better than that of others, because of such local advantages as strategic location on world and regional trading and transportation corridors, local government or investor control of organizations consuming certain goods and services, greater capital resources for investment and for "waiting out" temporary softness in demand, more attractive regulatory and decision-making environment for business ventures, and other factors to be identified by the consultant.

The population of Dubai and Dubai's public and private sector organizations themselves are responsible for consumption of many of the goods and services which have expanded economic activity in Dubai. Large scale public and private sector construction programs have stimulated local demand for labor and building materials. Some of these construction projects include the expansion of Port Rashid, construction of the dry dock, construction of the many commercial and residential buildings to house both the native Dubai population and some of the foreign labor force, and local infrastructure expansion programs including the water, road and electricity

system. Some long-term continuation of this local growth in demand is anticipated as a result of such planned or actual ventures as an aluminum smelter plant, an expanded cement plant, an oil refinery, a steel mill and other industrial projects to be identified by the consultant.

It is important for the consultant to identify the various market segments of historic and future demand in Dubai. The economic activity of the native Dubai population and the higher income foreign labor force has been a more significant factor in demand for many goods, e.g., housing, than has the economic activity of the lower income foreign labor force, many of whom appear to be minimizing local consumption in favor of saving or transferring their earnings to their homelands. Similarly much of the foreign labor force will be in Dubai for only the time period for which they have contracted, and future immigration may or may not offset this "completed contract" outmigration of the foreign labor force.

In accordance with the background described above, the overall survey and analysis task is organized below into four major phases as follows:

1) The Arabian Gulf and Peninsula study will isolate and analyze those aspects of the middle east area's natural features and socio-economic features which will affect Dubai's future growth and development;

2) The Gulf States analysis will focus on the coastal area from Bahrain to Muskat, examining both natural and socio-economic features of significance to Dubai. This section will also examine the governmental structure and functions of the United Arab Emirates;

3) The Emirate of Dubai analysis will look at the Emirate as a whole and stress those aspects of Dubai which have an Emirate-wide concern; and

4) The Dubai Municipality section will focus on the developed and developing area of Dubai. A detailed examination of all aspects of Dubai - physical, social and economic - is contemplated.

1. ARABIAN GULF AND PENINSULA

The consultant shall prepare an overview of the relationship of Dubai to the Arabian Gulf and Peninsula. This overview shall stress the socio-economic relationships that have and will influence the growth and development of Dubai.

a. Natural Features

Describe the natural features that have shaped the growth and development of settlements. Indicate in general terms what natural resources are available and how resource development has influenced growth, development and settlement patterns. Describe constraints to growth, development and settlement patterns. The consultant shall specifically cover the following topics:

1) Geography, physiography, climate;

2) Resources; and

3) Constraints.

b. Socio-Economic Features

The consultant shall, using existing data sources, describe the socio-economic features of the Arabian Gulf and Peninsula and their relationship to Dubai. Of major concern will be the actual and potential interaction between Dubai and the region of which

JUMEIRA: A FISHING HARBOR AND VILLAGE. THE PALM TREE PLOTS ARE INDICATIONS OF POSSIBLE OWNERSHIP.

it is a part. The consultant shall describe forces and influences that have and will impact on the growth and development of Dubai. The consultant shall specifically cover the following topics:

1) Population size and distribution;

2) Economic activity;

3) Transportation system; and

4) Transportation costs, rates, constraints.

2. GULF STATES

The consultant shall prepare an overview of the relationship of Dubai to the Gulf States (from Bahrain to Muskat). This overview shall stress those factors that have influenced the growth and development of Dubai. This overview will also delineate the functional relationships between the United Arab Emirates and the Emirate of Dubai.

a. Natural Features

Describe the natural features that have shaped the growth and development of settlements. Indicate resources that are available and how resources development has influenced settlement patterns. Describe constraints to growth, development and settlement patterns. The consultant shall specifically cover the following topics:

1) Geography, physiography, climate;

2) Resources;

3) Constraints; and

4) Water supply.

b. Socio-Economic Features

The consultant shall, using existing data sources where available, describe the socio-economic features of the Gulf States and their relationship to Dubai. Of major concern will be existing and potential interaction between Dubai and the Gulf States. The consultant shall stress those factors that provide some basis for cooperative actions to further growth and development as well as those competitive factors that will influence growth and development. The consultant shall specifically cover the following topics:

1) Population - size, distribution and composition changes;

2) Economic activity - oil, agriculture, manufacturing, trade and commerce, pearling and fishing, seafaring, industry and industrial development, transportation and communication;

3) Governmental structure and functions - United Arab Emirates.

3. EMIRATE OF DUBAI

The relationship between Dubai Municipality, which encompasses approximately 80 square miles, and the Emirate of Dubai, which covers approximately 1500 square miles, is unique. Dubai is first of all the only city within the Emirate. Approximately 200,000 of the 207,000 people in the Emirate reside within the developed area of Dubai. Dubai has no fixed municipal boundaries, nor are any necessary. The Emirate is governed by H.H. Shaikh Rashid Bin Said Al-Maktoum, the Ruler of Dubai, who also governs the city through the administrative structure of Dubai Municipality and the Dubai Municipal Council. All land that has not been specifically conveyed to others is owned by the Ruler. Municipal boundaries as such have no meaning.

That portion of the Emirate beyond the fringe of urban development except along the coast is almost entirely vacant desert with some minor settlements, a small number of farms, a few roads, and some wadis. A small portion of the Emirate - Wadi Hatta (approximately 38 square miles) - is separated from the Emirate by Oman.

The approach to data collection, analysis and plan formulation must both separate the highly urban nature

of Dubai Municipality from the largely unsettled Emirate while at the same time recognize the integrated nature of governmental control exercised over the Emirate and the Municipality by the Ruler. An understanding of Dubai requires a knowledge of the relationships between the Emirate and Municipality.

a. Natural Features

The consultant shall describe the natural features of the Emirate of Dubai that have shaped growth and development. The consultant shall indicate resources available and the limitations and constraints on growth and development. The consultant shall specifically cover the following topics - geology, topography, resources, drainage, soils, vegetation, climate, water supply (surface and ground water) and coastal features.

b. Socio-Economic Features

The consultant shall describe and analyze the socio-economic features of the Emirate. He shall stress the relationship between the Emirate and the Municipality. The consultant shall also indicate the potential for future growth and development as well as the constraints. The consultant shall specifically address the following topics:

1) Population in terms of size, distribution (urban and rural) and characteristics of rural components;

2) Economic activity - in terms of the economic environment, oil production and agriculture;

3) Physical development in terms of:

   a) Land use - developed area, small settlements, agricultural uses and other uses; and

   b) Transportation network - in terms of major roads, air transportation.

4) Utilities and facilities - in terms of:

   a) Water supply and distribution;

   b) Electric energy distribution system; and

   c) Communication systems.

c. Governmental Structure and Functions

The governmental structure of the Emirate and the functions it performs result from the pragmatic approach of the Ruler. Making the Municipality responsible for the administration of certain well defined functions (i.e., building permits) and keeping control of others (i.e., Port Rashid) which, though they have a great impact on the Municipality, are perceived as matters of State concern, is typical.

The consultant shall describe and analyze the structure and functions of the Emirate stressing the inter-relationships of those functions that impacts the Municipality.

4. DUBAI MUNICIPALITY

Dubai has experienced extraordinary growth since 1960 when it was basically a small settlement with fishing and some minor seafaring as the major activities. A tour of the city today reveals a large volume of construction activity of all types such as building the new dry dock, land reclamation, a new bridge over Dubai Creek, new hotels, and a wide variety of residential construction. Expansion and new developments are straining the capacities of municipal facilities and services. The atmosphere is clearly one of a "boom" town. Placing all the high velocity development in the context of urban planning that will guide growth while contributing to development activity will be a major challenge to the consultant.

a. <u>Definition of Developed and Developing Area</u>

The consultant shall undertake a study to determine the extent of the developed area and the area subject to development potential. Reference to

areas served or proposed to be served by utilities will be of prime importance to such a delineation. Since Dubai Municipality has no clear or definitive boundaries the definition of the extent of Dubai will be a necessary planning tool.

b. Natural Features

The consultant shall describe and analyze the natural features of Dubai that have influenced growth and development. This analysis shall stress the opportunities and constraints to growth and development that result from the natural feature of the area. The consultant shall specifically cover the following topics - topography, soils, drainage, flood plain, marsh (subkah) and cultivated areas.

c. Socio-Economic Conditions

The consultant shall undertake a comprehensive in depth survey and analysis of the socio-economic base of Dubai. This analysis shall explore the forces that have contributed to the growth and development of Dubai and the constraints to growth and development that result from the socio-economic environment.

