

The History of Land use and Development in Bahrain

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By.. Mohammad Noor AL- Nabi

2012

Dedication



This book is dedicated to His Highness Sheikh Abdullah Bin Khalid Al Khalifa, under whose leadership formal Town Planning was initiated in Bahrain in 1968. His Highness was Minister of Municipalities and Agriculture from 1967 to 1975. In addition to his responsibilities as Minister, His Highness was President of Planning Coordination Board from 1968 to 1975 and was a key player in establishing Physical Planning (Town and Country Planning) as a requirement in the Government mechanism of Bahrain.

H.H. was tasked with starting up Town Planning in Bahrain with just a few Town Planning professionals under him. He was faced with the challenge of getting land and development control in Bahrain widely accepted by both the Government and the Public. This was a very difficult task as enforcing development of land under the control of Government to be guided by master plans and regulations, was previously unknown to Bahrain and therefore a tremendous task. There were continuous objections from both wealthy and common landowners regarding planning issues concerning the use of their land.

Whenever H.H. Sheikh Abdullah visited the then Amir His Highness Sheikh Isa Bin Salman Al Khalifa and H.H. The Prime Minister Sheikh Khalifa Bin Salman Al Khalifa, he would return with a list of complaints submitted to their Highnesses courts concerning planning issues by various land owners.

H.H. Sheikh Abdullah under such circumstances and on many occasions would say “Indi Sabar Ayoub” which means “I have the patience of Ayub (A.S.)” and would accordingly continue his responsibilities of President of Planning Coordination Board with the utmost patience.

H.H. would meticulously listen to Planning advice given to him by Planning professionals with insightful attention to every detail. On many occasions in which H.H. Sheikh Abdullah would ask for my advice, he would do so by encouraging me not to succumb to pressure and to do so impartially and professionally.

In this very book many of the planning ideas that were originated by H.H. Sheikh Abdullah are mentioned throughout.

Continued progress of Town Planning in Bahrain from its starting point is his glorious achievement and contribution that stands till this very day. Among his other achievements are constructions of Ahmed Al Fateh Mosque and Islamic Centre and Sheikh Isa Bin Salman Library.

إهداء



إهدى كتابي هذا إلى سمو الشيخ عبدالله بن خالد آل خليفة الذي بدأت بقيادته مبادرة التخطيط الرسمي للمدن في البحرين عام ١٩٦٨م. حينها كان سموه وزيراً للبلديات والزراعة ما بين (١٩٦٧م - ١٩٧٥م). إضافة إلى مسؤولياته كوزير كان سموه رئيساً لمجلس تنسيق التخطيط ما بين (١٩٦٨م - ١٩٧٥م) يعتبر سمو الشيخ عبدالله لاعباً رئيسياً في إنشاء التخطيط العمراني (التخطيط للمدن) وهو مطلب لآليه عمل حكومة البحرين.

كلف سمو الشيخ عبدالله مع بدء تخطيط المدن في البحرين مع عدد قليل من المهنيين المختصين بتخطيط المدن يعملون تحت إدارته ، حيث واجهته تحديات عديدة تمثلت في الحصول على الأراضي وتطويرها حيث لاقى ذلك قبولا لدى حكومة وشعب البحرين على حدا سواء. وقد كانت هذه المهمة صعبة للغاية حيث إنها تقوم بتطوير الأراضي الخاضعة للحكومة من خلال استخدامها لخطة رئيسية وأنظمة لم تكن معروفة سابقا في البحرين، ولذلك كانت هذه المهمة شاقة. أستمرت تلك المعوقات من قبل ملاك الأراضي الأثرياء وشركائهم للخطة المتعلقة باستخدام أراضيهم.

كلما زار سمو الشيخ عبد الله الأمير الراحل صاحب السمو الشيخ عيسى بن سلمان آل خليفة وسمو الأمير الشيخ خليفة بن سلمان آل خليفة ، رئيس الوزراء كان يعود بقائمة من الشكاوى المقدمة إلى سموه من قبل الملاك فيما تتعلق بالمسائل المختلفة عن تخطيط الأراضي .

كان دائما ما يردد سموه في مثل تلك الظروف وبمناسبات عديدة «عندي صبرأيوب» وبذلك أستمرت مسؤولياته كرئيس لمجلس تنسيق التخطيط بصبر وتحمل شديدين.

كان سموه يستمع جيدا لنصائح مستشاري التخطيط ويبدى اهتمامه بكل التفاصيل. في كثير من الأحيان كان يطلب مني سموه المشورة ويشجعني على عدم الاستسلام للضغوط وتقديم المشورة دون تحيز وبمهنية.

من خلال هذا الكتاب ستجدون أفكار التخطيط النابعة من سمو الشيخ عبدالله بن خالد آل خليفة في جميع محتوياته.

إن التقدم المستمر في تخطيط المدن بالبحرين من نقطة البدايه تعتبر إنجاز رائع ومساهمة تقف حتى يومنا هذا شاهداً وكذلك تجلت إنجازاته الأخرى في مسجد أحمد الفاتح والمركز الإسلامي ومكتبة الشيخ عيسى بن سلمان.

PREFACE

Bahrain has undergone significant change between 1968 and 2002; developing from small unplanned towns and developments to a modern urban Kingdom. This book outlines the key infrastructure and land development initiatives that have led to the development of the modern Kingdom of Bahrain. The book records the history and development of land use in Bahrain in general but from 1968 to October 2002 in detail.

I arrived in Bahrain in February 1971 and over a thirty-five years period played a key role in physical planning, providing the base for the development of the Kingdom of Bahrain. As the Chief Town Planner and Town Planning Advisor, I worked with His Highness Sheikh Abdulla Bin Khalid Al-Khalifa and His Excellency Sheikh Khalid Bin Abdulla Al-Khalifa to initiate modern land use planning in Bahrain from 1971 to 2002.

Significant parts of old Bahrain's towns and villages, and their adjacent areas, were under private ownership prior to the preparation and implementation of master planning in Bahrain. Private lands were characterised by irregular shapes and adopting these areas into the detailed plans and making them acceptable to property owners was a difficult task. Although there was reluctance from other planners and consultants to go through this process, we undertook to overcome and resolve these challenges, succeeding in preparing master plans for major towns and villages which were adopted and implemented.

There were a large number of additional plans prepared by the Physical Planning Directorate staff and consultants that were commissioned but were not adopted or subsequently implemented. This book does include those plans and focuses on actual plans that were adopted and implemented within Bahrain during the period covered by the book.

This book does not cover any planning activity after October 2002 when the government administration changed. As a consequence of these changes, whilst I continued to serve until 2009, I was not as significantly involved in taking initiatives and in influencing decision making in land use planning after October 2002. This book was written during July, August and September in 2009 and may be read to this context.

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Historical Background

Bahrain is a small, strategically located country in the Arabian Gulf on the trading sea route between the ancient Mesopotamia and Indian civilizations. Traders traveling between both these civilizations found Bahrain to be a fertile land, with palm trees and natural inland and deep water springs making it the ideal stop over to acquire sweet water, vegetables and fruit for their voyage.



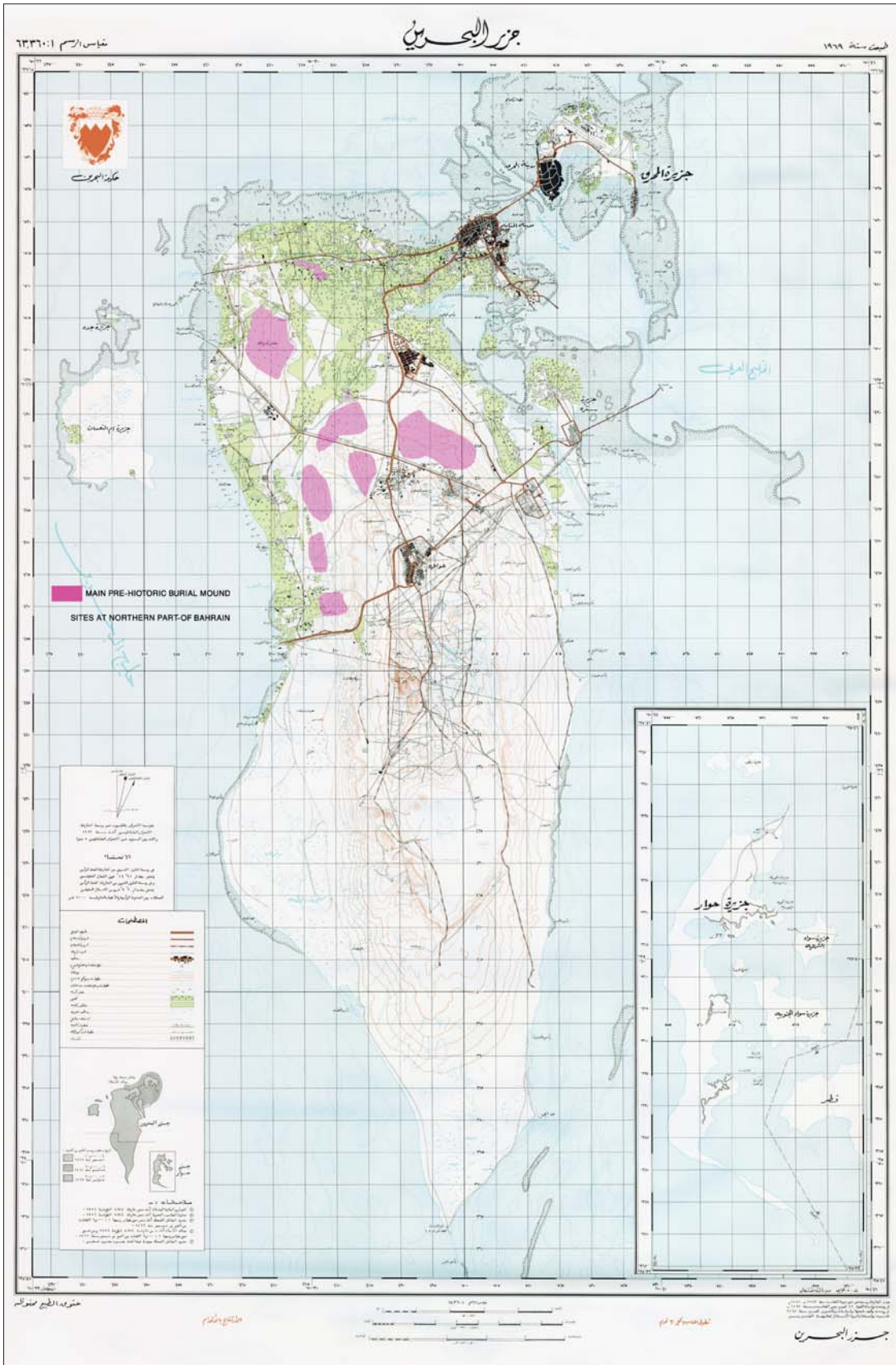
Bahrain, meaning 'two seas', is a group of thirty six small islands. The name may reflect the archipelago's position, between two seas, approximately 24 kilometers east of Saudi Arabia's sea board and a little further from the North West coast of the peninsular State of Qatar. Another theory refers to the incidence of two sources of fresh water rising in the form of numerous springs beneath the islands' surface and the off shore sea-bed. The total land area was about 620 Sq Km (before substantial reclamation between 1965 to date)



Bahrain has a rich history. On the north shore of the Bahrain Island is the site of Dilmun, an ancient city state, which was linked by trade with Mesopotamia, India, Oman and Mohenjadaró in about 3000 B.C. Bahrain with its abundant fresh water, laying some two day's sail with a following wind from Mesopotamia, was clearly a place of considerable wealth and power, with close cultural and trading contacts with the Sumerians of Mesopotamia and the Indus valley. The discovery of over one hundred thousand burial mounds at Saar, Aáli and other places at the northern part of Bahrain island, believed to be the largest pre-historic cemetery in the world, have been attributed to this and subsequent phases of Bahrain's history.. The locations of significant burial mound sites are shown in the map below. The reasons for the selection of these sites inland on barren areas outside the green areas are not known. It is also not clearly known from where dead bodies were brought to bury. The significant size of these areas indicates that these huge sites could not be filled only by the deceased residents of Bahrain.



Photo of some burial mounds



The city of Dilmun was supported by a rural population numbering several thousand persons. Ancient horticulture on Bahrain Island's north shore was facilitated by a well developed system of aqueducts. Further evidence of the large ancient rural population was provided by Alexander the Great's Ship Captains in the third century B.C. It can be inferred that Bahrain, while a trading center, was locally supported by a rural population which lived in nearby villages. Thus, Bahrain's current pattern of town-periphery relationship probably began in antiquity.

Bahrain once was known as Tylos and was extremely famous for its numerous pearls. Between 300 B.C. to 300 A.D. Bahrain enjoyed commercial prosperity based on its strategic location, trading and pearl harvesting. In the later part of this period Bahrain was dominated by Arab tribes from Saudi Arabia. In 4th Century A.D. Bahrain fell under the rule of the Persian King. Bahrain is a blessed country. The Amir of Bahrain received a letter from Prophet Mohammed (SA) to embrace Islam in 7th century A.D. which he accepted. For the next 350 years (up to the 11th Century) Bahrain and Eastern Arabia were ruled by governors on behalf of the caliphs of Damascus and Baghdad. In the 1154 A.D. the famous Arab-Spanish geographer, Idrisi, reported «*the capital of Awal is Bahrain, this is a town well populated whose environs are fertile and produce corn and dates in abundance*». Bahrain was invaded by Oman in 1487 and was under Omani Rule for some time. In 1521 the Island of Bahrain fell into Portuguese hands, following which the Bahrain fort was built, the renovated remnants of which can still be visited today.

Al Khalifa rule in Bahrain Recent History

The rule of the Al Khalifa family started in Bahrain in 1783.

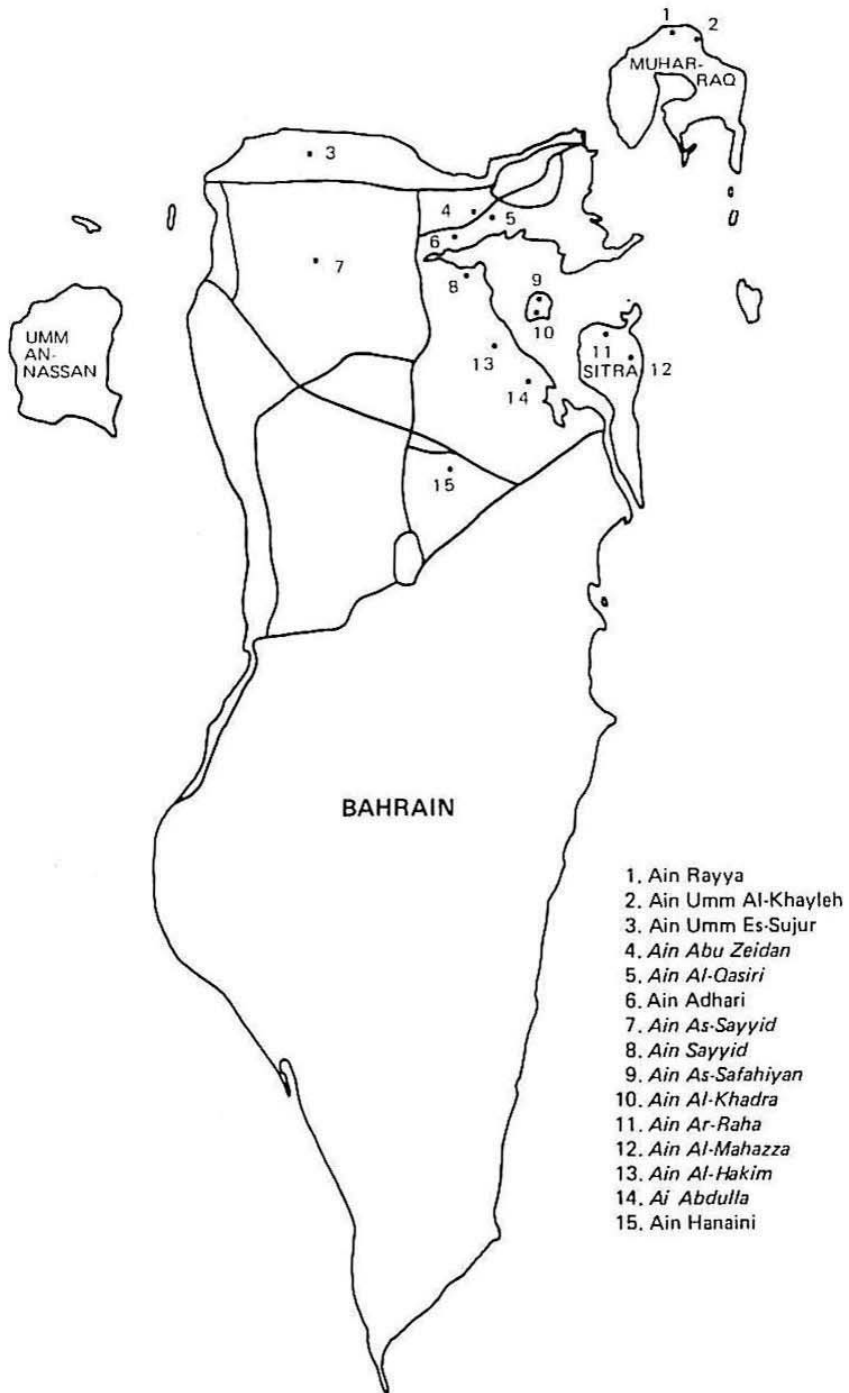
Bahrain became a British Protectorate in 1820. In 1902 a British Political Agent was posted to Bahrain and in 1913 a convention was signed which included the recognition of Bahrain's independence and of her control of a number of neighboring islands near her, including the Hawer Group.

Prior to the evolution of the present twin cities of Manama and Muharraq in around 1783, the island's inhabitants were spread amongst almost fifty small settlements, mostly villages and hamlets, located both along the coast and in the interior of the island, recognizable from a distance by their area of development and groups of date palms. There is no doubt that the pattern of settlement on Bahrain's islands owes its longevity to a rich endowment of natural springs, usually referred to as Ains. The town of Muharraq obtained its water supply from this curious sea-bed source called Bia mahab.

The transformation of the state's social and economic life which accompanies urban growth was well underway by the early nineteenth century. Since the beginning of the nineteenth century to the development of the oil industry from 1932 onwards, Bahrain's economic life was dominated by pearling, shipbuilding and entry port activities for Arabia. In 1907 Bahrain's pearling industry was estimated as including 917 boats, which provided seasonal employment for crews totaling 18,000 persons. Shipbuilding employed about 200 carpenters. These activities were centered in Manama and Muharraq.

The income to Bahrain from Pearling in 1926 and the following years was estimated to be £ 1,500,000 per annum. Custom duties and tariff on re-exports were the main sources of government revenue. Fishing and Agriculture also contributed to the economy. The pearl trade was adversely affected by the European financial depression in the 1920s, especially as Paris was a centre from which merchants visited Bahrain to negotiate their purchase. By 1932, the economy was in an even more precarious state, suffering from competition from cultured pearls from Japan. However, Bahrain was fortunate to discover oil at the same time. In the morning of 1st June 1932 oil began to flow and the nascent oil industry had begun. In 1934, BAPCO's first cargo of crude oil was loaded at the Sitra Terminal and on 29th December Shaikh Hamad granted a mining lease to BAPCO which covered an area of approximately 100,000 acres (40468 hecets = 40 km²) of Bahrain's main island.

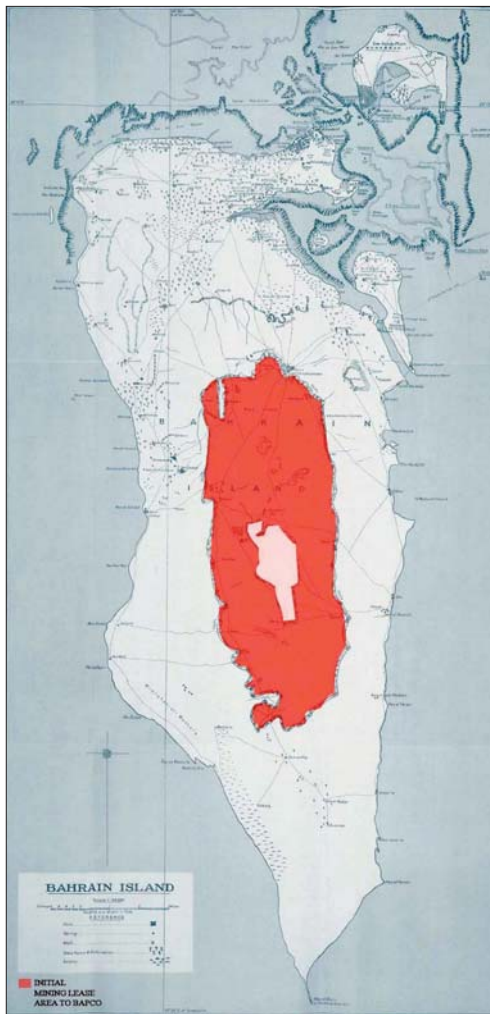
PRINCIPAL AINS (Springs) OF BAHRAIN



Developments between 1930 to 1971

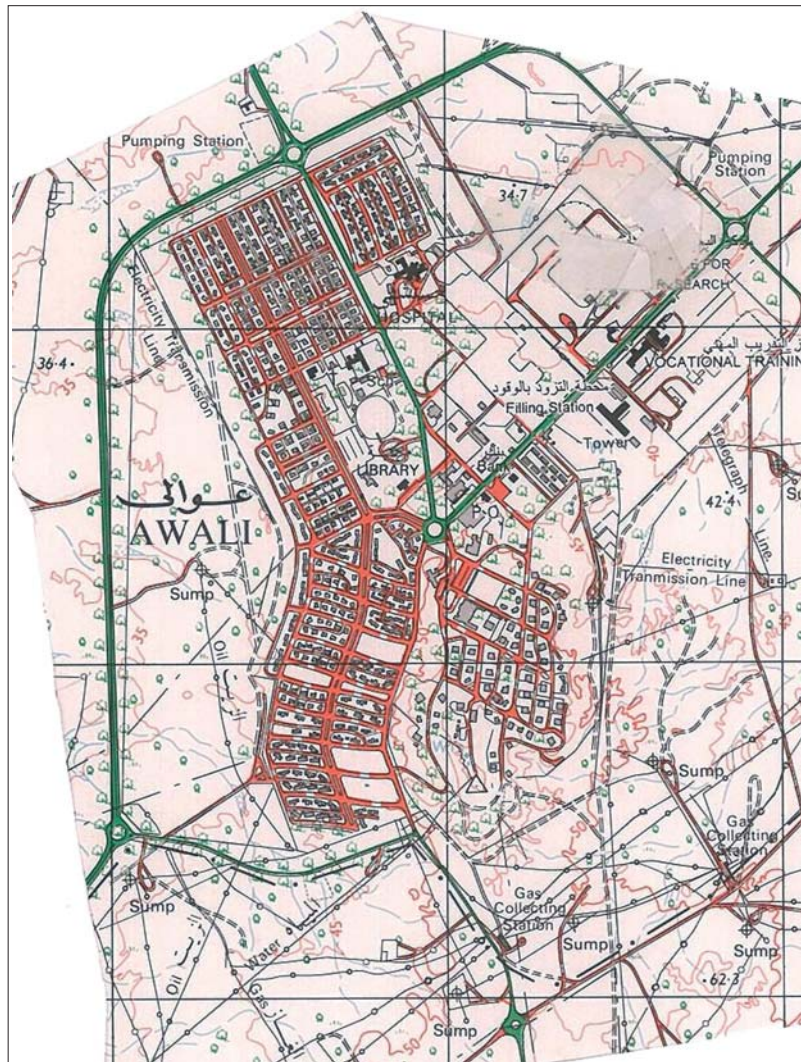
Since 1930 to 1971, when Bahrain gained its independence, the country has undergone considerable changes in the social and economic spheres of life and these in turn have changed the living conditions for the island's inhabitants and the administrative structure of the government. During this period a number of important developments took place.

In 1935 work commenced on the oil refinery. Rapid expansion of the refinery continued until a refining capacity of 255,000 barrels a day was reached in 1978. A pipeline traversing a total of 55 kilometers of sea-bed desert was constructed between Bahrain refinery and Saudi Arabia to bring 200,000 barrels a day of Saudi Crude oil to the refinery. The Causeway and bridge was built linking Bahrain Island with Sitra Island. Storage tanks were built in Sitra. The



Causeway and Wharf was constructed at the east of Sitra to export oil. In December, 1934 the first tanker load of Bahrain oil entered the world market. In 1958 Bahrain signed a treaty with Saudi Arabia establishing marine frontiers between the two countries. As per the treaty an area at the north west of Bahrain was designated from which Bahrain received half of the net profits of any oil found in that area. Sovereignty of the area was to be retained by Saudi Arabia which would also carry out any oil operations in the designated area. In 1963 oil was found in the off shore field of Abu Safa, some 27 miles north of Dahrán. Commercial production began on 19th January, 1966, and in accordance with the Treaty the Bahrain Government began to receive its negotiated share of the net profits, thereby substantially increasing its oil revenue.

In 1934 the first houses were constructed in Awali for BAPCO workers and subsequently the first modern planned town in Bahrain was built there.



Layout plan of Awali Town

Early infrastructure developments

In 1929 Power House, on the corner of Municipality's Manama Garden, became operational to provide electricity for 2000 lamps and 200 fans. In 1931 the Power Supply extended to Muharraq. In 1953 the Mahooz Power Station was completed as a result the power generating capacity increased substantially and power was supplied to many areas including many villages. In 1957 the water supply network was inaugurated to benefit some 3000 houses.

In 1932 Bahrain's telephone service was initiated with 12 lines and one public telephone. In the early 1930's Bahrain's Airport started operation. In 1932 the first Imperial Airways airplane landed at Bahrain on its way to India. The first Airport building was a simple barasti arrangement constructed of palm tree leaves. A new building was opened in 1961, followed by a terminal specifically designed for jumbo jets and other wide bodied aircraft in 1971.

In 1912 Mina Manama was built with a goods' warehouse which soon became out dated and inadequate for the needs of the burgeoning country. A deep water harbor named Mina Salman was built and came into operation in 1967.

In 1955 Bahrain Broadcasting Station (BBS) came on air.

In 1968 Earth Satellite Station was installed at the north of Askar near Ras Abu Jarjur.

Bahrain's first surfaced road was built between Jabel Al Dukhan camp, for oil exploration, and Awali in 1926. Subsequently road development was pursued on a minor scale in and around Manama primarily for the passage of non-motorized vehicles and pedestrians even by 1961. In 1930 work began on the Sheikh Hamad Causeway between Manama and Muharraq and the causeway opened to road traffic in 1936. The causeway was completed with construction of a swing bridge spanning the deep-water channel connecting the two ends of Manama – the Muharraq causeway in 1942. Further major road networks were constructed in the early sixties like Sheikh Salman highway to provide better connections between the airport at Muharraq, Manama and outlying settlements of Awali. Similarly the road between Manama and Budaiya was constructed. In the 1968 topographic map, other major roads constructed by 1968 are shown between Zallaq, Awali, east Riffa and Sitra, along Saudi Area via and Bahrain inland oil pipeline between Janabiya and east Riffa, Zallaq highway to Malchiya; Pipeline road; to Karzzakkan; Janabiya highway connecting Budaiya Road and pipeline road, Sehla road connecting Sheikh Salman highway with Budaiya highway and the road connecting Muharraq with Hidd at the south of the Airport.

In 1930 there were 200 vehicles in Bahrain including two lorries and a private vehicle for the British Political Agent. Bahrain's first petrol filling station was opened in 1938. In 1961 the number of registered vehicles was 6,500.

Early Social Developments

Education

Al Hidayah School for boys in the northern part of Muharraq was the very first modern public school to be opened in the Gulf area in 1919. By 1930 there were 500 boys and girls attending eight public schools in Bahrain. In 1971 there were 64 Government boys' schools and 47 Government girls' schools teaching 28,765 boys and 21,303 girls.

Bahrain had a number of private foreign schools from late 19th century starting with the American School in 1899. Sacred Heart School and the Indian School were opened in 1940. Subsequently Urdu school, Pakistan school, St Christopher School, Awali School, Bahrain-American and other private schools were opened which originally operated independently. In 1961 the supervision of all private schools came under the Bahrain Department of Education.

Bahrain's schools developed and advanced in phases – the foundation period during the 1920's and 1930's the growth period during the 1940's and 1950's and the period of modern development from 1960 onward.

Public Health

Bahrain was the first country in the region to set up a health clinic in 1888 followed by the establishment of the American Mission Hospital in 1893 and then the Na'eem Health Center in 1936. In Awali Hospital was built. A separate hospital was also built at the Royal Air force base at Busaiteen in Muharraq for the British Army. Salmaniya women's hospital was opened in 1960.

Sports

Bahrain also established sporting and cultural societies. The first club was Al-Shabiba football club in Muharraq which subsequently changed its name to Nadi al –Bahrain in 1937. The following year Al Ahli club was founded in Manama. Nadi al-Aruba was formed in 1942. These were followed by other clubs and societies throughout the towns and villages of Bahrain. These clubs facilitated sports and cultural activities and succeeded in acquiring land for their use and thereafter retaining substantial amounts of lands in future Master Plans for urban areas.

Many administrative and political changes happened prior to independence in 1971. Government administrations like the Municipality, Departments of Education, Health, Social Affairs, public works, Water Supply and other government organisations were established, creating many job opportunities.

Early Industrial Development

No major industries developed in Bahrain except the oil industry until Bahrain decided to develop Aluminum Bahrain (ALBA) in late 1960s by granting land for its establishment and agreeing to supply it with subsidized gas.

The Growth of the Urban Society

Traditionally Bahrain was a village society based on agriculture, pearling, fishing and other activities and there is no doubt that during the period between 1930 to 1971 the pattern of life changed dramatically primarily as a result of the new economic activities. Unfortunately, whilst there are no official statistics available for the numbers inhabiting towns and villages prior to the 1941 census, even since then until the present day we can observe a trend of depopulation of the countryside and growth of towns and urban dwellings. The depopulation would possibly have been greater had the oil company not provided transport from various different centres of population to their place of work. If transport was not provided, whole family units or communities could have abandoned their villages and concentrated in the larger centres of population. The same also applies to the provision of transport by the government of Bahrain for some of its employees and for students.

Even taking this into consideration there has been a major shift in the centres of population since the Second World War (1945), as job opportunities and quality of life in the villages was very much lower than that of the towns and the people naturally gravitated towards the later. The following table illustrates this trend.

The trend of urbanization (1941 – 1971)

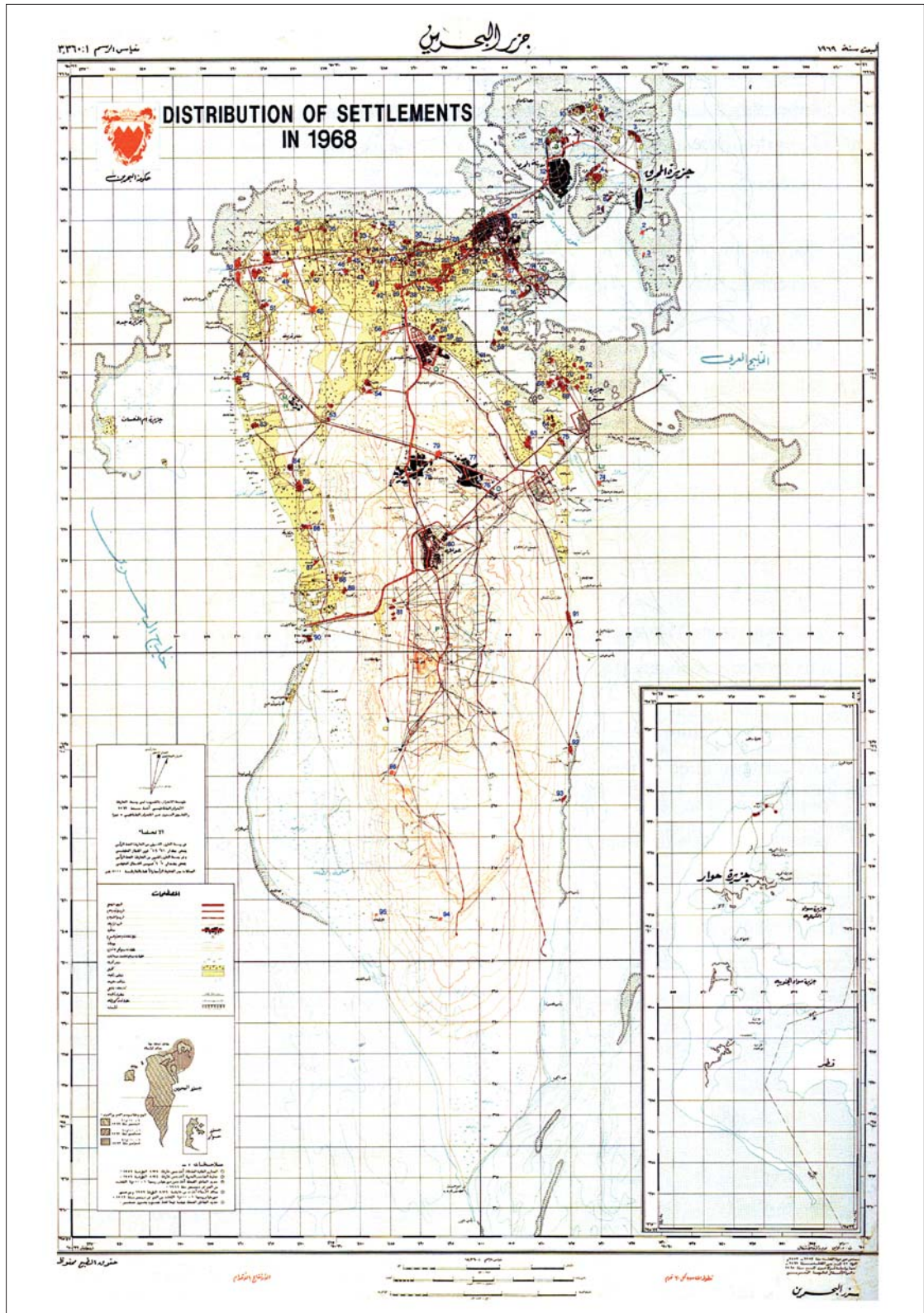
Towns	1941		1950		1959		1965		1971	
	Pop,	% of total	Pop,	% of total	Pop,	% of total	Pop,	% of total	Pop,	% of total
Manama	27835	30.9	39648	36.15	61726	43.12	79098	43.41	88785	41.00
Muharraq	21439	23.8	25577	23.32	32302	22.56	41143	22.58	37732	17.44
Hidd	-	-	-	-	4440	3.10	5230	2.87	5269	2.43
RiffA	-	-	-	-	6623	4.62	9403	5.16	10731	4.90
Awali	1532	1.70	3846	3.50	3123	2.18	2097	1.15	984	0.45
Jidhafs	-	-	-	-	5591	3.90	7941	4.35	11152	5.15
Isa Town	-	-	-	-	-	-	-	-	7501	3.46
Rural & Other areas	39164	43.5	40579	37.00	29330	20.49	37291	20.46	54149	25.00
Total	89970	99.90	109650	99.97	143135	99.97	182203	99.98	216303	99.83

From the above table we can see the trend of Bahrainis gravitating towards the towns. With the exception of Awali, which was populated by Europeans only, all urban centres of population have increased.

In Manama for example, 30.9% of the total population resided there in 1941 and by 1971 the percentage had risen to 41.00%, the actual number of inhabitants having increased by 313.5%. Muharraq shows the same trend up to 1965, the fall in numbers of the 1971 census being chiefly explained by the shift in population due to the creation of Isa Town in 1968. The reason for the fall in population of Muharraq and not the other towns is probably due to the regulations formulated through which people qualified for housing in the newly-created Isa Town.

The towns of Muharraq and Jidhafs are usually considered to have very close ties with the capital Manama, both serving as dormitory towns for the latter, Muharraq being only 1½ miles away across the causeway from Manama and Jidhafs being only 4 miles away on the main trunk road to the city and this may account for the growth in their populations.

The overall picture shows that in 1971, 75% of the Bahraini population are concentrated in seven towns and of these three of them, namely Manama, Muharraq and Jidhafs, contain almost 64% of the total population. The 1968 topographic map below and following table show that there were 96 centres of population within the islands and therefore the remaining 25% of the population were scattered over 89 small villages.



List of Towns, Villages and Small Settlements in Bahrain in 1968

(Please refer to map on page 26)

1. HIDD	22. Salihiya	43. Al Hajar	64. Al Aker	85. Karzakkan
2. Um el Shajar	23. Jamala-Khamis	44. Al Qadam	65. Qariya	86. Malchiya
3. El Azil	24. Abu Baham	45. Abu Saybi	66. Kaflar	87. Sadad
4. Arad	25. Tashan	46. As Shakhura	67. Kuriya	88. Shaharakkan
5. Halat al Naim	26. Musalla	47. Maqaba	68. Kharijiyah	89. Dar Chulaib
6. Halat as Suluta	27. JIDDHAFS	48. Saar	69. Wadiyan	90. Zallaq
7. Galali	28. Jabalt Burhama	49. Markh	70. Markuban	91. Askar
8. Samahij	29. Mani	50. Bani Jamrah	71. Sufalah	92. Jaw
9. Raiya	30. Sanabis	51. Kuriya	72. Muhazzah	93. Dur
10. Dair	31. Deah	52. Budaiya	73. Halat	94. Rumaitha
11. Busaiteen	32. Karbabad	53. Buri	74. Halat Umm Al Baidh	95. Mamttala
12. MUHARRAQ	33. Karranah	54. A'ali	75. Maámir	96. Amar
13. MANAMA	34. Magsha	55. Salmabad	76. Rifa ash Sharqi	} RIFFA
14. Juffair	35. Jannusan	56. ISA TOWN	77. Bokuara	
15. Gharifa	36. Barbar	57. Tubli	78. Rifa al Gharbi	
16. Umm Al Hassam	37. Diraz	58. Al Hujayar	79. Rifa ash Shamal	
17. Mahuz	38. Sehla Al-Hadriya	59. Al Jubaylat	80. AWALI	
18. Sugaiya	39. Sehla Al-Fuqiah	60. Jidd Ali	81. Sakhir	
19. Bu Ashira	40. Jabalat Al Habshi	61. Jurdab	82. Jasrah	
20. Zinj	41. Bukuwa	62. Sanad	83. Hamala	
21. Bilad Al Qadim	42. Kubait	63. Nuwaidarat	84. Dumistan	

List of Major Establishments/ Installations Outside Towns in 1968

(please refer to map on page 28)

A. Airport	K. Sitra BAPCO Wharf
B. RAF Area	L ₁ & L ₂ South Sitra Pier 1 & 2
C. Busiteen Wireless Station	M. Wireless Station
D. RAF (Juffair)	N. Hamala Army Camp
E. Hoorah RAF Pier	O. East Riffa Army Camp
F. Mina Salman	P. Oil field
G. Mina Manama	Q. Wireless Station
H. Ship Repairing Yard	R. Jida (Prison)
I. Oil Storage Tanks (Farm)	
J. Refinery	

Agriculture

From the distribution and nature of settlements shown in the map (page28) and in the table (page29) it is clear that small settlements were mostly within agricultural green areas. Predominant green and agricultural areas of 1968 are shown on the map on page 30

Bahrain developed a reputation for its palm trees and ubiquitous gardens with various types of fruit including figs, grapes, pomegranates, peaches and local melon in addition to the papaya and the local almond (lawz). Until the 1930's and even the 1940's the Budaiya Road was very narrow, bordered with an unbroken line of trees, reaching all the way between Manama and Budaiya: date palm trees, lawz, and bambar (a species of fig). The passers-by could easily touch the fruit from the road. Because of the density of trees, this road got dark very early. At dawn, the sound of barashim (bells) could be heard from donkeys, loaded with produce heading for the Suq of Manama.

The dependence on date palm products declined gradually and became a very minor part of the economic life of Bahrain to such an extent that in 1967 about 60% of the date crop was simply abandoned. Following the discovery of oil, agriculture formed the second traditional source of income for the inhabitants. The Bahrain Agriculture department was created in the early years of 1950's with a British Agricultural Advisor and with the decline in agriculture in Bahrain, the green areas largely disappeared.

Non Existence of National Landuse Planning Agency

The above developments took place on an individual basis and did not form any national or regional comprehensive Master Plan. There was no government agency responsible for comprehensive planning incorporating all sectors of development and planning.

Housing developments also took place on an ad hoc basis. Awali Town was developed as a separate project mainly for the residence of European and American employees of BAPCO. The Isa Town site was selected for public housing. The layout plan of its first phase as planned and developed by the Department of Labour with the help of Wimpy Consultants is shown below.



Isa Town Plan

Residential developments took place at the periphery of existing settlements based on plot plans prepared by municipality technicians. Typical layout of such plot plans in Hamala village is shown below.

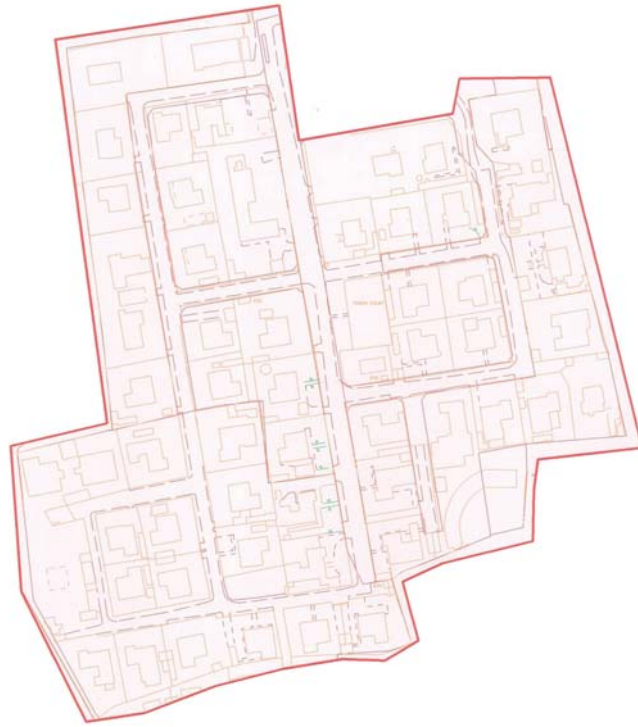


Hamala Plan

Juffair was selected for the establishment of the British military headquarters in 1927. The following table shows the number . of British and American nationals in Bahrain.