1) Population

The consultant will have the results of the census completed in 1976 for the Emirate of Dubai. The consultant shall make independent estimates where they seem appropriate. The consultant shall, in his study of population, describe and analyze the following specific topics - size, distribution, density, past growth; and

characteristics such as age, sex, nationality, labor force, employment, educational attainment, occupational structure and income.

2) Economic Activity

The consultant shall survey and analyze economic activity undertaking the preparation of independent estimates where appropriate. This survey and analysis shall specifically cover the following topics -

Economic environment, impact of oil production, tourism and hotels, trade and commercial activity, manufacturing and industry, fishing, pearling and services.

d. Physical Development

Dubai is experiencing a great amount of development activity. Raw land is being converted to urban uses

at a rapid rate. At the same time, development is scattered in such a manner as to leave large areas of land undeveloped. Patterns of land ownership are of critical importance in influencing this pattern. It is on land held by the Ruler that large scale development generally takes place.

A curious anomaly is that while there are large areas of vacant land a great deal of land has been or is being reclaimed (i.e., the corniche, and the area around the lake). Such reclaimed land is owned solely by the Ruler and will most certainly be the site of his investment in development. An understanding of the process by which raw land is converted to urban uses is essential to rational planning.

1) Land Uses

The consultant shall undertake to survey and analyze land uses within the Municipality. the consultant shall, in conjunction with the Chief Town Planner, develop a category system of land uses suitable to Dubai and a system for the continuous maintenance of up-to-date land use activity. The consultant shall specifically cover the following topics:

- category formulation, survey of existing uses, committed uses, and near-term (two years) proposed development.

2) Land Ownership

Land may not be owned by foreigners in Dubai. Land ownership patterns are decisive to development decisions. Hence the consultant shall undertake to determine, map and analyze patterns of land ownership for Dubai. The consultant shall specifically cover the following topics:

- Types of land tenure and developed land in private and government ownership.

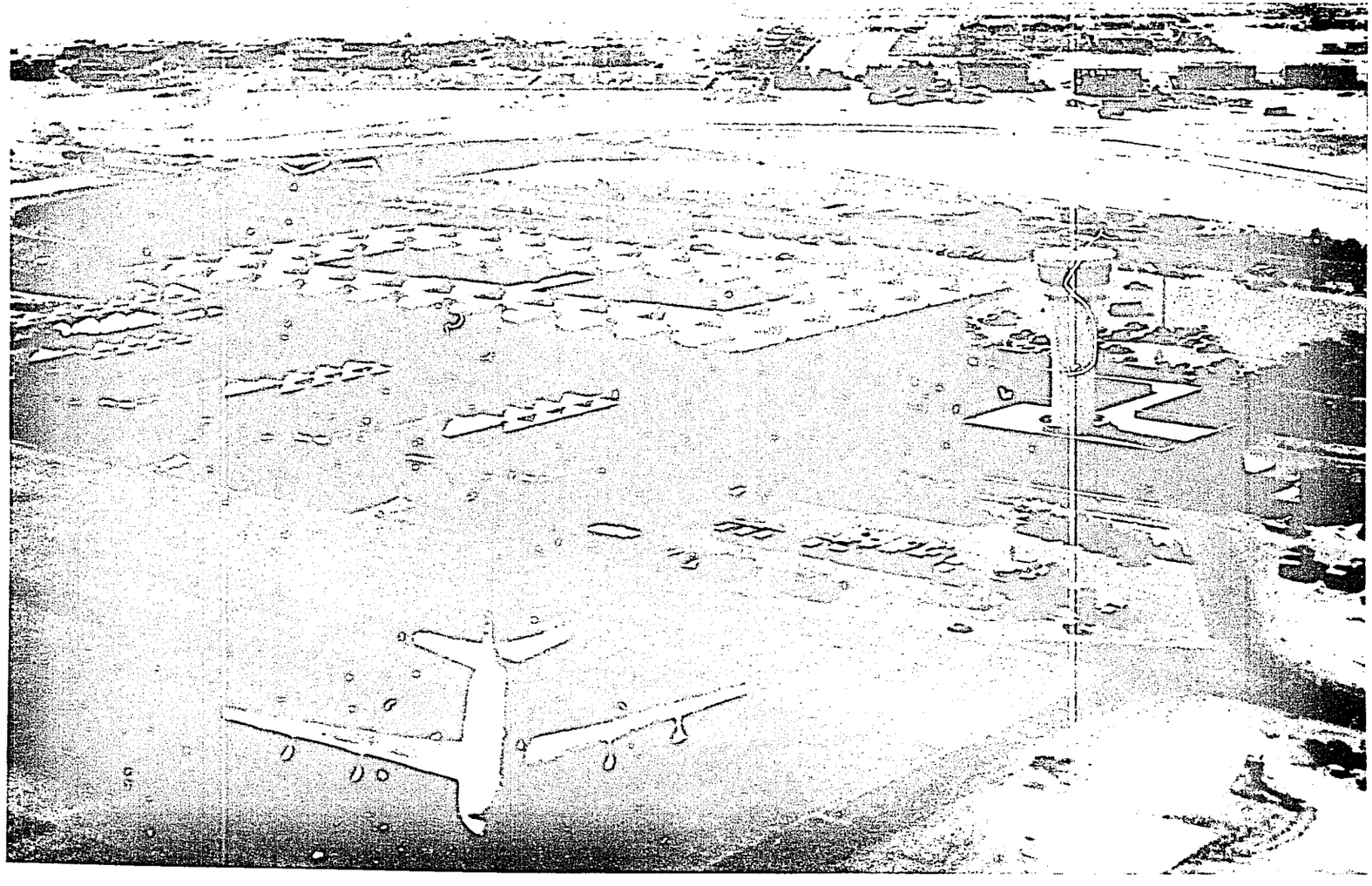
3) Building Survey

The consultant shall undertake a survey and analysis of existing buildings and buildings under construction. The consultant shall specifically cover the following topics:

- Types, height, lot coverage, quality, uses, parking and historic buildings.

e. Housing

Dubai is experiencing a housing shortage. The waiting list to rent single family villas in al-Jumeria (a suburban area west of downtown Dubai) may be as much as four months. The supply of temporary quarters for construction workers at various key



DUBAI INTERNATIONAL AIRPORT. NEW TERMINAL BUILDING

locations, particularly at the site of the new aluminum smelter will be critically short. The large number of squatters living in such areas as Carton and Al Quasis indicate a critical unmet need. High land costs and construction costs have virtually priced middle income families out of the market and forced them to seek accommodations in the nearby Emirates of Sharjah and Ajmen. In the meantime, development continues in Dubai, with plans to provide some subsidized housing for local civil servants.

The consultant will undertake a detailed survey and analysis of housing conditions in Dubai. Specifically the consultant shall cover the following topics:

- Housing stock, type, quality, costs;
- Distribution, existing, under construction, proposed;
- Housing production and construction costs;
- Occupancy and tenure characteristics; and
- Housing need study.

f. Transportation Systems and Services

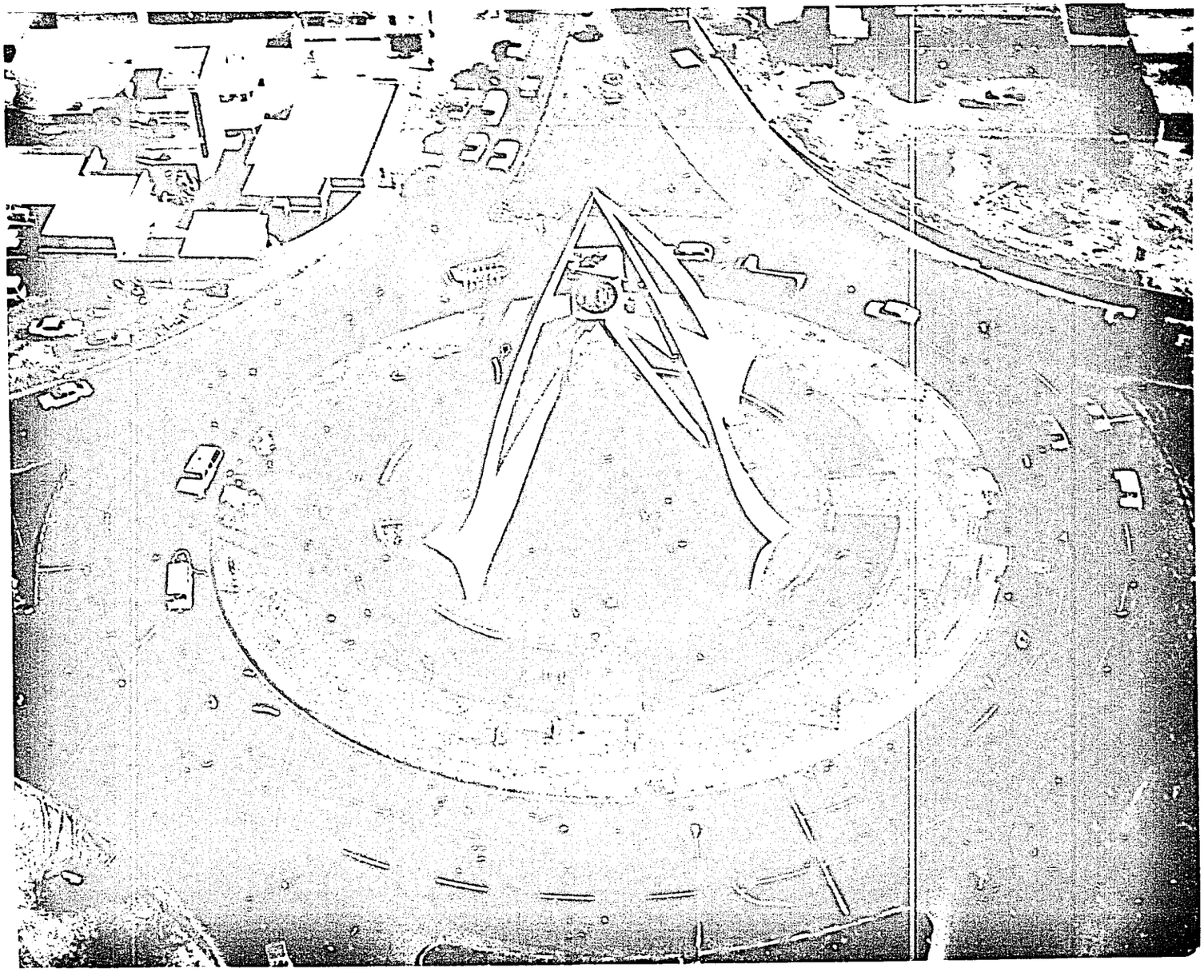
A national plan for the U.A.E. is needed to set policies and plan for those facilities of national importance. The Emirate of Dubai, however, has its

own problems of transportation and proposes to prepare a regional plan to meet the needs of its own area. A means of coordination with national planning will have to be established. The phenomenal rate of economic and population growth in the Emirate of Dubai during recent years has resulted in increased transportation need and problems.

Dubai Creek, which divides the town (Dubai on the west and Deira on the east) offered shelter and good anchorage for centuries and is still a major element in the transportation system.

In October 1972, a 16 berth harbor, known as Port Rashid, was opened. Demand has exceeded the capacity and plans are under way to develop an additional 22 spaces.

Work is under way on the Dubai Dry Dock, which will be one of the world's largest ship repair facilities, catering to the needs of the increasing number of large tankers in the Gulf. It will be able to handle virtually all types of repair, fabrication and maintenance work and will provide work for approximately 4,000 persons. The Dry Dock is expected to be in operation in 1978.



CLOCK TOWER: THE CLOCK TOWER ROUNDABOUT PHOTOGRAPHED AT NOON.

Dubai is served by an International Airport of modern design and adequately handles present day air traffic. All operations are handled on a single runway. A second runway has been recommended, parallel to the existing runway, along with a new terminal building. Dubai's International Airport began operation in May 1971. The terminal contains shops, restaurants, a roof garden and spacious facilities for passengers and visitors. In June 1973, the airport was equipped with Plessey AR5 (a modern radar system), and with the recommissioning of an instrument landing system, Dubai has a well equipped airport.

Ground transportation is a major problem of the area. Vehicular traffic between Dubai and Deira was almost non-existent prior to 1969. Almost all crossings of the Creek were by water taxi. These small boats, now motorized, continue to be a viable part of the transportation system. The Al Maktoum bridge, constructed in 1969, provided for one lane in each direction at that time. The bridge was widened to four lanes in 1975. An opening section of the bridge permits passage of ships on the Creek. Bridge openings for navigation have caused vehicular

traffic delays, although care is taken to minimize inconvenience to road users.

A four lane divided tunnel, linking the Dubai and Deira business districts near the Arabian Gulf, was opened in 1976. A third crossing, the Bustan Bridge, is now being constructed.

Public transportation by bus is limited to about 48 buses. Most public transportation is by taxi which seems relatively inexpensive. Taxis appear to be a large portion of the total vehicular traffic in Dubai. There are no railroads in the Gulf area.

The consultant shall review current standards and data relative to transportation operations and prepare recommendations for a continuing planning system. The consultant shall survey and analyze the existing transportation planning process and the training of personnel involved in this process. The consultant shall stress in this review the necessity of establishing an ongoing institutional transportation planning process adequately staffed to carry out its functions.

The consultant shall undertake a survey and analysis of existing data and data collection systems. The consultant shall determine what data needs are and what procedures could be used for collecting and processing data.

The consultant shall undertake a survey and analysis of the existing transportation system and facilities. The consultant shall specifically:

- Undertake to provide an inventory of the existing system, sufficient origin and destination information to make forecasts, a functional classification of all roads and streets, procedures for appraisal of existing roadways as related to the functional classification and report on road inventory, traffic counting program and functional classification requirements;
- Inventory existing parking spaces available both on and off street, and degree of compliance;
- Determine existing and proposed capacities in the ports and along Dubai Creek and controls in force for their use. Port studies are to include only those factors that affect ground transportation;

- Evaluate existing and proposed airport facilities as they relate to ground transportation;
- Determine usage of existing buses, taxis and water taxis. Collect such data as needed to provide basis for recommendation for further usage and consider what system is necessary for monitoring usage;
- Identify the vehicle fleet, composition and operating environment, both existing and projected, and recommend desirable changes in road regulations, vehicle registration statistics and enforcement;
- Perform a critical review of existing road regulations and degree of enforcement;
- Analyze existing data on the present vehicle fleet (number, type, age and maintenance condition), make recommendations regarding changes to the statistical procedures presently being used regarding vehicle registration, operator licensing, weight limitations, length and width limitations, road regulations and determine if any additional regulations should be established to control taxi operations;
- Prepare traffic maps for both the existing situation and the future forecast and show traffic flow on all arterial and collector routes;
- Make recommendations as to parking demand and

location, truck loading facilities and parking controls for trucks, pricing for parking and enforcement;

- Determine the roadway needs for 1983 responding to forecasts of needs and utilizing proper functional classifications. Projects are to be grouped into priorities by year. Include major construction work on new or unimproved locations, additions or rehabilitations to existing routes, and traffic operations improvements;
- Make recommendations for traffic operations which should include such items as:
  - . signs and pavement markings,
  - . signalization of selected intersections,
  - . improved traffic flow on roundabouts,
  - . one-way street systems,
  - . enforcement of regulations for parking, speed and observance of signs,
  - . establishment of regulations for heavy vehicles for weight and maximum size,
  - . establishment of a traffic control program,
  - . a statistics data gathering and analysis program,
  - . driver education; and

- Determine need for bus transportation, taxi usage (ground and water) and make recommendations for bus transportation routes, schedules, bus stops, shelters and maintenance facilities for the operating equipment.

g. Utility Systems

Utility systems are a critical problem in Dubai. Rapid development has generally outstripped capacity. The system by which raw land is converted to developed uses makes rational forward planning difficult. The consultant will have to come to a rapid understanding of the problems and constraints presented by the current status and proposed improvements to the various utility systems.