	1959	1965	1971
British	2513	2802	2919
American	146	153	227

To provide accommodation for the British Army, residential compounds were developed by rich merchants primarily close to Juffair and Manama like Yateem Garden, Sheikh Abdulla Garden, Khalil Kanoo Garden, Dewani Compound and Cunningham Garden.



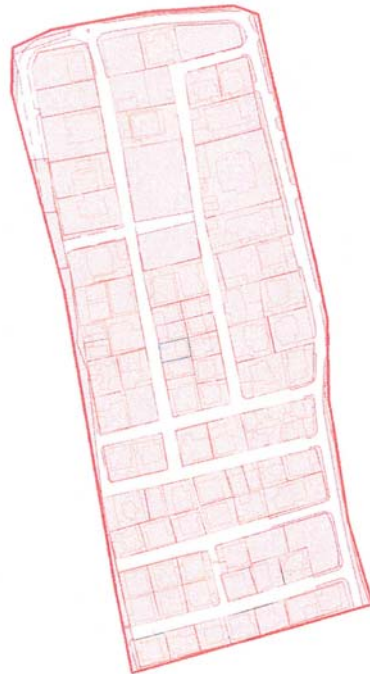
Layout Plan of Yateem Garden



Layout Plan of Khalil Kanoo Garden

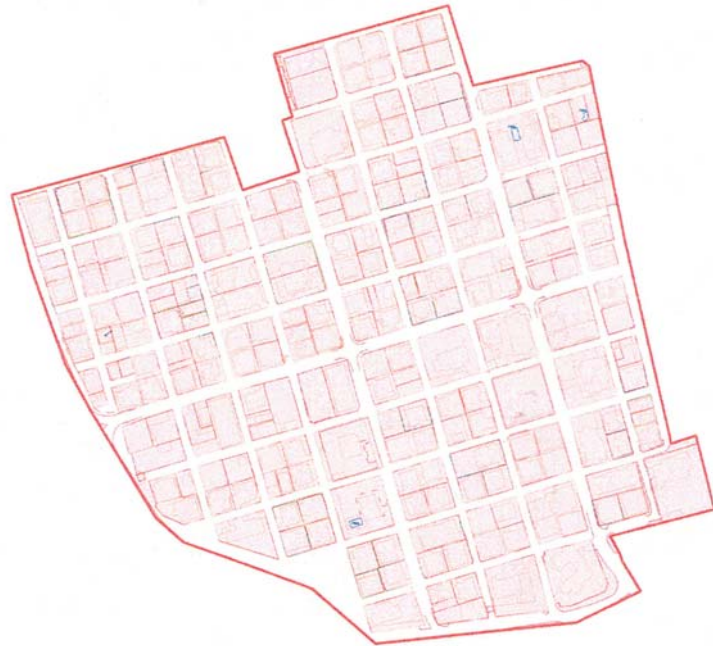
A close analysis of layout plans of these private developments shows that no standard road width, road hierarchy, plot size or other planning features were followed in these developments.

Another private subdivision was done at the west of Khalil Kanoo Gardens in a different manner without grid pattern.



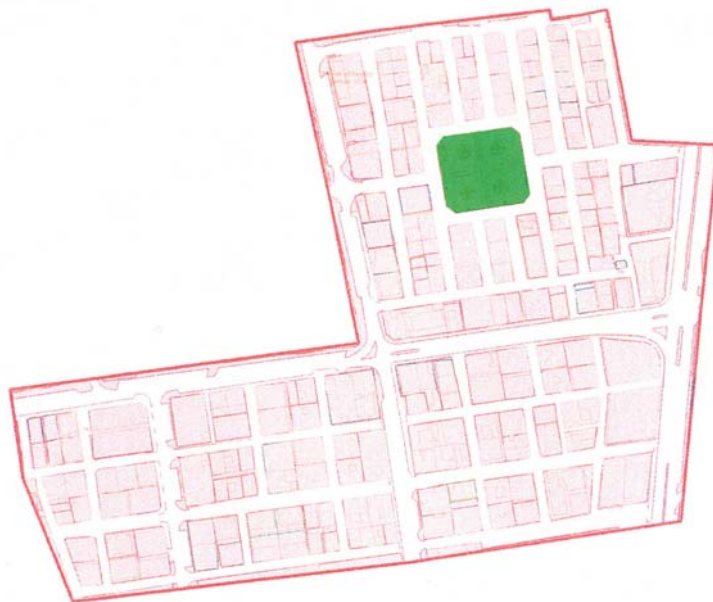
LAND SUBDIVISION PLAN AT NEW BURHAMA

Land sub divisions took place for residential developments. One such big subdivision was Gafool where land was subdivided in 1960's in grid iron pattern with four plots in one block with roads on four sides of the block with mainly 20 feet roads and two thirty feet roads running north south and one running east west.



GAFOOL LAND SUBIVISION PLAN OF 1960'S

In 1946 land in Gudaibiya was planned by the Govt. with wide straight roads and sold to the public for development.



PLAN OF GUDAIBIYA LAND SOLD TO PUBLIC

Origins of modern planning – the opening of the Bahraini Government Physical Planning Unit

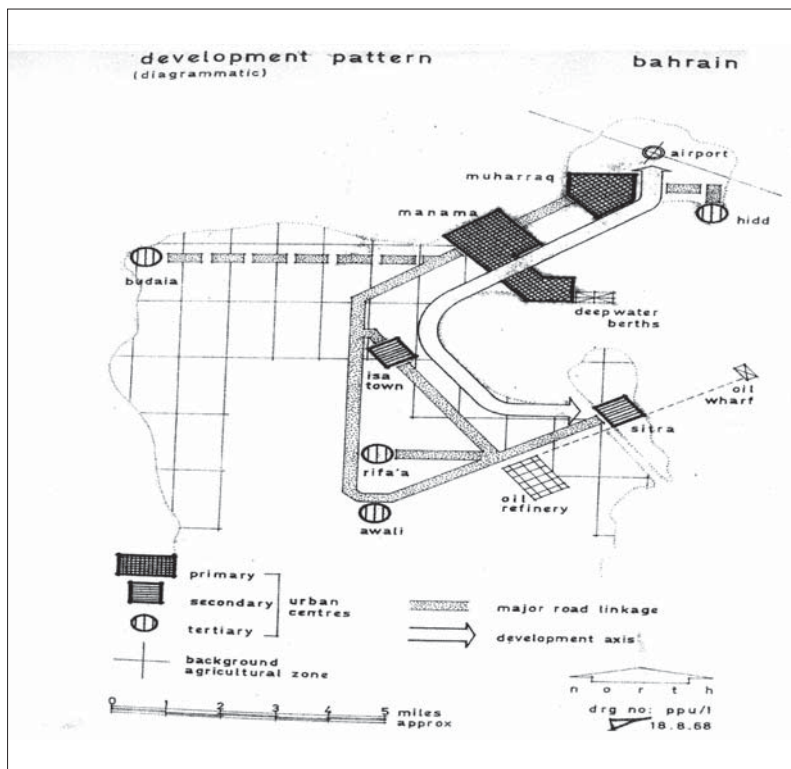
From the above mentioned plans and developments it is clear that planning in Bahrain was restricted to plot layouts, road patterns and land allocation. There was no government agency for Master Planning or Structural Planning. There was no qualified Town Planner in the Government or indeed in the country. The Government requested the services of a qualified Town Planner from the British Government And the British Ministry of Overseas Development sent Mr. A.M. Munro as Physical Planning Advisor to the Government of Bahrain in 1968. Mr. Munro was a qualified and well experienced Town planner. Before coming to Bahrain he worked in Malaysia and several other foreign countries as an Advisor of British Ministry of Overseas Development. Mr. Munro established the Physical Planning Unit under the Head of Municipalities and Agriculture. H.E. Sk Abdulla Bin Khalid Al Khalifa, Mr. Ebrahim Al Moayed, an Architect, qualified from Cairo, worked with Mr. Munro. Two technically qualified staff, two survey technicians and two secretarial staff joined the unit. So the journey of formal Physical Planning started in Bahrain.

Mr. Munro issued the “Physical Planning in Bahrain – Preliminary Assessment” report on 7th September 1968. In the preface of the report he stated; *“Physical Planning is primarily concerned with the coordination of all forms of development activity. The end product, the physical development plan, provides a framework within which various development programmes- economic, social, housing, public health, utility services, transport and communications etc. – may be implemented concurrently; thereby avoiding unnecessary and wasteful, inter-departmental competition, wrongful usage of land or the creation of undesirable environments. Co-ordination of physical planning with economic and social programmes, at all levels (national, regional and local urban) is essential, if the economic and social objectives of any future development policy are to be achieved. These three planning spheres are essentially complementary, and should never be mutually exclusive.”*

1988 was fixed as the planning and development target year for a period of 20 years starting from 1968. In the report three population projections 274,200 (low), 306,900 (medium) and 343,250 (high) were made for Bahrain for 1988. The 1981 census recorded population as 350,798 and 1991 census recorded population of 508,037, demonstrating that the original population projection was low. In the report requirements of key factors including housing, education, health and employment were calculated. Requirements of basic planning

legislations were also mentioned. The report predicted a requirement to construct 1275 new dwelling units each year until 1988, an overall requirement of 76 primary schools in 1988, 2058 hospital beds in 1988 and a required employment provision for 102,950 people were estimated.

Following development pattern was assumed in the report.



Advisor, A.M.Munro

<u>DEVELOPMENT PATTERN: BAHRAIN</u>		(Based on 'Medium' Projection)		1988
<u>Location:</u>	<u>Planned Population:</u>	<u>Economically Active:</u>	<u>Housing Units Required:</u>	<u>Primary School Streams Required:</u>
Primary Centres:	200,000	} 18,500	25,000	133
Secondary Centres:	49,000		6,100	32
Tertiary Centres:	28,000		3,550	19
Background Zone:	30,000	8,500	3,710	20
TOTAL:	307,000	92,000 (Unemployed - approx 2,000 would be spread throughout the various locations)	38,360 (Based on four-room housing unit)	204

Note: In this context 'urban' - i.e. primary, secondary or tertiary - is restricted to those centres with populations of not less than 2,000 persons.

Creation of Planning Co-ordination Board

Mr. Munro took the initiative to form a planning coordination Board with responsibility to examine all schemes of development of all authorities with powers to recommend appropriate action to the Administration Council where necessary. The following order was issued by the President of the Administration Council establishing the Board.

Bahrain Government
Administration Council

Office Order Urban and Rural Planning Co-ordination Board

Preamble

For the purpose of securing orderly progress in the development of both urban and rural areas in Bahrain and its dependencies, it is necessary that there should be constituted a coordinating authority responsible for examining and considering all schemes of development and with powers of recommending appropriate action to the Administration Council where necessary.

The Board

By this order, a coordination Board is established with responsibility for coordinating all development projects involving land and water utilization, and other aspects of physical planning, preventing overlapping and duplication of effort and submitting plans for the development and growth of both rural and urban areas.

The Board will receive and consider all plans submitted to it by the Physical Planning Unit. All plans, projects or schemes remitted to the Board from any source shall first be submitted to the Physical Planning Unit for investigation and report back to the board.

The Board shall recommend to the Administration Council appropriate action on any scheme for physical planning, and the council shall consider any such recommendations of the Board and take the necessary steps for the implementation of any such plans which it approves.

Constitution

The Board shall have as Chairman, the President of Manama Municipality and as members the following Directors, Heads of Departments or representatives:

Representative of Police and Public Security (Traffic)

Representative of the Administration Council

Director of Public Works Department

Director of Water Supply Department

Administration Officer of Electricity Department

Director of Land Registration

The Secretariat shall be provided by the Physical Planning Unit and the Adviser of that Unit shall act as Secretary.

The Board may co-opt any persons to attend meetings when matters are to be considered which are such that these persons may contribute specialized or other knowledge to its deliberations. The Board may also invite representations on any matter within its competence from any persons, institutions or Department and shall take all such representations into consideration. The Board may form any sub-committee from its members and may at its discretion include members from other Departments to consider specific issues referred to it of the committee.

Physical Planning Unit

The Physical Planning Unit shall be responsible for the preparation of over all planning schemes and the detailed planning of specific areas. It shall submit any such schemes prepared by it to the Board. It shall be responsible also for the consideration of all matters concerning urban and rural planning submitted to it and shall prepare reports as requested by the Board on these matters.

(signed)

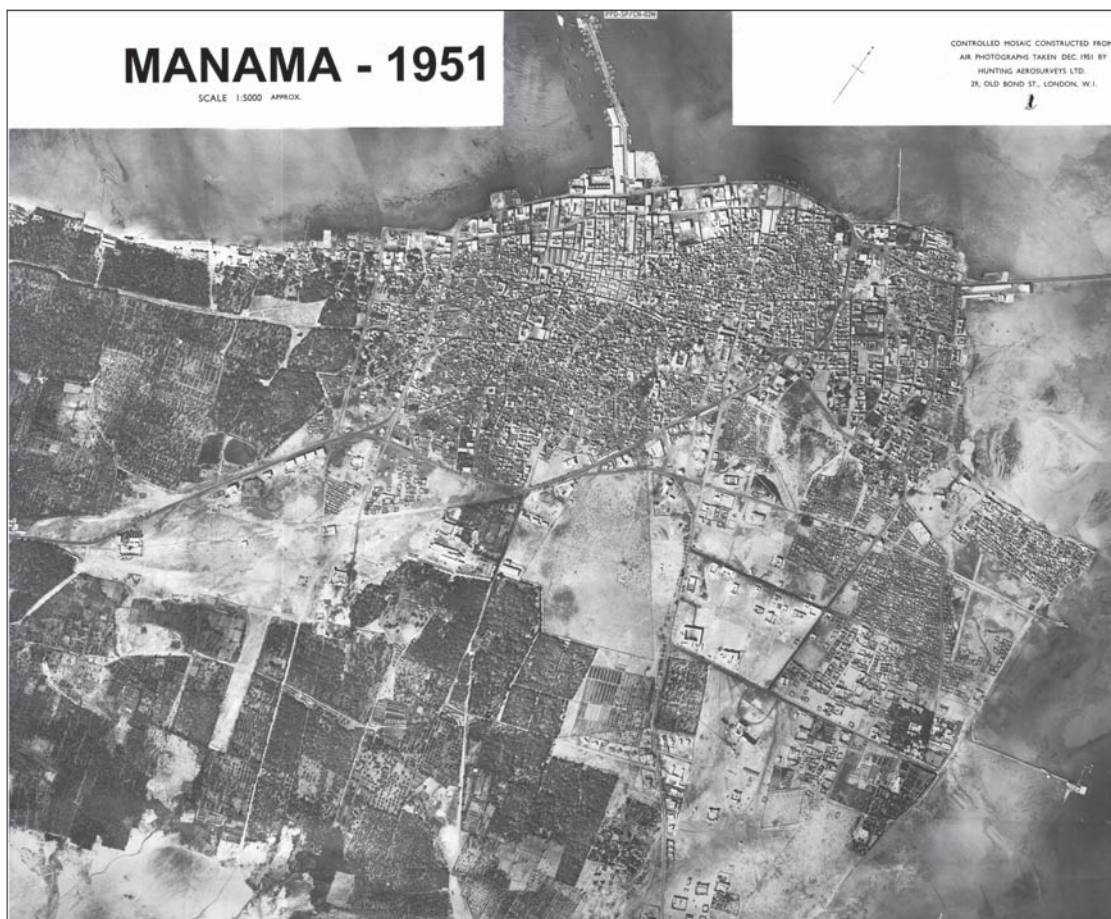
K.S. Khalifa

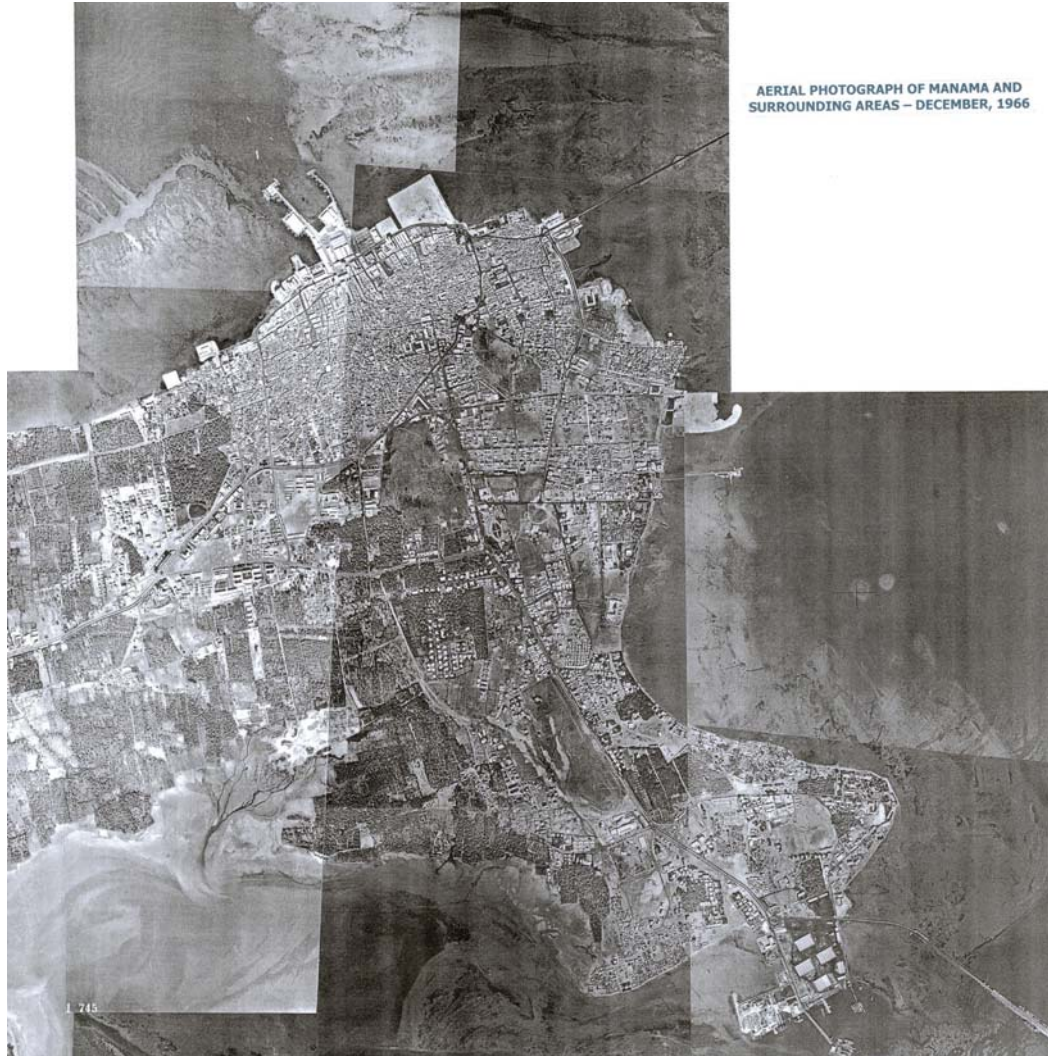
President of the Administration Council

Preparation of the Manama Master Plan

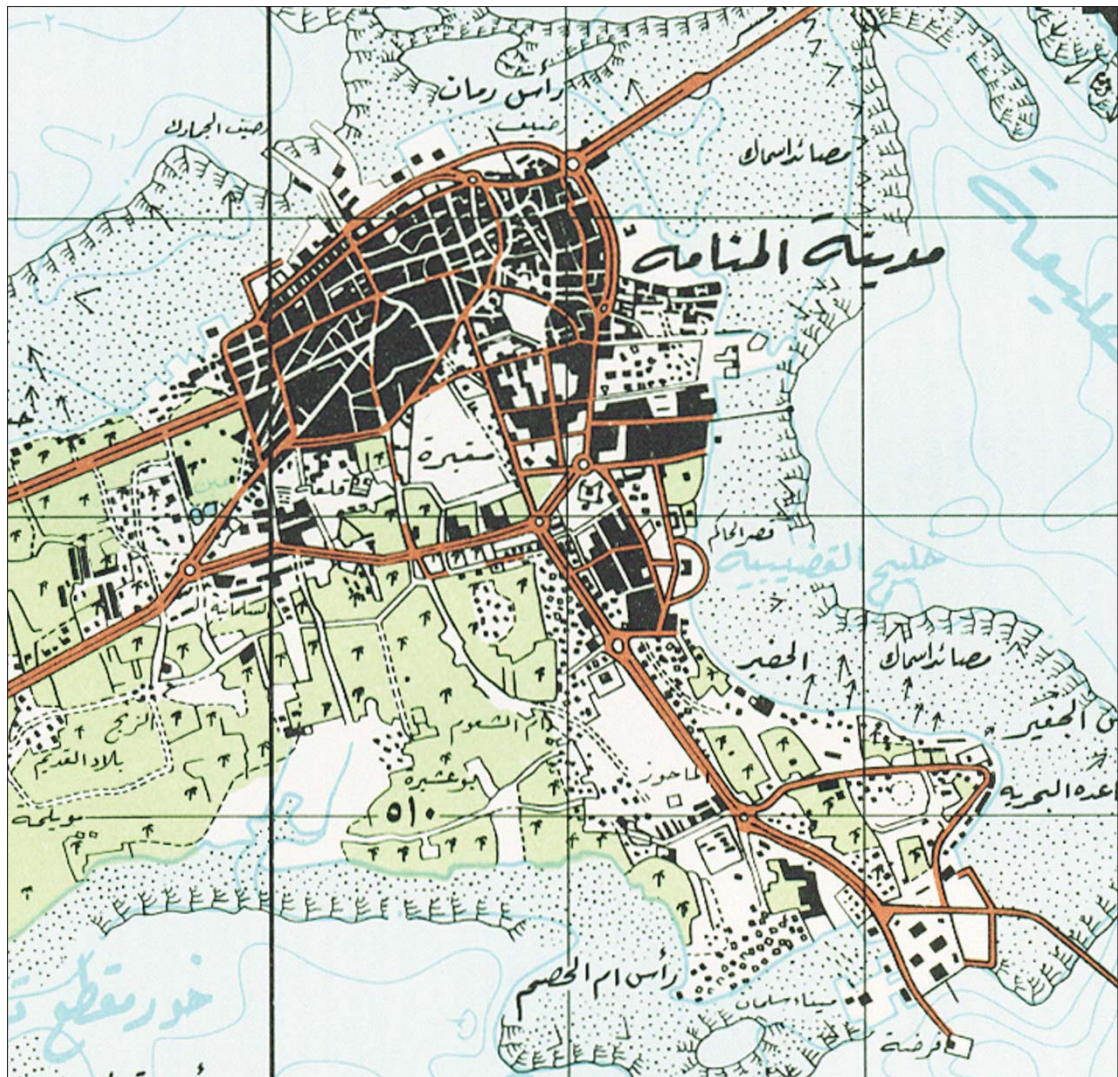
Background

Mr. Munro gave top priority to the preparation of a Manama Master Plan. Historically Manama started developing as a gateway to the main Bahrain Island. The old Manama Port, the place on which the present Bab-Al-Bahrain building was erected during 1940, was the starting point for the growth of Manama and expanded eastwards towards Ras Ruman and westwards towards Naeem along the coast. Gradually it also expanded towards the south. The 1951 aerial photograph below shows the extent of growth of Manama as a dense contagious area extending to the south up to Sunni graveyard and up Hooraa and Gudaibiya in the south east. Further south and at south east there was barren land and at the south west were palm tree gardens up to the sea.





Juffair was selected for the British Military Headquarters in 1927 and subsequently the area was developed for this purpose. Mina Salman came into operation in 1967 and developments took place as an extension of Manama towards Juffair as can be seen in aerial photograph of December 1966.



Topographic Map of Manama 1968

The main government offices and banks were along Government Road and Al Khalifa Road. Mina Manama was busy with small boats and dhows trading between Bahrain, Saudi Arabia, Iran and Qatar. Mina Salmaan was used for big ships.

Bab Al Bahrain had many shops. Al Khalifa Road, Sk Abdulla Road, Tujarr Road, Zubara Raod were other busy shopping roads. Lulu road and Sk Hamad Road were used for mixed purposes – shops, workshops etc. Palace Avenue was also an important road with clinics of private Doctors, shops etc.

All buildings were generally one or two storied. The tallest building was the 9 storied Al Moyaeed Tower between Government Road and Al Khalifa Road built by Yousuf Al Moayed in 1956 on the site of his grand father's timber yard. The other Tower was Zamil building at the east end of Govt. Road and Al Khalifa Road which has since been rebuilt.

Public open spaces were scarce. Although the Water Garden was in poor condition, Salmaniya and Andalus gardens were in a more reasonable condition. There was no organized formal public beach but the sea shore was easily accessible there were therefore no restrictions for public access to the sea.

The information required for planning was scarce. Manama was surrounded by shallow sea to the north, east and south and at the west there were palm tree gardens. Umm e Shroom spring at the north of Mahooz village was active and water was flowing from it through nearby palm tree gardens.

The main feature of the Master Plan was the proposed ring road. The proposed south ring road was extended through the shallow sea at the south of Adari spring until Sheikh Salman highway at Raad Mal Kawari. It was a very wise proposal which assisted in eventually locating the Saudi-Bahrain causeway by extending this road to the west. Other roads were proposed within the ring road utilizing existing roads very sensibly and intelligently leading to a road hierarchy and basic frame of the Master Plan. As mentioned earlier, Manama was surrounded by sea on three sides. Before this Master Plan proposal there was no clear picture how the town should expand, where the main roads should be built, what should be the aspirational population of the expanded Manama, where schools, health centers, houses, markets or playgrounds should be built. The north ring road, most of the east ring road except through Juffair and the south ring road were proposed on Fasht (shallow sea along existing coast). North and south part of west ring road was also on the Fasht and its middle part was through existing private gardens.



Master Plan Road network plan



Master Plan Road network plan on aerial photo 1966

In 1965 the population of Manama was 79098 and in 1971 this had risen to 88,785. Mr. Munro proposed a Manama Master Plan for 1988 which assumed a population of 125,000. The Master Plan was in diagrammatic form with broad zoning. Although this Master Plan was used between 1971 and 73, a copy could not be found for inclusion in this book. Once the diagrammatic Master Plan was approved by the Planning Coordination Board and the Administration council preparation of the detailed Planning for implementation became necessary. There was no Planning Law and Regulation related to planning on private

properties. The only available legislation was the ‘ Land Acquisition Law’ which enabled the Government to acquire private land for public benefit by paying cash compensation or compensation by land. There was not enough money available in the Government budget for land acquisition for Town Planning purpose. Mr. Munro prepared a detailed plan for Sugaiya area (current census blocks 328, 330, 332) and Umm al Hassam area for British style terraced housing to meet the anticipated demand for housing. These areas were covered by private properties however Mr. Munro in his detail planning exercise did not consider existing property boundaries. The only way these detailed plans could be implemented was through large scale land acquisition and by undertaking implementation of mass scale housing projects.

As funding was not available for these purposes and the Government was unwilling to go for mass scale land acquisition these detailed plans were not implemented. The area covered by Manama Master Plan incorporated various types of private properties except the areas in the Fasht area at the north of Manama, the fast areas along proposed east ring road and south ring road.

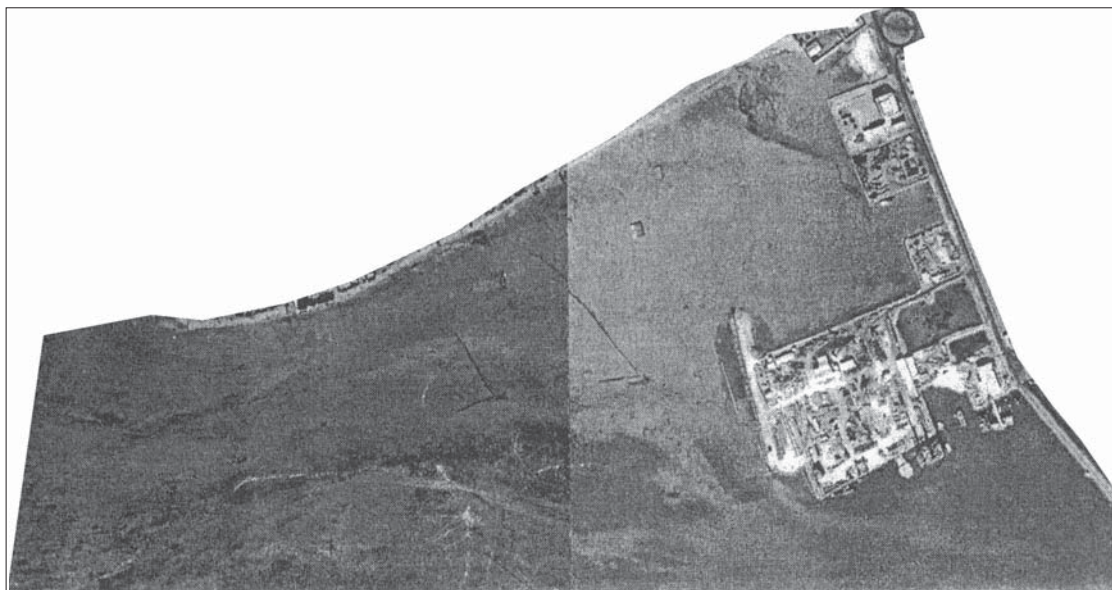
Mr. Munro also prepared detail proposals for the Master Plan blocks at the north of Manama (present Diplomatic area); these detail planning proposals were conceptual and professionally ideal. But in the circumstances of that time these plans were considered not suitable for implementation.

Preparation of Detail Plan of Mina Salman Industrial Area

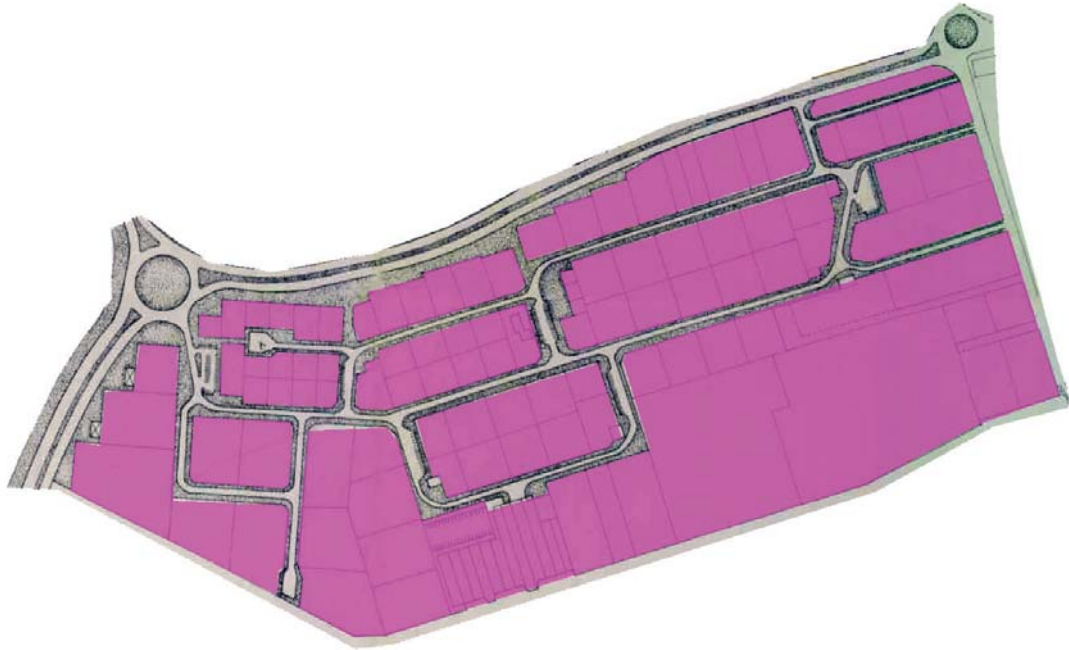
Mina Salman Industrial area is shown shaded yellow in Master Plan main road network plan below.



This area was a Fasht area (shallow sea) at the south of Ummel Hassam village. Part of the area at the south east was already reclaimed and developed before detail planning of the area as shown in the aerial photograph of the area below.



Mr. Munro prepared initial detailed plan of the area. Minor re-planning was required in certain parts. The final detail plan is shown below.



Detail planning of areas covered by a mixture of small and big private properties with existing structures and features always proved to be very difficult especially in the absence of any planning laws or regulations. Such plans require negotiation with property owners and continuous monitoring of the plan for property development, land subdivision and demarcation of roads. .

Preparation of Detail Plan of Ummel Hassam area

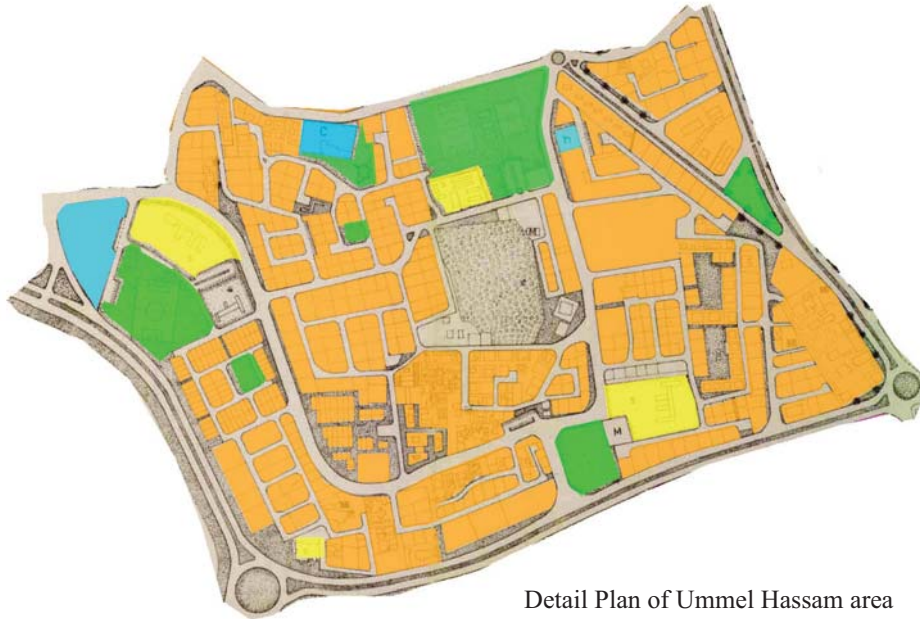
Mr. Munro left Bahrain in June 1970 after a two years stay. Before he left Mr. Wissa Agaibi an Architect and Planning Diploma holder from Cairo joined the Physical Planning Unit. He was assigned to make a detailed plan of Ummel Hassam area. He used survey technicians available in the Land Registration Directorate to survey the area. Plan making was very slow and the plan proposed was revised frequently to meet objections from property owners

Ummel Hassam was a small village a distance away from Manama Town. Housing here was in a poor condition and developed in an unplanned manner. The area from Juffair Power house up to the village was barren and half of this area to the north of the village was designated for use as a graveyard .With the opening of Mina Salman, housing for renting to expatriates and other developments took place at the east of the village. Moon Plaza Hotel and the British Club were there at the time of the detail planning.

The aerial photograph below shows how the area was at the time of planning. The building at the extreme south west of the village was used as a school. Although the building was old and in very poor condition, the Ministry of Education rented it from the owner for use as a school.



In the detail plan, a road network for the area was proposed. Sites were designated for key amenities including shopping centers, schools, play grounds, children's playing spaces and health centers. In two blocks at the North West of the village, 121 dwelling units were built for housing of low income groups. These developments took place under direct supervision of H.E. Sheikh Abdulla Bin Khalid Al Khalifa who used to regularly visit the site to supervise construction and to see the progress of the project.



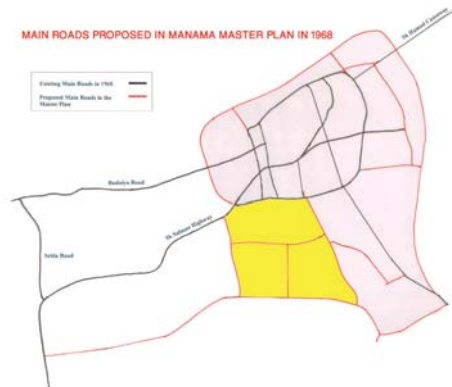
Detail Plan of Ummel Hassam area

I joined Physical Planning Unit on 15th February 1971. His Excellency Sheikh Abdulla Bin Khalid Al Khalifa the Head of Municipalities and Agriculture and President of Planning Coordination Board provided me with full help and support. I reviewed all existing works – plans, reports, Planning Laws and Regulations proposed by Mr. Munro and decided to build on foundation work undertaken by him. H.E. Sheikh Abdulla asked me to make a detailed plan of the area adjacent to Salmaniya hospital. I proposed dividing Manama Master Plan area into 4 phases and to select the first phase for detailed planning. From my perspective, the area at the south and east of Salmaniya Hospital was not the ideal area to be considered for the first phase of the Master Plan for implementation. This phasing proposal was not accepted and I was advised that the whole Master Plan should be planned in detail to enable the whole Master Plan area to be made available for development.

I attended all Planning Coordination Board Meetings. Meetings used to take place twice every month. In the first meeting of the Planning Coordination Board I attended, I was asked whether I will be able to prepare detail plans for the Manama Master Plan and how long I envisaged this task taking. When I said I could prepare a detailed plan for new areas of the Master Plan in nine months to one year, most of the members of Planning Board were surprised.

Preparation of detail Plan of Sugaiya – Mahooz area

I decided to work within the frame work of the Master Plan prepared by Mr. Munro and the block selected for detail planning is shaded yellow in the Master Plan Road network plan below.



Available information was very limited. A topographic map of the area in the scale of 1” – 200 feet (1:2400) was available. On the topographic map Land Registration Directorate drew property lines as shown below.



Most of the private properties were covered by palm tree gardens through which water was flowing from nearby Umm as Shroom spring at the north of Mahooz village. The shallow sea at the south west corner of the block was used as a municipal garbage dump. There was a Hindu crematorium at the north of present Oman Road between present road 2805 and 2807 in block 328. In the aerial photograph below, the Master Plan block area is shown. Salmaniya hospital, Sugaiya village, Pepsi Cola Factory, Bu Ashira, Mental Hospital and other developments in the area also shown.



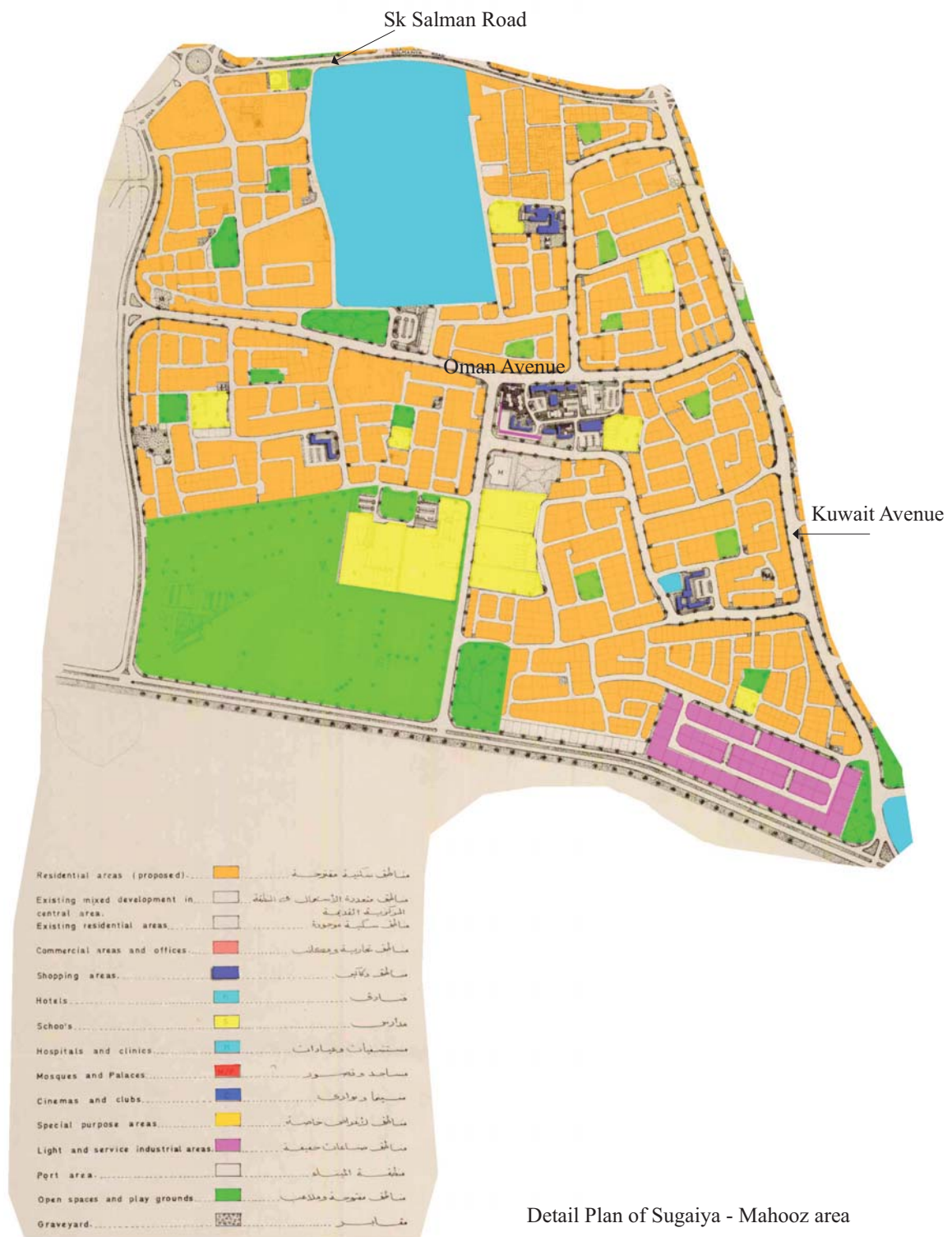
I followed some basic rules in preparing a detailed plan for the area :

- I wanted to make an implementable plan, not a conceptual theoretical plan.
- I used the topographic map on which property boundaries were drawn by Land Department as a base map. I tried to respect property boundaries as much as possible and proposed access roads (30 feet wide) at the property perimeters taking half of the road from each adjacent property without any compensation payment at the same time to achieve reasonable road network.

-
- fixed the Master Plan road alignments to maintain proper road standards and road geometry at the same time minimizing the affect on individual private properties.
 - Provide major required community services utilizing available government lands within the block.
 - Emphasis was given on allocating school sites. In the 1970's there was a lack of suitable school buildings. It was the policy of the Education Directorate to rent houses, especially in Manama, and convert them to educational use. There were 14 schools in rented buildings in Manama at that time. These houses lacked the essential facilities for education, such as proper class rooms, laboratories and playgrounds and overcrowding was a very serious problem.
 - Adequate open spaces, playgrounds and mosques, commercial facilities and other communal requirements were provided in the detail plan.
 - Municipality garbage dumping area at the south west corner was designated as the main public park of Manama so that the area could be used for the proposed purpose without requiring any land acquisition. Mr. Munro also proposed the same in the original Master Plan.

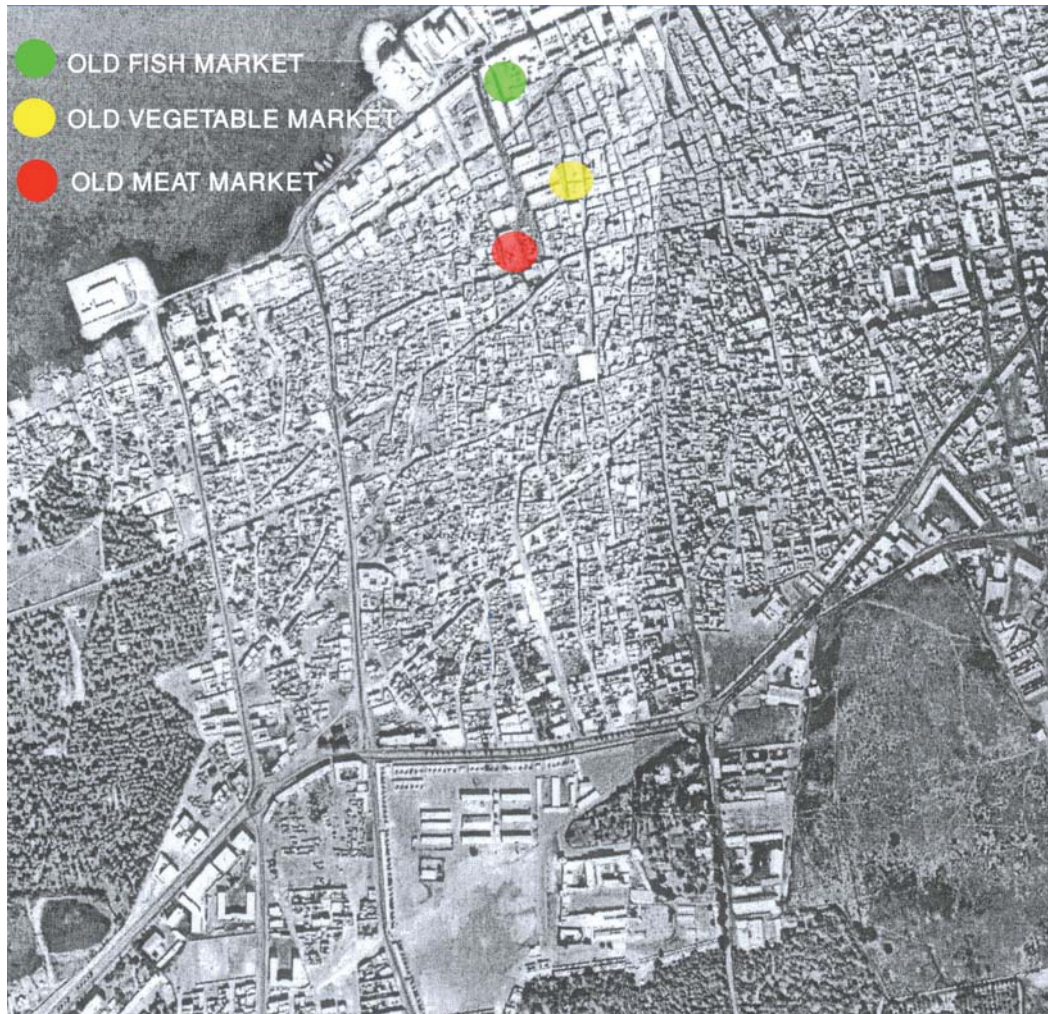
After preparation of the plan, the plan was discussed in the Services Committee, in the Planning Coordination Board and was approved. The plan was discussed in the Administration Council (Cabinet of that time) and was approved. Approved detail plan is shown below.

Immediately after issue of the plan price of land around Salmaniya hospital increased from 200 fils per sq feet to BD 2/- per sq feet. The plan was followed and implemented. The present road network in the area including major and minor roads are mostly based on this detailed plan.



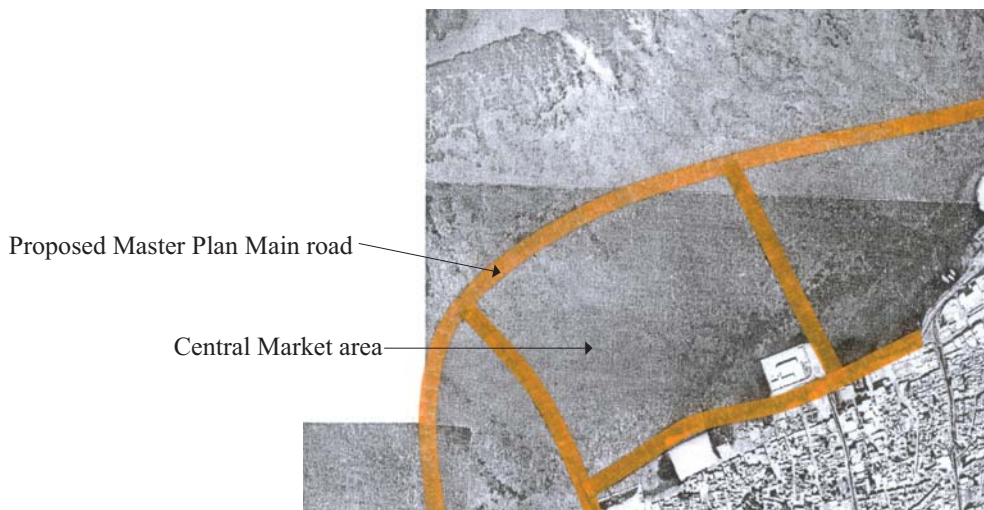
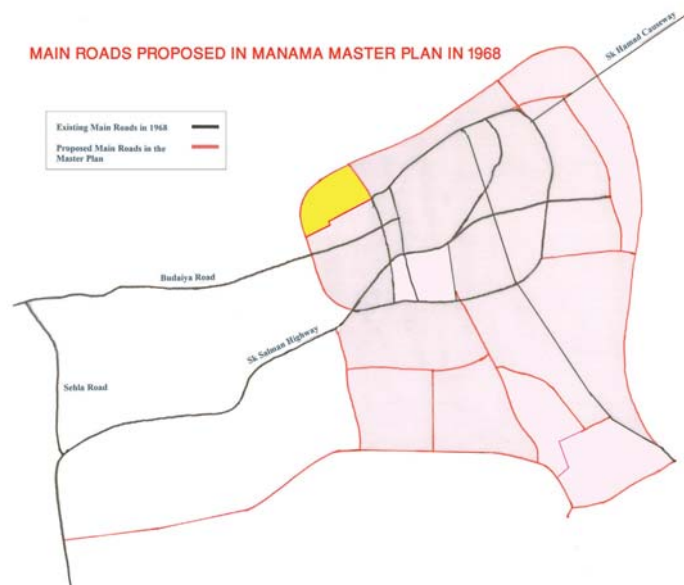
Preparation of Detail Plan of Central Market Area

Manama's fish, meat and vegetable markets were very small and located within the congested Suq area as shown in the Plan below.



Relocating the fish, meat and vegetable market became a priority. The Master Plan block at the north of Na'em and the area immediately outside the proposed ring road here were considered as possible sites for the new market. The idea of putting the market outside the ring road was not approved and the decision was taken to build the new market within the ring road. This was a Fasht area. Na'eem village was directly on the sea. Many of the activities that were located on the shore, including dhow building were dependent on direct links with the sea. Fortunately there was no private property in the sea at that time.

Detail Planning of this block, as shown in the plan below shaded yellow, was under taken.



Aerial Photograph of Central market area at the time of Planning

Mr. Wissa made the initial detailed plan of the area which I subsequently revised. I proposed most of the available government land for public purposes including Central Market, major Car Parks, wide access roads, and expansion of Na'eem school, Mosque, Health Center, Police Station, Petrol Station, Fire Station, Primary Substation, Water Station and the BAPCO Bus Station. A small area was also planned for service and light industry. On the North West side of the ring road an area was planned to relocate the Dhow builders and other related uses. Fortunately all these proposals were approved.



Detail Plan of the Central market area

H.E. Sheikh Abdulla Bin Khalid Al Khalifa, President of Planning Coordination Board approached The Amir His Highness Sheikh Isa Bin Salman Al Khalifa to obtain approval for allocation of the large area for Municipality for construction of the Central Market.



سعادة الشيخ عبدالله بن خالد آل خليفة .. رئيس مجلس التخطيط

H.E. Shekh Abdulla Bin Khaled Al Khalifa
(from Al-ADHWAA Weekly News Papers 12.8.1971)

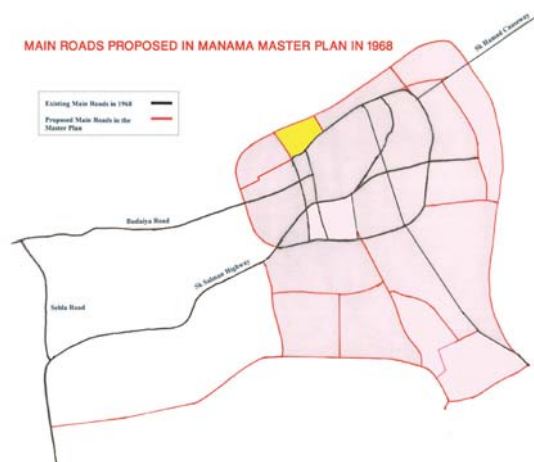
The southern half of land allocated for the Municipality was used for three large sheds for fish, meat and vegetable markets with adjacent big car parks. H.E. Sheikh Abdulla succeeded in acquiring the necessary budget for construction of the Market. The area was reclaimed, construction of the market started in 1974 and the market was opened in 1978. H.E. Sheikh Abdulla bin Khalid Al Khalifa persuaded Mubarak Al Hassawi of Kuwait to build the Mosque to the south of the central Market. The northern half of the land allocated for Municipality was considered, on many occasions, for construction of investment buildings for income generation by the Municipality but the idea did not materialize.



Furthur detail plan of the Central market area

Detail Plan of the area east of New Market up to Manama Municipality

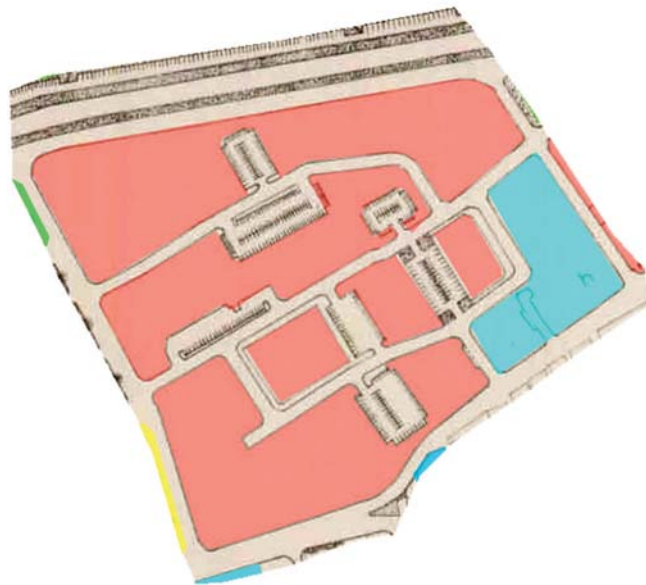
Mr. Wissa also prepared a detailed plan for the area between Manama Municipality and Central Market area shown shaded yellow in the plan below.





Aerial photograph of the area at the time of planning

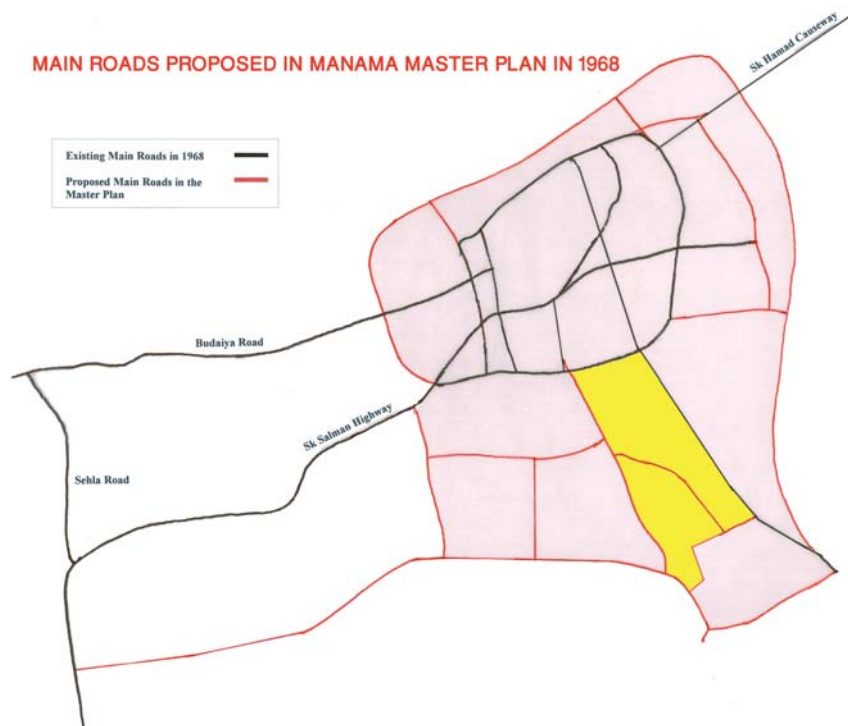
This area was also a Fasht area and the sea was touching the Government Road. The plan divided the area with internal roads into blocks. No land was proposed for public purpose except a few small car parks. Later on I persuaded H.E. Sheikh Khalid bin Abdulla Al Khalifa, Minister of Housing to allocate the bus station site at the north of Government Road



Detail plan of the block

Preparation of detail plan of Adliya – Mahooz area

The next Master Plan block I selected for detailed planning was bounded by Sheikh Isa Avenue in the east, present Kuwait Avenue in the west, Salmaniya Avenue to the north and Mahooz Avenue in the south as shown and shaded yellow in the Master Plan road network Plan below.



This area had different characteristics at different locations as shown in the aerial photograph of 1966 below. In the north there were residential developments along Delmon road. Further south there was Yateem Garden (an expatriate housing compound) within thick palm tree gardens. To the east of this compound a large area was covered by barastis (huts). Along Osama Bin Zaid Road there were mixed residential and commercial developments. The Radio station was along the south side of this road. At the south of the Radio Station up to the power house there was a large barren area which had previously been used as a race course. In the south west corner of the block there was a residential compound of Kanoo's, along Road 3419 there were private residential houses and three storied apartment blocks for expatriate housing. Mahooz village with small houses in poor condition was covering a substantial area. At the north of the village from Umm as Shroon spring water was flowing through nearby gardens.



1966 aerial photograph of the area

Property map of the area supplied by Land Registration Directorate is shown below.



Most of the area was covered by private properties. In between there were patches of unallocated lands, the biggest such area was the old race course area between Radio Station and Power house.

Before detail planning of the area was undertaken the race course area was given to the Iraqi Consulting Firm, Makiya Associates for detail planning to mostly accommodate housing needs of government expatriate employees. Consultants submitted a plan for over 900 expatriate housing units and gift plots. Rich merchants who had residential properties to rent to expatriates vehemently opposed the plan and the plan was shelved. I was asked by H.E. Sheikh Abdulla Bin Khalid to reserve a school site and a separate area for building residential accommodation for expatriate government employees and make some plots

for key government officials for houses in the race course area. With these briefings and background I proceeded with preparation of a detail plan for the area.

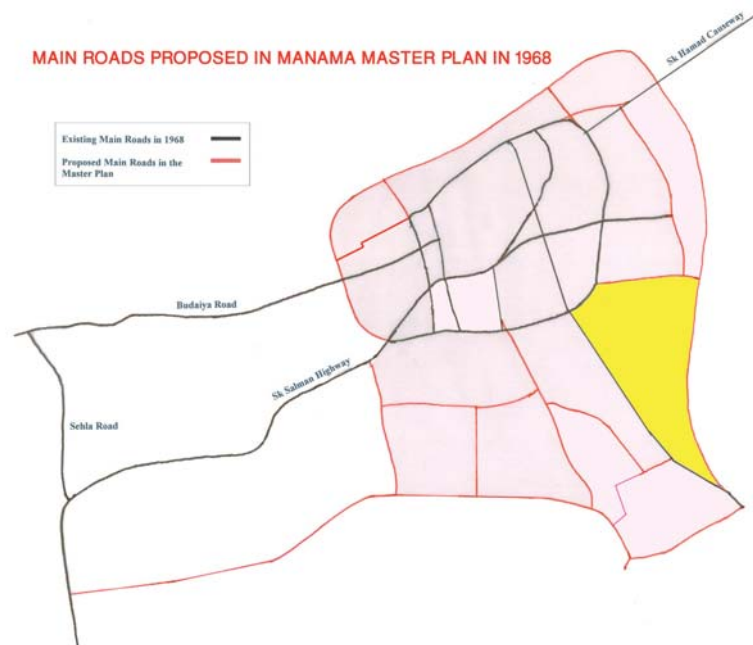
I proposed a reasonable, implementable, main road network for the area, proposed school sites and community facilities on available government land. The plan I prepared after discussion and amendments was approved and adopted for implementation. Most of the present existing roads in the area are as per this detailed plan. The recently constructed small public garden at the site of Umm as shroon spring at the north of Mahooz village is primarily as was proposed in this detail plan.



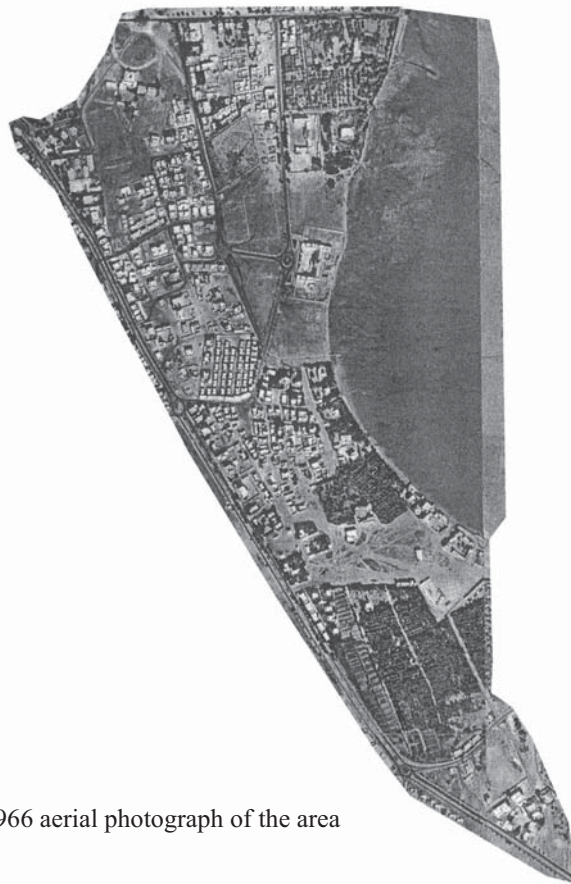
Detail plan of the area

Preparation of detail plan of Gudaibiya area

The next Master Plan area selected for detail planning was the area bounded by Sheikh Isa Avenue in the west, Al Fateh highway in the east, Juffair Avenue to the south and Sheikh Daij road in the north shown shaded yellow in the Master Plan Road network plan below.



The aerial photograph of the area dated December 1966 shows existing features of the area. There was the garden of the Bahrain Petroleum Company at the north east corner of the area along the coast with residence of BAPCO Chief Executive. The area was dotted with residences of Royal family members. The present Gudaibiya Palace (H.H. The prime minister's office) was on the coast surrounded on three sides with open barren land and informal football playing fields. Gulf Hotel was constructed on reclaimed land (1968-70). Along Juffair Avenue there were houses built in ribbon development fashion for renting to the British Army. There were two large private palm tree gardens at the north of Juffair Avenue. All on shore lands in the block were mainly allocated and were privately owned.



1966 aerial photograph of the area

Detail planning had to be started with fixing the alignment of the Manama east ring road. I discussed the issue with H.E. Sheikh Khalid Bin Abdulla Al Khalifa, the then Road Engineer of Public Works Directorate. Together we agreed about the location of the road and he supplied a drawing with the proposed alignment of the road from Juffair coast to Sheikh Hamad causeway. I fixed alignment of the road from the coast to the south up to Mina Salman entrance taking into consideration property boundaries, existing features, road geometry and the continuity of the ring road. This proposed alignment of Al Fatah Highway was implemented. Emphasis was given in the plan to the road network and the proper and reasonable allocation of land to existing government buildings and institutions like Gudaibiya Palace, Gulf Hotel for expansion and civic purpose and reserving areas, like BAPCO garden where the present Shura Council and Parliament are located, for future institutional uses. We also prioritised relocating playing fields around the Gudaibiya Palace to an area for Club and play grounds, located at the south of Sheikh Daij road at its junction with Al Fateh highway. The plan was discussed in the Planning Coordination Board. Many questions and issues were raised and finally the plan was approved.

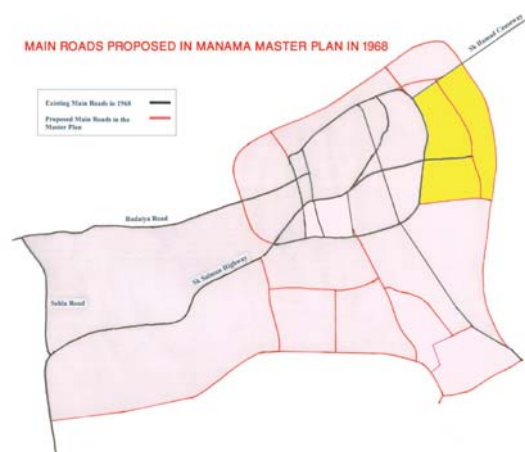


Detail plan of the area

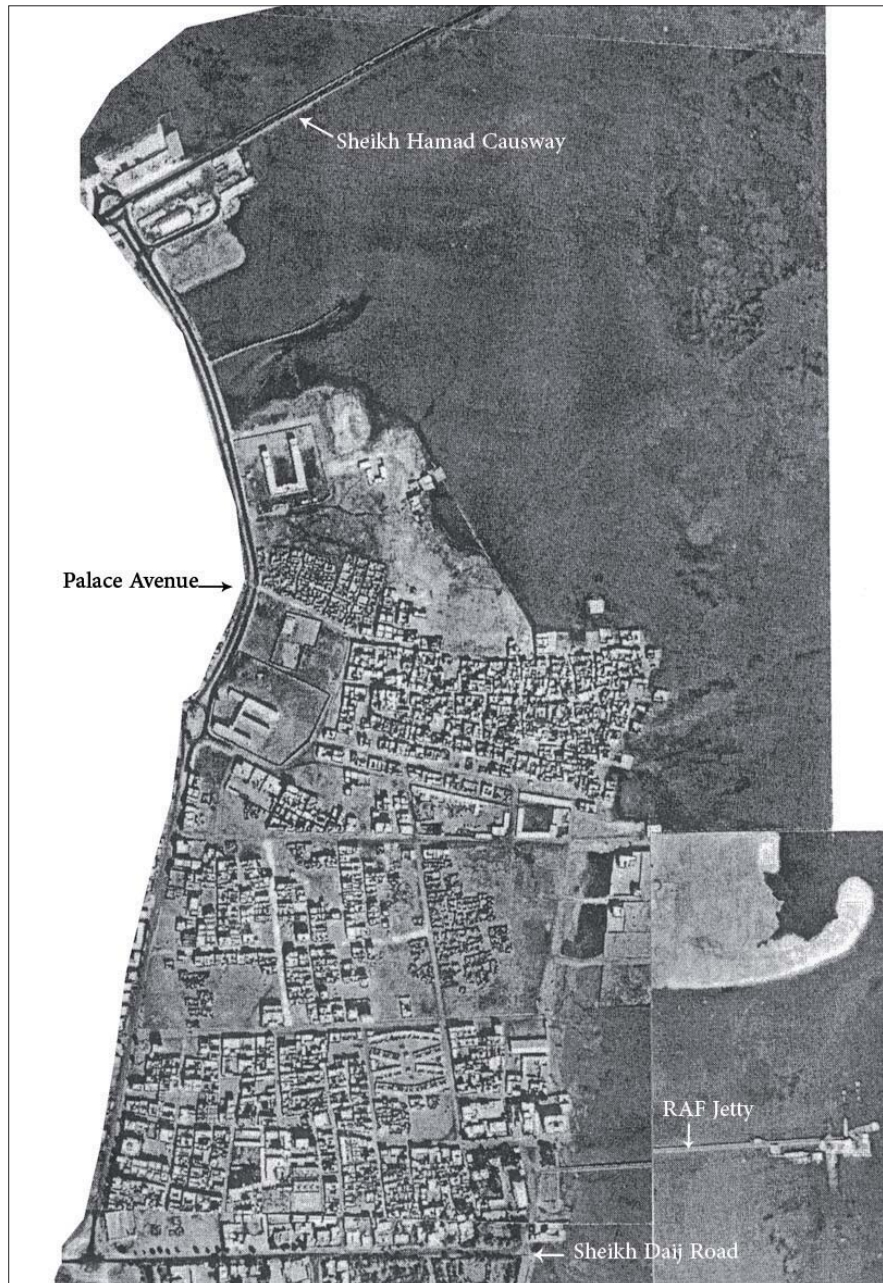
It should be noted that the road as shown in the plan between Gudaibiya Place and Gulf Hotel (Bani Autba Road) was proposed to be cancelled by H.E. Yousuf Ahmed Al Shirawi, the then Minister of Development and Engineering Services to build new a Gulf Hotel tower. He approached H.E. Sheikh Abdulla Bin Khalid Al Khalifa with the proposal. H.E. Sheikh Abdulla called me and asked my opinion about the proposal. I stressed that this was a very important road of the Master Plan and should not be cancelled. H.E. Yousuf Shirawi was very committed to his proposal and strongly supported the cancellation. I also raised all relevant issues and strongly argued against the proposal. H.E. Sheikh Abdulla was convinced with my arguments and the road was not cancelled.

Preparation of Detail Plan of Hooraa Area

The next Master Plan block I selected for detail planning is Hooraa area shown shaded yellow in the Master Plan Road framework plan below.



The aerial photograph below shows the area as was in December 1966.



From the photograph the extent of the area, included in the Master Plan to be reclaimed from the sea can be seen. There were private properties in the sea, big and small extending more or less until the present Exhibition Avenue. There was a big Municipality property extending up to Al Fatah highway at the south of present Avenue 19 and adjacent south of that property there were big private properties extending beyond alignment of Al Fatah highway.

There was a RAF Jetty as shown in the photograph.

Inland the area had mixed unplanned developments, including natural growth of old settlements especially two old areas of Hoorā and old areas of Gudaibiya. The site of present Um Ayman Girls School was covered by barastis (huts). The initial phase of Public Works Directorates buildings were in the corner of Sheikh Hamad Causeway and Palace Avenue. There were existing big schools in the area – Hoorā Girls School, Hoorā Boys School and Madrassa Diniya.

Gudaibiya Mosque was there. Along Zubara road near the coast of that time there was slaughter house and a little distance inside were the municipality garage, fire station and fruit and vegetable market.

Detail planning of the area with so many existing features was a difficult and challenging job. The main task was to provide an implementable road network for the area within existing constraints. Minor adjustment was made to some private properties to ensure provision for the proposed road network. Exhibition Road alignment was proposed as close to lands already in private ownership even though they were in the sea. Even then the proposed road encroached into some properties which were adjusted to provide equivalent areas. The block was in a very strategically important location. There was no approved road standard and the only agreed access road reservation was 30 feet (9.14m). Within these limitations the road network was proposed and main road junctions with main perimeter roads were proposed. The area, at the time of planning, was not meant to be for high rise – high density buildings. There was however provision for a district center with mosque, Health Center and shops in this block.

All available government land along Sheikh Hamad Causeway and Al Fateh highway was reserved for government use. Open spaces were provided, even in small residential blocks, within easy walking distance from every house. These open spaces were proposed mostly on government land where no compensation for land would be required for implementing these open spaces proposals. New school sites were also provided in the plan to meet requirements of the area. The plan was discussed in Services Coordination Committee and Planning Coordination Board. After taking into consideration of all views and suggestions the plan was finalized and approved.



Sheikh Hamad Causeway

Al Fateh highway

Palace avenue

Residential areas (proposed)	مناطق سكنية مقترحة
Existing mixed development in central area	مناطق تنمية المختلطة في المنطقة المركزية
Existing residential areas	مناطق سكنية موجودة
Commercial areas and offices	مناطق تجارية ومكاتب
Shopping areas	مناطق تسوق
Hotels	فنادق
Schools	مدارس
Hospitals and clinics	مستشفيات ومراكز طبية
Mosques and Palaces	مساجد وقصور
Cinemas and clubs	سينما و نوادي
Special purpose areas	مناطق لغرض خاص
Light and service industrial areas	مناطق صناعية خفيفة وخدماتية
Park area	مناطق الحدائق
Open spaces and play grounds	مناطق مفتوحة وملاعب
Greenyard	مناطق خضراء

Hoora detail plan

The written statement on the plan quoted below shows the details of the plan.

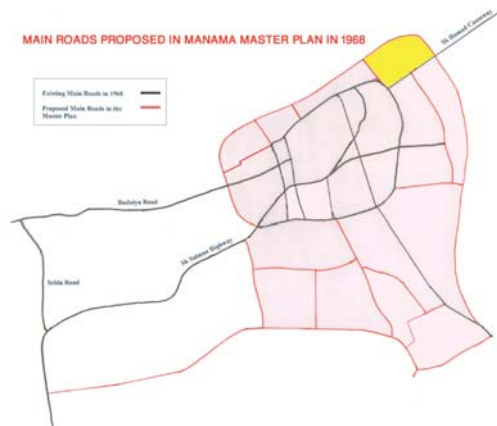
Gross area	=	409 acres
Existing housing units in the area	=	1919 nos.
New residential plots	=	1132 nos.
At 3 families per 2 new plots together with existing housing units No. of families can be accommodated in the area	=	3617

OTHER LAND USES PROVIDED IN THE PLAN

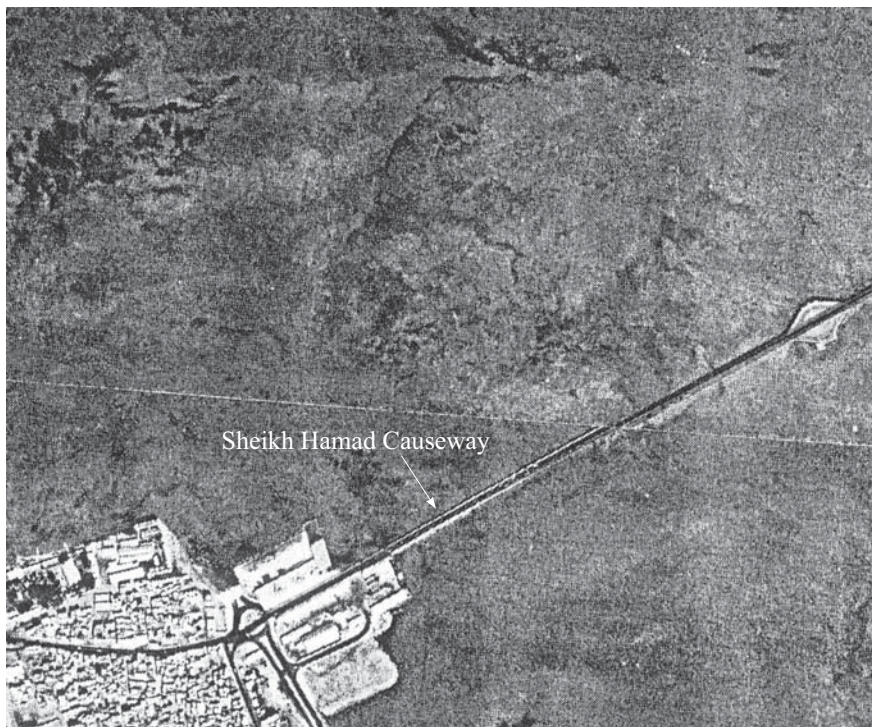
NAME	NO.	AREA IN ACRE
Primary School	4 (new)	9.58
Secondary School	2 (existing)	7.25
Religious School	1 (existing)	2.75
Shopping sub-centre	1	3.8 with access roads
Fruit and vegetable market	1 (existing)	0.57 with car park
Corner shops	15 (new)	-
Health Centre	1	0.37
Land reserved for suitable govt. purposes	2 blocks	19.37
Centre Mosques	1	0.71
Other Mosques	7 (existing)	-
Service and light Industry	1 block	1.16 with car park
Site for Engineering Services	11 (new)	-
Land for Water Supply Dept.	1	1.94
Open spaces & children playing spaces	42	23.59

Preparation of detail plan for Diplomatic Area

The next area for which a detailed plan was prepared was the Diplomatic area. The area is shown shaded yellow in the Master Plan Road framework plan below.



As stated above, Mr. Munro originally prepared a detailed plan for this area which was not adopted for implementation. Mr. Wissa opted to undertake a revised detailed plan of the area. This area was a Fasht area (shallow sea). There was only one small store of Al Moayyed's at the end of Sheikh Hamad Causeway and a small area was reclaimed for construction of the Hilton Hotel. The rest of the area had no constraints.



Aerial photograph of the area at the time of planning

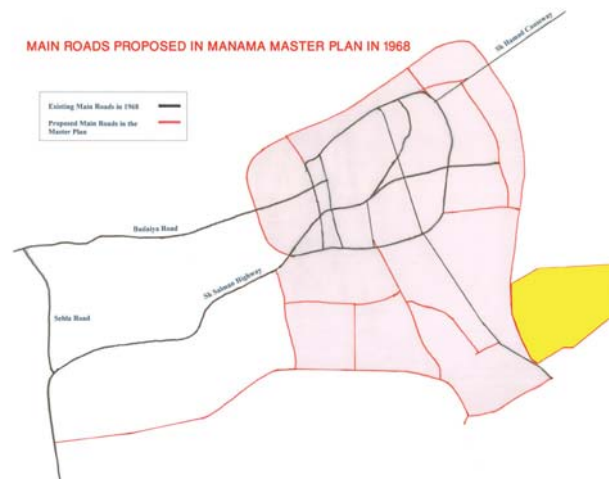
H.E. Yousuf Ahmed Al Shirawi, Minister of Development and Engineering Services and member of Planning Coordination Board wanted two hotel sites in the area (Diplomat and Crown Plaza). There was also demand to provide sites for foreign embassies and a requirement for sites for government offices. There was an idea to raise money through selling land to compensate property owners affected by the Manama Master Plan and the land price was fixed at BD4.500 per sq. feet which merchants opposed claiming that it was too high. Mr. Wissa produced the plan to satisfy these needs. One car park was provided in the centre. Apart from that no other public facilities were proposed in the plan.



Detail plan of Diplomatic area

Preparation of Detail Plan of Juffair Area

The next area I selected for detailed planning was the Juffair area. The area is shown shaded yellow on the Master Plan main Road framework plan below.



This area had Mina Salman Port in the south and was close to the densely built Garifa village. At the east were RAF buildings and installations near Juffair village on the coast. Along Juffair Road there were private residential developments and within the area were scattered similar residential developments for renting to the British army. There were four big date palm gardens in the area. Aerial photograph below shows the area at the time of planning.



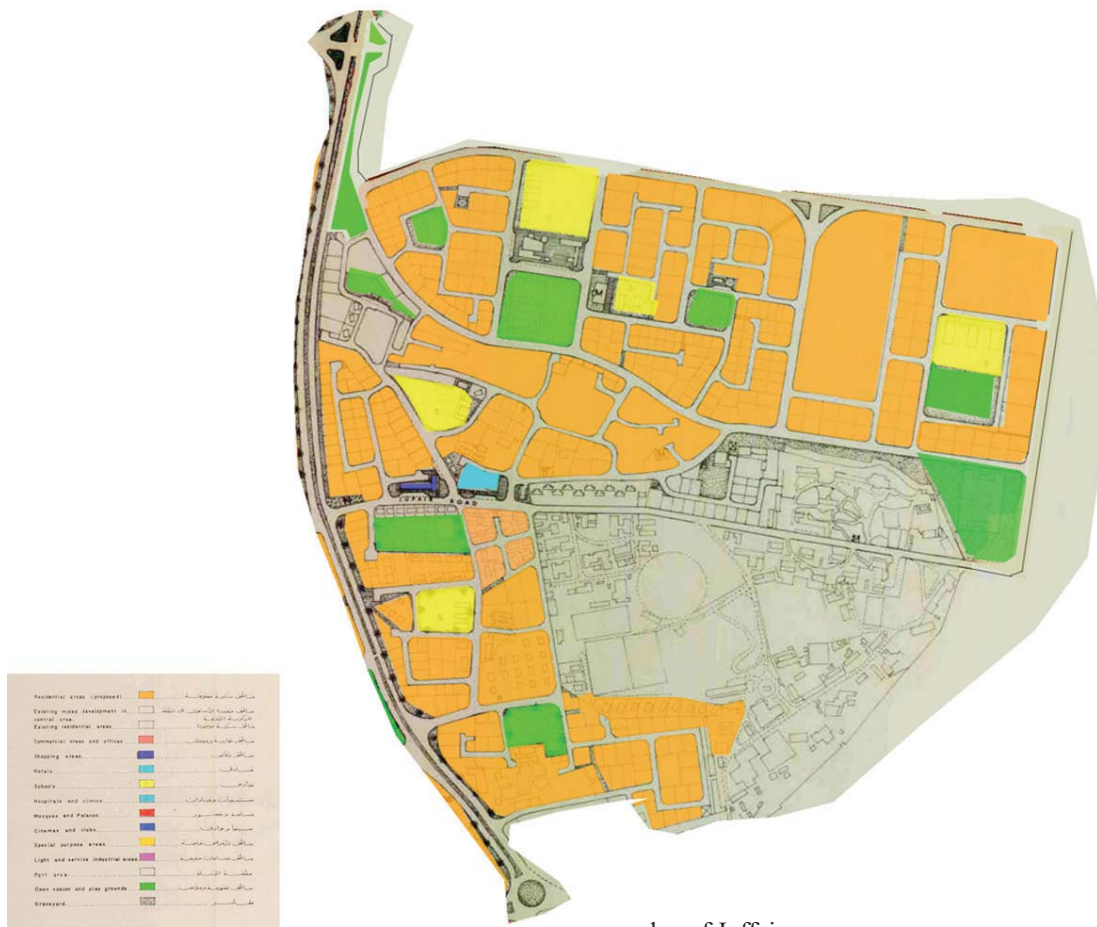
In detail planning, the fast area (shallow sea) at the north of Juffair village up to present road 4015 was included to provide housing land, school sites and other community facilities. Later on this area was extended to the east to provide land for Amiri Gift. The detail plan for the area shown below shows the emphasis that was given on providing sites for community services – including schools, playgrounds, health center, community center, mosques and gardens. With all these facilities, the area was intended for low density development not for high rise multi storied apartment blocks as the proposed road network was suitable only to serve low density development. The identity of Juffair village and its existing limit was defined by Avenue 41.

More details of the plan are shown below

Gross area	=	178 acres (excluding the naval base of about 80 acres)
New residential plots	=	470
Existing good housing	=	215
Existing poor housing in Juffair and Garifa villages	=	100
At 3 families per two new plots with existing]	= 1020
Housing units no. of families can be accommodated in the area		
So total population in the area at the rate of 5.3 per family will be]	= 5406

OTHER LAND USES (Master Plan Proposal)

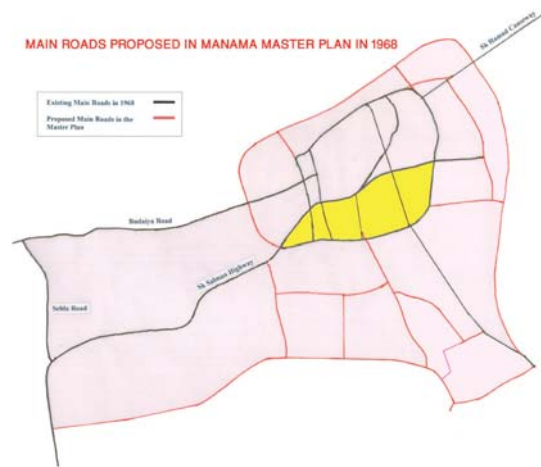
NAME	NO.	AREA IN ACRES
Primary School	3	4.45
Intermediate /Secondary School	1	3.67
Shopping sub-centre	3 (new)	1.5
Fruit and vegetable market		
Corner shops	3 (new)	-
Community Center	1	1.07
Health Centre	1	0.85
Mosques	1 (new)	0.47
Site for Engineering Services	7 (new)	-
Open spaces & children playing spaces	7	11.3



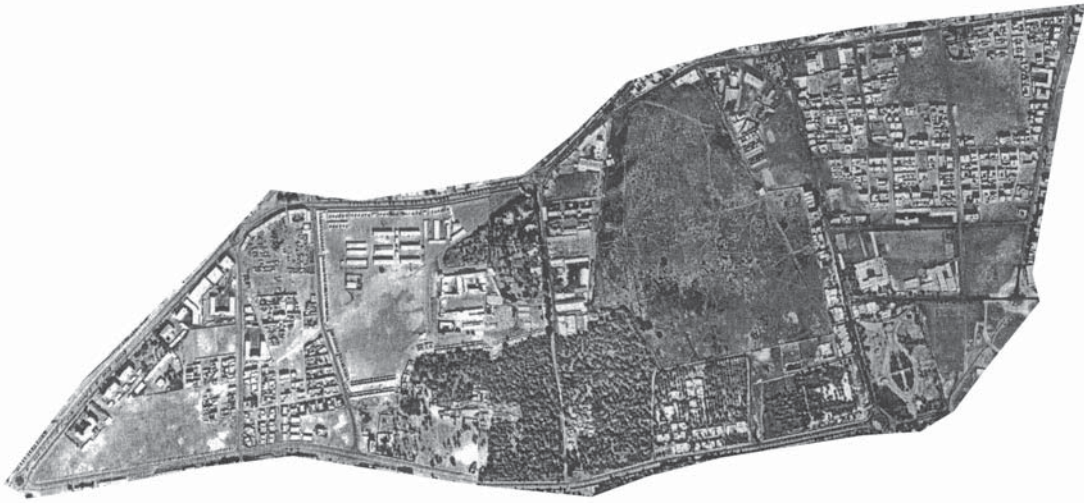
plan of Juffair

After completion of the detailed plan for the above mentioned area, the detailed plan preparation for the new outer areas of the Master Plan was complete. Juffair plan was completed and issued on 1st November 1971. With this, my commitment to the Planning Coordination Board in February, 1971 to complete detail plans of new areas of Manama Master Plan in 9 months to 1 year was fulfilled. The next stage was to prepare a detailed plan of the fringe areas of old core of Manama. These areas had unplanned scattered developments and were consisted mainly of private properties. Any significant planning improvements of these areas without a substantial land acquisition budget were not feasible. I believed then and still believe today that any planning effort, no matter how small or insignificant, provided it is within available rules, regulations and budget is worthy if it delivers benefit to the public. So detailed planning exercises were undertaken for the block highlighted yellow in the Master Plan road network plan shown below.