1) Sewerage System

The older downtown areas of Dubai (including downtown Deira) as well as some specialized users are currently connected to a sewerage collection system that goes to the sewage treatment plant. Approximately one half of Dubai's population is served by this facility. The remainder is on septic tanks without drainage fields, generally on small sites with a high water table. The treatment plant (which

empties effluent into Dubai Creek) was designed to serve a population of 25,000, but is currently serving a population of 100,000. The effluent of the plant which handles perhaps 2 MGD has a high (100) BOD count and a high ratio of suspended solids (100 PPM).

Significant areas of the Municipality are being provided with sewerage collection facilities, although they will not be served until the current treatment works are expanded and new treatment works are established. Even though a significant amount of water is used by the port, it is safe to say that only 25 to 30 percent of the rest of the water flowing through the distribution system is being collected and treated by the sewage system. Various schemes are currently under consideration for the use of both liquid effluent and deactivated sludge.

The consultant shall undertake a detailed survey of the sewerage system and specifically cover the following topics:

- Location of collection lines and capacities;
- Areas currently served and characteristics of use;

- Developed areas on septic tanks or unserved;
- Treatment facilities including capacity, quality of treatment, effluent discharge and use, sludge disposal and use;
- Proposed extensions and expansions; and
- Administration, cost, charges.

2) Water Supply System

The current water supply for Dubai, which depends on wells located at Al-Awir (about 25 miles from Dubai), is currently supplying a somewhat greater amount of water than the design capacity of the system. The current system is delivering about 10 MGD and it is being expanded with an additional main which will deliver about 4 MGD. New wells are under development. It is anticipated that this new source will be able to supply approximately 14 to 15 MGD. The current total projected sources will deliver 28 to 30 MGD. These sources will be insufficient to accommodate additional growth after 1979. A desalination plant is being proposed at Jabal-Ali, as part of the new electric generating station.

The water system is experiencing severe

problems because of inaquete storage capacity and insufficient pressure. Although several new storage tanks are under consideration this will continue to be a problem for some time. While the quality of the water supply is reputed to be safe up to the meter, a potentially serious health hazard exists due to private storage tanks on each building that are not cleaned on a regular basis. A separate water system pumping brackish water for garden use is also in existence.

The consultant shall undertake a survey and analysis of the water system of Dubai, including existing and proposed systems of sources, purification, storage and distribution. The consultant shall stress the interrelationship between water supply and growth and development. The consultant shall specifically cover the following topics:

- Sources, distribution system, capacity;
- Areas currently served and characteristics of use;
- Water quality and health hazards;
- Proposed additions and extensions;

- Water for agricultural uses;
- Potential new sources and constraints; and
- Administration, costs, charges.

3) Drainage System

Only a small portion of Dubai is served by a storm drainage system. Curbs and gutters exist in few areas. The infrequency of heavy rains is perceived as a justification for giving a storm drainage system minimum priority. The consultant shall undertake a survey and analysis of the existing storm drainage system. The consultant shall cover the following specific areas:

- Collection points and discharge system;
- Areas served and proposed extensions;
- Drainage problems; and
- Administration.

4) Electrical Supply System

Electrical supply is provided by an existing 60 megawatt diesel fired plant located within the built up area of Deira on Dubai Creek and a 70 megawatt gas turbine plant (currently fired by diesel fuel) on the Dubai side generating 380/220 volt electricity. There are approximately 35,000 connections. The present

facilities are currently inadequate as evidenced by frequent power failures particularly in the summer months. The consumption of electricity has been increasing rapidly due to accelerated development. The aluminum smelter to be located at Jabal Ali will generate its own power, and it is proposed that a new generating plant be built to supply the needs of Dubai at the same location.

The consultant shall undertake a survey and analysis of the electrical supply system. The consultant shall specifically cover the following topics:

- Generating plant, capacity, fuel, water, operating characteristics;
- Distribution network, location, sub-station capacity, area served;
- Use characterisrics, problems and constraints;
- Proposed relocation, expansions; and
- Administration, costs, charges.

5) Refuse Disposal

The refuse disposal system of Dubai is at present in a crude stage. In the older, more

densely populated portions of Dubai refuse is collected daily by laborers using push carts. Refuse is left in the street either in cartons or other open receptacles. Laborers transport refuse to collection points where it is loaded on trucks and transported to a central point where it is burned. In other areas of Dubai, householders may purchase plastic bags from the Municipality. These bags are collected and shipped to the incineration site. In such areas, collection is every third day.

The consultant shall undertake a survey and analysis of the refuse collection system in Dubai. The consultant shall specifically cover the following areas:

- Collection system and disposal system;
- Health hazards; and
- Administration, costs.

h. Public Safety and Security

The consultant shall undertake a survey and analysis of public safety and security in Dubai. The consultant shall concentrate on the early identification of actual or potential problems.

1) Fire Fighting Service

Keeping up the level of fire fighting service

where rapid urbanization is taking place has proven to be a difficult task for Dubai. There are currently two fire stations - the main station on the Deira side near the Al Maktoum bridge and a sub-station on the Dubai side at Satwa. Although larger establishments and facilities are directly connected to the main fire station by telephone, there is no general alarm system. The existence of the port, airport and new high rise buildings create a unique and serious problem. There are no fire hydrants in the Municipality, although there are key points at which pumpers may be connected to the water supply system. The lack of water pressure and adequate storage also presents problems. The consultant shall undertake a survey and analysis of fire fighting service in Dubai, specifically covering the following topics:

- Fire stations, location, size, access;
- Equipment, alarm system;
- Personnel, training;
- Fire regulations, inspections, hazards;
- Insurance coverage, rates; and
- Administration and costs.

2) Police

The Police department in Dubai Municipality has a total strength (including civilian employees) in excess of 1800. The force operates out of four stations, one being the new headquarters building on the Dubai-Sharjah Road. In addition to law enforcement responsibilities the police are also responsible for traffic control and the enforcement of traffic laws. Experience indicates that even where parking regulations are in effect they are not enforced. Other traffic control regulations are not vigorously enforced. Police officers do not, as a normal rule, carry two-way radios. The consultant shall undertake a survey and analysis of law enforcement facilities and services. The consultant shall particularly address the question of the adequacy and efficiency of the present system of traffic control. The consultant shall specifically address the following topics:

- Stations, facilities, equipment;
- Personnel, training, data keeping;
- Traffic control; and
- Administration.

i. Communication Systems

The consultant shall undertake a survey and analysis of the communication system of Dubai. This study will stress the identification of problem areas that are reducing effectiveness and efficiency. Although Dubai is served by modern communication systems, experience indicates delays and difficulties in the systems. A modern growing trade center requires a quick, reliable system of communications. The consultant shall specifically cover the following topics:

- Telephone, telex, radio, television, newspapers;
- Major receiving and transmission points, location and capacity;
- Major distribution network, location and capacity; and
- Problem areas, constraints, administration.

j. Educational Facilities

Education within the Emirate of Dubai is basically the responsibility of the United Arab Emirates. In 1953, only 700 pupils were attending school in the entire Trucial States. In early 1975, schools in Dubai had approximately 13,300 pupils. In addition

to education provided by the Federal Ministry, there are a number of private schools. Although education at schools run by the Federal Ministry is free, it appears that a large number of children leave school after attending only four years of primary education. The consultant shall undertake a comprehensive survey and analysis of existing education facilities, service and programs in Dubai. The consultant shall concentrate its efforts on the identification of problems and constraints. The constraints shall specifically cover the following topics:

- Facilities, location, size, capacity, type;
- Enrollment, characteristics;
- Programs;
- Nursery and day care facilities;
- Constraints, needs; and
- Administration, costs.

k. Medical Facilities and Services and Public Health

Medical services in Dubai are provided primarily by the Department of Health and Medical Services which is an administrative unit of the Emirate. The Department is located in the Rashid Hospital.