Preparation of Detail Plan of Salmaniya - Gudaibiya Area



The area had various types of existing uses. These included Ministry of Health offices along Sheikh Salman Road at the south of Water Garden, the Police Fort at the middle of the block, Sunni Graveyard, four schools, six cinemas, thirteen clubs, three hotels, eighteen restaurants, eighty-seven shops, some offices, garages and workshops. The area had previously grown in an unplanned manner. Residential developments were found in clusters, scattered across the area and totaling 1813 dwelling units. The aerial photograph below shows the area as was at the time of planning.



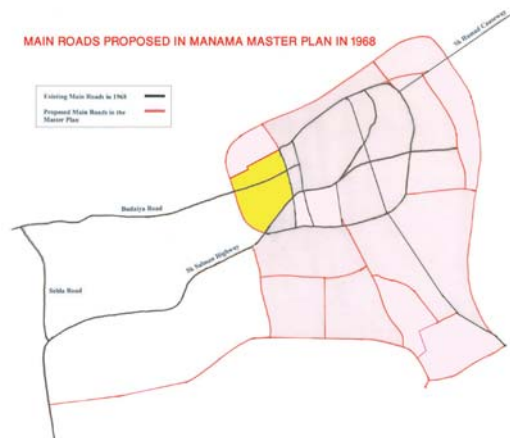
In the detailed plan, efforts were made to integrate all these existing unplanned scattered developments into a harmonious entity with a hierarchy of Road System. Sites for schools, play grounds, gardens, shopping centers and other community uses were proposed. The plan shown below was approved in principle.



Detail Plan of Salmaniya - Gudaibiya Area

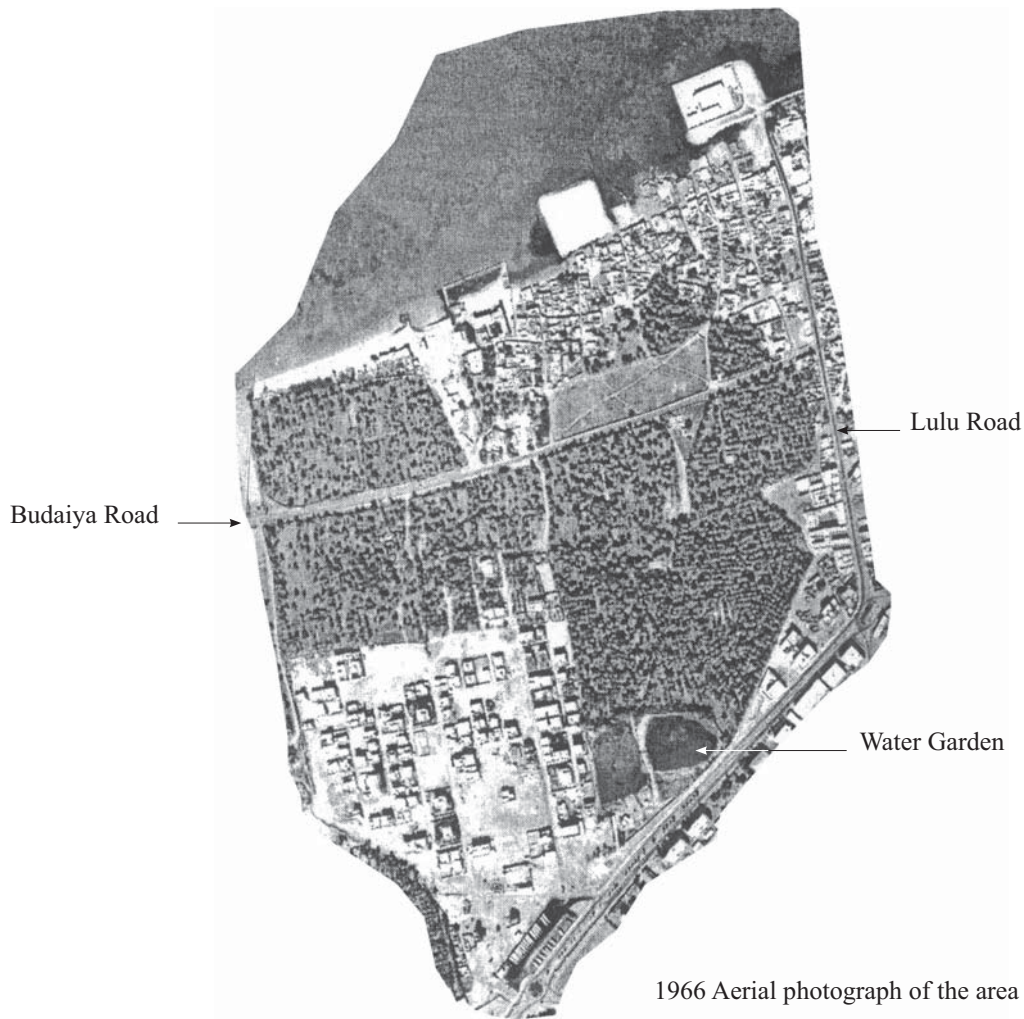
Detail plan of Na'eem & Gufool area

The next area selected for detailed planning was Na'eem- Gufool area as shown shaded yellow in the Master Plan Road network plan below.



This area extends from Sheikh Salman Road in the south to the sea in the north, immediately to the north of Na'eem village and Sheikh Hamad road in the east and to the proposed Manama west ring road at the west of Gufool.

The north part of this block to the north of Budaiya Road had various uses, including mixed houses, workshops, car repairing garages, offices and clubs. There were 15 car repairing garages, 121 workshops, 164 shops and 967 housing units in this part. This area had typical developments of old Manama with narrow and tortuous roads, lanes and by-lanes haphazardly laid out. The population of the area was 6080 living in gross area of 23 hectares.



1966 Aerial photograph of the area

In the plan new building lines along existing selected roads were proposed to provide a better road network in the area. Six small open spaces with a total area of 0.72 hectares (1.8 hectares) were proposed in the area.

The south part of this block to the south of Budaiya road was new except developments along Lulu Road. This area was a green area covered by palm trees in the past except for a small area along the junction of Lulu Road with Sheikh Salman Road where buildings and a mosque existed prior to 1950.

There were two small water pools which exist until now, with a small strip of public land along the east, north and west side of the pools.

This was known as the Water Garden although the physical condition of the area was very poor and was unattended by the Municipality or any other organization as can be seen in the aerial photograph below.

During 1960's, the southern part of Gufool was subdivided into plots, at the time of planning (Sept.1972) there were 265 housing units and 80 vacant plots within this subdivision. Almost all roads here were 20 feet (6m) wide laid out in a grid iron pattern with cross roads after every 120' (with 60ft x 60ft, 4 plots in every block). No open space or community facility was provided. In

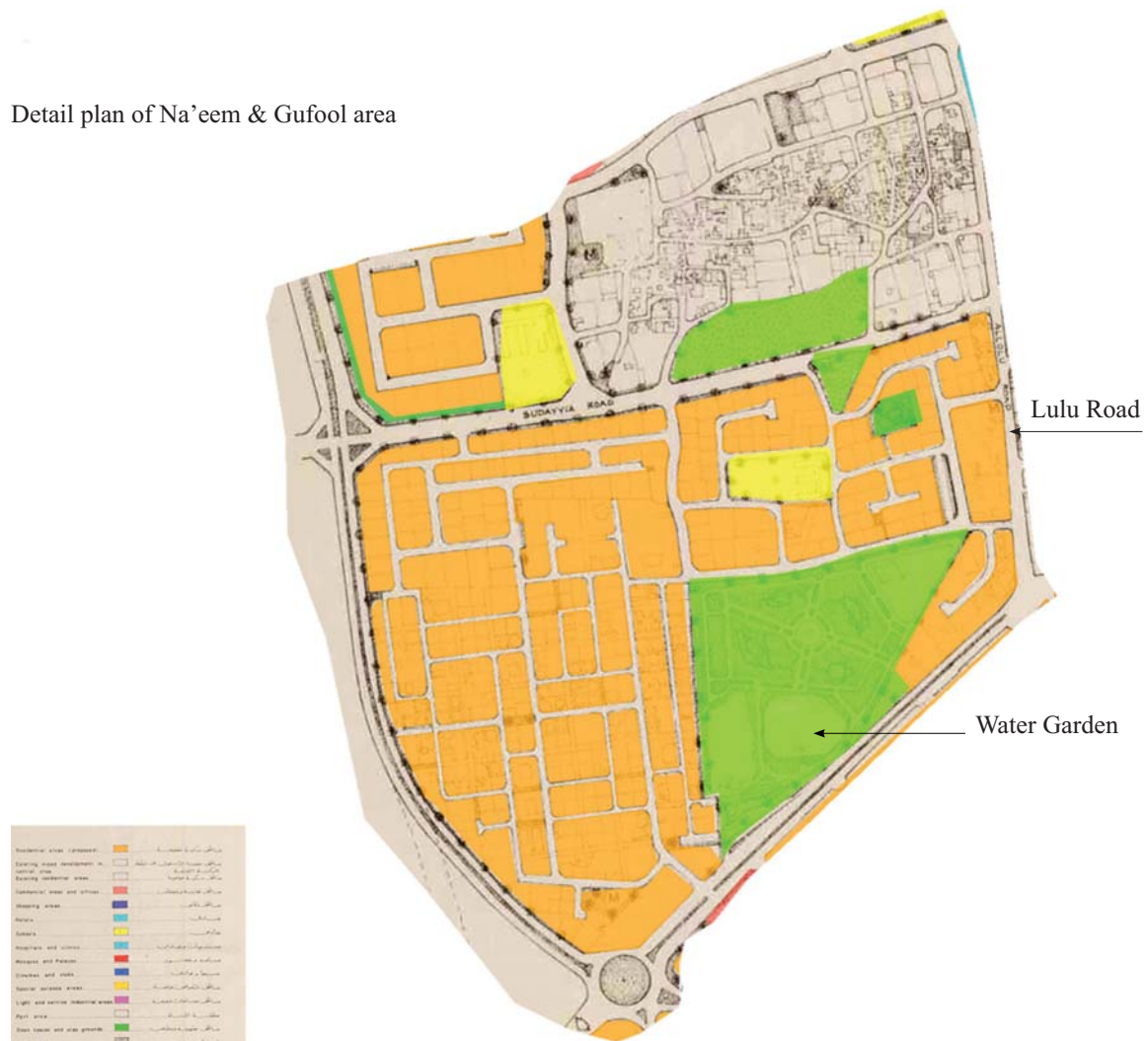


1970 the area to the north of this area until Budaiya road was subdivided into 70 plots again without any provision for public space. In the strip between Lulu Road and Private Garden and Water Garden there were 13 workshops, 4 car repairing garages and 48 dwelling units. North of Water Garden was Private Gardens until Budaiya Road with a small Graveyard near Budaiya Road.

In the original Master Plan of Manama by Mr. Munro the whole private garden area to the north of Water Garden up to Budaiya Road was proposed as a public park. The proposal was based on the fact that for about 40,000 people at that time living in the old core of Manama there was no other open recreational space.

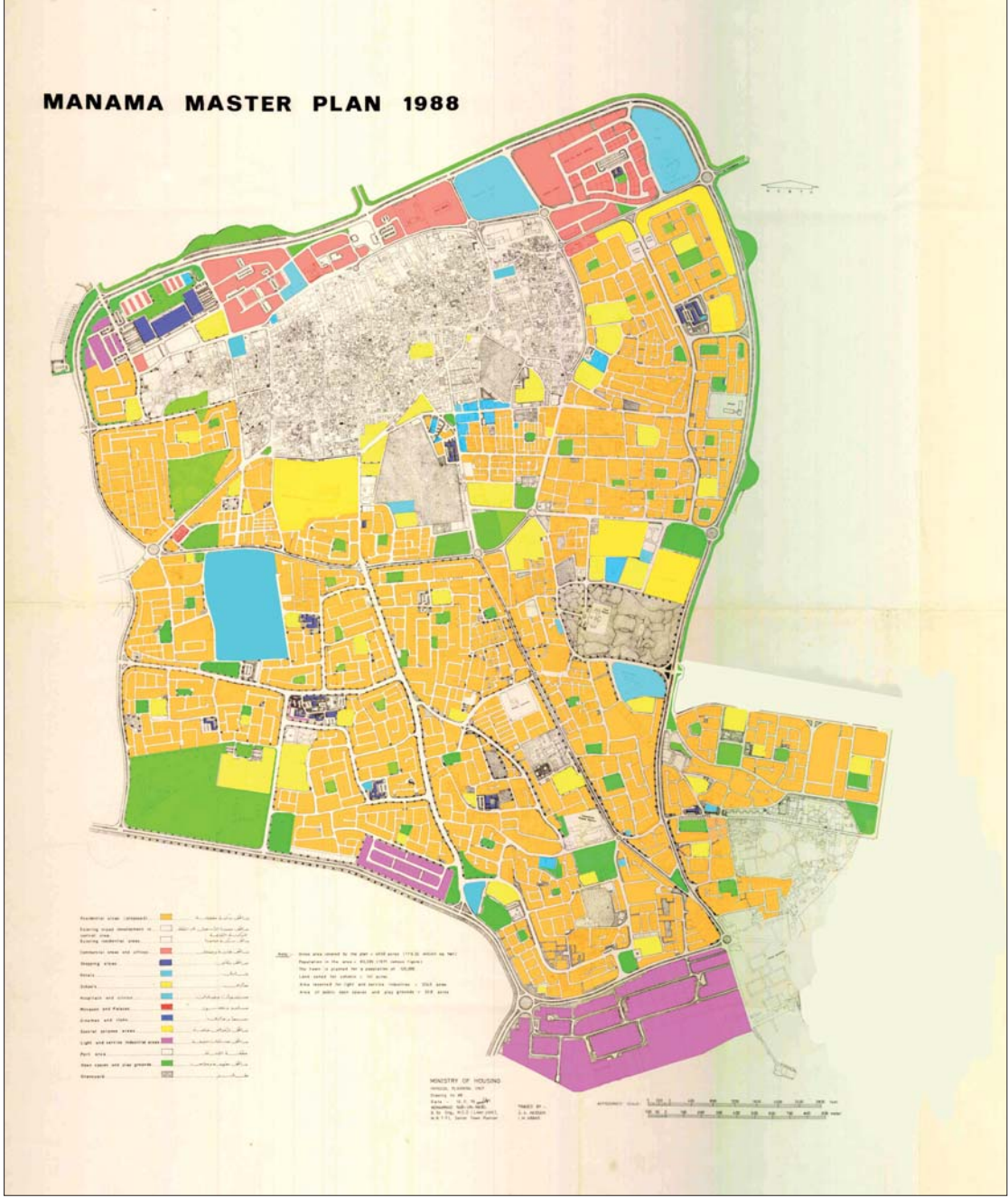
Given the government reluctance to acquire so much private property in the area, in my proposed detailed plan I designated almost half of the private property, proposed by Munro, to be used for the expansion of the Water Garden. I proposed a school site, two other small open spaces and a road system for the area. When the plan was presented in the Planning Coordination Board, one member of the Board, H.E. Majid Jawad Al Jishi, who was Director of Planning in Ministry of Development, seriously objected to my proposal of extending the Water Garden area on private property. My proposal was strongly dependent on extending the Water Garden. The majority of the Board members supported me and the proposal was approved. Private property owners within the proposed extended area of the Water Garden were compensated by land in Hooraa and the present area of the garden is the same as was proposed in my detail plan of the area.

Detail plan of Na'eem & Gufool area



Implementation of Manama Master Plan

Detail plans of Manama Master Plan blocks were made on the available topographic map at the time, in the scale of 1" = 200 feet (1:2400). There were 12 such block plans. It was difficult to incorporate these plans with the old Suq area into a single combined plan. Technology and available equipment was very limited. For example, there was only one plan enlarging and reducing machine in the Electricity Department in Juffair power house which was not very accurate in reducing plans. Through trial and error, I managed to reduce block plans and with the help of technicians of the Physical Planning Unit produced on one sheet a detailed Master Plan of Manama. This plan as shown below became very effective and was utilised by all plan implementing authorities.



I personally coordinated with PWD, Electricity, Health, Education and other concerned authorities about implementation of the plan. After achieving political independence in 1971, Bahrain had experienced major changes in her economic structure and financial position. The quadrupling of international oil prices in 1974 consequently led to a rapid increase of Bahrain's foreign exchange earnings from oil revenue. Net earnings from oil rose from BD 25.5 million in 1972 to an estimated BD 198.5 million in 1977 while exports and re-exports increased from BD39.5 million to BD 150 million, respectively. Most of these funds were spent on land reclamation in accordance with the Manama-Muharraq Master Plan, on electric power, water and sewage facilities, and the expansion of the port, airport and road network, on public housing, schools and health centers.

The Manama Master Plan implementation started with reclamation of land around Manama as per the Master Plan starting from the Central Market area.

Manama Ring road construction started with construction of the King Faisal highway. The Ring road was constructed following the original Master Plan, with the only amendment being made to allow the alignment of the south ring road adjacent west of its junction with Sitra causeway as shown in the plans below. This amendment was made to rationalize the Ummel Hassam junction and to create sufficient land for Ummel Hassam Housing Project where 583 dwelling units were built.

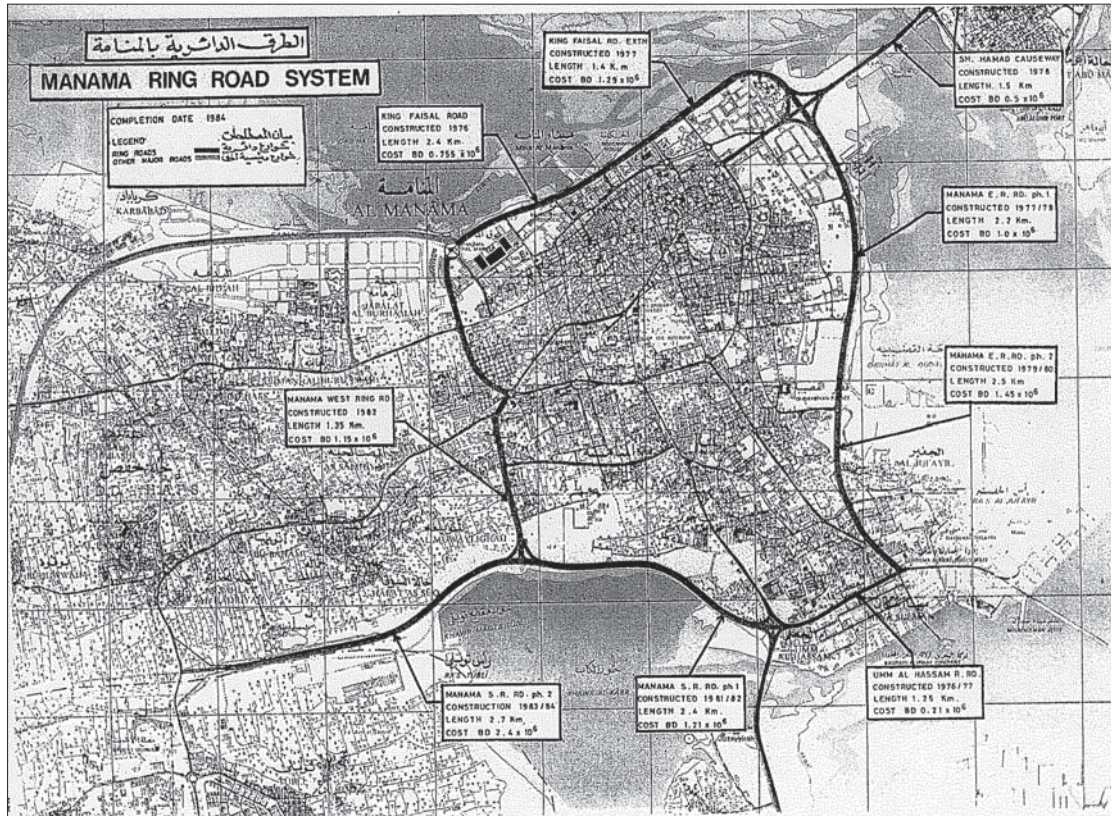


Original junction plan



Revised junction plan

Timing and cost of construction of Manama ring road is shown in the following map issued by Ministry of Works, Power and Water.



Construction of internal roads took place in accordance with the Master Plan. Initially the Master Plan was strictly followed. H.E. Sheikh Abdulla Bin Khalid Al Khalifa was giving personal attention to all matters related to Master Plan implementation. He would personally meet The Amir His Highness Sheikh Isa Bin Salman Al Khalifa to advise on preventing or amending land gift proposals to avoid conflict with Master Plan. He used to negotiate personally with property owners and developers to resolve development proposals conflicting with the Master Plan. For example, a villa was under construction on west ring road as an expansion of Khalil Kanoo Garden. When I highlighted this to H.E. Sheikh Abdulla he called Salman Khalil Kanoo and stopped the construction on west ring road alignment. Similarly, Mohammed Jalal was constructing a water treatment plant in the premises of an abandoned palace in Gudaibiya south of the Gulf Hotel, encroaching in the corridor of the east ring road. When I highlighted this to H.E. Sheikh Abdulla, he called Mohammed Jalal and persuaded him to construct the water plant outside the Master Plan road corridor.

As the Ministry of Education was in need of constructing schools in Manama, especially to replace schools in unsuitable rented buildings, they were in regular coordination with me to select school sites in the Master Plan. Schools were built on government land as well as on private land as per the Master Plan and I was responsible for proposing where owners of such lands could be compensated. Similarly, the Ministry of Health also selected Health Center sites proposed in the Master Plan for construction of Health Centres and medical facilities. 14 Schools and 3 Health Centers were constructed in Manama by 1983.

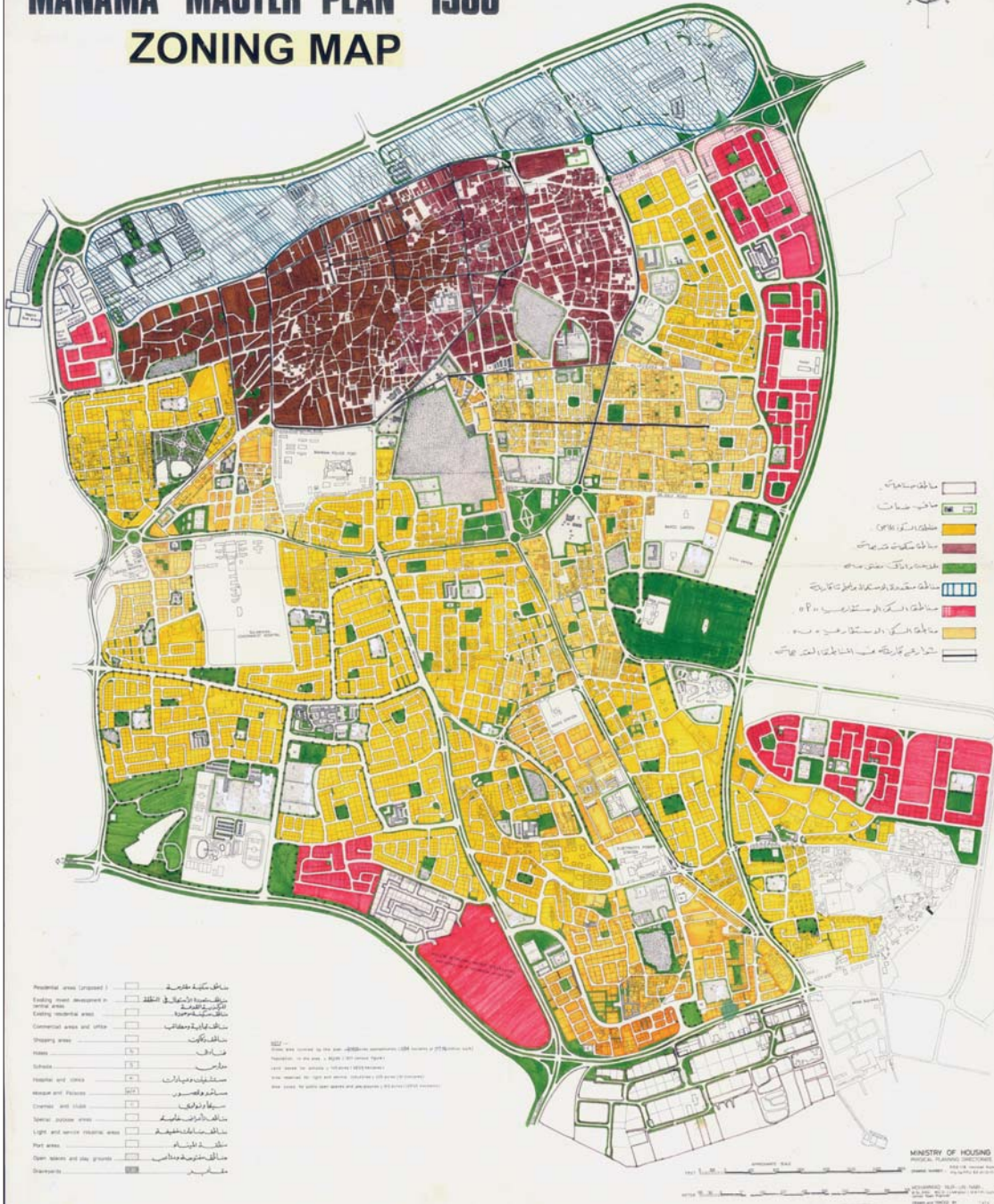
As per Master Plan sites for Ministries and Government offices including the Ministry of Justice and Islamic Affairs, Ministry of Finance, Ministry of Housing, Monetary Agency; and embassies and diplomatic establishments including the Saudi, Kuwait, France and other countries missions were then allocated. Institutions like the Red Crescent Society and the Sports hall in Juffair took place within the framework of the Master Plan. Private developments also occurred within the Master Plan framework.

People subdivided their lands following the Master Plan. Main sewers were constructed within the Master Plan road network. Other infrastructures like water mains and electric cables were also planned and laid within the Master Plan road corridors. Water stations, Electricity Primary Substations were built as per the Master Plan.

11 local clubs with play grounds were constructed as per the Master Plan and the Plan provided the blueprint for all developments; government in addition to private. All major Master Plan issues were discussed in the Planning Coordination. Board meetings and Services Coordination Committee meetings, decisions were taken and implemented.

The Master Plan covered gross area of 4050 acres (1639 hectares) for target population of 125,000 in 1988 and initial zoning proposal for the Master Plan area was as follows:

MANAMA MASTER PLAN 1988 ZONING MAP



Aerial photograph of southern part of Manama below is an example of developments especially road network following proposals in the original Master Plan.

Sugaia , Adliya And Mahooz Area - 2006

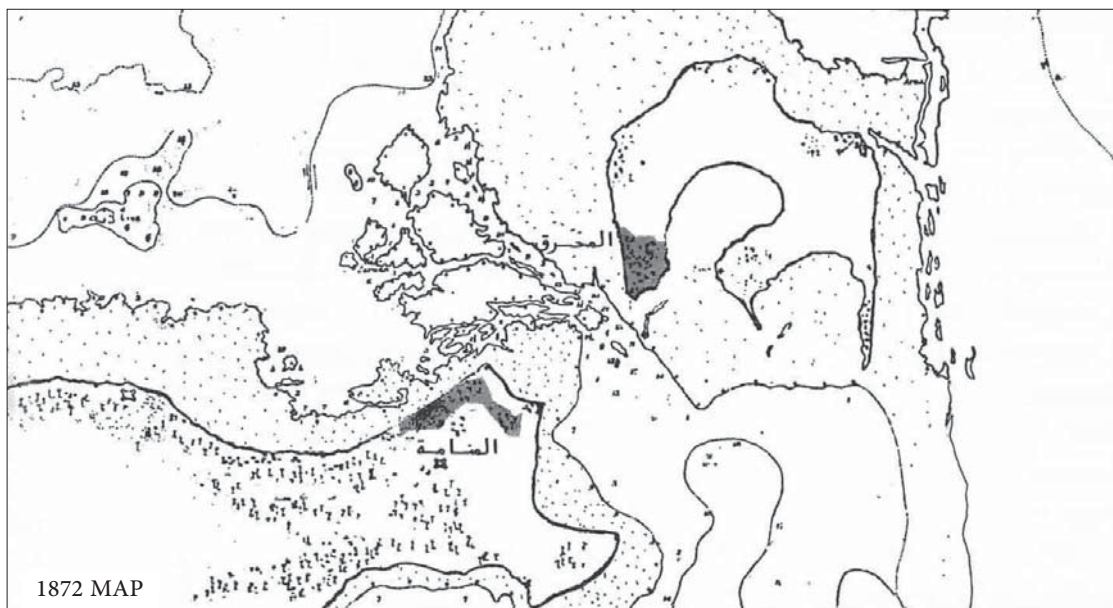


Muharraq Town

Historical Background

Muharraq Town originated at the south west peninsula of Muharraq Island. Area of Muharraq island before substantial reclamation was 5.36sq miles (1388.24 hecets or 13.88 sq km) as recorded in 1971 census. Muharraq island had both inland (Ain Rayya, Ain Umm Al Khayleh) and deep water (near Bu maher, west of Busaiteen, east of Hidd) springs. There were substantial green areas with date palm trees at Busaiteen, Dayer, Samahij, Galali, adjacent to east edge of Zimma bay and at Arad. Muharraq Town site was more or less barren on the peninsula surrounded by shallow sea (fasht) of coral reef, dry at low tide.

Fresh water spring adjacent to Bu Maher was one reason for selection of Bu Maher fort site and a little distance away the site of Muharraq Town. Although Manama and Muharraq appear to be twin cities founded simultaneously, Muharraq took the lead because of its defensive location and thus became the capital city. Thus Manama developed as a subordinate settlement and a gateway to the main island. Muharraq's location on the north-east tip of the country, together with Hidd and Abu Maher fortresses, was part of an efficient defensive system controlling the marine commercial trade in the Arabian Gulf, which frequently passed through Bahrain Bay. Relative sizes of Manama and Muharraq are shown in following two maps dated 1872 and 1904.





Al Khalifa family built their own palaces and the two major Friday mosques on the highest ground in the centre of Muharraq urban area. The reasons for this location may include symbolic, military and climatic reasons. It accords with a longstanding Islamic urban traditions the ruler's palace was at the centre of administration, political patronage and upper class social life- a magnet for many people.

This forms the core of Al Muharraq from which the city grew in different directions. Sk Abdulla Bin Ahmed Al Fateh made Muharraq his capital and residence in 1796. He also built Bu Maher fort in 1810. The map here shows relative positions of Muharraq and Bu Maher fort area in 1810.



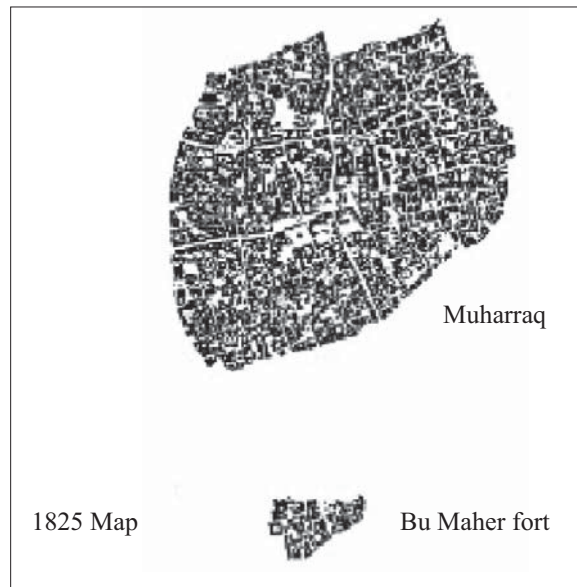
Muharraq

1810 MAP

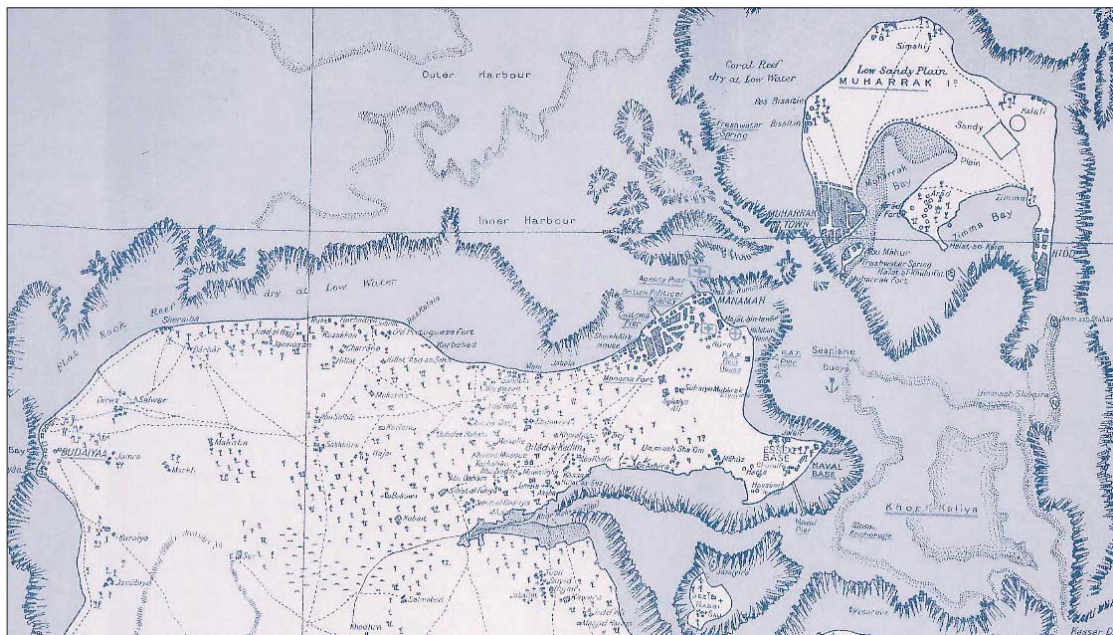


Bu Maher fort

Al Muharraq, as many other traditional Arab cities did, evolve through a long process of innovations, adjustments and refinements. Generally, the town has grown by expansion on land initially and later on by reclamation from the sea. The following map of 1825 shows the size of Muharraq and Bu Maher at that time.

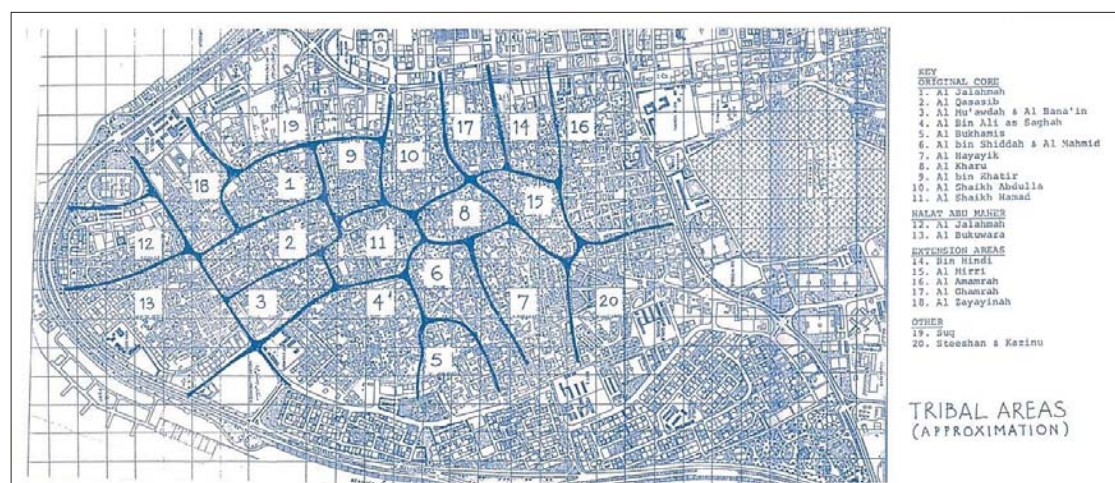


Another map below dated January 1933 shows Muharraq Town occupied southern part of south west peninsula of Muharraq Island. Bu Maher appears to have grown but is still separated from the main town.

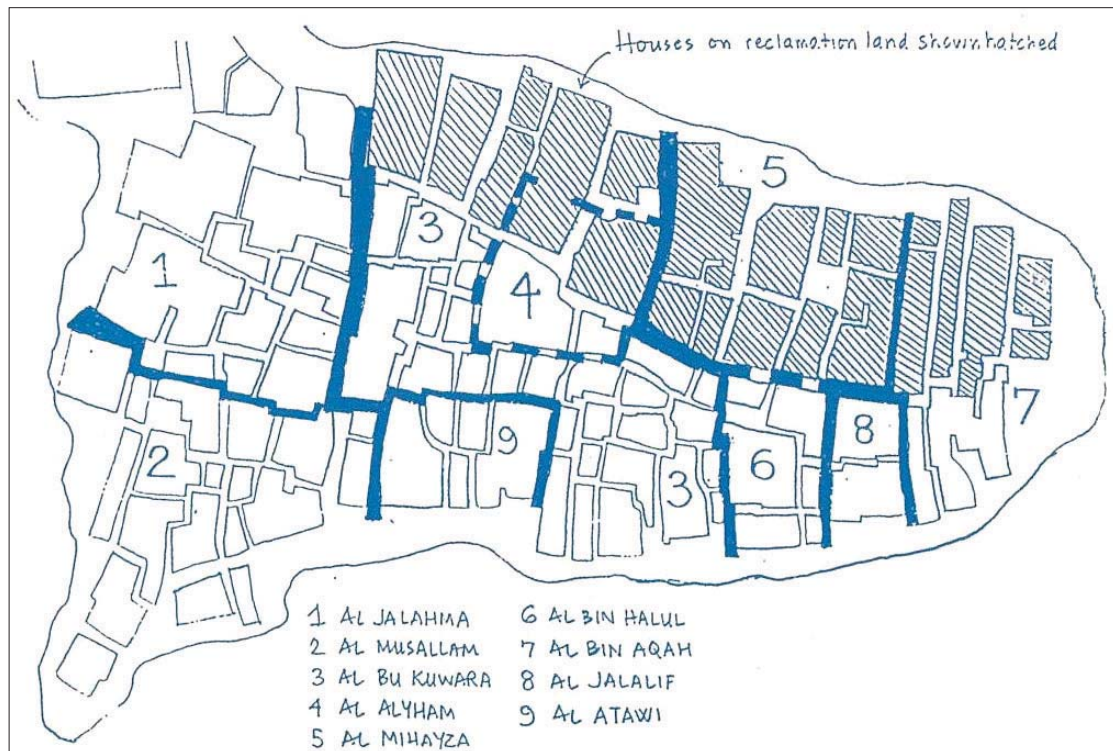


Tribal and Kinship group played an important role in shaping urban form. Around 1825 Al Khalifa and famous families from Gulf came and settled in Muharraq for political power and for financial reasons and as Muharraq' economy based on pearl fishing was flourishing. It is popularly acknowledged that the city was divided into perhaps nineteen zones, each being name for a major tribal grouping, except for al'Kazinu , meaning public garden and steeshan the arabised word of station. Therefore, the spatial pattern parallels the social pattern in the sense that socially related families cluster together. This may have been for reasons of security, power-broking or to endow prestige. Tribal areas were generally bounded by major roads.

As the town grew, tribes would expand across the new roads, which ran along the earlier coastline. Generally as the years went by, property would change hands at the margin of areas and certain streets would be widened for traffic thus obscuring the earlier pattern. Within each tribal area the tribe itself would create plots for its constituent families and secondary roads would immediately arise to give access to these plots. Over the generations however, each plot would be subdivided many times according to Sharia Law. Each subdivision would entail creation of an independent access. One can see the historic pattern of roads fills the function of defining human territory as well as permitting movement. The territory relates to tribal, subtribal, family and household origin and so the road pattern models the social structure of the community. There seems to be neither an engineering pattern, nor physical or material hierarchy. The pattern is social in nature.



Tribal areas of Muharraq



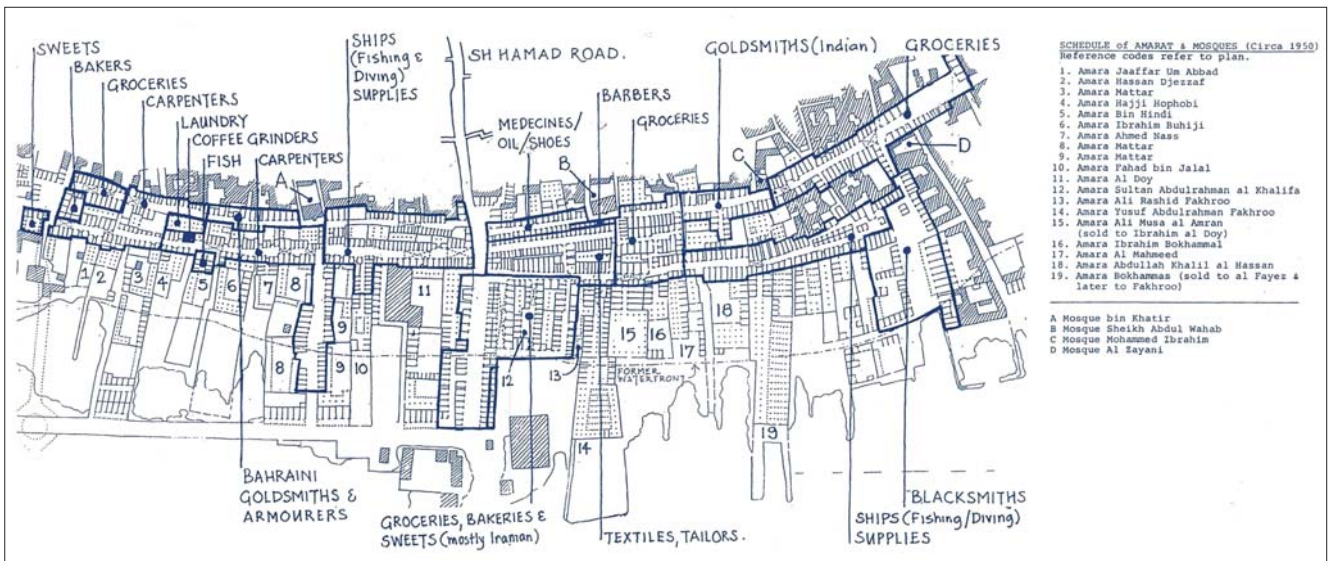
Spatial pattern tribes on abu maher

It is worth to mention about history of development of Souq area in Muharraq. Muharraq suq is a late ninetieth century creation. It displays a very interesting urban structure. It arose organically on the coast facing Manama because the people congregated there for ferry boats, because this coast was most accessible for merchant's boats, and most of all, because open land was available. However, this involved gradual reclamation from a very shallow sea. Muharraq souq started around Sheikh Hamad road because this was the natural entry point and link to the urban core of Muharraq. Here the boats from Manama landed. The Airport road, essentially a by pass, had been built in 1926 and soon afterwards the petrol station, municipality as well as the causeway ended at this point in 1936. Muharraq Suq developed in linear form at the western fringe of 1880 Town and gradually expanded by reclamation. One interesting feature of the Suq is grouping of similar category of shops and workshops. It is also interesting that the racial or family connections with craft and trade were strongly associated, for example

- Groceries and Bakeries were mainly run by Iranians, who came particularly from the town of Qarash.
- Sweet shops were also run by Qarashis or by Omanis, particularly the family Al Maskati (from Muscat).

- Herbal medicines were made and sold by Yemenis especially by a family named Nasr.
- A lot of goldsmiths were Indians: they worked in the area between Sh. Abdul Wahab Mosque and Mohammed Ibrahim Mosque on Bu Maher Road. The Bahraini goldsmiths also produced swords and daggers in a separate district north of bin Khatir Mosque.
- Some Baharanah family names derived from trades were: An Nabirah (well diggers), As Safafir (copper workers), As Saghah (goldsmiths), Al Haddad (blacksmiths), Al Najjar (carpenters), and Al Galalif (boat builders).

The number of business of each type or in each district varied with time, but a total number of 435 business were established in 1930. Such businesses were, of course, very small and many would involve one man. Some groceries would involve two or three men, particularly if shifts work were involved. Crafts would have one or two or occasionally more apprentices. An average size might thus be two men or less. Therefore, around 900 men might be working in Muharraq Souq in 1930, and of these at least 300 would be not be Bahraini.



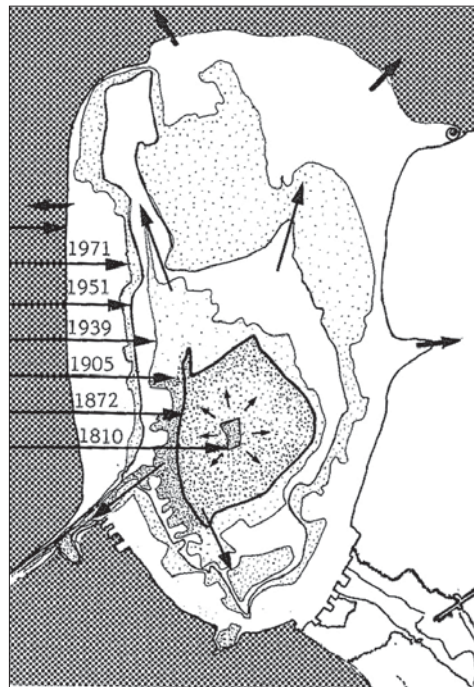
Muharraq had grown in size by natural expansion without any plan in the sense of Town Planning, as shown in the maps below.



1872 MAP OF MUHARRAQ



1904 MAP OF MUHARRAQ



EXPANSION OF MUHARRAQ TOWEN BETWEEN 810 - 1983

Following table shows the no. of population and no. of houses in the town in the past.

	1941	1950	1959	1965	1971
Population	21,439	25,577	27,115	34,430	37,732
No. of Houses	-	-	4,361	5,117	5,670

Muharraq had periods of economic prosperity and periods of economic decline. Before decline of pearling industry around 1930 Muharraq was relatively prosperous compared to Manama. Gulf's first modern public school Al-Hidayah school for boys was opened at the north of Muharraq in 1919. Even a foreign Doctor, Doctor Banderkar who came to Bahrain in 1925 was stationed in Muharraq. With beginning of oil industry in 1932 Manama's importance increased. Significant development at the time of decline of pearling in Muharraq was development of airport at the north east of Muharraq Town in early 1930's in barasti and development of British Royal Air Force (RAF) offices and facilities at Busaiteen. A big hospital was also built there for use of British army and a cinema was opened for their recreation. A huge area in the sea at the north of Busaiteen was covered by Radio transmission masts. But the rate of growth of the Town was slow.

Following aerial photograph of Muharraq Town of 1951 shows the town, the sea touching the buildings in the south, south east and south west of the town. Though airport road was built as by pass in 1936 at the north west side and north side of Muharraq Town substantial areas along this road at the north west corner and north east corner of the town remained empty even in 1951.



1951 Aerial photograph of Muharraq

Following aerial photo of the town of 1968 shows the extent of growth of the town between 1951 and 1968. There was ribbon development along west side of airport by pass road at the north west of Muharraq and a strip of residential development from airport road to Busaiten. The public park (Casino) at north east of the Town was developed in this period and some public houses and two schools were built on reclaimed land at the east of the

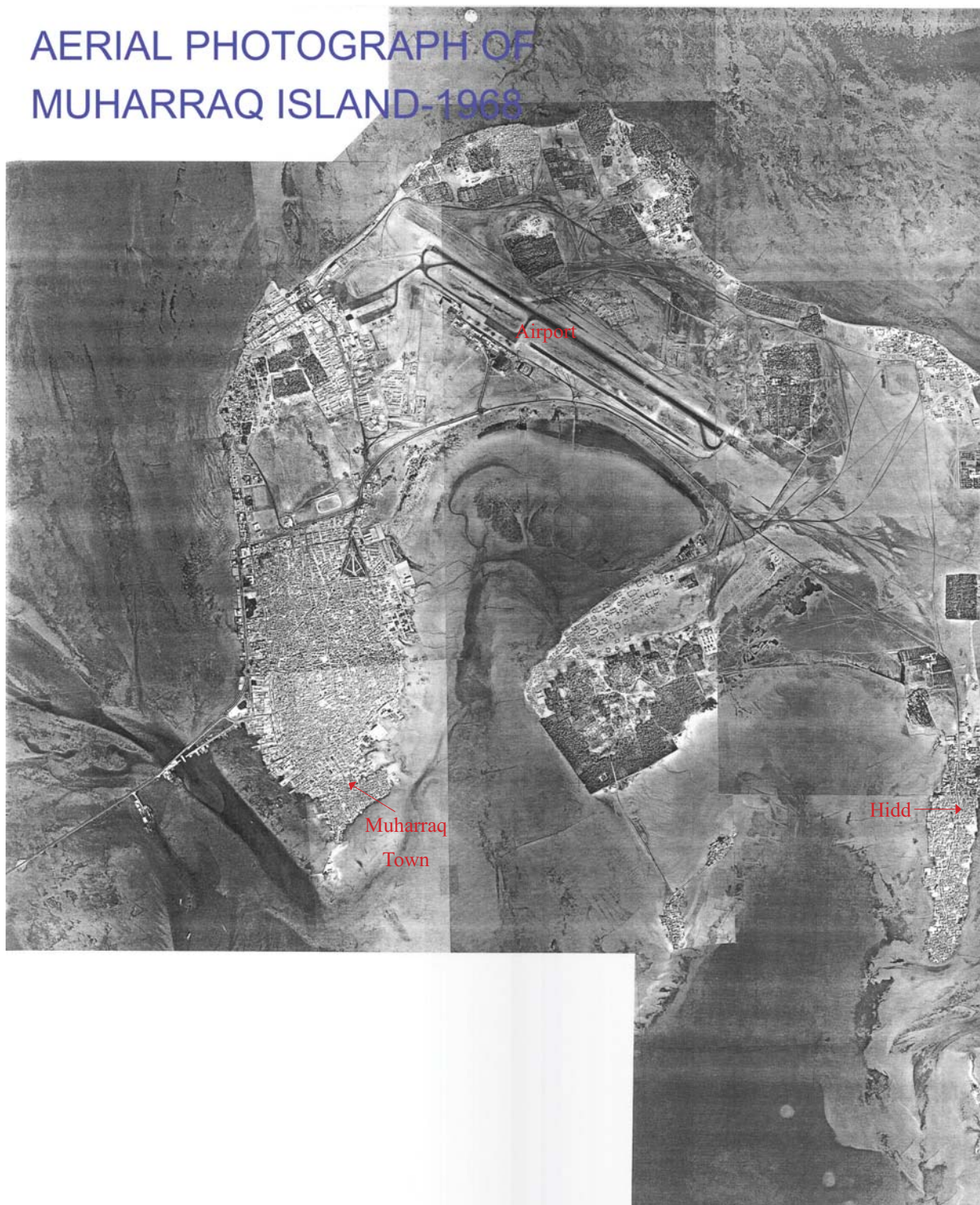
casino. Further south houses were built in scattered manner on lands reclaimed individually on land gifted by the Ruler. Though there was a substantial British army (Royal Air Force, RAF) establishment at Busaiteen no British army lived in Muharraq and no housing development by private developers, like Manama, for renting to British army took place in Muharraq island. There was no air conditioned shop or cold store in Muharraq in 1960's though there were many such shops and stores in Manama at that time. Many people moved to Isa Town around 1970 from Muharraq town.

Muharraq graveyard site between Muharraq town and Busaiteen is little away from old Muharraq town similar to locations of grave yards in Manama and other small settlements like old Ummel Hassam, Naem.



Topographic Map of Muharraq Town 1968

AERIAL PHOTOGRAPH OF MUHARRAQ ISLAND-1968





Aerial photograph of Muharraq town master plan area - 1968

Preparation of Master Plan of Muharraq Town

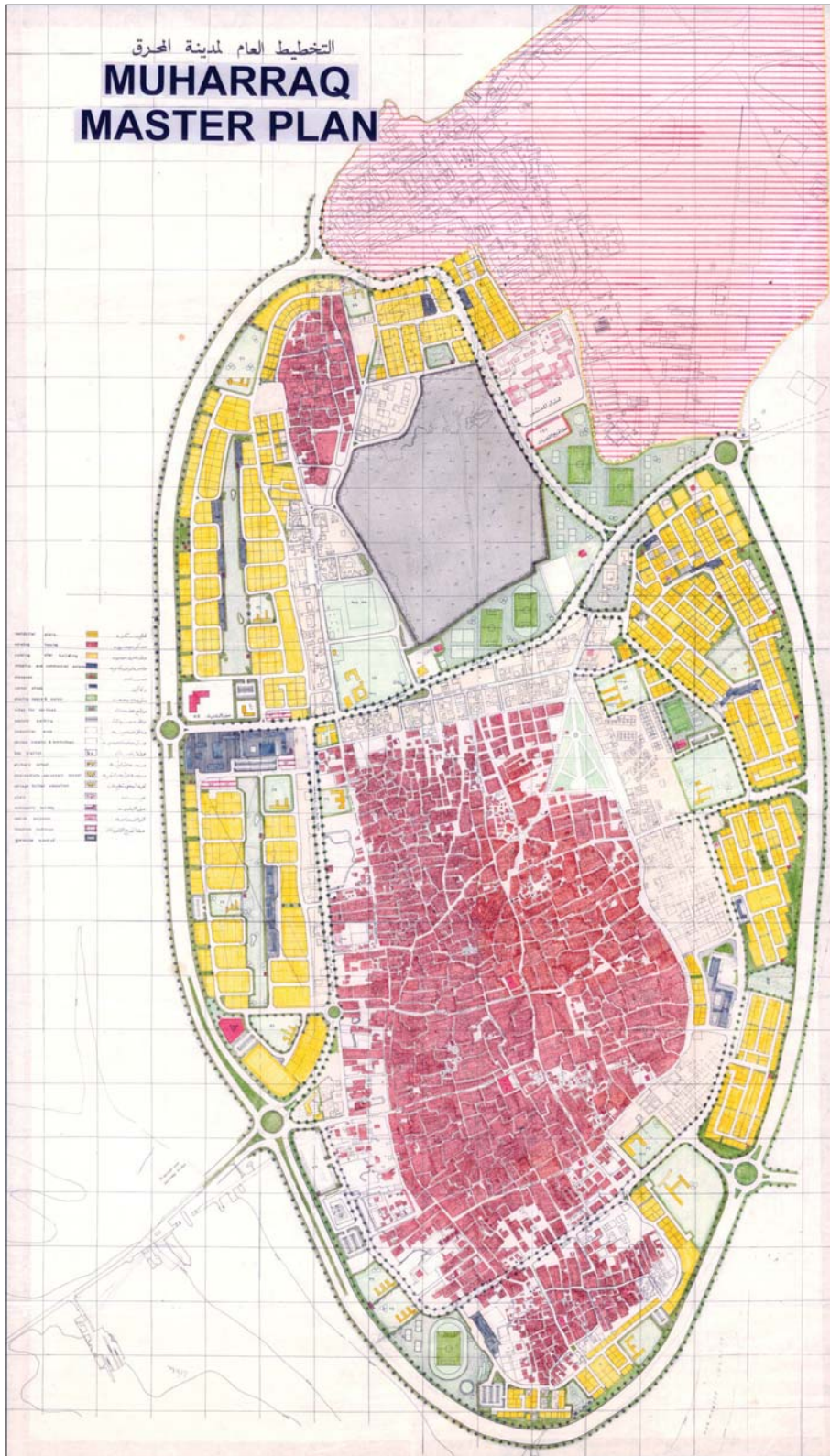
After preparation of Manama Master Plan Mr. Munro worked on preparation of Master Plan of Muharraq Town. In consideration of Muharraq's economic condition of 1968 and foreseeable potential growth of Muharraq as well as the factor that RAF already decided to leave their facilities in Busaiteen and leave Bahrain, he proposed a conceptual diagrammatic Master Plan for Muharraq Town with modest goal and objectives. He proposed ring road on shallow sea on three sides and a road connecting the north west corner of proposed ring road with airport road by a link road. He proposed mainly low density residential development on reclaimed land within proposed ring road with estimated required schools, shops and other facilities. Most of the areas in the sea within proposed ring road was uncommitted and unallocated except some plots along airport road at the west, a site for hospital at the north west of present police station and governorate at the east side of the town and some gift plots at the north east side in block 202. Position of proposed ring road is shown on the aerial photograph and topographic map of 1968 below.

**MASTER PLAN RING ROAD ON 1968
AERIAL PHOTOGRAPH**

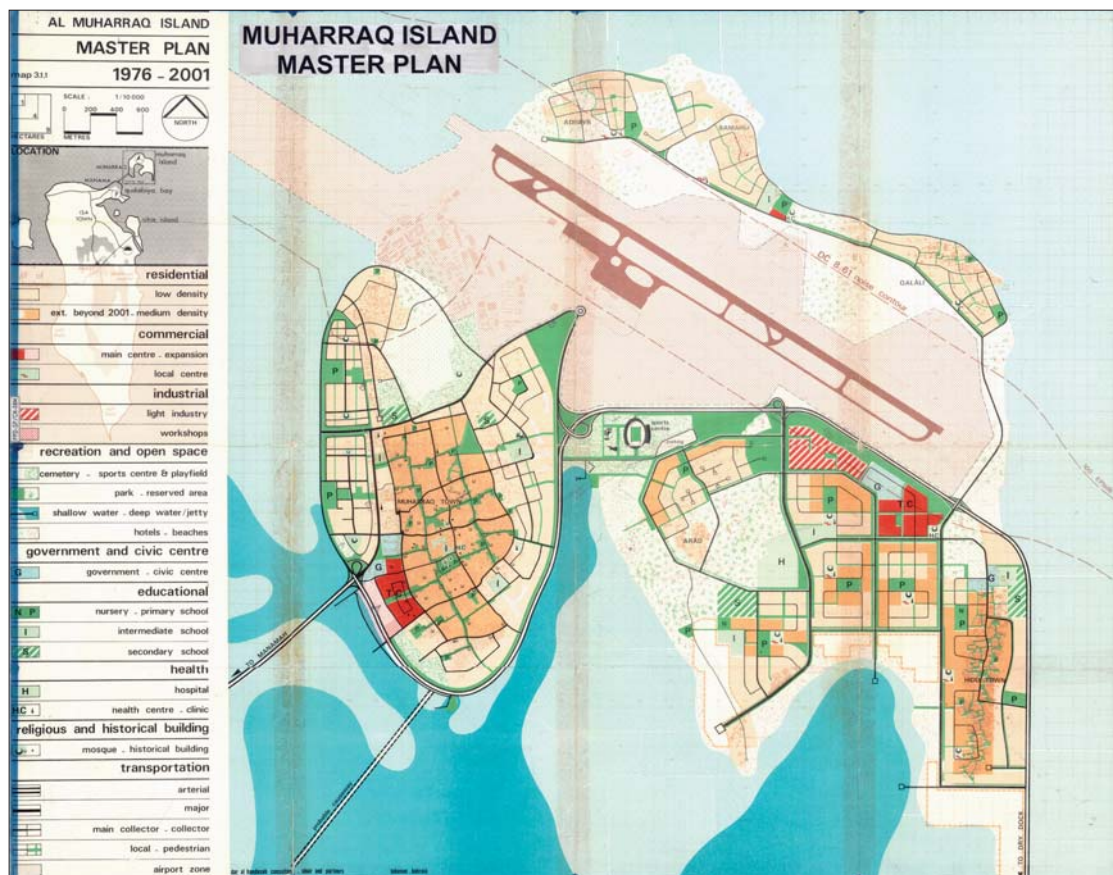


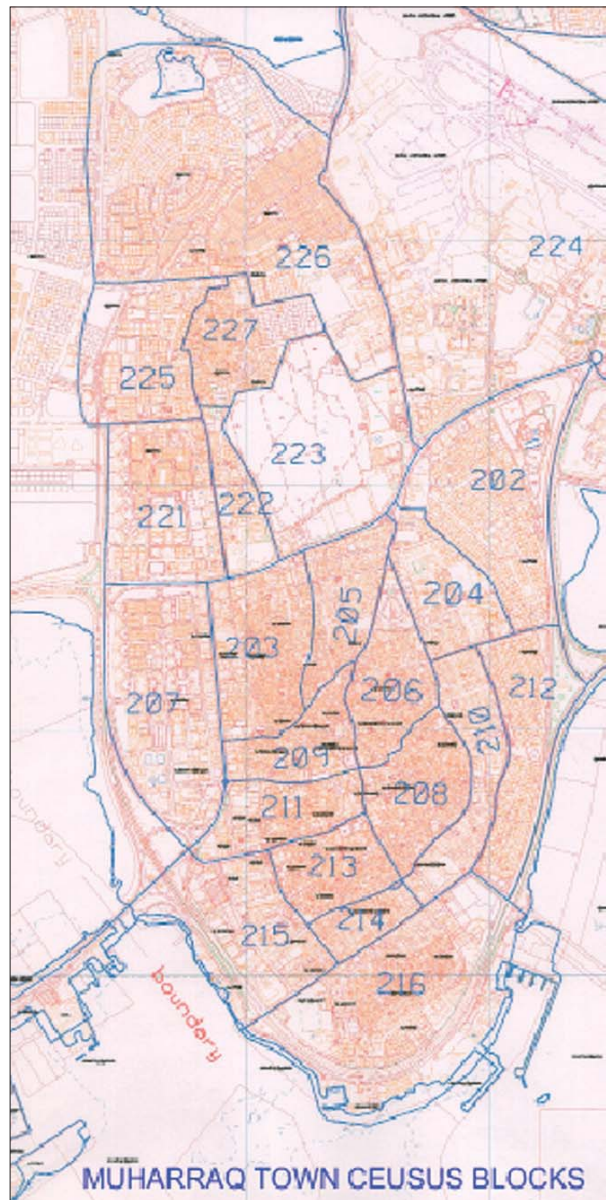
Mr. Wissa prepared a detail Master Plan for Muharraq Town adopting locations of ring road and main features of Mr. Munro's Master Plans as shown below.

التخطيط العام لمدينة المحرق
**MUHARRAQ
MASTER PLAN**



This plan aimed at providing road hierarchy in new areas, proposed low density villa type of development, proposed school sites, shopping center sites and sites for other community facilities. But this Master Plan, in general, was not followed in subsequent implementation decisions except for block 202 and 212. This Master Plan was followed by Master Plan for whole Muharraq Island by Dar Al Handasah Consultants in 1976 as shown below. This plan was not adopted for implementation.





Decisions were taken for implementing housing projects, building Muharraq Market, gifting land in piece meal manner. At one stage in late 1970's I had to work on preparation of detail Master Plan for Muharraq Town taking into consideration of all commitments and requirements of all concerned Ministries and authorities.

This revised Master Plan is shown below.

MUHARRAQ TOWN MASTER PLAN 1988



North end of east ring road of original Master Plan was shifted to the east to match with the entrance to expansion of airport creating a triangular space I proposed to H.E. Sk Khalid Bin Abdulla, Minister of Housing to use this triangular land created by this shift of ring road for public park in block 202. He agreed and I prepared letter to His Highness the Prime Minister proposing to register the area for Public Park which His Highness approved. Subsequently Muharraq Al Kubra Park was constructed here covering 9.36 hec.

Major sites were allocated for different purposes in block 207 at the north west of old Muharraq Town. Land for new central Market of Muharraq with car park and public garden site was allocated at the center of the block. Northern half of the block was allocated for Housing Project where 506 flats and 265 houses were built. Shakhn Farshi of Kuwait built a mosque in the middle of the housing project. Sites for 2 schools, Al Aslah society were provided. Big area was allocated for water supply as per request of Water supply Directorate.

The area between proposed ring road and old Suq (part of block 215 and west part of block 216) was allocated mainly for public purposes – schools, club, petrol pump, site for Govt. offices (post office site), bus station, sewage pumping station, car park's etc. as proposed in the Master Plan.

In the area (blocks 221, 225) at the north of airport road-west of Busaiteen lands (already gifted) at the back of existing developments along Sk Khalif road to Busaiteen was accommodated in the Master Plan. Sites were allocated for housing projects where 131 houses and 152 apartments were built by Ministry of Housing. Sites were proposed in the Master Plan and allocated for health center, 2 schools in addition to two existing schools in nearby block 227, 2 shopping centers, 2 mosques, playground – club, gardens, car parks and major electricity substation. A plot was proposed along north side of airport road at the south west corner of block 221 for Municipality office but Municipality converted the site into housing plots and disposed off the site.

The area along north side of Airport road had existing scattered developments as shown in the aerial photograph of 1968. All available vacant and unallocated lands in the area were proposed for public purposes – play grounds, fire station, car parks etc. Existing hospital of RAF was converted into Govt. Maternity hospital and existing buildings of RAF were used for different Govt. offices. Play grounds were provided in the Master Plan covering areas were in used at that time as informal play grounds to cater need of the town as the population would grow substantially by 1988, the target year of the Master Plan.

The area at the north east of the town (blocks 204 and 202) was kept more or less same in the revised detail plan, as was in original Master Plan of Mr. Wissa, except the entrances to the area from the airport road were revised and, as mentioned earlier, Al Kubra Park area was created by moving the north end of east ring road to the east to match with new entrance to new terminal building. This area was already partly covered by residential gift plots and remaining area within Master Plan was also gifted quickly for housing plots and housing developments took place in the area very quickly.

Substantial public open spaces were proposed in revised detail plan of block 212.

Previously allocated hospital site was maintained in the revised plan on land to be reclaimed in block 216 within proposed ring road. Also site for police station, school, public open spaces, car park, land for water supply provided in the plan.

Addition of small crafts port, fishing harbour and light industry site along south side of the south ring road.

In the original Master Plan proposal of Mr. Munro and detail plan of Mr. Wissa there was no land use proposal in this area. As per requirement of Ministry of Finance and National Economy a small craft port site was added at the south east of south ring road and the site was quickly developed. A site was added at the west side of the ring road for fishing harbour and at the south of this side a strip of light industrial area added for industries related to dhows and boats.

Implementation of Master Plan of Muharraq Town.

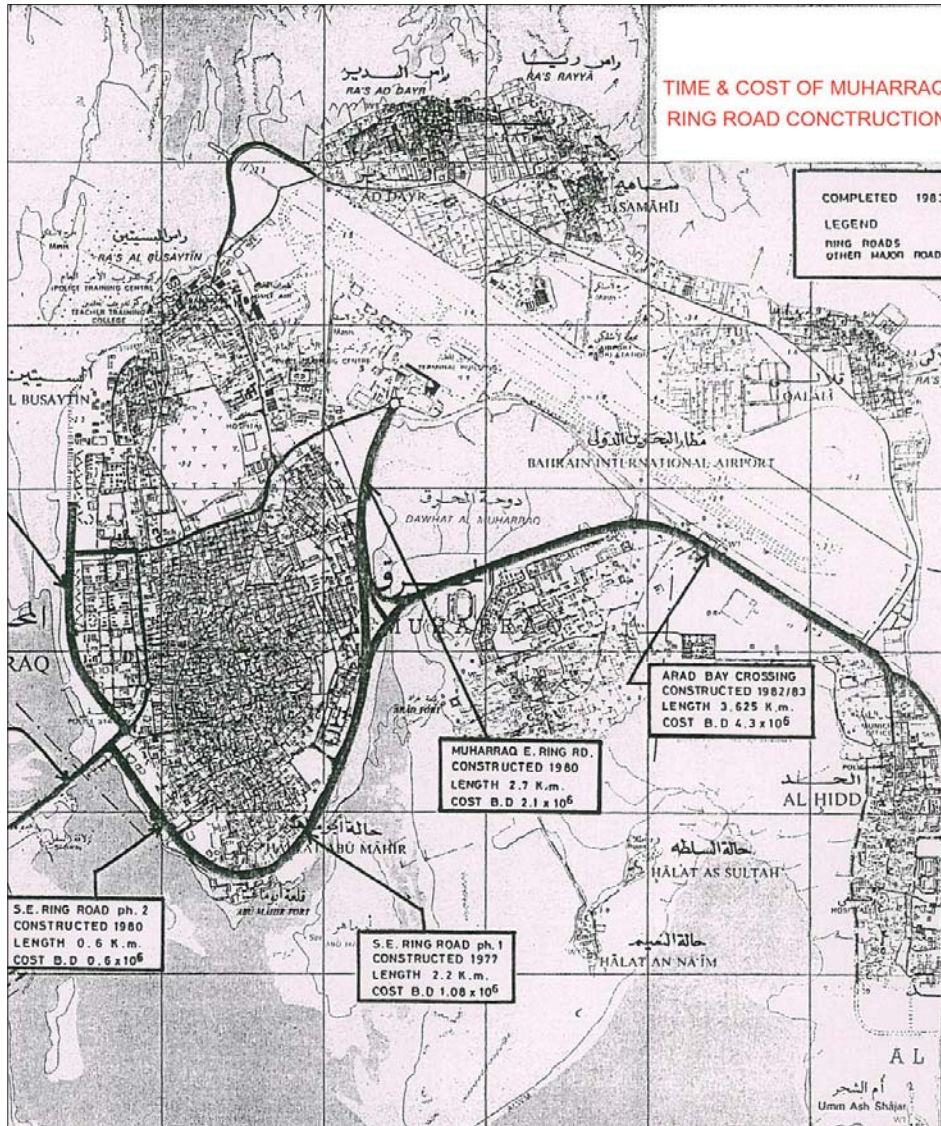
Master Plan implementation was relatively quick. Land was reclaimed as per Master Plan by 1977. Following aerial photograph shows reclaimed areas around 3 sides of old towns as per original Master Plan of Mr. Munro and detail Plan of Mr. Wissa.

Above mentioned detail plan prepared by me, was implemented substantially. This detail plan was prepared under direct supervision and guidance of H.E. Sk Khalid Bin Abdulla Al Khalifa, Minister of Housing from August 1975 to October 2002.



Major implementation decisions of different aspects of the Master Plan were taken by him and with his personal initiative he got required approval from cabinet, H.H. The P.M. and other authorities. Master Plan preparation and implementation was properly coordinated with all concerned Ministries and authorities mostly by me. All major plans and planning issues were discussed in weekly meeting of senior staff and advisors of Ministry of Housing chaired by H.E. Sk Khalid Bin Abdulla and he used to take decisions after hearing everybody's comments and opinions.

Following map issues by Directorate of Roads and sewerage shows the timing and cost of construction of Muharraq ring road.



In 1974 Ministry of Health wanted to build a Health Center urgently to meet requirement of Muharraq Town. Though a plot at the north part of block 216 was available for the purpose but was not reclaimed at that time, new Sk Salman Health Center was built at the east side of Sk Isa Avenue in Block 208 by acquiring private property. By time the plot in Block 216 for hospital – health center was fragmented for other purposes and yet no part was used for health purpose. Though some playgrounds, public open spaces, car parks etc, provided in the revised detail plan on Government land, later on converted into other uses without consulting Physical Planning. Implementation of Muharraq Master Plan in general took place much faster than Manama Master Plan. New areas of Muharraq Master Plan area developed quickly. Many well to do families moved out of old areas to new areas within the Master Plan and built their residences in new areas and rented their old premises to expatriate, generally low paid workers. New schools, health centers, primary substations, water stations, some public gardens were built as per The Master Plan. No substantial area within the Master Plan of Muharraq remained vacant by 2000 unlike Manama Master Plan areas. In above mentioned revised Master Plan population of Muharraq Town was stipulated to be 58,000 in 1988. 2001 census recorded population in census blocks of Muharraq town Master Plan area 56,360 (32,260 Bahraini – 57.24% and 24,100 non-Bahraini 42.76%).

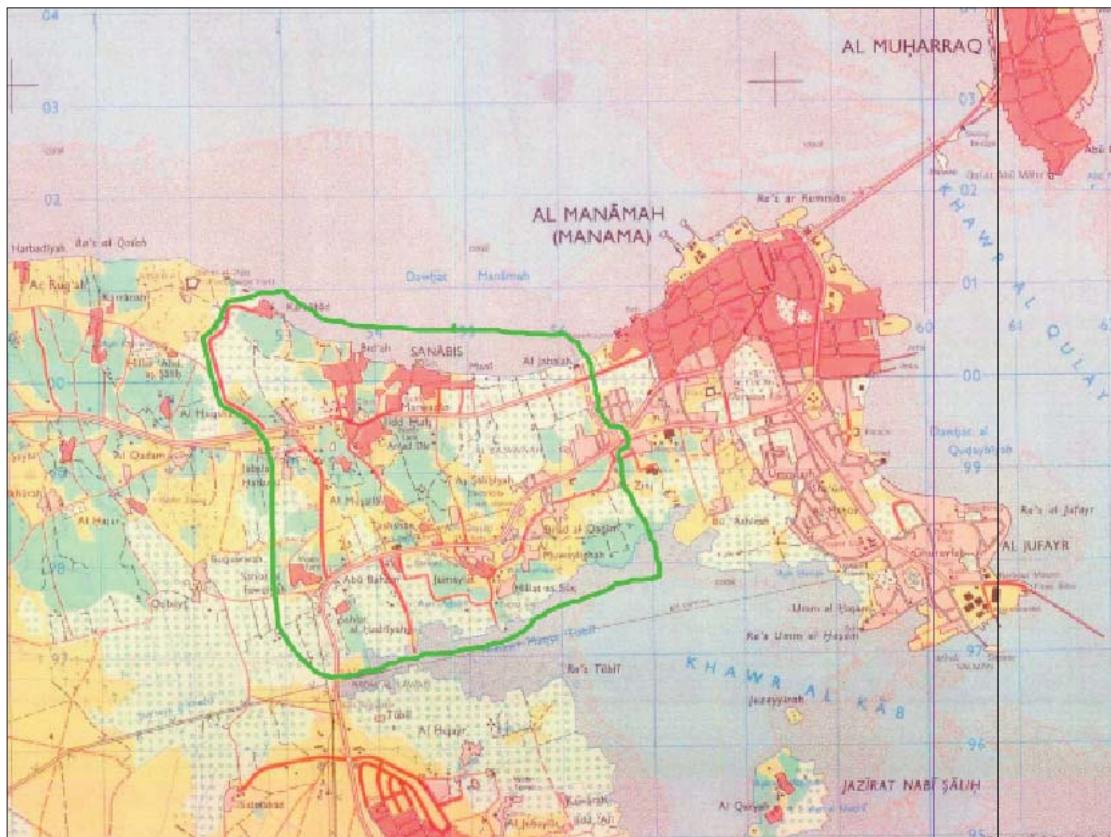
MANAMA GREEN BELT

Mr. Munro worked in Bahrain as Physical Planning Advisor for two years from 1968 to 1970. He was asked to prepare Master Plan for the area from Manama to Jiddafs like Manama. He was a strict professional and an outstanding Planner who followed basic Planning principles and being an advisor coming from British Ministry of Overseas Development was able to resist unreasonable political pressure and influence in giving physical planning advice and in producing plans. He said the areas at the west of Manama Master Plan area should be preserved as green belt only allowing natural growth of existing villages in carefully selected places without palm trees and doing minimum possible damage to existing greenery and agricultural areas by these expansions. There was serious difference of opinion between him and the Planning Coordination Board and Govt. who under pressure of speculative property owners of the area wanted urban development in the area without taking into consideration of such need in real terms. One reason for Mr. Munro not to extend his initial two years' contract to work in Bahrain was his difference of opinion on this issue with the Authority.

As soon I finished detail planning of Manama Master Plan areas I was asked to prepare similar detail plan for the area between Manama and Jidhafs in early 1972. There were pending subdivision applications for dividing 7 big lands covered by palm trees within the area. These subdivision plans were in seven different locations treating each area separately. Before that one big area was subdivided adjacent to south side of Budaiya Road where even two houses were built, one of these houses is now used as Mono Café and restaurant. H.E. Sk Abdulla Bin Khalid Al Khalifa, President of Planning Coordination Board told me he was under tremendous pressure to approve these pending subdivision applications. There was even suggestion to approve these subdivisions to get rid of pressure. I did not agree and advised H.E. Sk Abdulla not to approve these subdivisions and told that if these subdivisions are approved more subdivision applications will come for subdividing land in the area. I proposed to Sk Abdulla to prepare a proper Master Plan for the area and undertook to prepare the plan. H.E. Sk Abdulla thought I would prepare a detail urban development plan like Manama and asked me to prepare the plan.

I first identified the area to be covered by the plan and defined the area shown by green border in the following topo map of 1973, extending from proposed extension of Manama south ring road at the south of Adari pool to Sk Salman road on existing narrow sea inlet as the south edge of the plan and the sea in the north after karbabad and Sanabis as the north

edge of the plan, Manama west ring road as the eastern edge of the plan and upto the west of Karbabad, Jabalat Habshi and Sehla Al Fougia as western edge of the plan and named it as 'Greater Manama Area'.



1973 Topo map showing greater Manama with green border

I collected relevant information of the area. Sources of information, planning tools and staff were limited unlike currently available planning information and planning techniques. There were 17 villages in the area with total population of 20,277 covering about 317 acres (128.34 hec) in 1971 as shown on plan on page 123 and table on page 124 These villages had distinguished separate identities. Between them there were green areas and gardens with healthy date palm trees and various other trees and agricultural areas.

There were many sweet water springs (Ains) in the area. Most of the well known Ains were located in the villages adjacent to modern Sk Salman highway. Modern developments have obscured much of Ain Al Qassari to the west of Salhiya village not far from the mosque at Suq Al Khamis. H.E. Sk Abdulla Bin Khalid under took a scheme in 1971 and rehabilitated the

spring and constructed a garden here. He used to visit the site daily during the improvement works and supervised improvement works. After that for many years the site was a pleasure garden and picnic place for public. Ain Abu Zeidan on the other hand, situated in the midst of ruins of the former capital, Bilad al Qadim (old town) at the west of Khamis Police Station, was reserved in the 19th century for the private use of the great grand father of late Amir H.H. Sk Isa bin Salman Al Khalifa and his family. Subsequently a mosque was built over the spring. Not far from this was Ain Jamalah. Most famous and important Ain Adari (meaning Virgins Pool) which supplied water to many kilometers of date groves through a canal of ancient workmanship. There was an Ain at the north east of Sehla Al Hadriya. Ain al Dar was at the east of Jidhafs.. All these Ains were sources of drinking water and water supply to palm tree gardens in the area in the past.

The area was covered by high grade agricultural soil. Photo below shows how date gardens generally looked like in the area. Huge areas on both sides of the road from Sk Salman highway to Ain Adari were covered by dense forest of date palm trees and other trees as shown in aerial photograph of 1966 below.





Aerial Photo along Adari Road

Photo below shows how healthy date palm trees were in the area producing abundant fruits.



Photo of fruits

Adari Pool was one of the biggest and deepest fresh water springs in Bahrain. Bathing in the Ains for hygiene as well as pleasure was very popular especially in the Adari Pool which was also a favourite meeting place. Once a week in the summer, the police used to go out in lorries to bath at Adari. Photo below shows how Adari Pool was around early 1970's.



Photo of Adhari Pool

Just at the south of Adhari Pool there was a bay of mud and silt which used to be flooded at high tide and remained dry at other times as shown in the aerial photo below by red border.



Aerial Photo

On east and west side of this area there were private gardens and in the south was the extension of Khawr Tubli on which extension of south ring road upto Sk Salman highway was proposed and approved.

I realized the potential of the area and proposed to H.E. Sk Abdulla Bin Khalid Al Khalifa to reserve the area for a Park. He visited the site with me and liked the proposal and immediately got approval of the Cabinet. After that I proposed to create Bahrain's National Park here. After that open competition was held for plan of the park and three Consulting firms competed.

Planning Coordination Board selected the best plan out of the three and National Park was built here by reclaiming the shallow sea and creating an artificial lake and landscaping the area incorporating Adari pool in the development as shown in the photo below.



For many years from late 1970's this park was a very popular recreation and picnic area. After that the area lost its attraction due to lack of proper maintenance. The area around Adari Pool was partly redeveloped under a new scheme initiated in early 2000 by H.E. Sk Khalid Bin Abdulla Al Khalifa as Minister of Housing and Municipalities and Agriculture. The Park was redeveloped and opened to public in 2008 with help of private investor.

The area has ruins of historical Al Khamis Mosque believed to be built by the Umayyad Caliph Umar Bin Abdul Aziz in 692 A.D. Adjacent to the mosque, is the site of the Thursday Market (Suq Al-Khamis) at the east of Khamis Police Station, which was held regularly until the 1960's. Present Khamis boys intermediate school occupies part of the site. Bilad Qadim, the former capital of Bahrain in the middle Ages, was built on the habitation mounds of an earlier Islamic city. Although little remained of the town in 1972, it is significant to note that its ruins look towards the coast to the south and may be to a nearby harbour of that time which prior to extensive silting was much closer to inland.

Northern villages within the area – Karbabad, Deh, Sanabis, Manee and Jabalat Burhama were coastal villages, these villages had direct access to the sea. Development within all villages in the area was dense. The table on page 122 shows the size of these villages and population. Budaiya road and Sehla road within the area had very little ribbon type of development along them. Part of Budaiya road as by pass road to Jidhafs was constructed just before this planning exercise. Sk Salman Road had few garages and workshops and some residential compounds along it. There were 6 primary schools occupying only 2.23 hecets of land in the area, one secondary technical school occupying 2.96 hecets at Jidhafs and one Intermediate – Secondary school at Khamis occupying 1.06 hecets of land. Existing schools were not adequate for the need of the area.

There were 3 graveyards in the area one at the west of Jidhafs, one at the south east of Sanabis and one at the north of Khamis. Graveyard of Zinj fell within Manama Master Plan area just at the north of west end of Oman Avenue.

In the Master Plan exercise population and existing built up area of each village were analyzed. Population of each village was projected for 1992 to be total 40853 for 17 villages in the area compared to total population of 20,277 of 1971. Population density was high in all villages of the area. The Master Plan as shown below proposed expansion of villages to accommodate target population of 1992 along with all required schools, playing fields and other social facilities. For proposed expansion of villages land for development proposed adjacent to the existing developed areas in such a way that future development would join

the existing villages wherever possible to become a reasonably big population center to support public services such as primary schools, shopping centers, clinics, public transport etc. also to keep the cost of provision of electricity, water, drainage, telephone, municipality sweeping etc. within reasonable limit. In proposing land for development existing good gardens were avoided as much as possible.