Medical services are also provided by the United

Arab Emirates at the Kuwait hospital, through the U.A.E. Ministry of Health. The government of Iran also provides medical services at Red Lion and Sun Medical Centers. Children in the U.A.E. schools receive medical treatment at facilities located in the schools. There are a number of outpatient clinics located throughout Dubai. Medical services in Dubai are free to all, whether it involves a cornea transplant or treatment for a laceration. Ambulance services are provided by Dubai Municipality through the Fire Brigade, by the Department of Health and Medical Services and by large firms (particularly contractors) who feel the need to have their own service available. An acute problem in providing medical services is the lack of public transportation. The Department of Health and Medical Services has 28 vehicles to provide transportation for its own staff to get to work. Ambulance services are either overlapping in some areas, or non-existent in others. The number and variety of institutions providing medical services poses problems of coordination.

Forward planning for medical facilities and services has been difficult in the absence of

comprehensive planning for growth and development. There is little coordination between Dubai Municipality's Public Health Department, which is responsible for environmental concerns, and the Department of Health and Medical Services which describes its area of concern as people only.

Understanding the complex nature of medical service and its relationship to public health in Dubai will be a major challenge to the consultant.

The consultant shall undertake a survey and analysis of medical services and facilities in Dubai. The consultant shall stress the physical and insitutional barriers to more effective and efficient service. The consultant shall specifically address the following topics:

- Facilities, capacities, services;
- Equipment, ambulances, transportation;
- Institutional structure and personnel;
- Administration and costs.

1. Public Buildings and Civic Amenities

Dubai Municipality officials are housed in an office building on the road to the airport. A new municipal building is under construction.

near the existing building. Dubai Municipality has a municipal garage on the airport road near the McDermott plant. The Municipality operates a library located on the Creek front in Deira. It contains some fifteen thousand books.

The Municipality operates the Dubai Museum, housed in the historic Al Fehade Fort, and the Dubai Zoo, which was started as a private preserve.

A major new sports facility is under development near Rashid Hospital and a major architectural competition is under way for a major new facility - Union Public Square - to be developed across from the new municipal building. This activity, however, is not keeping pace with the needs of the population as urbanization increases. Amenities close to where people work and live are lacking. Some sport facilities are available in private establishments. Land is a valuable commodity and land uses which do not produce income must be justified on other factors.

The consultant shall undertake a survey and

analysis of public buildings and civic amenities in Dubai. The consultant shall develop realistic standards related to the realities of Dubai and the character and traditions of its inhabitants. Large open spaces are difficult to turn green in an arid climate.

The consultant shall specifically cover the following topics:

- Location, size, capacities of facilities;
- Services offered;
- Utilization, tradition, standards; and
- Administration, costs.

m. Governmental Structure

The Dubai Municipality is governed by the Dubai Municipality Council whose sixteen members are appointed by the Ruler. The current Chairman of the Council is Shaikh Hamdan, the Ruler's second son. The execution of the Council's policies (after final approval by the Ruler) and the administration of the operations of the Municipality are the responsibility of the Director.

The Municipality handles such functions as municipal taxes and regulations, town planning, engineering,

gardens, fire services, public health, library, museum and the zoo. Building regulations and the coordination of various utility company functions are handled by the engineer. Water, sewer, electric and gas are provided by private utility companies. Other vital functions which have a significant impact on the growth and development of Dubai, are handled either by the Emirate or by the Ruler's office.

Comprehensive planning, to be effective, must accommodate the system that has evolved in Dubai. The consultant shall undertake a survey and analysis of the governmental structure of Dubai Municipality and its interrelationships with other institutions which significantly impact the Municipality. The consultant shall stress the identification of problems and constraints. The consultant shall specifically cover the following topics:

- Governmental structure and functions;
- Personnel and staffing;
- Policy formulation and implementation;
- Coordination and monitoring;
- Record keeping; and
- Costs.

n. Planning and Development

Town planning in Dubai has been in effect since 1959, when the Ruler commissioned the British Town Planner, John R. Harris, to prepare a plan for the development of the town, which was completed in 1960. A development committee was formed to assist in the realization of the plan. This committee administered town planning through 1964, when the Municipality took over the administration. In 1965, and again in 1971, John Harris undertook a review of the town plan and made recommendations for further studies and analysis.

Building regulations were completed in 1969 and have not been substantially changed since. The Municipality is currently considering a major revision of the building regulations. In 1969, restrictions on building heights were also adopted and are still a major control of the bulk of buildings developed in Dubai. Land use controls in the form of a zoning map were adopted by the Municipality in 1973. A separate text to accompany this map has not been prepared. The zoning map was an extension and refinement of the land use plan prepared by John Harris.

There is no separate housing code. Of major importance in the planning and development of Dubai, is the fact that substantial areas have been platted with street layouts. Land uses within these platted areas have been fixed and areas have been reserved for public uses. These plats have the status of official maps. The consultant shall review the entire process of planning and development in Dubai, as it currently exists. The consultant shall determine the effectiveness and desirability of this system for Dubai and identify problems and constraints in the planning and development system.

o. Municipality Budget

The amounts budgeted for expenditure by the Municipality of Dubai have increased dramatically in recent years, as is evident from the actual total expenditures for 1974 and 1975, of 18.7 million dirhams and 83.1 million dirhams respectively, compared with the approved 1976 budget expenditures of 635.3 million dirhams. While the increase in salaries and current expenses have been large (16.6 million dirhams in 1974 to 29.1 million dirhams in 1975 to a budgeted 104.1 million dirhams * in 1976), the largest portion

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*) Approximately four dirhams per U.S. dollar

of the increase is attributable to special projects such as road construction, sewerage projects, a new Municipality Building and planning costs by outside consultants. In 1975, for example, actual expenditures on these items were 50.0 million dirhams compared to a budgeted 509.6 million dirhams in 1976. While some of these increases are overstated because of accounting reclassifications and because the Municipality will, in 1976, assume responsibility for projects previously assigned to other government entities, it is clear that Municipality responsibilities and expenditures are growing rapidly.

The revenues included in the Municipality budget are modest compared to expenditures, requiring that approved budget deficits be funded by direct contributions from the Ruler. In the 1976 budget, for example, total estimated revenues will be 35.8 million dirhams, compared to budgeted salary expenses alone of 37.7 million dirhams. Some of the larger budgeted revenue items include real estate tax revenues from residential and commercial properties, income from business permits and inspection fees, and income from taxes on cinema and alcohol.

The Municipality budgeting process is distinctive therefore, because of its large operating and capital funding deficits. The Ruler's procedure of financing deficits by direct contributions is in accord with his policy of maintaining close control of Municipality plans and operations. It is evident also that the operating and capital funding deficits are largely attributable to the relatively low real estate taxes and other fees imposed by the Municipality. The real estate taxes, for example, are typically five percent of the annual income (or rental value) of the property. Vacant land is not taxed at all.

These relatively low taxes and fees are consistent with a general policy of the Ruler and Municipality of offering certain public services, such as electricity and sewerage, for example, at either no cost or at a heavily subsidized cost, to the residents of Dubai. The Municipality is also distinctive because of its absence of long-term debt or mortgage financing on major facilities. The consultant shall undertake a survey and analysis of the Municipality budgeting process. The consultant shall specifically cover the following areas:

- The cost to the Municipality of providing individual inspection, road cleaning, septic tank draining and other services, in order to assess whether these costs are covered by the revenues generated from these services. Emphasis should be placed, on those services where the Municipality expenditures are relatively high;
- The real estate tax rates levied by the Municipality, in order to assess the comparability of these tax rates with those levied by other governments in the Gulf area;
- The costs to the Municipality of the various administrative services provided, in order to assess the comparability of staffing levels and wage scales with those of other governments in the Gulf area; and
- Various financial alternatives of increasing revenues or decreasing costs to the Municipality, in order to determine alternative costs and benefits of operating the Municipality on a balanced budget where revenues either exceed or equal expenditures.

p. Special Studies

In addition to the comprehensive studies previously

described, there are subjects which have been identified for special study. These studies must be done concurrently with the survey and analysis process. The following subjects are to be investigated as described and reports made to the Municipality.

1) Historic Preservation

The Bastakia quarter of Dubai has been considered in the past as an area suitable for historic preservation.

Although the individual buildings in the area are of minor architectural value (the style was imported to the area from Iran during the early part of the twentieth century), the grouping is sensitively done and is the last wind tower quarter remaining on the Arab side of the Gulf. There has been considerable pressure to redevelop this area because of its central location. In 1975, the Dubai Municipal Council determined that such redevelopment should take place. This has not yet occurred.