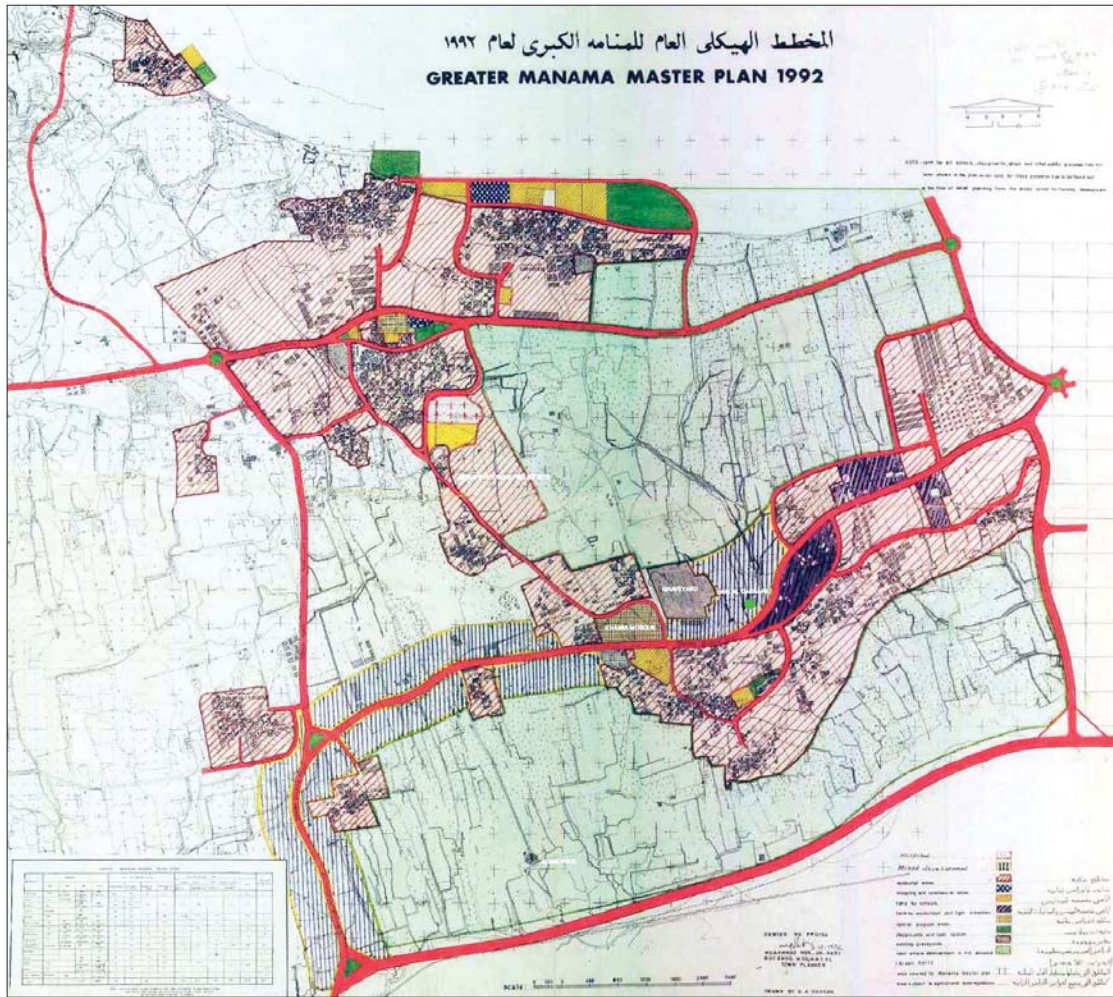
Limited reclamation was proposed adjacent to Karbabad, Deh and Sanabis – Manee to accommodate required schools, public garden and shopping center.

A special zone was proposed around Khamis Mosque to facilitate and encourage tourism.

Existing three garages and workshops areas along Sk Salman highway were zoned for same purposes as shown in the plan.

Remaining areas in the plan were zoned as Green Belt area, without building development, only for agricultural development and recreation purpose.

No major development was proposed along Sk Salman Road, Budaiya Road and Sehla Road to maintain good traffic flow capacity of these roads.



The Master Plan

GREATER MANAMA MASTER PLAN - 1992

Name of Area	Population				Area and Population Density			
	1959	1965	1971	1992	Present Area (1972)	Gross Present Density	Area Proposed for 1992	Gross Density 1992
Karbabad	570	732 (4.4% growth)	875 (3% growth)	1620 (3% growth)	8.35 acre 3.38 hect	105/acre 259/hect	22 acre 8.9 hect	74 / acre 183 / hect
Deah	1263	Not available	2359 (5.5% growth)	13400 (3.5% growth)	44 acre 17.81 hect	53.5/acre 132.5/hect	281acre 113.76hect	48/ acre 119/hect
Sanabis	1914	«	3358 (4.74% growth)		53.5 acre 21.66 hect	62.6/acre 154.6/hect		
Manee	Not available	«	782		6.8 acre 2.75 hect	115/acre 284/hect		
Jidhafs	1896	«	3669 (5.75% growth)		7540	35 acre 14.2 hect		
Jabalat Habshi	198	230 (< 3% growth)	330 (6% growth)	675 (3.5% growth)	4.7 acre 1.90 hect	70 /acre 173/ hect	12 acre 4.86 hect	56.5/acre 140/hect
Sehla Fougiya	284	368 (> 4% growth)	535 (> 6% growth)	1100 (3.5% growth)	10 acre 4 hect	53.5/acre 132/hect	27 acre 11 hect	40 / acre 99 / hect
Sehla Hadriya	437	530 (4% growth)	587 (< 2% growth)	886 (2.0% growth)	8 acre 3.23 hect	73/acre 182/ hect	15 acre 6 hect	59 / acre 146/ hect
Abou – Baham	247	327 (4.5% growth)	313 (decreased)	467 (2% growth)	2.3 acre 0.57 hect	147/ acre 363/hect	7 acre 2.83 hect	67 / acre 165/hect
Zing, Khamis, Bilad Al Kadim	Not available	Not available	4841	9000 (3% growth)	77 acre 31.17 hect	63/acre 155/hect	208 acre 84.21 hect	43 / acre 106/hect
Burhama	«	«	423	1700	41 acre 16.6 hect	10/acre 25/hect	73 acre 29.5 hect	23 / acre 57 / hect
Salhiya	«	«	294	550	9 acre 3.64 hect	33/acre 82/hect	14.5 acre 5.87 hect	38 / acre 94 / hect
Tashan	127	«	912 (19% growth)	1875 (3.5% growth)	8 acre 3.24 hect	114/acre 282/ hect	32 acre 12.95 hect	59 / acre 146 /hect
Musalla	391	«	849 (6.75% growth)	1780 (35% growth)	7.2 acre 2.91 hect	118/acre 291/hect	17.5 acre 7 hect	100 /acre 247 /hect
Jabalat Burhama	Not available	«	150	270 (3% growth)	2.1 acre 0.85 hect	71/acre 175/hect	4.3 acre 1.74 hect	35 / acre 86 / hect
Total	-	-	20,277	40,863	317 acre 128.34 hect	64 / acre 158 / hect	824 acre 333.6 hect	46/ acre 122 / hect

Note : Land for all schools, play grounds, shops and other public purposes has not been shown in the plan. Exact land for these purposes has to be found out at the time of detail planning from the areas.

In the plan proposal was made to expand existing villages covering 130 hecets to 333 hecets and remaining 867 hecets to be kept as green belt.

During preparation of the plan influential land owners in the area kept H.E. Sk Abdulla Bin Khalid Al Khalifa, president of the Planning Coordination Board under tremendous pressure to approve subdivision of their lands and some proposed to build in the areas proposed as green belt. In late 1972 H.E. Sk Mubarak Bin Hamad Al Khalifa, the uncle of the then Amir H.H. Sk Isa Bin Salman Al Khalifa submitted a subdivision plan for his big land at the east of Jidhafs adjacent south of Budaiya Road where present Al Shabab Club is built. He said he needed to sell the land to build present City Center building where present Urban Planning Affairs is

located. H.H. The Amir personally gave the plan to H.E. Sk Abdulla to consider the request. H.E. Sk Abdulla asked me to study the subdivision proposal to approve it. I have shown the location of the land in the draft Master plan within proposed green belt and argued that if the subdivision plan is approved then it would be example and govt. will be forced to approve other subdivisions within the green belt. He said, he had order from H.E. the Amir to approve the subdivision. But I strongly put my arguments. He took the draft Master Plan to H.H. the Amir and H.H. the Prime Minister and got their approval not to approve proposed subdivision. H.E. Sk Abdulla instructed me many times to give proper planning advice to him without any fear and I tried to follow his this instruction all through my career in Bahrain upto the last (Sept 2009). In this connection I want to quote from a letter of Mr. Munro to me, "*If I am popular, I am not doing my job properly*".

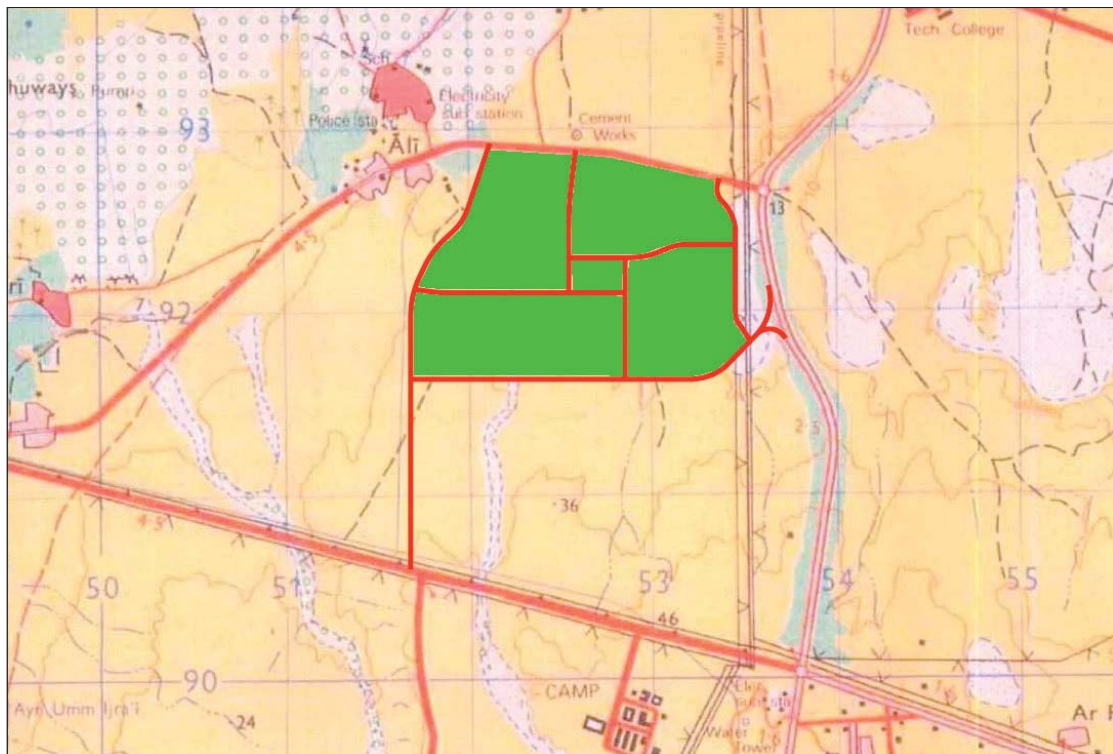
The draft plan was discussed in the Planning Coordination Board. There were objections from some members but I strongly defended the plan. The Minister of Health Doctor Ali Fakhro and some other members supported me. After that the plan was discussed in the cabinet meeting and I presented the plan there. The Then Minister of Justice and Islamic Affairs, H.E. Sk Khalid Bin Mohammed Al Khalifa insulted me in the Cabinet meeting as his land at the west of Deh village was in the green belt in the plan. No proper decision was taken in the cabinet meeting about the plan.

In early 1973 the plan was discussed in a Special Planning Coordination Board meeting chaired by the then Crown Prince H.H. Sk Hamad Bin Isa Al Khalifa. Please see minutes of the meeting in Appendix B on page 133 In the meeting Sk Abdulla Bin Khalid Al Khalifa proposed to allow mixed development along Sk Salman road upto a depth of 500 ft on both sides of the road within this plan. This proposal was approved. Also decision was taken to preserve 480 hec as green belt between Manama and Jidhafs and at the south of Zinj – Khamis and Sehla al Hadriya as shown in the Master Plan.

Later on part of this proposed green belt area at the east of Jidhafs was utilized for building school, maternity hospital and a housing scheme of 196 houses (between 1976 – 80) though the area covered by the housing scheme was occupied by dense date palm garden. Decision was also taken to compensate property owners in the Green Belt on Govt. land at the west of Isa Town.

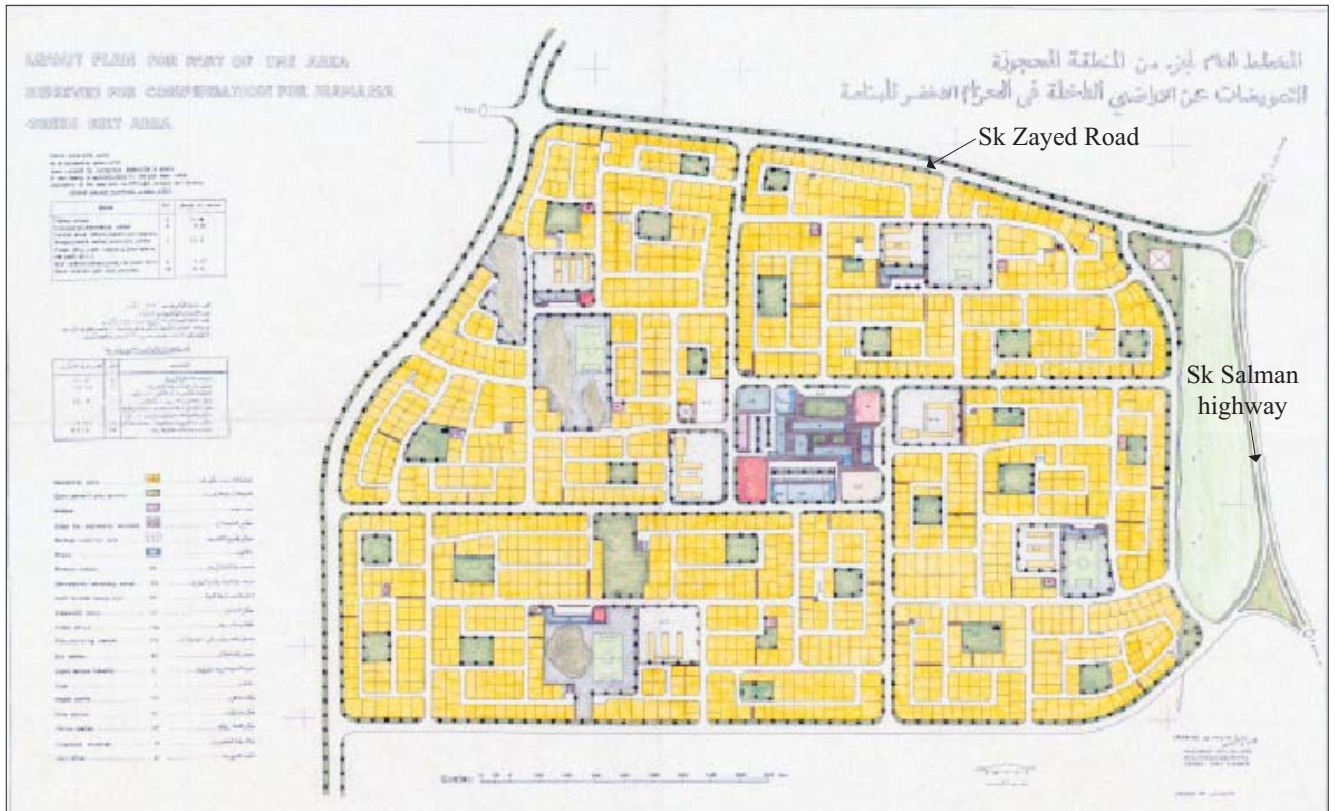
I was asked to propose land and plan land for compensation. I proposed to plan the area,

more or less, now occupied by Zayed Town for the purpose. The area between Zayed Town and Sk Salman road at the west of Isa Town was already privately owned. H.E. Sk. Abdulla Bin Khalid disagreed with me and said this area at the heart of Bahrain should be maintained as public open space and asked to plan the area shown shaded green in the topographic map below at the south of the road from Sk Salman road to Aáli village. The area was a barren desert area, the surface was undulating and little bit unattractive for building, in the circumstances of those days. There were four ancient burial mound sites also in the area. These sites were proposed for preservation in the Master Plan.



PROPOSED ROAD NETWORK PLAN OF COMPENSATION AREA EAST OF A'LI

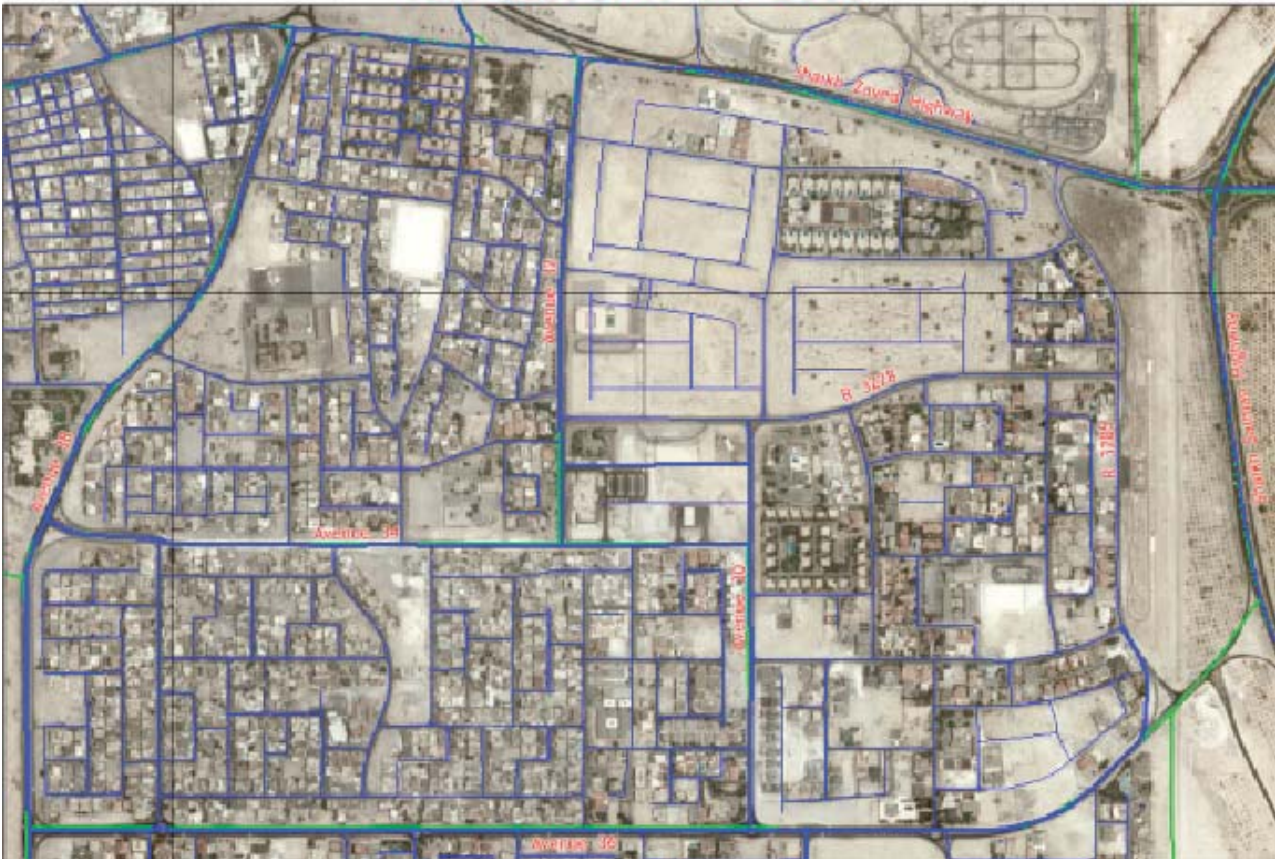
I prepared a detail Master Plan for the area. I tried to make an ideal plan for residential purpose with all amenities with adequate public open spaces, schools and sites for playing fields. H.E. Sk Abdulla Bin Khalid Al Khalifa used to discuss frequently with me, during plan preparation, the facilities to be provided in the plan. He even wanted in the plan garbage collection points. Accordingly garbage collection areas were provided in each residential block in the plan. The plan shown below was approved for implementation.



Master Plan

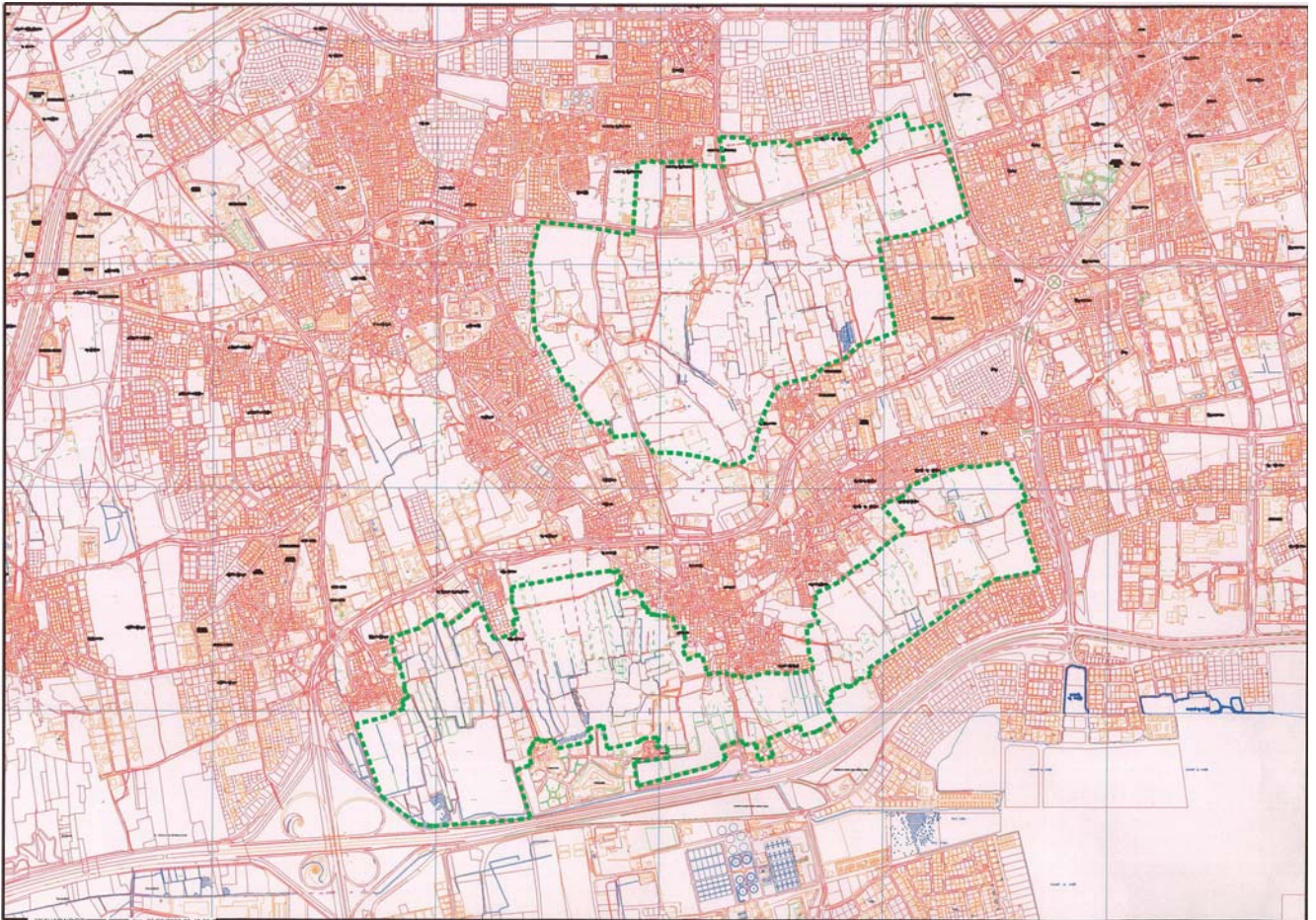
The plan covered 472 acres (191 hec). All conceivable public amenities sites were proposed in the plan. But only two property owners in Manama Green belt area took land here in exchange of their land in the Green Belt. This plan's main road network was implemented. Houses were built for expatriate employees of Civil Service Bureau in the block at the north of central area in the Master Plan, those houses are now demolished. Plots were gifted and later on Ministry of Housing built 740 houses within the area between 1976 and 77. Some schools were built as per the Master Plan. As usual the Master Plan was implemented partially. Following 2006 aerial photograph shows developments in this area.

Master Plan Of A'ali Area South Of Shaikh Zayed Road And East Of A'ali - 2006



Aerial photo

Subsequently the Green Belt area was subject to various studies and recommendations were made based on those studies as listed in the Appendix 'A' on page 130. Areas were excluded here and there from the green belt between 1973 and 1991. To stop this practice as per instruction of H.E. Sk Khalid Bin Abdulla Al Khalifa the Green Belt boundary was drawn in a plan covering 354.5 hec as shown in the plan below and the plan was signed by H.E. Sk Khalid Bin Abdulla in 1991. This signed Green Belt area as shown in the map below is still officially recognized as Green Belt area.



Plan of Green Belt border

In the mean time green belt area has gone through dramatic physical change. Water level of Adari Pool gone down substantially and water was not available from it to supply to nearby gardens as before. People started neglecting their gardens within green belt with the idea that if greenery and trees disappear building development would be allowed in these gardens. By late 1980's previous dense forest of palm trees on both sides of the road to Adari from Sk Salman Road almost completely disappeared. Patches of gardens within green belt survived here and there. For distributing treated sewage effluent (TSE) from nearby Tubli Sewage Treatment Plant a TSE storage tank was constructed along the road to Adari from Sk Salman road. Elaborate irrigation and drainage network was constructed in the southern green belt at the east and west of Adhari pool for developing the area for agricultural purpose but the effort was not very successful. When a 55 million dinar budget was available to supply and

distribute TSE water to agricultural areas in 1999 an elaborate scheme was worked out by consultants of the project to cover the entire green belt area by TSE supply but the scheme was not implemented.

The southern Green Belt more or less survived without any building development within the green belt area defined in 1991, as mentioned above but the northern green belt area is partially covered with scattered temporary, mostly ugly developments.

APPENDIX - A

BRIEF HISTORY OF MANAMA GREEN BELT

NO.	YEAR	PROPOSING AGENCY	PROPOSAL	AREA	REMARKS
1	1970	Physical Planning Unit (PPU)	<ul style="list-style-type: none"> Not allow any building development Only allow agriculture No compensation proposed for restricting development 	1070 hec.	Not approved
2	1972	Planning Coordination Board	<ul style="list-style-type: none"> To plan the area between Manama and Jidhafs for urban development like Manama. Asked PPU to prepare a plan. 	415 hec. (approx.)	Plan for urban development was not prepared by PPU
3	1972	Physical Planning Unit	<ul style="list-style-type: none"> Proposed greenbelt to cover entire area from Manama to west of Sehla and Karbabad. Proposed areas for expansion of existing villages from 130 hec. to 333 hec. Proposed no building development in remaining area of 867 hec. 	867 hec.	Proposal was discussed in Planning Coordination Board
4	1973	Planning Coordination Board- Special meeting with H.H. the Crown Prince in the chair.	<ul style="list-style-type: none"> Reviewed proposals of Physical Planning Unit Agreed to allow commercial development on both sides of Sh. Salman road with a depth of 150 meters from the border of the road. Approved 480 hec as green belt where no building development should take place and only agricultural development allowed. Proposed compensation for property owners to the west of Isa town on government land. 	480 hec.	A detail plan for 191 hec. of land at A'ali was prepared for compensation. Only two owners took compensation in the area.
5	1977	Consulting Firm	<ul style="list-style-type: none"> Proposed low density residential development with min. 2500 sq.m. plot size. 10% plot cover with building maximum 15% floor area and two storied building. 	450 hec.	Proposal amended by Ministerial Committee
6	1978	Ministerial Committee	<ul style="list-style-type: none"> To plan the area and take 25 to 30% of every property for roads and services without compensation. To allow residential development in the area with 10% plot coverage and 50% floor area with 5 storied buildings. To develop government land at the west of Isa town as substitute green area. 	450 hec.	Proposal was not approved for implementation.
7	1979	Physical Planning Directorate (American Planning Team)	<p>Recommended:</p> <ul style="list-style-type: none"> 2 storied residential building with 25% plot coverage for plots up to 1499 sq.m. 2 storied residential building with 12.5% plot coverage for plots 1500 sq.m. to 2999 sq.m. 3 storied residential building with 10% plot coverage for plots 3000 sq.m. to 9999 sq.m. 5 storied flats for plots over 10,000 sq.m. with 10% plot coverage. In case of subdivision or compound over 5 hec. of plot 25% plot coverage but 25% of land to be given to Municipality for public use. 		Not approved
8	1981	Physical Planning Directorate	<ul style="list-style-type: none"> To preserve 134 hec. around Adari and 68 hec. on both sides of Budoiya road only as green belt without building development. To allow residential development in remaining area near Manama with minimum 1500 sq.m. plot, 15% plot coverage with main building and 25% floor area in 2 floors, 5% plot area coverage for services, and max. 30% of plot area as building floor area. 5% of any plot to be taken for services in addition to area required for road without compensation. 	202 hec.	Estimated acquisition cost of 202 hec. BD. 27 million. Proposed compensation by reclaimed land at Sanabis. Not approved.
9	1990	Physical Planning Directorate	<ul style="list-style-type: none"> To acquire 118 hec. around Adari at a cost of BD 25.5 Million covering 94 properties. Letter was sent to H.H. the Prime Minister for budget allocation over a period of 5 years for the amount. 	118 hec., no proposal was made for remaining area.	Not approved.
10	1991	Physical Planning Directorate	<ul style="list-style-type: none"> Border of Green belt was drawn on a plan and the plan was signed by H.E. the Minister of Housing. 	354.5 hec.	

MOH/PPD/APRIL 1992

BRIEF HISTORY OF MANAMA GREEN BELT

NO	YEAR	PROPOSING AGENCY	PROPOSAL	AREA	REMARKS
11.	December 1999	Physical Planning Directorate - Memo to the Cabinet	<p>Six alternative proposals made:-</p> <p>1) Preserve the area as Agricultural area.</p>	354 hec	<ul style="list-style-type: none"> • Cabinet referred the subject to Ministerial Committee for Utilities
			<p>2) Preserve the area for Public Park and Garden</p>	354 hec	<ul style="list-style-type: none"> • Ministerial Committee on 2nd February, 2000 recommended to preserve the area (354 hec, 3.54 km²) and Ministry of Finance & National Economy to provide budget for compensation.
			<p>3) Use the area for unique Economic Projects like private hospital, private University.</p>	354 hec	<ul style="list-style-type: none"> • Letter was sent from H.E. the Head of Ministerial Committee for utilities to H.E. the Minister of Finance and National Economy on 14.2.2000 to provide budget for land acquisition on 14.2.2000.
			<p>4) Use the area for unique special housing with plot size minimum 1500m², in all 1400 villas with estimated infrastructure cost of BD10 million.</p>	354 hec	<ul style="list-style-type: none"> • Committee was formed between Ministry of Finance and National Economy and Ministry of Housing to study ways and means for compensation.
			<p>5) Normal Housing area and apartments, estimated 4300 D.U's, estimated infrastructure cost of BD30 million.</p>		<ul style="list-style-type: none"> • MOF&NE declined to provide budget for the purpose.
			<p>6) Establish a Development company with capital of BD150 million.</p> <p>a). 70% of Green Belt area to be preserved.</p>	249 hec	
		<p>b). 30% area to be used for Investment Development.</p> <p>* Govt to provide 20% of capital for Infrastructure = BD30 million</p> <p>* Owners contribution, value of land = BD75 million</p> <p>* Banks and establishments to provide 30% = BD45 million.</p>	105 hec		

BRIEF HISTORY OF MANAMA GREEN BELT

NO	YEAR	PROPOSING AGENCY	PROPOSAL	AREA	REMARKS
12.	Early 2001	Cabinet	To invite International Consultant to prepare Master Plan for Development of Green Belt area.	354 hecets	<ul style="list-style-type: none"> • Physical Planning Directorate invited 14 International Consultants to submit proposal based on Terms of reference prepared by PPD in July 2001. (Please see enclosed appendix-A) • Six Consultants submitted proposals (please see enclosed appendix-B). • Highest fee (\$ 1,385,186) was quoted by French Town Planning Group and lowest fee (\$662,500) was quoted by Llewelyn Davies. • Committee was formed to evaluate terms of offer by six consultants and the committee evaluated HOK as best, French Town Planning Group as second and ACE as third. • Ministry decided to offer the job to HOK. • Letter was sent to H.E. the Minister of Finance and National Economy on 13.11.2001 to allocate BD500,000 budget for the purpose. • Budget is not yet approved by MOFNE.

Final Recommendation from PPD

In the Terms of Reference for Consultants for 'National Development Strategies' project emphasis should be given to study Urban Parks and Open Spaces requirements of Major Urban areas like Manama, Muhrraq, Riffa taking into consideration of future expansion of these urban areas.

Future appropriate use of present Manama Green Belt should be clearly recommended based on this study. Ways and means of securing recommended use of present Manama Green Belt should be clearly spelled out.

PPD/SP/March-2003

APPENDIX - B

مجلس التخطيط والتسييق

عقد مجلس التخطيط والتسييق اجتماعه رقم (٩٧) برئاسة صاحب السمو الشيخ حمد بن عيسى آل خليفة ولي العهد وزير الدفاع والقائد العام لقوة دفاع البحرين ، وذلك في تمام الساعة الرابعة من عصر يوم الاثنين الموافق ١ أبريل ١٩٧٤ ، بقاعة الاجتماعات بمبنى بلدية المنامة ، وقد حضر الاجتماع كل من :

وزير البلديات والزراعة	الشيخ عبدالله بن خالد الخليفة
وزير العدل	الشيخ خالد بن محمد الخليفة
وزير التمية والخدمات الهندسية	السيد يوسف احمد الشيراوي
وزير الصحة	الدكتور علي محمد فخرو
وزير العمل والشئون الاجتماعية	السيد ابراهيم حميدان
المدير المساعد للشرطة لشئون المرور	الشيخ ابراهيم بن محمد الخليفة
مدير الشئون البلدية/ وزارة البلديات	الشيخ عبدالله بن محمد الخليفة
مدير الشئون الفنية/ وزارة البلديات	المهندس ابراهيم خليل المؤيد
مدير ادارة الاشغال العامة	الشيخ خالد بن عبدالله الخليفة
مدير التخطيط التربوي/ وزارة التربية	الاستاذ حمد السليطي
مساعد مدير ادارة التسجيل العقاري	الشيخ سلمان بن عبدالله الخليفة
من وزارة التمية والخدمات الهندسية	المهندس جميل العليوي
من وزارة المالية والاقتصاد الوطني	السيد حسن فلاح
من ادارة التسجيل العقاري	السيد محمد أفضل نجيب
مخطط بوحدة التخطيط الطبيعي	المهندس ويصا عبايبي بنيامين
مخطط المدن بوحدة التخطيط	المهندس محمد نور النسيبي
من سكرتارية مجلس التخطيط والتسييق	السيد طاهر عقيل صالح

افتتح سمو الشيخ حمد الجلسة طالبا استمرار مناقشة موضوع الحفاظ على الاراضي الزراعية ، وذكر سموه أنه قد عرض الموضوع على صاحب السمو أمير البلاد وكانت توجيهات سموه تقضي بالحفاظ على الاراضي الزراعية التي يمكن التمييز عنها وتكون في حدود ٣١ مليون قدم مربع حسب ما ذكر في الجلسات السابقة ، وطلب سموه من الشيخ عبدالله تلخيص الموقف السابق . فأوضح سعادته بأن الدراسة شملت موضوعين ، الاول وهو ما يختص بالاراضي الزراعية القريبة من المنامة وقد رفعت توصيات بشأنها الى مجلس الوزراء ، والثاني وهو ما يختص بالاراضي الزراعية فيما وراء شارع السهلة وقد شكلت لجنة لدراسته وبالفعل فقد انتهت اللجنة من ذلك ورفعت توصيات الى المجلس وهي معروضة عليه اليوم .

وتساءل الشيخ حمد عن المساحات المبينة على الخارطة والمطلوب حجزها ، وهل هي في حدود ٣١ مليون قدم أو أكثر ، فافاد الشيخ عبدالله بانها حوالي ٥٥ مليون قدم وخاصة بعد ضم الاراضي جنوب شارع الشيخ سلمان .

ولكن سمو الشيخ حمد اعترض على ذلك طالبا تقليص المساحة الى أقل من ذلك حتى تكون في نطاق قدرة التعويض وليست مجرد مشروع بدون امكانيات ، فأوضح المهندس ويصا بأنه بعد تنزيل مساحات الطرق الحالية وكذلك المقابر وارااضي الاوقاف يمكن تعويض المساحات المطلوب حجزها وربما تصل الى ٤٥ مليون قدم مربع وهي فعلا متاحة قرب مدينة عيسى حيث لنا حوالي ٨٠ مليون قدم مربع للتعويض .

وشن المهندس نور النبي مواقع المساحات التي وردت الى التخطيط من ادارة التسجيل العقاري حول مدينة عيسى في الجنوب والغرب ، وافاد بانها خمسة مناطق تصل مجموع ثلاثة منها صالحة للتمجير حوالي ٧٦ مليون قدم مربع ويمكن اعتبار ٥٠٪ منها للتعويض والباقي للطرق والمرافق ، فيكون لدينا حوالي ٣٨ مليون قدم مربع للتعويض وباقي المناطق منها ما يحتفظ به كعزام فاصل أو لا يصلح للتمجير .

وطلب سعادة وزير التتمية التأكد اولا من مدير التسجيل العقاري عن مدى صحة ملكيات الاراضي حول مدينة عيسى حتى يمكننا الاعتماد عليها ، افاد الشيخ سلمان بن عبدالله بان هذه الاراضي حكومية .

وتكلم الشيخ عبدالله بن خالد فطلب ان يكون تعجير المنطقة غربي الطريق الدائري كالاتي :

- (١) يحافظ على جميع الاراضي الزراعية المبينة على الخارطة والتي رقت بها توصية الى مجلس الوزراء .
- (٢) يضم الى العمران شريط ضيق على شارع الشيخ سلمان وحتى دوار توبلي .

وأيده سعادة وزير التتمية والخدمات الهندسية في ذلك مقرا بأن هذه المنطقة فعلا قد بدأ البناء فيها ولا يوجد مبرر للتمسك بها ويمكن البناء على عمق يحدد حسب الحاجة بحيث لا يزيد عن خمسمائة قدم . وأعترض سعادة وزير الصحة على ذلك مستندا الى ان شارع الشيخ سلمان هو شارع رئيسي جميل سريع تعدد به الخضرة من كل جانب، ويمكن ان يقال انه طريق سياحي فكيف تسمحوا بالبناء على جانبيه؟ وهل يسمى بشارع التجار ؟ وهل يوافق التخطيط والمخططون على ذلك ؟

ورد على ذلك سعادة وزير العدل مبينا بان البناء انتشر في هذه المنطقة ولا توجد قطعة أرض قائمة كزراعة وليسوضع المنطقة الان كما تصوره الخريطة بل اختلف وكل اربع قطع شخص مسموح له بالبناء والمسألة لا تعدو .. . تحصيل حاصل .

وتكلم سعادة مدير المرور فابدى اعتراض بشدة على التعمير حول هذا الطريق لان حجم المرور عليه سيتضاعف في الخمس سنوات القادمة بحيث ان عدد السيارات الان حوالي ٢١ ألف سيارة ستزيد الى ٤٠ ألف سيارة ، ولا يوجد الان أى طريق يربط بين الحاصصة وباقي المدن جنويا غير هذا الطريق وأخشى من تضاعف الحوادث على هذا الطريق .

فيران سعادة الشيخ عبدالله أفاد بأنه لن يسمح بالبناء أو إعطاء الرخص إلا بعد فتح طريق خدمة خلف هذه المباني ، وأضاف سعادة وزير التنمية بأنه يمكن تحويل هذا الطريق السريع بطريق يربط ما بين دوار تويلي والطريق الدائري من الجنوب سيقت ذلك كافة المرور الثقيل وتحجز مساحة على جانبي الطريق بحرض كافي بدون عمران .

وأوضح المهندس أيضا بأنه فعلا يوجد مشروع لهذا الطريق موافق عليه من مجلس التخطيط والتنسيق على أن يكون هذا الطريق بحرض ٣٠٠ قدم مربع ، وهذا المشروع مدروس بالاشتراك مع إدارة الأشغال الحامة قسم الطرق .

وطلب سعادة وزير البلديات أن يسمح بالبناء على الجانب الشمالي ، وتساءل صاحب السمو الشيخ حمد عن المنطقة الخضراء شمالي شارع البديع وهل يشملها القرار . ناقش الشيخ سلمان بن عبدالله السمل بالبناء عليها نظرا لأن هذه الأراضي لم تعد في أيدي الملاك الكبار وإنما قسمت وبيعت بين أكثر من شخص .

وتطرق البحث إلى أن شمل الأراضي البحرية شمال هذه المنطقة وهل يسمح ببنائها أم لا يسمح . واستقر الرأي على أن القرار لا بد وأن يشمل هذه المنطقة حتى تكون هناك واجهة بحرية يمكن الاستفادة منها في إنشاء شاطئ للاستحمام وكذلك تكون نافذة للمنادقة على البحر .

وطلب سعادة وزير الصحة بأن تكون هناك لجنة دائمة لبحث إمكانية الاستفادة بالأراضي الزراعية وأن لا تترك بدون عائد ، وأفاد الشيخ عبدالله بأنه يمكن أن يضمن استمرار بناء هذه الأراضي خضراء طالما هي في نطاق عام .

وسأل سمو الشيخ حمد عن موعد تسليم أراضي التمريض للناس فأجاب المهندس أيضا بأن هذا يتوقف على وزارة التنمية لأنها الجهة المسؤولة عن فتح الطرق وتمديد المرافق وكل ما يمكن عمله هو تسليم المشروع بعد التخطيط اليهم ، وأفاد سعادة وزير التنمية بأنه لا يمكن تحديد وقت معين وهذا يتوقف على الخطة والميزانية غير أنه يمكن إنهاء منطقة بعد منطقة حسب الحاجة إليها ، وطلب سمو الشيخ حمد تلخيص الموقر فأفاد الشيخ عبدالله بما يلي :-

(١) بالإضافة إلى الأراضي المشار إليها في توصيات مجلس التخطيط والتنسيق إلى مجلس الوزراء الموقر فإنه يقترح إضافة الأراضي البحرية شمالي هذه المنطقة غربي منطقة الاسواق حتى سنابس وطلب سعادة وزير التنمية أن يحمل بها ملحق يرسل إلى مجلس الوزراء في الجلسة القادمة .

(٤)

(٢) التوصية بالسماح بالبناء على امتداد شارع الشيخ سلمان حتى دوار توبلي وذلك بعمق ٥٠٠ قدم .

(٣) انشاء طريق للخدمة خلف هذه المساحات وفتح من الآن وقبل التصريح بالبناء .

(٤) التمجيل بانشاء الطريق الذي بين توبلي والطريق الدائري .

(٥) أن يصدر اعلان أو قانون يحدد الاراضي الزراعية ويعلن للملاك من الآن بأن هذه الاراضي ستبقى زراعية وسيحوز عنها في مكان يجري تخطيطه لمن يرغب في استئجار أرضه .

وأضاف الشيخ خالد بن محمد بأن يكون الاعلان متضمنا مشروها كاملا متكاملًا لا يتغير أبداً وستظل الارض محتفظة باستعمالها حسب المخطط .