The consultant shall examine available data on the area, e.g., A Windtower House in Dubai (by Anne Coles and Peter Jackson), make an

investigation of the area, and examine a variety of alternate development schemes (varying from total preservation to no preservation) and their fiscal implications. These alternatives must be integrated into the policy alternatives in such a manner as to clearly describe their implications and to elicit a policy decision.

2) Potential Re-Development Areas

Both Dubai and Deira old towns are subject to pressures for demolition and new development. The buildings are old, in some cases poorly constructed, and property ownership is confused. It would seem that a re-development project, combining groups of properties might be advantageous to land owners as well as to the Dubai Municipality.

The consultant shall select a portion of the old city and prepare an alternative re-development scheme, analyzing the costs and benefits of re-development to owners, renters and to the Dubai Municipality. Re-development in areas of the old town

is to be analyzed as an alternative to development farther out.

3) Temporary Housing

Dubai is growing at a rapid rate. Housing for construction workers is a serious need. Temporary housing is a possible solution to this problem. The consultant should consider alternative solutions to this problem. The consultant shall assess the potential magnitude of the need for temporary housing and explore various systems that could be suitable for Dubai. The consultant shall consider possible locations and the distribution of temporary housing and indicate what services would be required. The consultant shall estimate the costs and revenues of a temporary housing program.

4) International Redistribution Center

South of the old town of Dubai, east of Port Rashid and the new Dry Dock and extending in an eastern direction almost as far as the Ruler's Palace, is a vacant area which has at various times been referred to as a "free port zone." The boundaries of this area are not clearly defined, but it is

apparently land acquired by the Ruler with the intent of establishing a free port in Dubai. The land so acquired is vacant while development takes place on its fringes. Since it was originally conceived, the free port zone concept has evolved into the idea of making the area a storage and light manufacturing area.

The consultant shall examine the concept of a free port zone in Dubai, determine the feasibility, financial value and potential land requirements for such a zone and propose uses for any land now held for the free port zone.

5) New Community Development

Dubai Municipality proposes to develop a new town to be located at the new industrial port at Jabal Ali. In addition, a new town is under development by private developers southeast of the airport. Another new town is under consideration in the same general location.

The consultant shall examine such plans

as part of the overall planning process. The consultant shall evaluate the growth of Dubai and shall determine, based upon this evaluation, whether the development of new communities out of town are to be recommended in the long term planning of Dubai.

6) Lake Dubai Development

At the present time, Dubai Creek and the "Lake" at its southern end are being dredged to a depth of 18'. A portion of this dredging is intended to improve the navigability of the creek, a portion is intended as recreational development with a marina, pleasure boating, etc., and the rest of the dredging seems to be for the reclamation of land subject to flooding. Development of a high quality residential area around the lake is envisioned as a means of repaying the cost of the dredge and fill operation. The consultant shall undertake a study of the potential for development around the new lake and prepare recommendations for the potential development of this area.

7) Hatta

Hatta is a portion of the Emirate of Dubai totally detached from the Emirate. Hatta is located in the mountains, on Wadi Hatta, approximately sixty miles east of Dubai. Some infrastructure has been developed in Hatta, and some attempt at agricultural development is in progress.

The consultant shall evaluate the existing situation, project the growth of Hatta and make recommendations as to growth plans for Hatta.

8) Second Center Deira Side

The Ruler has indicated a great interest in encouraging development along the road to Sharjah. This corridor is under a substantial amount of development both in Dubai and Sharjah. Government land has been sold by the Ruler to developers in this corridor, with the requirement that construction begin in 1976.

The consultant shall review the proposals for the Second Center Deira Side and assess its impact on the overall planning

of Dubai. The consultant shall evaluate the development, under way and proposed, to determine what problems and opportunities are presented by the proposed development.

9) Al-Awir and Khawanij Areas

Al-Awir and Khawanij are similar areas about twenty-five miles east of Dubai. They have available ground water, are supportive of more vegetation than the majority of the Emirate, and are within driving distance from Dubai. These factors coupled with a desire, on the part of the native population, to seek a change from city living, are instrumental in the decisions being made by a few wealthy persons to build second homes in these areas.

The consultant shall inventory and map existing development in these areas, analyze opportunities and constraints for future growth, and include the issue of growth in these areas in the policy alternatives analyzed in this project.

B. BASE MAP SERIES

There are many maps, at a variety of scales, already existing in Dubai Municipality. For example, there are small scale maps at 1:1000 showing buildings, streets, etc., in the developed areas of Dubai. Less developed areas are mapped at 1:2000. Planning maps are available at 1:5000, 1:10,000, 1:20,000, 1:25,000 and 1:50,000. Maps of Dubai and the Dubai region are also available. There is a need, however, for a consistent, coordinated set of base maps that should be part of the planning and administration of a fast growing city. Therefore, a first task, and a necessary one, to the process of collecting, displaying and analyzing data, is the creation of a coordinated base map series.

1. INVENTORY OF EXISTING MAPS

The consultant shall undertake a complete inventory of existing base maps in the Municipality, the utility companies, the Office of the Emirate and the United Arab Emirates Offices. The consultant shall catalogue the size, scale and area covered, and describe the natural and man-made features shown.

2. DEVELOP BASE MAP SERIES

With the advice of the Chief Town Planner, the consultant shall prepare a series of base maps using

existing information for tne following areas:

a. Major Region - Entire Arabian Gulf and Peninsula;

b. Gulf States - Bahrain to Muscat;

c. Emirate Dubai - Abu Dhabi to Sharja (Include Wadi Hatta);

d. Dubai Developed and Developing Area; and

e. Dubai Sub-Area Quadrants.

All maps (with tne exception of sub-area quadrants) shall be approximately the same size or a multiple of tne basic size. Base maps shall have the same conventions, keys and orientation to the greatest extent possible.

3. UPDATING BASE MAP SERIES

The most recent aerial photo of the Dubai developed area is 1974. Existing maps are currently being updated to reflect changes shown on the 1974 aerial photo. It is anticipated that this work will be completed by June 1976. The consultant shall ensure that the series of base maps reflect the most up-to-date information available.

C. PLAN FORMULATION

At the completion of the survey and analysis stage, the consultant will be required to integrate its findings and conclusions into a coherent presentation that shows how and why Dubai has developed. The consultant will have gathered substantial quantities of data in a fast changing environment and he/she must be careful to assess the possibility that data collected may need to be updated shortly thereafter.

In order to make the planning process relevant to the institutional structure of Dubai, it will be necessary to demonstrate that planning can:

- Make a positive contribution to economic growth and development;
- Give pragmatic solutions to currently perceived problems;
- Be a more cost-effective guide to growth and developmental decisions;
- Make positive, incremental improvement to the quality of life; and
- Be flexible enough to accommodate shifting interests in a super-heated economic environment.

1. POLICY ALTERNATIVES AND ECONOMIC IMPACT

The consultant will be required to prepare a set of realistic policy alternatives with an evaluation of their economic impact as a method of articulating the choices that are available to the decision makers as to how Dubai could grow and develop. A presentation and discussion of policy alternatives will also give these decision makers a structured framework for providing policy guidance to the consultant in the formulation of a comprehensive plan for Dubai.

a. Problem Identification

The consultant shall prepare, in easily displayed summary form, a compilation of problems identified in the survey and analysis stage. The consultant shall particularly stress those problems that are, or can potentially become, constraints on growth and development. The consultant shall, wherever possible, provide an assessment of the economic implications of such constraints.

b. Opportunity Identification

The consultant shall prepare, in easily displayed summary form, a compilation of opportunities identified in the survey and analysis stage for enhancing and promoting orderly growth and development.

The consultant shall provide an assessment of of the potential economic implications of such opportunities.

c. Review of Existing Plans and Programs

The consultant shall review existing plans, planning activity, programming and major projects under way, or proposed, to demonstrate how these either contribute to solving identified problems or maximize identified opportunities. The consultant shall, wherever possible, attempt to assess the economic implications of this review.

d. Developing Policy Alternatives

The consultant shall prepare a study of policy alternatives with specific assumptions and projections for the growth and development of Dubai.

The consultant will specifically indicate the advantages and disadvantages described.

Alternative time spans for the various policy alternatives shall be specified. The consultant shall clearly demonstrate how the various policy alternatives reflect the conclusions drawn from the survey and analysis phase of the

planning program and the statement of problems and opportunities identified. The consultant shall present the resources (financial, material, institutional and manpower) required and available to implement the various policy alternatives and the consultant shall be prepared to submit his recommendations as to the feasibility and desirability of the policy alternatives.

2. POLICY STATEMENT FOR DUBAI

The consultant will be required to make in depth presentations describing the policy alternatives prepared. Such presentations shall be in both graphic and written form and the consultant shall be prepared to provide summaries in Arabic. The consultant shall use three-dimensional models wherever possible to illustrate his presentations. On the basis of the presentation to the Ruler, the advisory committee and the Municipal Council, the consultant shall prepare a policy statement that incorporates the guidance received. This policy statement should be stated in terms that will provide clear guidance to the consultant in the formulation of a comprehensive plan for Dubai and it must be submitted to

the Dubai Municipal Council for approval.

3. PLAN PREPARATION

The consultant shall prepare a comprehensive plan for Dubai which will incorporate all of the planning component elements described in the survey and analysis stage. The consultant shall be guided in the process of plan preparation by the policy statement that is approved by the Dubai Municipal Council.

The comprehensive plan for Dubai shall present a coordinated system including those functions of the Emirate and the United Arab Emirates that influence the growth and development of Dubai. The consultant must demonstrate how the comprehensive plan for Dubai reflects the findings of the survey and analysis stage and the policy statement for Dubai.

The consultant shall assess the economic and fiscal impact of the comprehensive plan he prepares and show the public and private investment required for the fulfillment of the plan. The consultant will clearly demonstrate the availability (or constraints) of resources necessary to fulfill the comprehensive plan.

D. IMPLEMENTATION PROGRAM

The consultant shall prepare a program to implement the comprehensive plan for Dubai. This program shall include regulations to control land use as well as a capital and operating budget for Dubai Municipality. The consultant shall incorporate in the implementation program the functions and activities of the Emirate, the Federation and those private utility and service institutions which have a vital impact on the growth and development of Dubai.

The consultant shall specifically prepare the implementation tools listed below:

1. ZONING ORDINANCE AND MAP

   Land may be left undesignated on the map where appropriate. The ordinance should be clear, simple and flexible. Wherever possible, the zoning ordinance should be based on performance standards that are easily measured and enforced.

2. OFFICIAL MAP

   The current official map of Dubai should be reviewed and revised to reflect the comprehensive plan. The consultant should consider how the amount of land currently platted into streets should be reduced. Flexibility is of vital importance.

3. PLANNING STANDARDS

The consultant shall prepare a set of planning standards that reflect the realities of Dubai. These standards will be used by the Municipality to do detailed planning of given areas and also to review development proposals.

4. SUBDIVISION REGULATIONS

The consultant shall explore the necessity and desirability of subdivision regulations given the traditions and patterns of land tenure in Dubai.

5. BUILDING CODE

The consultant shall prepare a modern building code which should be clear, simple and easily administered. The consultant shall use performance standards wherever possible to provide flexibility.

6. HOUSING CODE

The consultant shall prepare a housing code incorporating all aspects of public health and safety.

7. TRAFFIC ORDINANCE

The consultant shall prepare a traffic ordinance regulating the movement of people, vehicles and goods in Dubai.

8. PLANNING AND DEVELOPMENT PROCESS

The consultant shall prepare a system to rationalize

the planning and development process. This plan shall outline an organization plan with functions and staffing.

9. CAPITAL IMPROVEMENT PROGRAM

The consultant shall prepare a capital improvement program indicating the cost and phasing of the capital infrastructure shown in the comprehensive plan. The capital improvement program will delineate both costs and resources to meet costs. The program will integrate expenditures by the Municipality, the Emirate, the Federation and the service companies that are vital in Dubai.

10. OPERATING BUDGET

The consultant shall prepare an operating budget consistent with the capital budget and for the same time span, indicating how the capital budget will impact the operational budget.

11. ENVIRONMENT QUALITY CONTROLS

The consultant shall explore the necessity, feasibility and desirability of preparing environmental quality controls for air, water and noise pollutions.

S E C T I O N 5

WORK PROCESS, PHASING AND DOCUMENTS

It is the intent of Dubai Municipality to utilize the work of the consultant to develop an ongoing planning process and not to prepare a static Master Plan. It is therefore essential that the consultant structure its work process and intended work products with this clearly in mind.

It is a requirement of this contract that the consultant establish an office in Dubai. It will be necessary for the consultant to work closely with various departments and agencies during the survey and analysis phase.

A regularly scheduled weekly meeting with the Chief Town Planner and a regularly scheduled bi-weekly meeting with the advisory committee should become the routine. It will be vital for the consultant to bring the leadership of Municipality and other agencies into the planning process, in order to ensure their understanding and use of the final product. A presentation as succinct and graphic as possible of the information gathered during the survey and analysis phase should be made to all concerned parties. These presentations should be made a part of a continuing data bank of Dubai information. It will be

absolutely essential that the consultant prepare a series of technical papers incorporating the data collected, the analyses undertaken and the findings and conclusions drawn from the survey and analyses stage. These technical papers will be an important data base to the Municipality. During the formulation of policy alternatives and the computation of the resultant economic implications, it will be necessary to test alternatives with the advisory committee as they become clearly defined. A presentation of the most viable alternatives (not the desired alternatives and a few strawmen) and the resultant policy recommendation must be made to the advisory committee.

The final policy statement must have the approval of the Municipal Council prior to proceeding to the next phase. The advisory committee will be responsible for structuring the presentation to the Ruler. The presentation must show the justification for, as well as the projected results of the policy recommended, and must be as direct and clear as possible.

Subsequent to policy statement approval, the plan formulation process begins. During this phase, it will be necessary that the Dubai Municipality staff in the areas of town planning and engineering be brought into the process so that it will be able to understand, implement and continue to update the final plan.

The diagram at the end of this report attempts to describe the work phasing visually. The process requires that planning take place on a broad front with a number of disciplines involved simultaneously. It is felt that only through this approach can a plan be developed, which will have broad enough support to be implemented.

The consultant will be responsible for the delivery of the following items:

1. A review and recommendation relative to existing and required maps.
2. A series of reproducible maps for this planning process of consistent size, covering the study areas as defined.
3. Maps and technical papers of the existing situation as of a given date in the planning process. These documents are the results of the survey and analysis process, as well as the basis of the plan.
4. A policy statement and projection of resultant economic implications. This policy statement to be formulated and drafted in such a way that approval of the Ruler can be received and that this policy statement can guide the planning process.
5. A long-term strategy (twenty year plan) report on the planning problems in Dubai and the conclusions of recommendations as to the manner in which the Emirate and

urban areas should develop in the long term. In framing these recommendations, a number of alternative development strategies should be formulated and evaluated.

6. A short-term plan (ten year plan).

   a. The Regional Plan

      A tentative physical plan for the Emirate to be outlined. The interim concepts of that tentative plan are then to be examined in more detail and more precise proposals to evolve for the development of a settlement pattern for the Emirate as a whole, its natural resources, communications, and its potential for various activities and recreation.

   b. The Urban Areas

      To describe the more detailed studies made in evolving a master plan for the areas proposed in the long-term strategy for urban development in the short term during which the population is expected to increase from 220,000 to half a million. The master plan should incorporate recommendations on the land use and transport policy for urban areas, and the phasing and amount of investment in various kinds of urban development.

   c. The Old Town

      To contain an account of the more detailed surveys of activities and of the building fabric of the old

town, the estimates of growth and change likely to take place, the development of a variety of "Conceptual Plans" to accommodate change, their evaluation and the development of a preferred plan, the master plan for the old town. The recommendations for various aspects of master plan implementation, including the needs for development controls, for review and subsequent modifications of the master plan and for monitoring of the economic implications of the overall development of Dubai.

7. Action area studies

a. A Housing Development

A proposal for the development of an area defined in the master plan as a residential township for some 30,000 people on the basis of new standards, as defined in master plan studies.