وطلب سمر الشيخ حمد تحديد طريقة التعويض من الآن وكذلك أن تحجز كبل الوزارات احتياجاتها وأن يكتب لها لاخذ رأيها في ذلك .

وطلب سعادة الدكتور علي فخر بأن يعرف من الآن الوضع الاداري للمنطقة هل ستتحب مدينة عيسى أو عالي .

وبعد المناقشة تقرر أن تتبع هذه الاراضي بعد تخطيط مدينة عيسى نظراً لانها احسن منطقة في البحرين وتحتوي على الخدمات المثالية ويمكن تحديدها دون صعوبة في اطار تخطيطي سليم ويمكن أن تندمج مع باقي المناطق دون تضارب وورد سعادة وزير الشؤون الاجتماعية بارسال الخرائط اللازمة عن مدينة عيسى الى وحدة التخطيط الطبيعي .

وتقرر أن تقدم وحدة التخطيط الطبيعي بتحديد مسار الطريق الخدمة شمالي وجنوبي المناطق المقترن تعميرها حول شارع الشيخ سلمان وهرضها في جلسة قادمة وكذلك تقرر أن يرفع ملحق الى مجلس الوزراء بالتوصيات التالية :

١ - صدور قرار مبدئي يترك الاراضي السابق تحديدها كما هي واضافة المنطقة الشمالية البحرية بين الاسواق وسنابس، دون تعيير استعمالها على أن يعوض كل من يرغب في استئجار أرضه بأرض فسي منطقة يجري تخطيطها الآن .

(٥)

- ٢ - السماح بالبناء على جانبي شارع الشيخ سلمان بعمق
يحدده التخطيط بحيث لا يزيد عن ٥٠٠ قدم .
- ٣ - حجز الاراضي حول مدينة عيسى والتي أكد التسجيل
العقارى بأنها ملكة للحكومة وتسجيلها باسم مجلس
التخطيط والتنسيق .

• انتهى الاجتماع في تمام الساعة الخامسة والنصف مساء .

مجلس التخطيط والتنسيق

٣ أبريل ١٩٧٤

APPENDIX - C

Author's interview with Gulf Mirror's reporter, Mary Frings published on July 20, 1975 covering Master planning aspects of Bahrain in general and Manama Green Belt in particular.

Page 22, GULF MIRROR, July 20 — July 26

Manama's 1988 town plan to save green belt

MANAMA will have grown to twice its present size by 1988 — stretching three miles from north to south and two miles from east to west — but a "green belt" area will be permanently protected from building development.

A 20-year forward plan on which work began at Bahrain's Ministry of Municipalities and Agriculture as long ago as 1968 envisages a population growth in the island's capital of from 82,000 in the 1971 census, to 125,000 by 1988.

This compares with an island-wide population growth of from 216,000 in 1971 to a projected 350,000. One of the two Senior Planners at the Ministry, Mr. Mohammed Nur Al-Nabi, told the *Gulf Mirror* this week following his address to the Manama Rotary Club on Sunday: "We have studied the land requirements for all purposes and have incorporated them in this big master plan".

The plan covers Manama, Muharraq, Hidd, Arad and the rest of the villages south of Manama, known locally as Bugazle, for carpentry and metal workshops.

by Mary Frings

"We shall encourage the workshops to move from Sheikh Hamad Road and Lulu Road, which has been zoned as a mainly residential area, although we don't mind a few small offices and showrooms", Mr. Al-Nabi said.

He agreed that the Government had no powers to evict people carrying on business in these areas, but he suggested that owners of property would find it more profitable to let their premises for residential purposes.

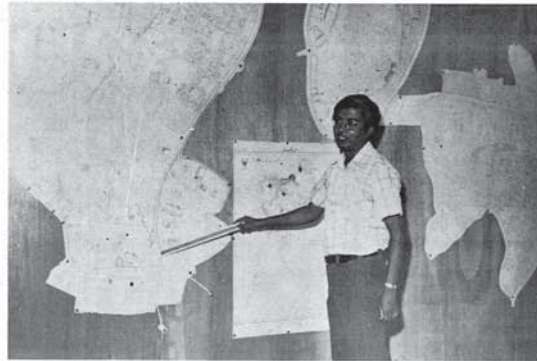
"We can also stop car parking in these roads, so that the workshops lose their customers", he added. Safety is an important factor in the plan, with house entrances leading on to service roads rather than main thoroughfares, and schools sited so that children do not have to

cross any major road. "Each district should have its own school in the centre," Mr. Al-Nabi explained. In addition to the existing schools, 40 new schools will be built in Manama alone by 1988.

All Government departments and private developers will be required to implement the plan: the Ministry of Education, for example, will build schools only on the sites shown, and the Ministry of Health will use the designated sites for hospitals, health centres and clinics. The existing date gardens between Manama and Jidhafs, and around Adari Pool, which Mr. Al-Nabi described as the "best green area of Bahrain", will be preserved.

ACCESSIBLE

"Residential areas must be accessible to shopping centres and places of work", Mr. Al-Nabi stressed, with easy movement between the various zones reserved for specific uses. The separation of users not complementary to each other is an important factor in providing a pleasant environment for people to live in, he said. This was the thinking behind the designation of the Mina Sulman industrial area.



Mr. Al-Nabi with master plan of Manama in the 1980s.

Abdulla Abdul Gaffar, came to Bahrain from Bangladesh four years ago. He qualified in civil engineering at the University of Dacca, and has a master's degree in Civic Design from Liverpool University where he studied for two years and became a member of the Royal Institute of Town Planning.

His first professional post was in Britain's Buncom Development Corporation, whose task was to turn a small town of 50,000 people just south of Liverpool, into a new city to house 100,000. Back in his home country, Mr. Al-Nabi worked on a much larger scale as assistant town planner for the city of Dacca, which has a population of one and a half million. The physical planning department in Bahrain was founded in 1968 with the help of Scottish consultant Mr. Archie Munro, and it work closely with Government ministries. Responsible for development control on the basis of the town plans is Mr. Ibrahim Al-Moayyed, Director of Technical Affairs.

When plans have been worked out by Mr. Al-Nabi and his colleagues, they are submitted to the Planning Co-ordination Board — headed by the Minister of Municipalities and Agriculture Shaikh Abdulla Bin Khalid, and having as its members the Ministers of Development, Health, Education, Labour and Social Affairs, and Justice. The plans are then passed to a number of technical sub-committees for detailed study and possible amendment, before returning to the Board for approval and then being placed before the Cabinet.

"We have studied this area very thoroughly", he said. "There are already 15 population centres with a total of 20,000 inhabitants, which we estimate will grow to 41,000 within the planning period. "We are reserving 43 million square feet of land for the expansion of the villages, but the rest will be protected as the green belt of Manama."

No-one is now allowed to build in the designated green area — but if an owner does not wish to maintain his gardens he can hand them over to the Government and receive in compensation a plot of land opposite Isa Town on the west side of the Awali Road.

"Sixty million square feet of land has been earmarked for development on this site", Mr. Al-Nabi said. Adari Pool itself, with the surrounding gardens and 1½ million square feet of reclaimed land, will become Bahrain's "National Park", with three swimming pools, an artificial lake, public leisure gardens with refreshment facilities, an aquarium and an aviary.

The land reclamation to the south of the pool is almost complete, and Mr. Al-Nabi expects the next stage of development, the swimming pools and cafeteria, to begin next year. The town of Muharraq, he continued, is one of the most densely populated areas of Bahrain, "and there is not much existing land for expansion."

"It is therefore planned to reclaim the stretch of shallow sea between Arad village and Hidd town, and house the surplus population there", Mr. Al-Nabi said, but added that tentative plans to move the villages standing in the way of airport expansion had been shelved for the present.

The 1971 population figures for the town were 37,000, compared with 49,500 for Muharraq Island as a whole, with estimated growth to 50,000 and 70,000 respectively.

URGENT

"We are however discouraging the growth of the villages", he said, "so that if the need for airport expansion becomes urgent the problem will be small and not big".

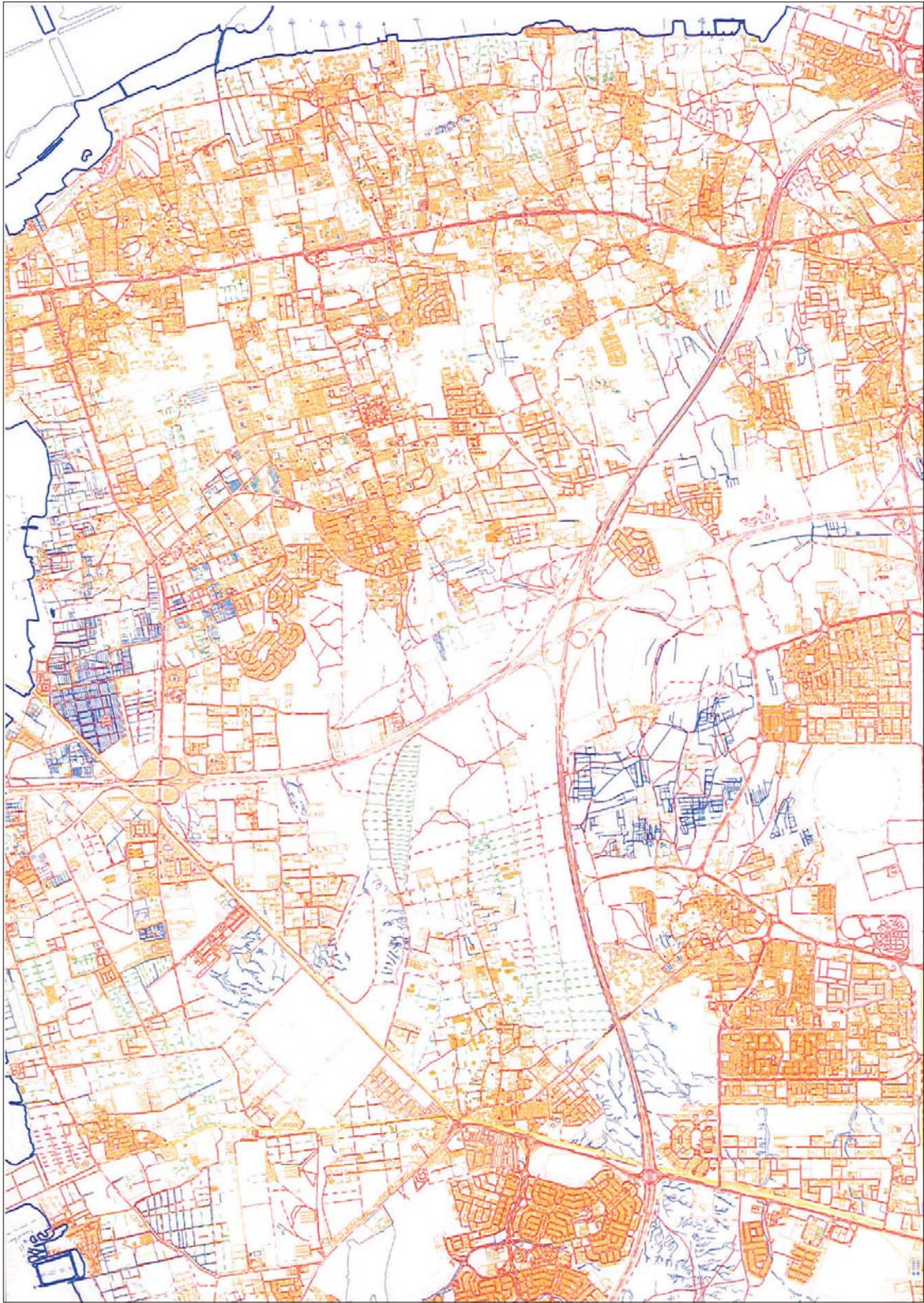


Author representing Bahrain in United Nations Conference on Marine Parks in Tehran in March 1975

Construction in Rural Areas Outside the border lines approved for extension of Villages and Towns

Upto early part of 1970's there was very little scattered development in Bahrain. From Jidhafs roundabout to Budaiya there was no ribbon development along Budaiya road. All villages in the area were off Budaiya road, each village had its buildings in cluster. There was hardly any scattered development in the area. Physical Planning restricted development outside logical extension areas of villages.

After independence of the country in 1971 the economy of the country was improving. New industries like ASRY, ALBA and new banks were bringing high income expatriate workers who needed better accommodation. So rich land owners brought pressure on Govt. to allow development in their palm tree gardens outside limits of Towns & Villages especially along Budaiya Road to satisfy housing need of rich expatriates. Though many of them had empty land in Manama for this, they wanted to utilize their cheaper land outside towns knowing that they could influence Govt. to provide roads, electricity, water etc. to such developments. So immediately after Master Planning exercise of Greater Manama area, as mentioned before, in 1973 Physical Planning Unit was asked to formulate a Policy to allow such development in green agricultural areas. I proposed to give alternative Govt. land near Isa Town in exchange to owners of gardens who wanted to build residential compounds. Planning Coordination Board did not agree with my proposal. Decision was taken to allow residential compound in one quarter of any plot and to leave remaining three quarters as open green areas. Most of the properties in Budaiya road and Saar area were big. Immediately big land owners started building using this policy. For lack of proper implementation and follow up later on property owners built on remaining three quarters of their land also. Initially no subdivision of any property into plots in these areas were allowed. When comprehensive Building Regulation was framed in 1980 this procedure was changed and in Prime Ministerial Edict No. 10/1981 subdivision of Rural areas, outside limits of towns and villages, were allowed with minimum plot size of 4,000sq.m., on each such plot two residential units with floor area ratio of 25% were allowed. Until 1973 most of the northern area was green with only traditional villages without any scattered development as shown in the topographic map of the area below.

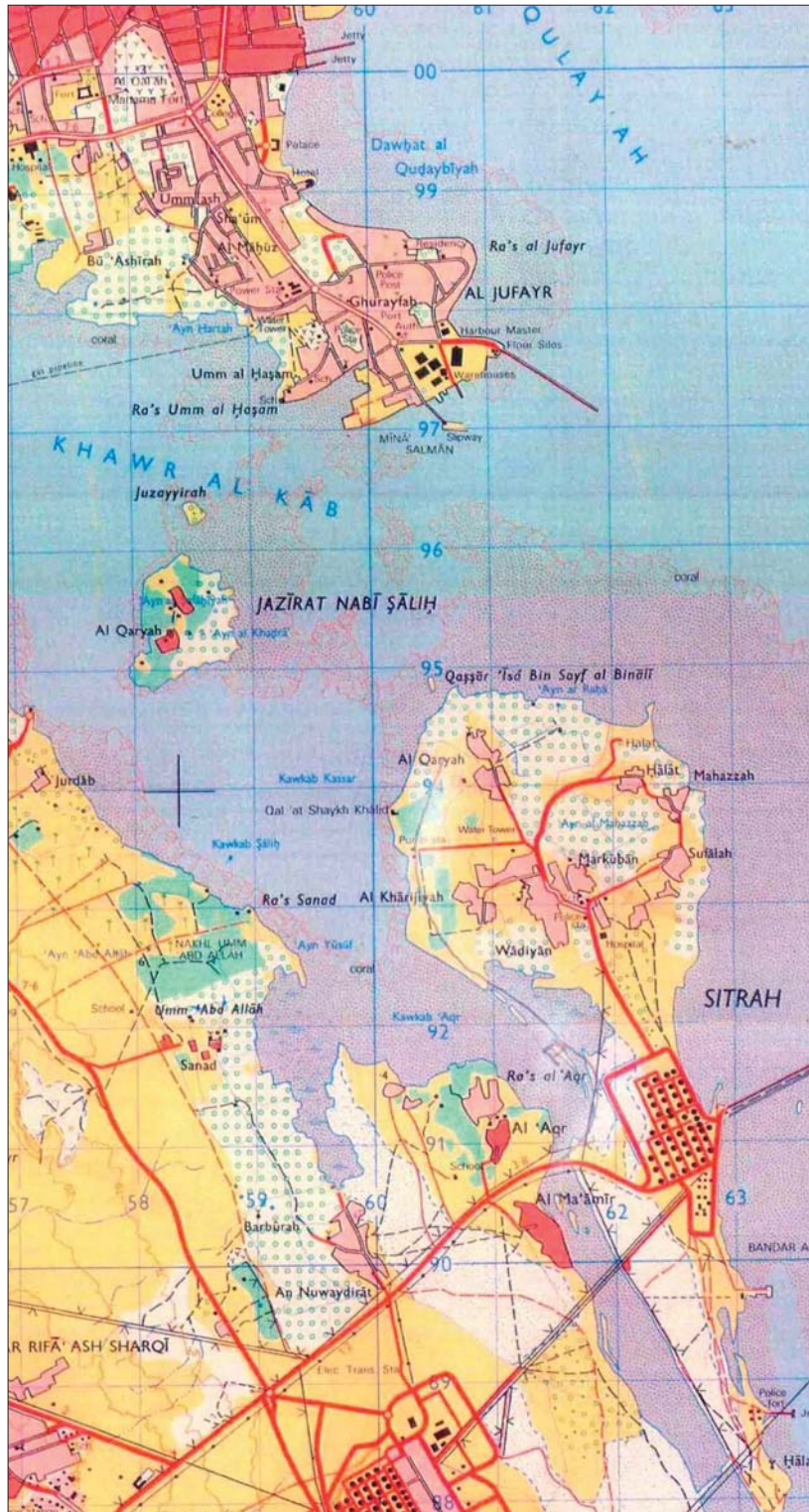


Recent topo map of Northern area

Some big projects of early 1970's

Sitra Causeway Construction

Before construction of Sitra causeway only road communication from Manama to Sitra was by Sk Salman Road to Isa Town gate roundabout and onward to Refinery roundabout by Refinery road and from there to Sitra through the causeway between Bahrain Island and Sitra Island constructed by BAPCO around 1940. Due to construction of ALBA a shorter route became necessary to bring aluminium to Mina Salman Port from ALBA for export. Also contractors were bringing desert fill from the desert area from west side of Jaww-Askar to Manama and Muharraq. So quicker route from Manama through Sitra to refinery and ALBA was investigated by PWD in 1971 and the present Sitra causeway through shallow sea at the east of Nabi Saleh, through private properties at the north west corner of Sitra Island and along shallow sea at the middle west of Sitra was selected. In selection of the causeway route consideration was given also to provide road access to Nabi Saleh Island from the causeway. Construction of the 3.8km causeway with two bridge openings for movement of water in Tubli by between east and west side of the causeway, and the link road 3.2 km within Sitra Island was completed in 1977. Link road was provided from causeway to Nabi Saleh Island. The link road was connected to Kalfar village of Nabi Saleh and to the shrine and the mosque by Municipality by new roads, without any planning study, through private properties. Later on Physical Planning struggled unsuccessfully, to solve compensation problem and problems related to cutting many small private properties in awkward manner by these roads.



Topo map of the area before construction of causeway

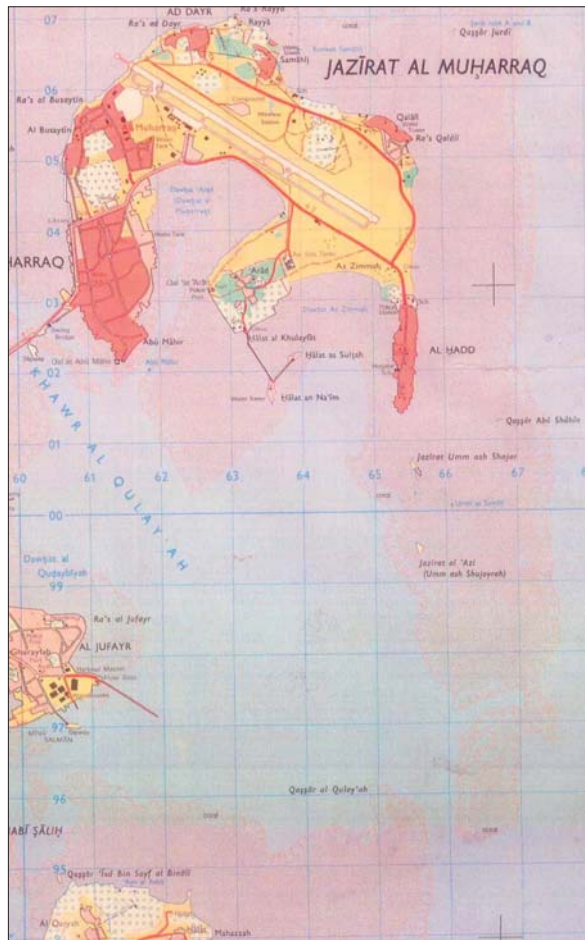


Topo map showing alignment of the causeway

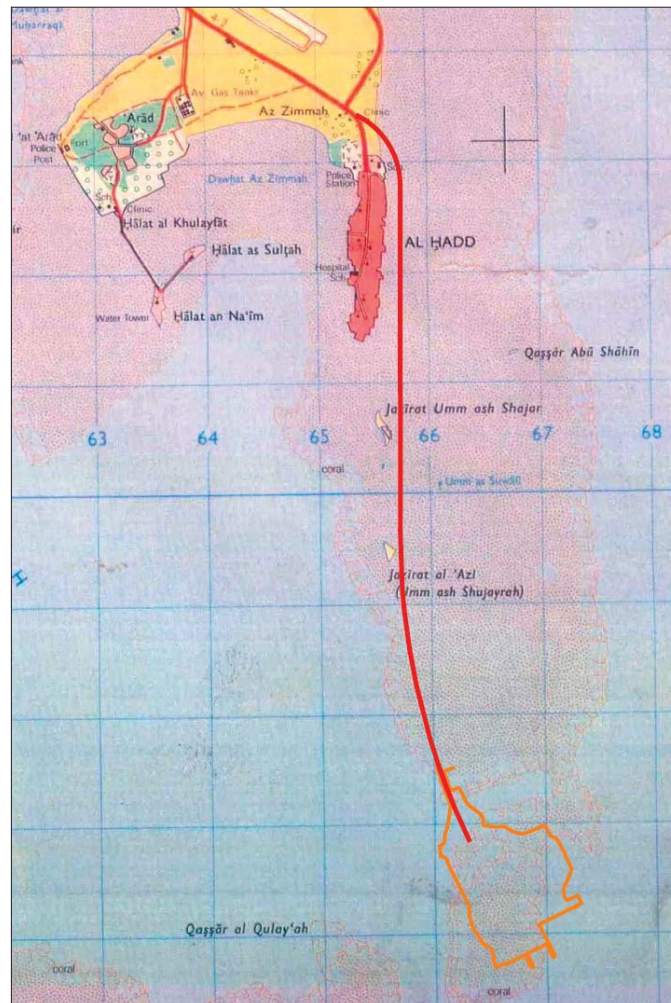
Construction of Dry Dock and the Link Road to it

Organization of Arab Petroleum Exporting Countries (OAPEC) decided to finance and build dry dock in Bahrain immediately after Bahrain joined the organization in 1973. Consultants of the project selected the site of the project at the south east of Hidd Town. At that time Hidd Town was a very narrow peninsula about 1.5km long and about 0.4km wide (at the widest point). The Arab Shipbuilding and Repair Yard (ASRY) was opened officially in 1977. \$340 million dry-dock on 300,000 sq meters (30 hecets) of reclaimed land reached by a 7 km new causeway starting from the road at the south of Airport leading to Hidd (from just north of entrance to Hidd Town) become operational.

For expatriate employees of ASRY houses were built in the north east corner of Master Plan area [(for Manama Green Belt compensation area east of A'ali (Please see page 104)]



Topo Map of the area 1973

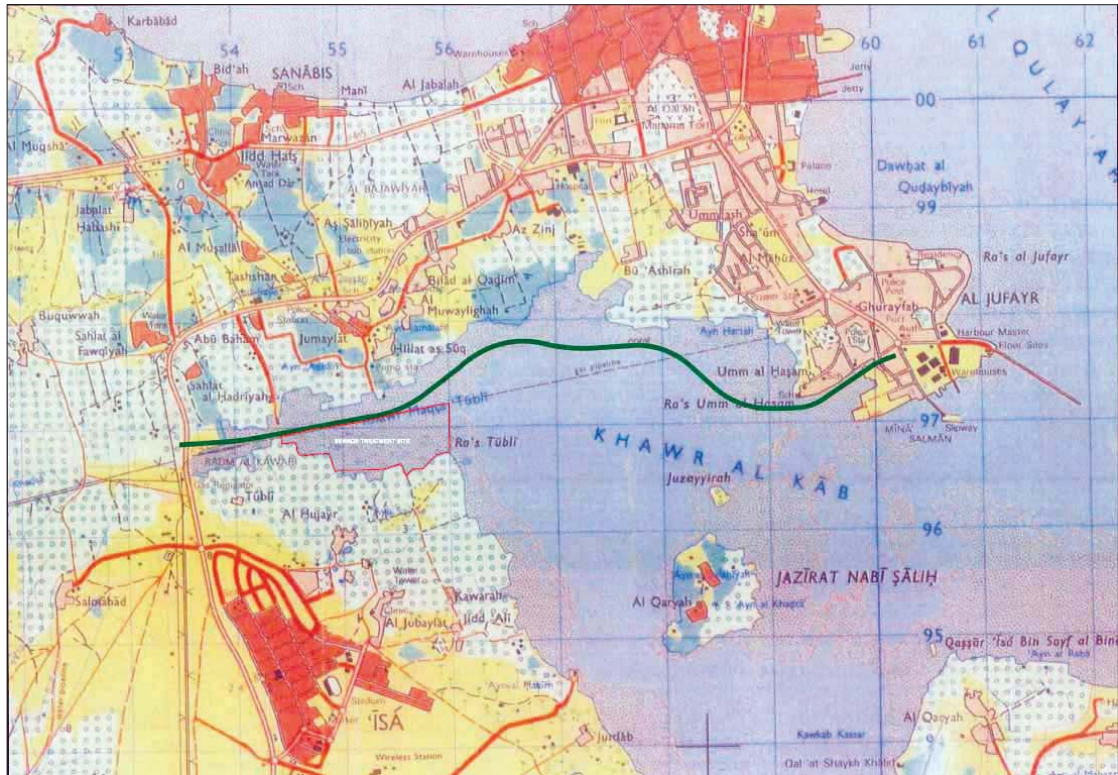


Topo Map with causeway to ASRY site

Selection of Site for Sewage Treatment Plant at Tubli

Upto early 1970's there was no proper sewerage system and sewage treatment plant in Bahrain except for Awali. There were drainage pipes draining areas of Manama and Muharraq discharging directly into the sea. Consultant was engaged to study sewerage and to propose sewage treatment site in early 1970's. Consultants proposed two major alternative sites for sewage treatment. One proposed area was desert site at the south east of Saar, popularly known as Tass Tass area at that time. The site was not approved, wisely, by the Planning Coordination Board. The other site proposed was at Khawr Maqta Tubli at the south east of Adari Pool along south side of proposed and approved Manama south ring road extension to Sk Salman road. The area was low lying, used to get flooded at the time of high tide. The site

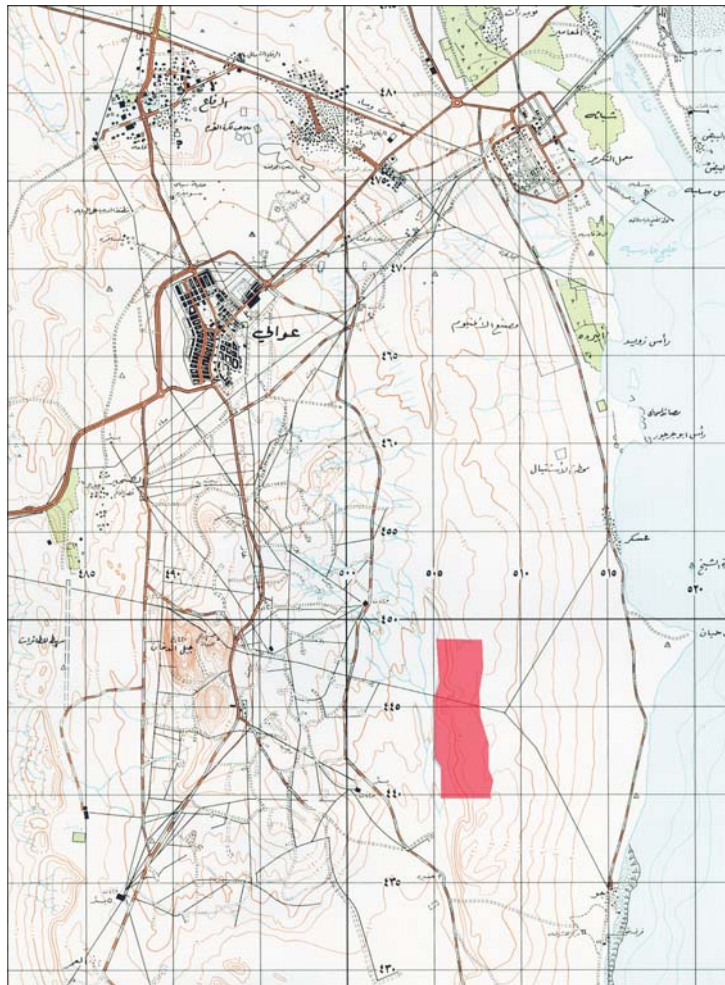
was approved for building Bahrain's main Sewage Treating Plant. About half of the allocated site of over 40 hecets was reclaimed in later Part of 1970's and Sewage Treatment Plant was built there. At the same time sewerage system was built in Manama and Muharraq and was connected to the treatment plant



Topo Map of the area showing Sewage Treatment site

Selecting site for relocating stone crushing plants and cement works

There were Stone crushing plants and cement works at the west of Isa Town and other places. Dust from these plants were causing severe pollution to Isa town and some other residential areas. Physical Planning Unit in early part of 1970's was asked to select site for relocating these plants. After study a site was proposed and approved. The approved site is at the south west of Askar and North west of Jaww as shown on Topo map of that time below. His Excellency Sk Abdulla Bin Khalid personally considered different aspects of the site before approving it. All stone crushing plants moved from sites near Isa Town to this site. United Building Factory was constructed and operated in the north end of the site.



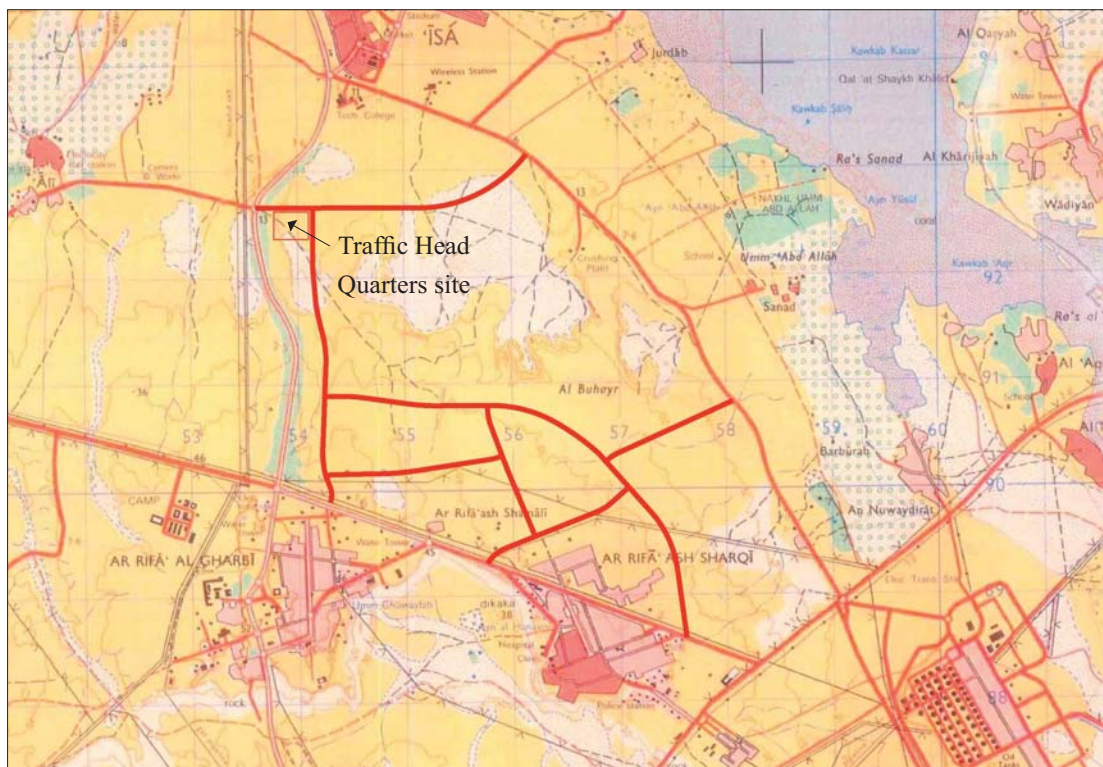
**Some other major Planning decisions of early 1970's
Fixing Green Belt of Sk Salman Road from Isa Town gate
junction to junction on Wali Al Ahad Road**

East side of Sk Salman road from the junction with Sk Isa Bin Salman highway to Bahrain Gas junction was covered by a private property which was subdivided. Mr. Munro struggled to improve the subdivision plan. West side of the road in this section also had private property.

H.E. Sk Abdulla Bin Khalid Al Khalifa said Sk Salman Road running in the middle of the country should be especial road as much as possible. He proposed a green belt for the road from Isa Town gate junction to Riffa entrance junction with Wali Al Ahad road. He asked me to propose a definite green belt. Accordingly I studied and proposed reservation of Sk Salman Road in this sector 240m, 120m on each side from center of the road. This was approved and implemented and later on included in Prime Ministerial Edict no. 10/1981.

Selecting site for Traffic Head Quarters

No. of vehicles were increasing rapidly in Bahrain. In 1966 there were 9,441 vehicles, in 1971 the no. was 15,311 (excluding motor cycles) In 1975 total no. of vehicles reached to 33,000. The traffic and licensing office was a small office in Manama Police Port with Sk Ibrahim Bin Mohammed as Asst. Director for Traffic. Sk Ibrahim was chairman of Services Committee of Planning Coordination Board. Sk Ibrahim was raising the issue of requirement of new Traffic Office. As per his request in detail Plan of Hoorā within Manama Master Plan a site was proposed for traffic office at the east of Abu Bakar Mosque. Soon it became obvious that the location and size of the site was unsatisfactory. So Sk Ibrahim asked for a new site. In mid 1970's the present site of Traffic head quarters at the east of A'ali junction on Sk Salman highway covering 9.65 hecets was selected and approved. I fixed the site boundary taking into consideration of road reservation of Sk Salman highway and future major roads requirement of the area. There was no Master Plan for the area at that time, only the draft Master Plan for Bahrain University and foreign school sites at the north was in discussion stage at that time.



Traffic Head Quarters site in Topo map of 1973.



Author (2nd from right) representing Bahrain in United Nations Conference on Marine Parks in Tehran in March 1975.

Daraz Village

Daraz is a historical village of Bahrain. Just at the east of the village Ain Umm Es-Sajur was, at the beginning of the Islamic era, the largest of the three most important springs in Bahrain. During the 7th century, the capital city of the island was situated adjacent to the Ain Umm Es-Sajur. Daraz temple site is also very close to the village. So Daraz might be a very very old village of Bahrain.

1971 census recorded population of Daraz village was 3,195 and no. of housing units were 361. The core of the village was at about 380m away from Budaiya Road. There was a group of houses only 76m away from the edge of the road. There were some scattered houses at the north east of the core of the village. Houses in these 3 areas were in very poor condition, road layout was zig zag, unplanned and roads were very narrow. At the west of the village there were new houses on plots gifted by H.H. The Amir based on plans prepared by Municipality technicians in grid iron pattern with 4 plots in each block, each plot 50ft x 50ft, with roads surrounding each block. There was no school in the village. There was an expatriate housing compound for ASRY employees at the south east of the village near Budaiya Road and at the north west was Al Mahroos compound. At the north of the village there is a big grave yard which also indicates that there was human settlement in the area for long long time. A little bit away at the north was a desert strip of land 1390m long from A to B as shown on aerial photo of December 1966 below facing the sea known as Abu Subah beach. People in large nos. used to go there and used to look at the sea seating in their cars or letting their family and children have fun and picnic. There was a mosque at the east end of this strip.

At the north east of the village there were private gardens through which a track was existing from International hospital passing through north of Daraz and west of Daraz upto Budaiya Road, now known as Nakheel highway. East of the village was desert area covering Daraz temple site and Ain Umm Es-Sajur area, at the west of the village there was an empty desert area adjacent north of Budaiya Road after which was the road leading to Abu Subah beach. To the west of this road was Budaiya Agricultural farm.

Some big plots were gifted by H.H. The Amir just outside the village areas. Owners of these lands wanted to subdivide their lands in early 1974. I advised H.E. Sk Abdulla Bin Khalid Al Khalifa that these subdivisions should not be approved without a Master Plan for the area as there was no planned or existing road network in the area. H.E. Sk Abdulla asked me to

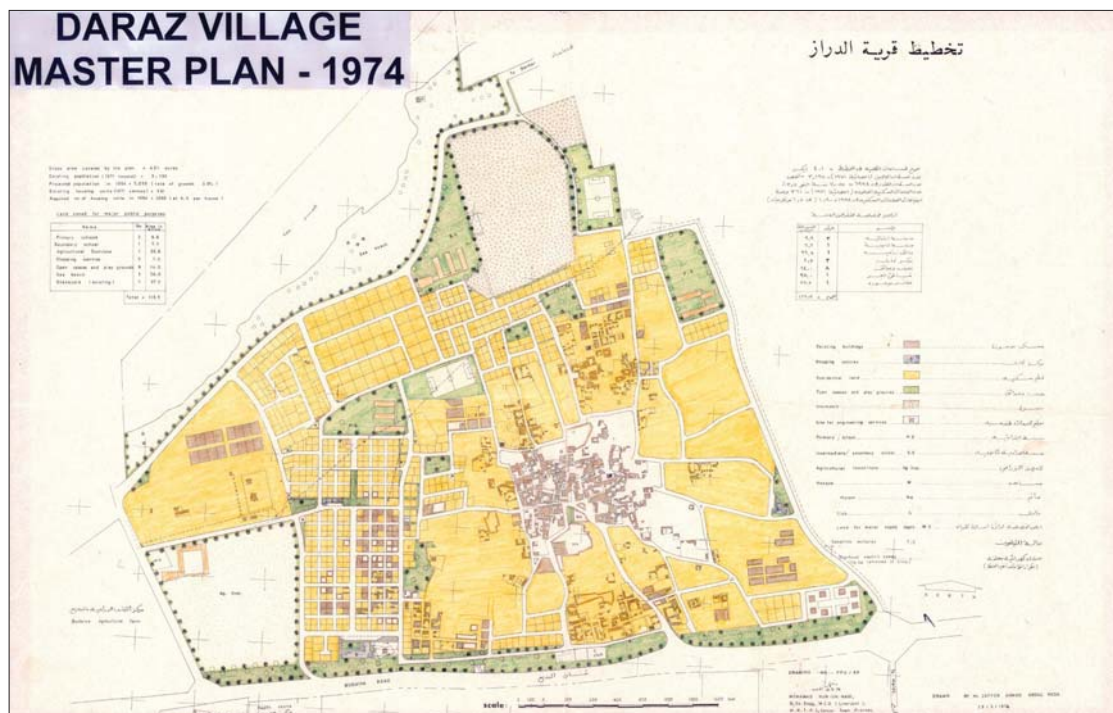
prepare a Master Plan for the village. I started collecting information to prepare the plan. Available information – Topographic map in the scale of 1" = 200 feet, rough and inaccurate property information from Land Registration Directorate and census information from Census Directorate was collected.



Aerial Photo of 1966

After site survey and site investigation and analysis of available information Master Plan for the village was proposed. Population of the village was projected to be 7055 in 1994, 1971 population was 3,195. Road network was proposed – eastern perimeter road was proposed at a safe distance from Daraz temple site and Ain Umm Es-Sajur site. The route of this road was in accessible even by 4 wheel drive jeep. The western perimeter road was fixed on

the track from Budaiya road at the east of Agricultural firm leading to the track of Nakheel highway. The Master Plan covered 162 hecets. An implementable road network was proposed. Pending subdivision applications were accommodated in the plan by integrating roads in the subdivision plans with proposed road system of the Master Plan. Most of the available Govt. land was designated for public purposes – 3 schools, open spaces, Agricultural institute and 11 hecets along the sea coast was designated as public open space and beach as shown in the Master Plan below.