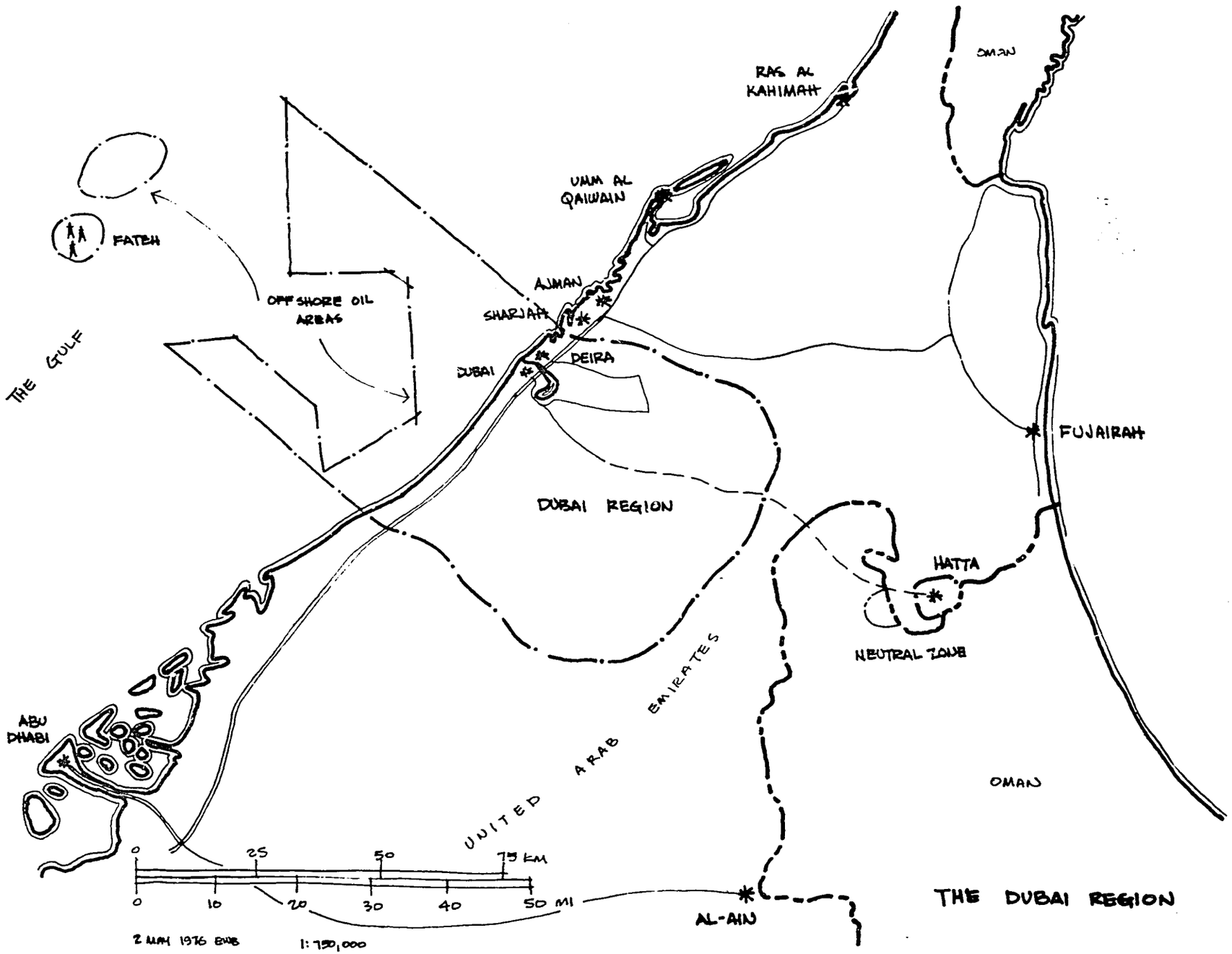
b. Traffic in the Old Town

A proposal for the improvement of traffic and environmental conditions in the old town, together with a policy for parking control, proposal for parking facilities, and procedure for analysis of traffic flows within the old town.

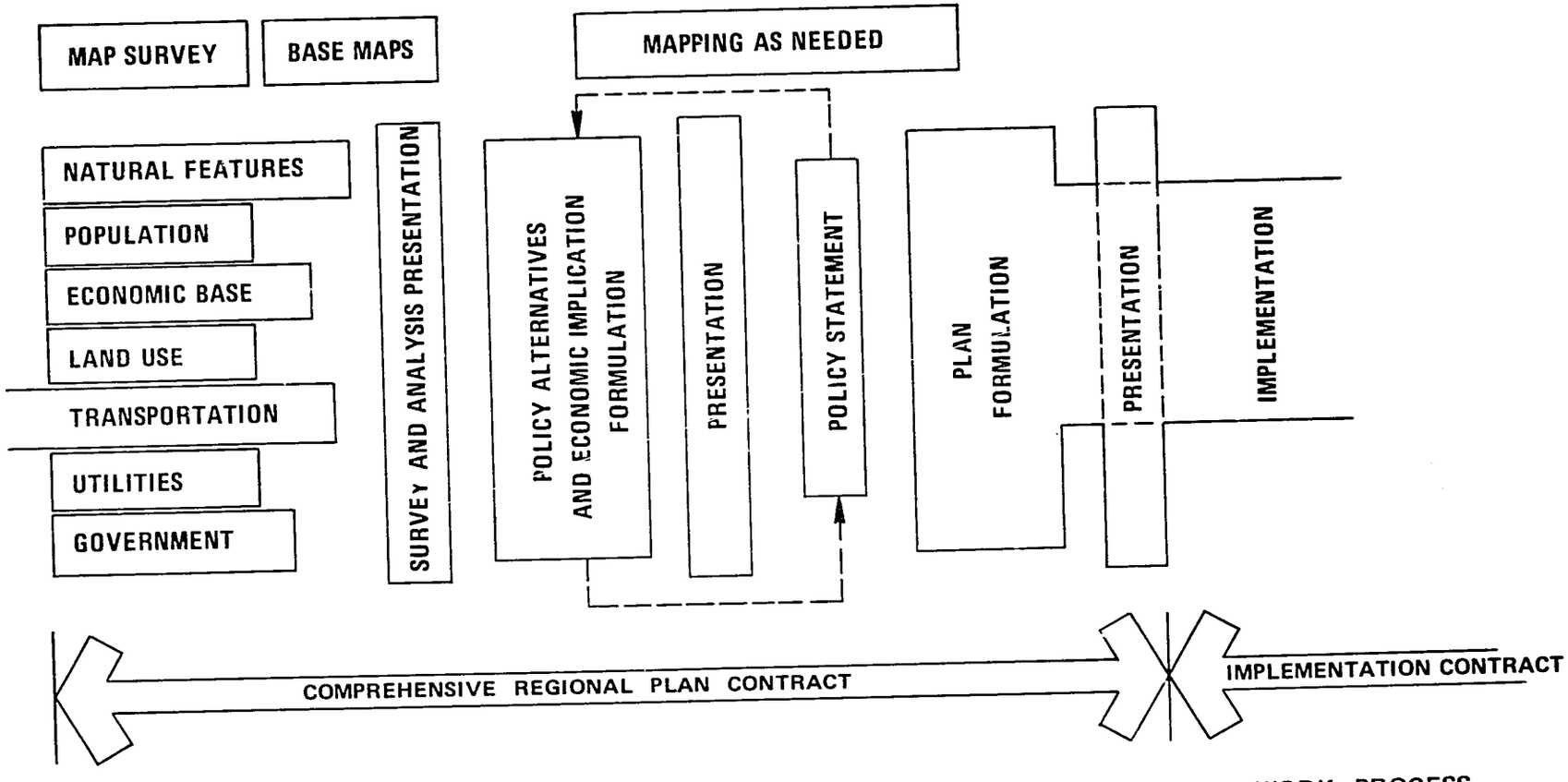
8. A report containing desirable and required planning standards for development in Dubai.

9. A series of implementation documents in final form that can be put into effect quickly.

10. A recommended, ongoing planning process with recommendations as to staff, organization, budget, responsibility and reporting requirements.



THE DUBAI REGION



WORK PROCESS

2 MAY 1976 EWB