Master Plan

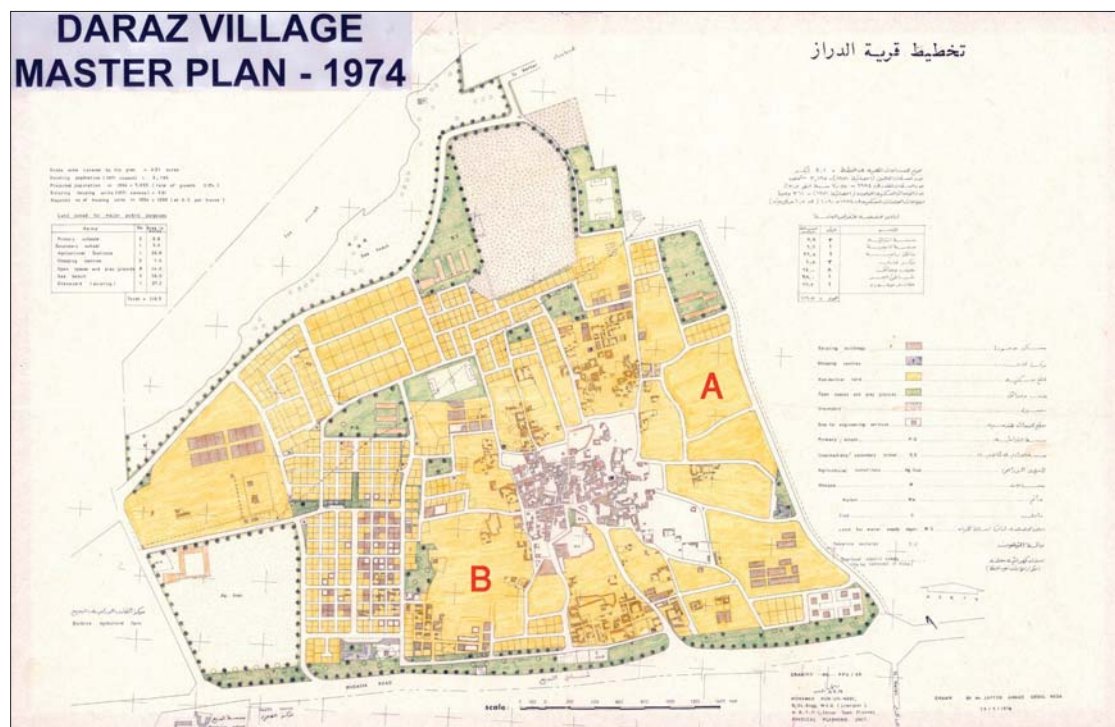
Implementation of the Master Plan

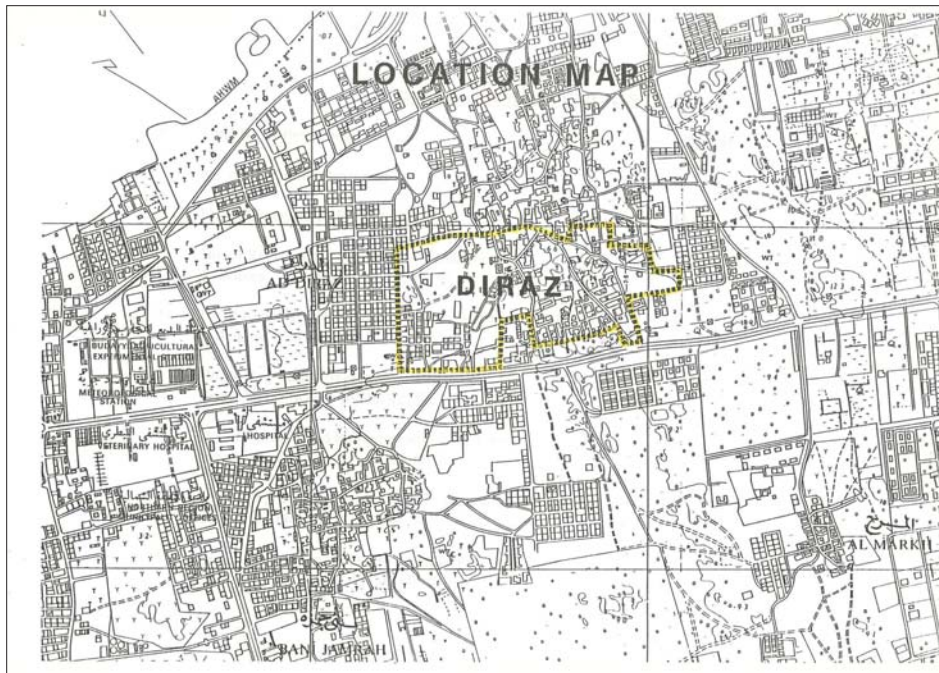
Proposed road network of the Master Plan was implemented. 3 schools were built as per proposal in the Master Plan. 40 houses were built in 1976 by Ministry of Housing near the grave yard within the frame work of the Master Plan. Existing garden at the entrance of Daraz from Budaiya Road is as per this Master Plan. Two play grounds are in use as per Master Plan. Proposed seafront public open space in the Master Plan was proposed to be divided into 6 gift plots. I raised objection to the proposal and H.E. Sk Abdulla Bin Khalid stopped the gift proposal and preserved the area as public open space as per Master Plan. In late 1970's a landscaped garden was constructed here by the Municipality. For many years

this was a recreation and picnic area for public and was very popular. Later on in 1990's because of lack of maintenance the area became bad and unattractive. Later on around 2005 a walkway was constructed at the east part of the area. However, the entire area is available for developing into a good public recreation area. Without a Master Plan most of above mentioned spaces used for public purpose could go as gift lands.

Two areas of Daraz (A+B) as shown in the plan below could not be planned for lack of accurate property information in 1974. Area- A was covered by awkward shaped small properties. Under village expansion scheme of Ministry of Housing first project was undertaken here as per my suggestion. Small private properties of the area were acquired and the area was planned for 159 housing plots and sold to selected public to build houses. Loan was provided to people to both buy and build on these plots under the scheme. Area - B in census blocks 536 and 538 was also covered by private properties and correct cadastral map of the area was not available in 1974. In 1994 under my supervision a planning exercise was undertaken covering the area.

There were 125 plots in the area. Re-planning was done by pooling and redistribution of properties and deducting 10 to 30% from properties depending on the type of access the property had in the title deed.





The plan was discussed in various meetings and was adopted in late 2002 for implementation. Roads were built as per the plan and sewerage network was constructed.

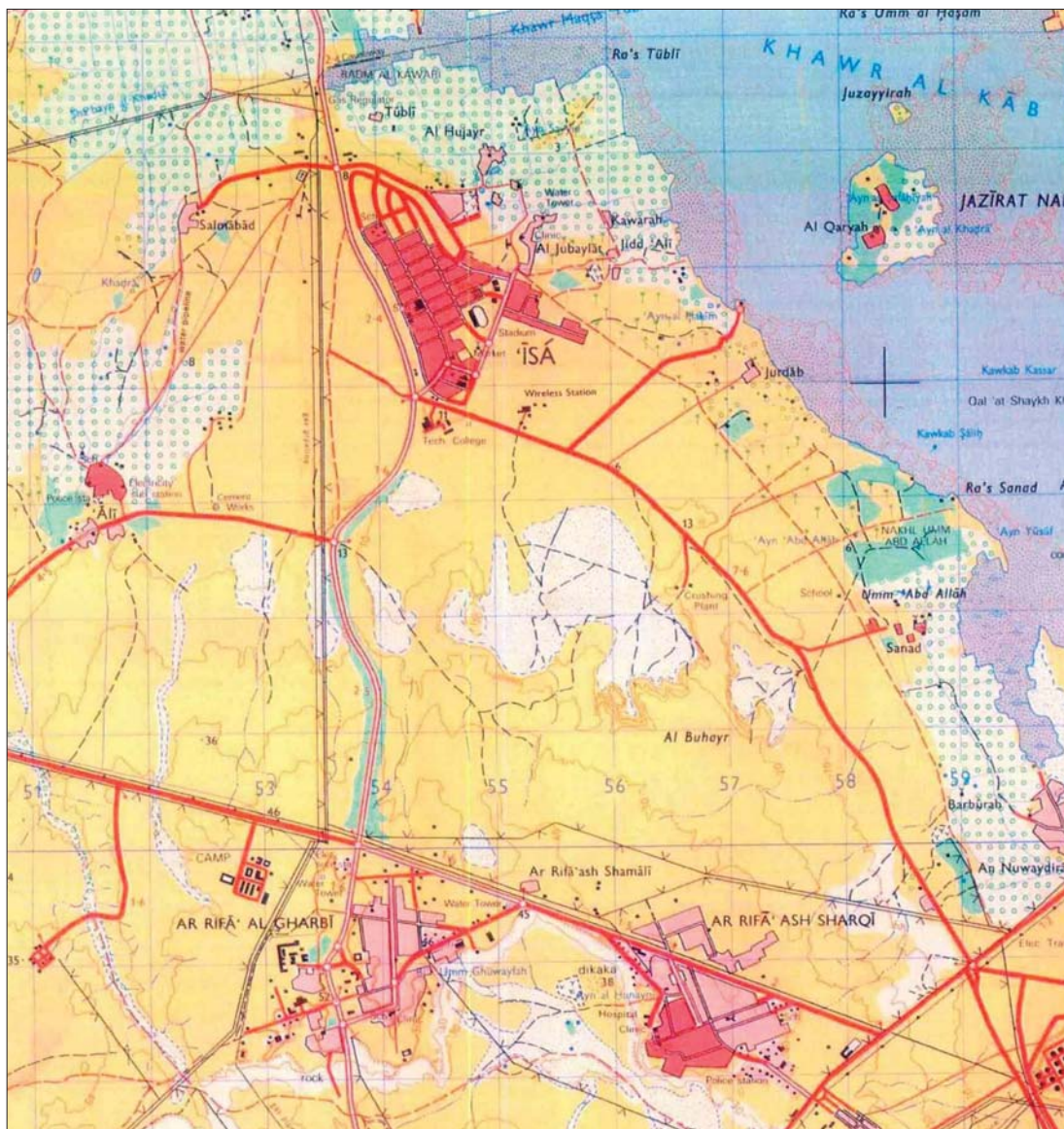
So Daraz was the first village to have Master Plan. It benefitted substantially by mentioned Planning exercises.

Bahrain University and Special Schools area south of Isa Town

Upto mid 1970's there was Gulf Polytechnic building occupying a small area at the south east of Isa Town Gate Junction and rest of the area at the south of Isteglal highway (old Refinery Road) was vacant. The idea of establishing the Bahrain University cropped up, Sacred Heart school wanted to build a new school as the old school in Manama became inadequate, Indian school wanted to move out from their old rented building in very poor condition in old area of Manama, St Christopher school wanted a bigger school than the existing school in front of Police Fort and some other Govt. institutions and private schools also were looking for land to build new premises. Sacred Heart school was gifted a land by H.H. The Amir at the west of Sk Salman highway opposite of Isa town to build school. They wanted to build a new school there. I said it was not a good idea to allow new Sacred Heart school on the gift land in isolation. So I was asked to prepare Master Plan for the area near the Gulf Polytechnic to meet pending requirements. Ministry of Information was located in an old building in abandoned British Naval Base in Juffair. That Ministry also wanted a plot to build a new office.

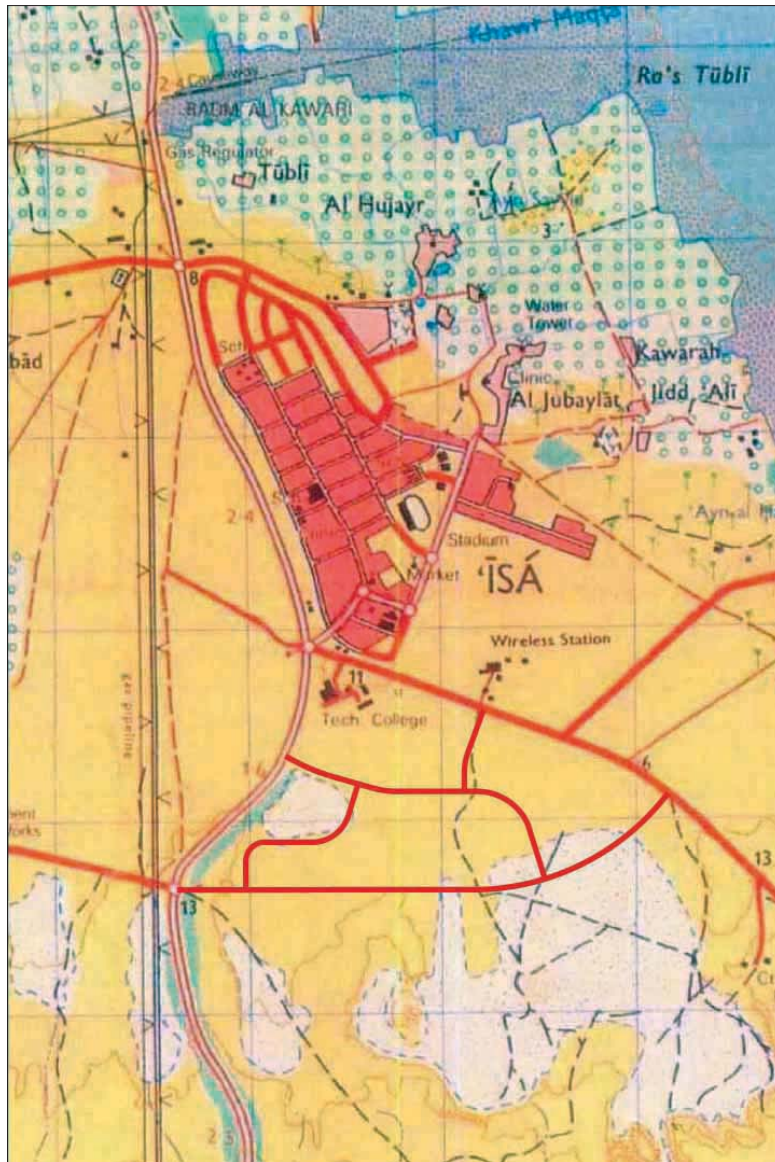
I collected information from all relevant sources, estimated land requirement for every school and institute, made assumption for future requirements. Fixed the block size accordingly by proposing a road at the south of the block connecting A'ali junction with Refinery road from Isa Town gate junction to Refinery. Foreseeing the importance and potential of this road I selected the alignment so that the road could be extended to Jurdab and to Sitra causeway. I reserved a very wide corridor for the road.

The topographic map of the area below shows how the area was in 1973.



1973 Topo Map

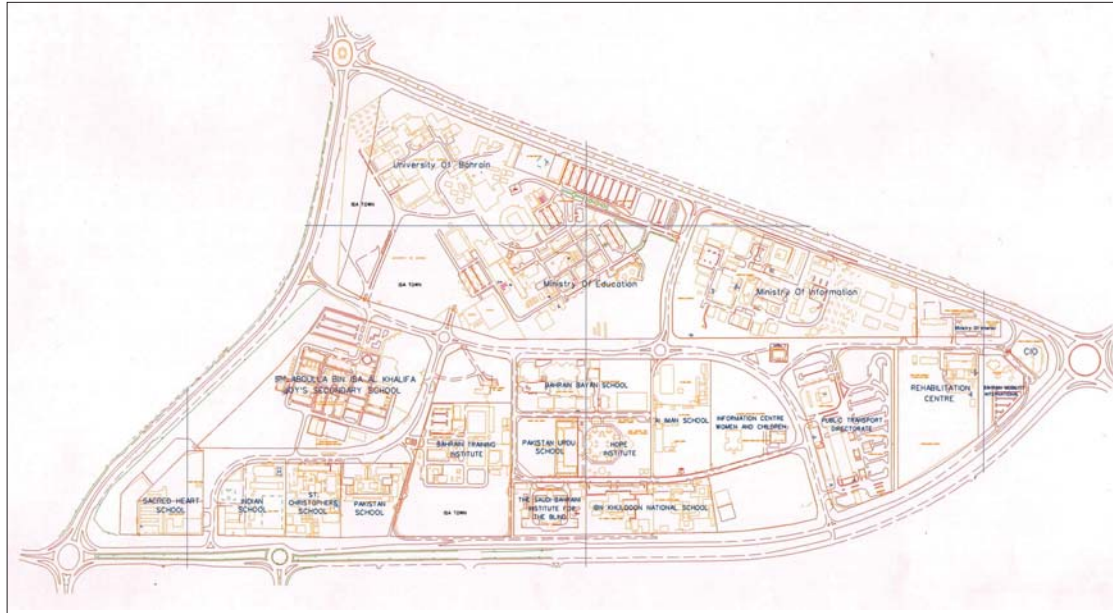
Main road network of the plan is shown below.



Main Road Plan

After preparation of the plan the plan was discussed in services coordination committee and in the Planning Coordination Board. The plan was approved. Plots were allocated immediately after approval of the plan for Sacred Heart school, Indian School, Bahrain University, Ministry of Information and Bahrain Training Institute. Later on plots were allocated to other schools and institutions as per the plan. Initial frame work of the plan remained as was originally planned. In later stages plots were allocated in the area for Police Station, Central Bus Station, Central Population Registration (CPR) etc. Initially a big play ground and open area was proposed in the plan, part of that area allocated to Information Center for Woman and Children.

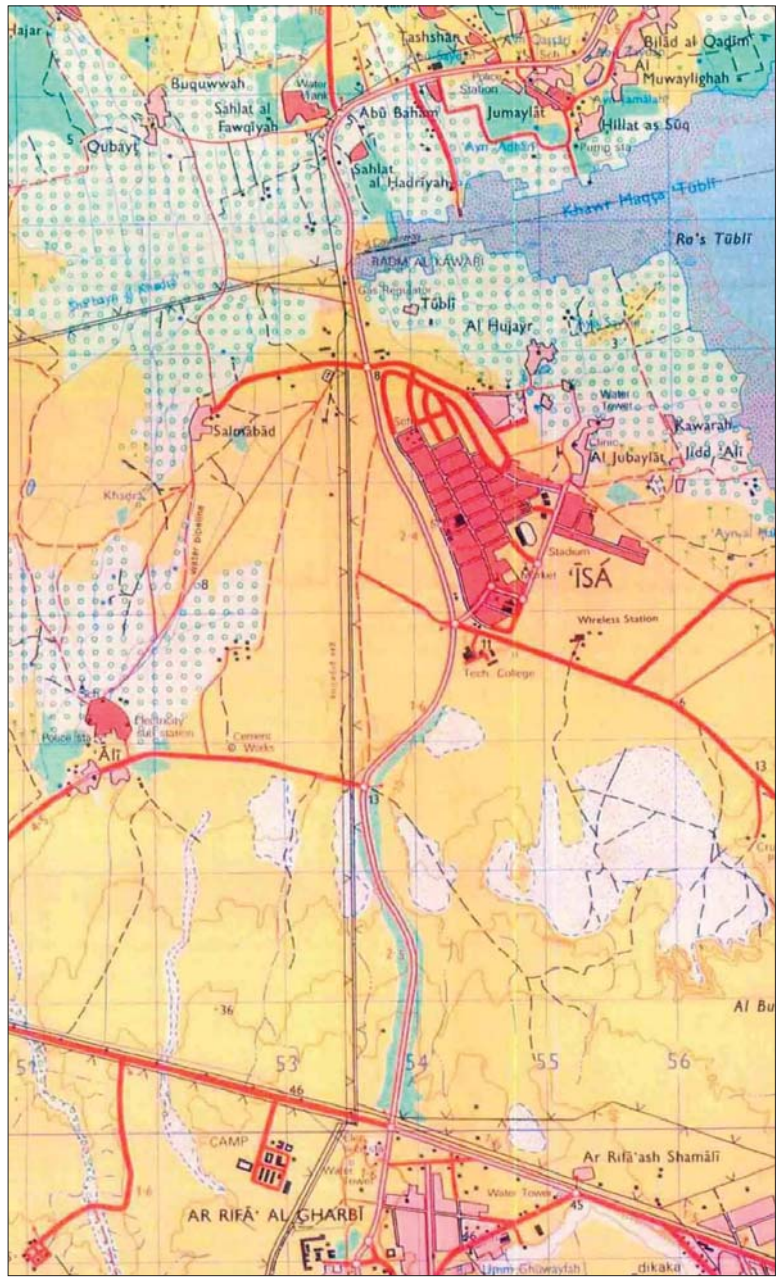
The area developed with many institutions as shown in the map below.



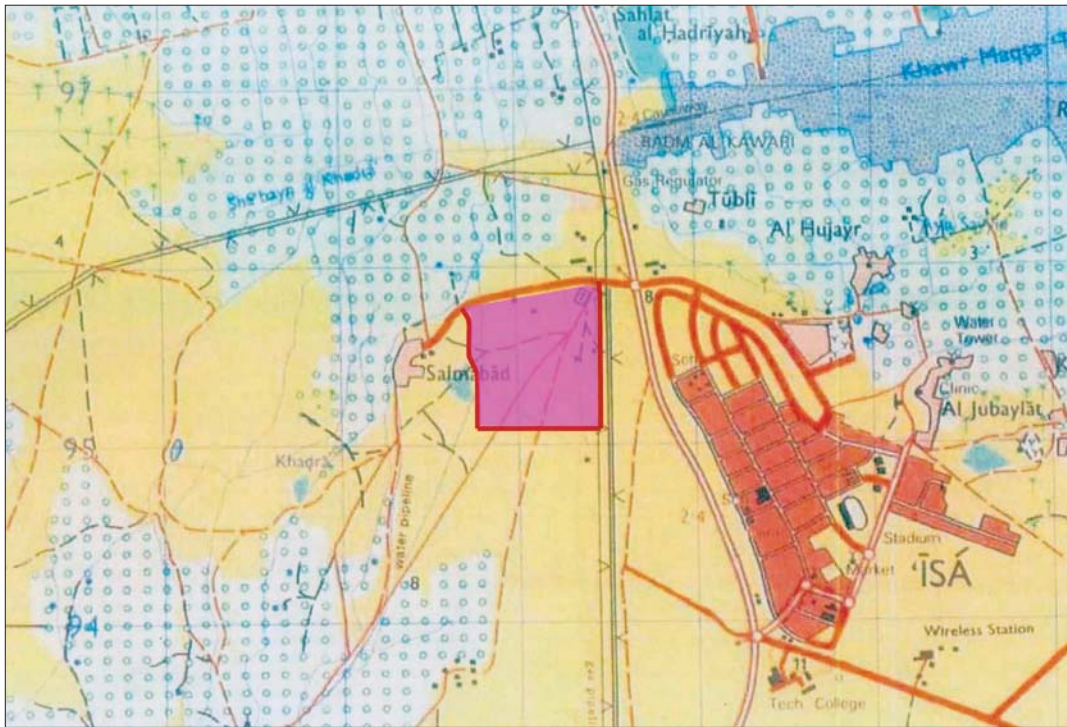
Salmabad Light Industrial Area

There were car repairing garages, carpentry and other workshops in Manama and Muharraq in scattered manner causing noise, pollution and other problems. The issue was discussed in Planning Coordination Board in 1974. Planning co-ordination Board took many important decisions. Decision was taken to plan an area on Govt. land at the east of Salmabad village. I was asked to do the job.

The area at the south of the road from Sk Salman Road to A'ali village was barren desert. 1973 topographic map of the area below shows the condition of the area utilised for the light industrial area plan.



Topo map of the area of 1973



Area covered by light industrial area plan

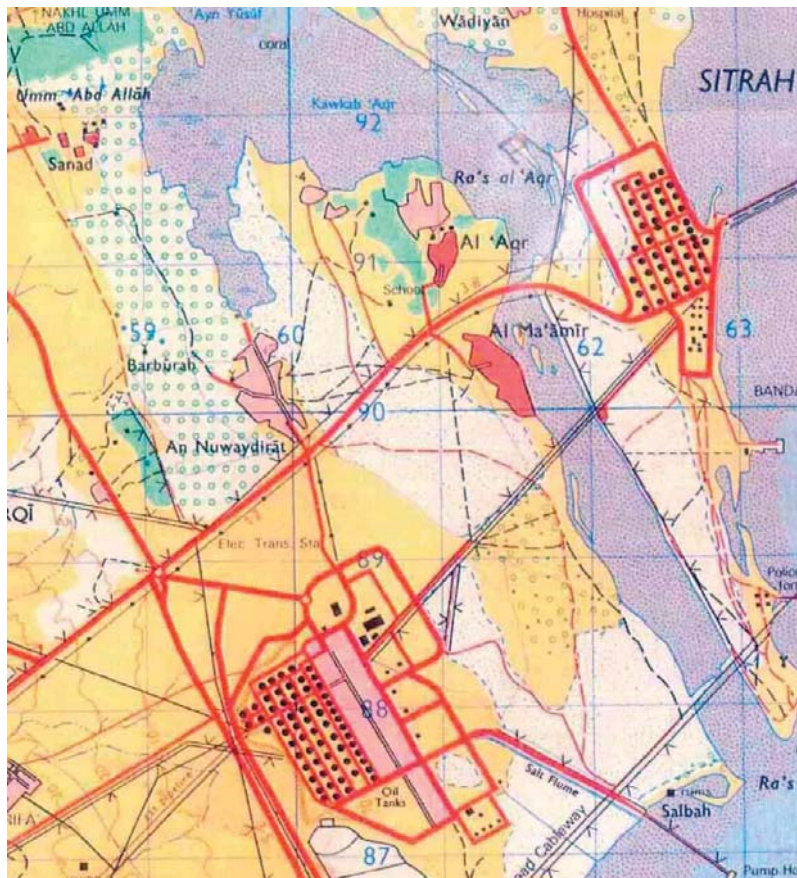
I prepared a layout plan for this area shown in the topo map above.

The plan was approved by Planning Coordination Board. Many garages and workshops were shifted from Manama and Muharraq to the area, the first was Gulf Garage which was at the west of Palace avenue in Hoor. But shifting garages and workshops here from Manama and Muharraq was partially successful. Many garages and workshop still remained in Manama and Muharraq for lack of strong implementation mechanism.

North Refinery Light Industrial Area

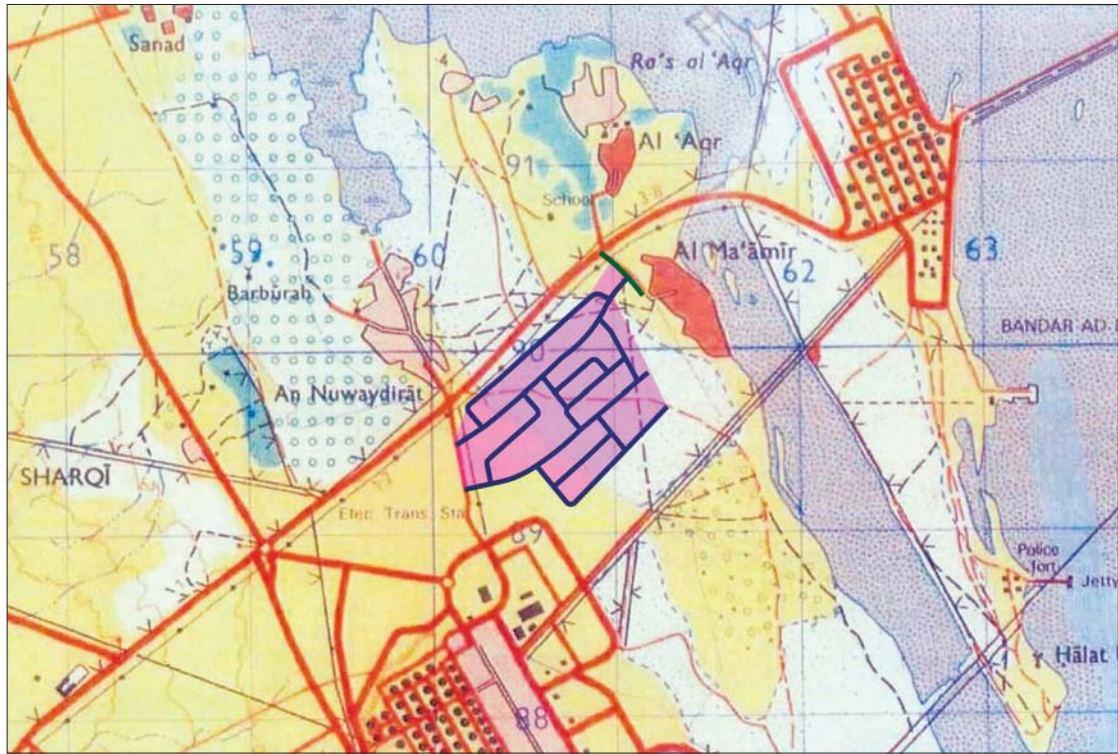
There were building block making factories, tiles factories and cement works in different areas of Bahrain in un appropriate and undesirable locations. Planning Coordination Board decided to move these factories from these undesirable locations to one planned area. There was also new applications for such factories and applicants wanted land for the purpose. Available Govt. land for the purpose was looked for. The barren area between north east of Refinery and Ma'amir village was selected for the purpose. I was asked to plan the area for the purpose.

I studied available information. There was BAPCO reservation area along north side of pipelines from refinery to Sitra storage tanks area via south of Ma'amir village. 1973 topographic map of the area below shows how the area was at that time.



Topo map

A layout plan for the area was prepared keeping sufficient distance from Ma'amer village. The plan was approved by the Planning Coordination Board. Plots were allocated to new applicants but very few existing block making factories relocated to the area as was intended.



Layout plan of the area.

Riffa Town

Twin towns of east and west Riffa situated on a low, narrow plateau over looking the central basin of the Bahrain island. These two settlements have been the traditional strongholds of the Al Khalifa family and their allies, the Utub tribes, since the start of Al-Khalifa family rule in 1783. The two towns are close to the narrow but important pasture land of Bahrain, where the ruling family kept its camels. The two Riffas offered another advantage, in that they are served by what are reputed to be the best fresh water springs in the country, those of Hanainia in Riffa Ash-shirqui and Umm Ghuwifa in Riffa Al-Gharbi. In nineteenth and early twentieth centuries donkeys and camels laden with skin water-bags filled from these wells made the long daily trek into Manama, to provide the residents with drinking water.

Riffa Fort was constructed in the 17th century on an escarpment which dominates the low-lying desert between the old settlement of East Riffa and the modern town of West Riffa located on the opposite hill side. It was in this fort that the Ruler, Sk Ali Al-Khalifa, was killed by his brother, Mohammed Al Khalifa, in 1869 during a desperate attempt to seize control of the islands.

East Riffa is a much older town than West Riffa. It was the former home of the earlier Al Khalifa family who ruled the islands from this place during the early nineteenth century.

West Riffa is a modern town, built by Sk Salman, the father of late Amir Sk Isa Bin Salman. In late 1960's Al Khalifa family moved to west Riffa in mass scale from Manama.

In mid 1930's pipeline (A/B) was constructed at the north of East and West Riffa to bring crude oil to Bahrain Refinery from Saudi Arabia. Along the south side of the pipeline a road was also constructed. So the pipeline and road defined the north edge of East and West Riffa for a period.

Following table shows population size of Riffa Town in recent years.

	1959	1965	1971
Population	6,623	9,403	10,731
No. of Houses	1,134	1,427	1,682

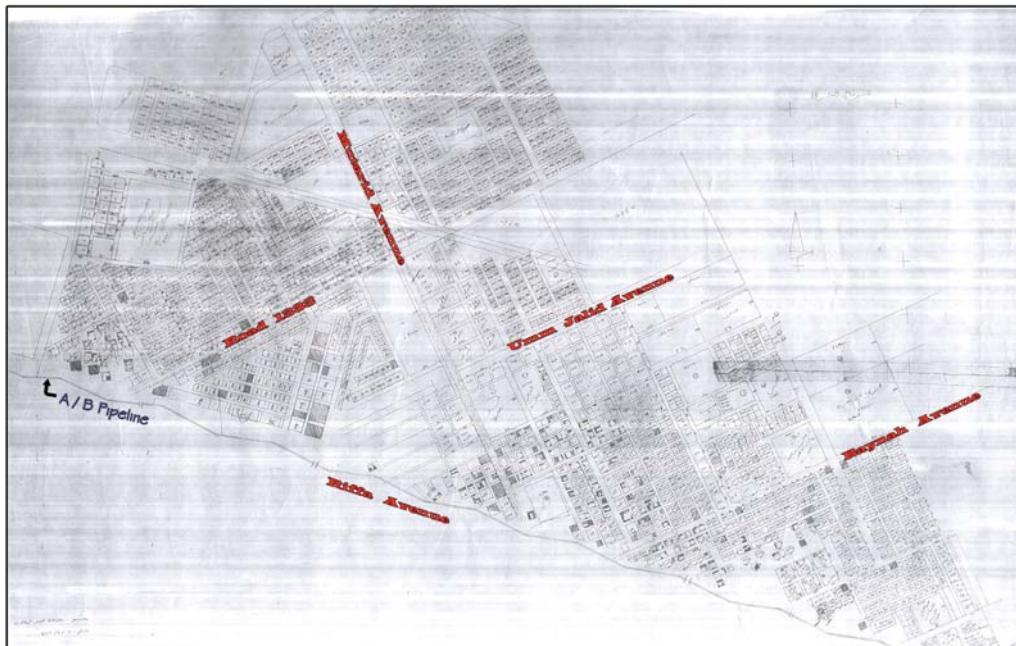
East and West Riffa was expanding at the north of A/B pipeline in 1960's based on typical

layout plan of 4 plots in each block surrounded by roads prepared by Municipality technicians. Available land in both east and West Riffa at the south of pipelines was either built or owned. So there was no Govt. land to take as gift from the Amir to build houses in these areas.

So expansion was taking place at the north of pipeline beyond traditional northern limit of Riffa. But there was no Master Plan or well thought out local and regional road network plan for the area. In early 1975, I proposed to H.E. Sk Abdulla Bin Khalid Al Khalifa to prepare Master Plan for the area. But he did not agree. He thought implementation of any Master Plan for the area will be difficult because of ownership of land by influential people and requests coming from VIPs for gift land in the area. After a month or so I again raised the issue to H.E. Sk. Abdulla. Again he refused to give me go ahead for Master Planning the area for reasons mentioned. After a while I again raised the issue as I foresaw the potential of the area and problems the area will have without a Master Plan. I also assured Sk Abdulla that I will be prepared to explain and justify provisions of Master Plan to anybody who will raise objection to the Master Plan. This time H.E. Sk Abdulla reluctantly gave me permission to work on preparation of Master Plan for the area.

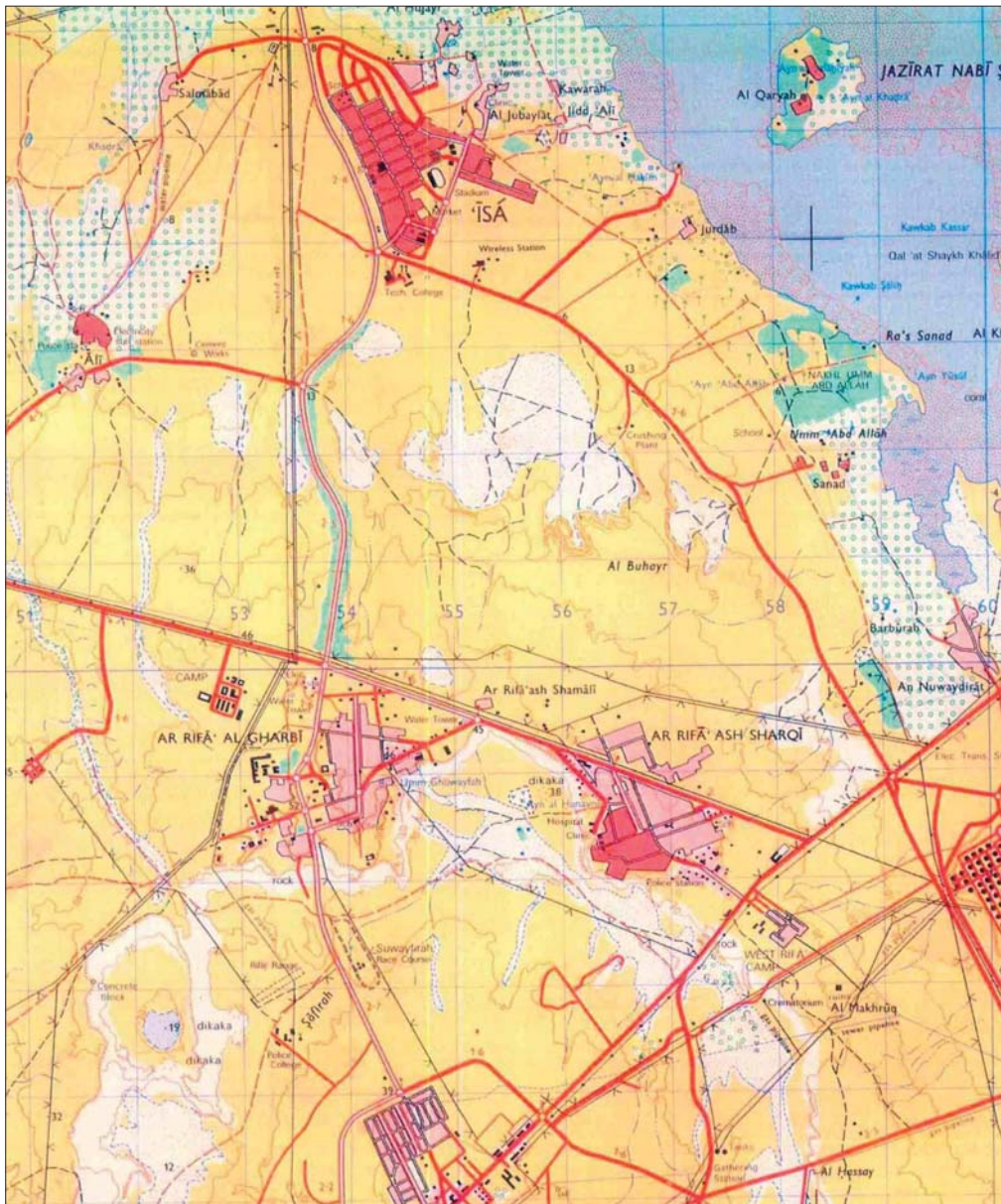
Big part of the area was already covered by gift lands as shown in the land ownership map of that time below.

**PROPERTIES IN NORTH RIFFA MASTER PLAN AREA
BEFORE MASTER PLAN PREPERATION-1975**

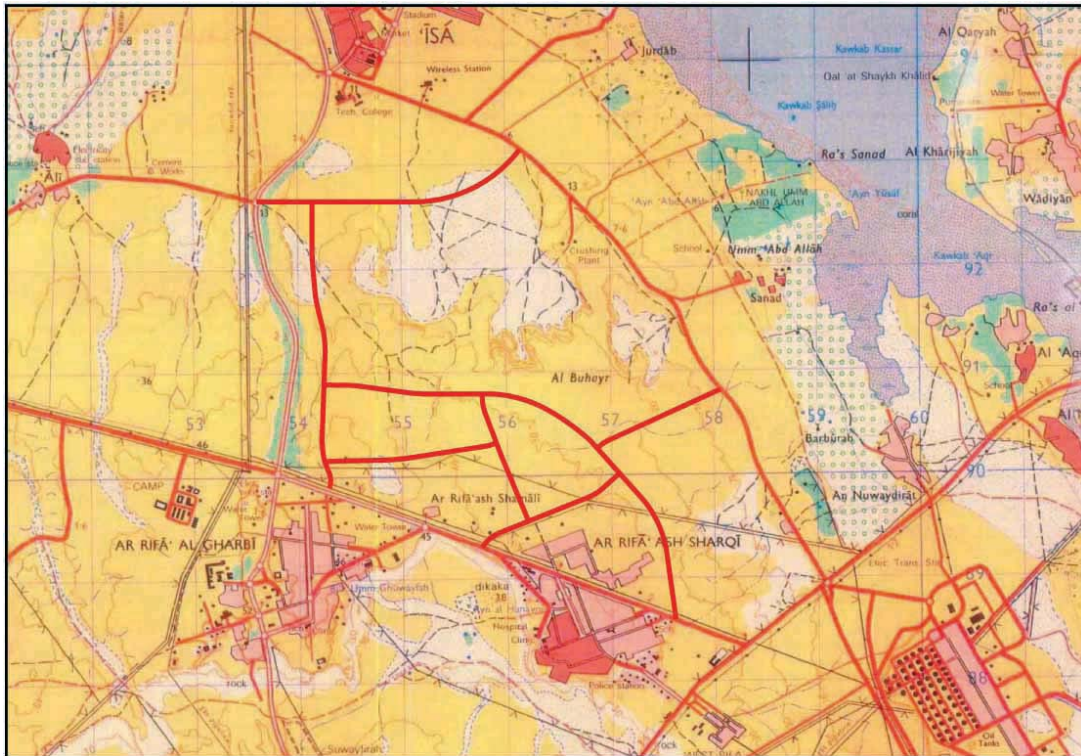


Land Ownership Map

I visited the site several times. The area was rough and undulating, immediately at the north was Buhayer depressions, areas close to Buhayer were pretty rough. There were scattered ancient burial mounds in the area. There were existing electric lines and other services in the area. Following topographic map of 1973 shows the area and adjacent region.



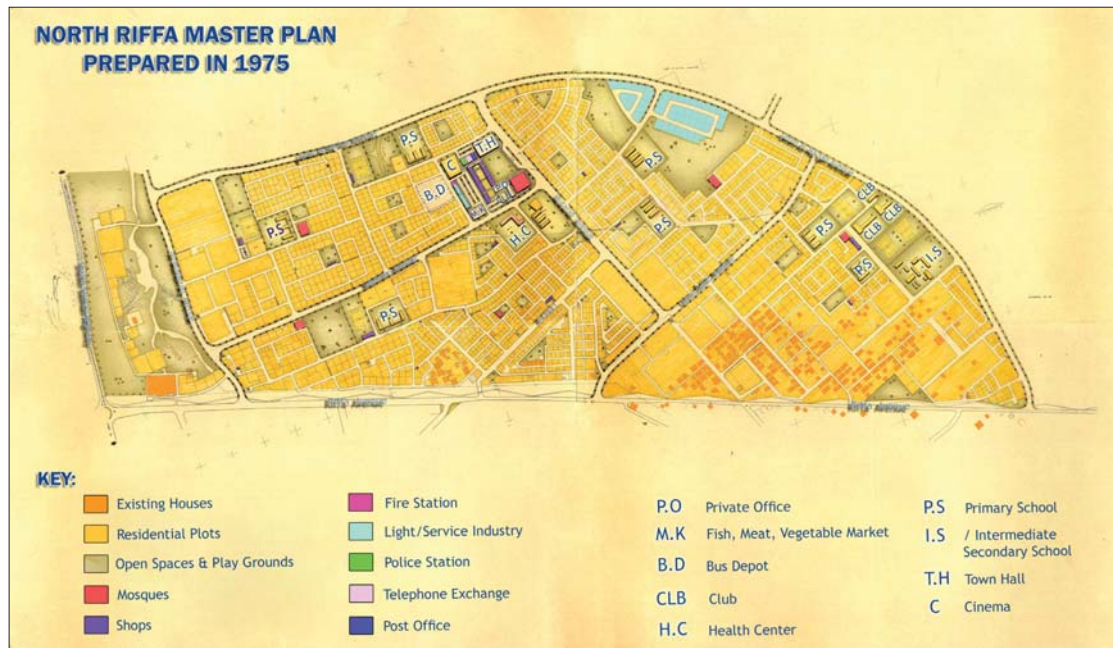
I selected topographically reasonable good area for detail Master Planning. Initial task was to fix regional road network for the area. Following road network for the area was proposed and approved.



Topographic map showing proposed road network

This road network was implemented and provided basic framework for all developments in the area.

The area upto proposed north perimeter road in the above mentioned road network plan covering 471 hecets was planned in detail. In detail plan existing properties in the area were carefully accommodated where necessary by adjusting them. Local road network was proposed within existing constraints. Available Govt. lands were used mostly for community uses as shown in the Master Plan below.



Master Plan

A town center was proposed along west side of Mutrad Avenue with a square (public open space) with all facilities.

By the time this plan was ready there was reshuffle in the cabinet in August 1975, the Planning Coordination Board was dissolved and Physical Planning Unit was transferred to newly created Ministry of Housing with H.E. Sk Khalid Bin Abdulla Al Khalifa as Minister. H.E. Sk Khalid approved this plan about in the middle of 1976. After that the plan was implemented very quickly. The area became very popular and housing development within the area also took place faster than Manama and other planned areas.

Cabinet Re-shuffle and Creation of Ministry of Housing in 1975

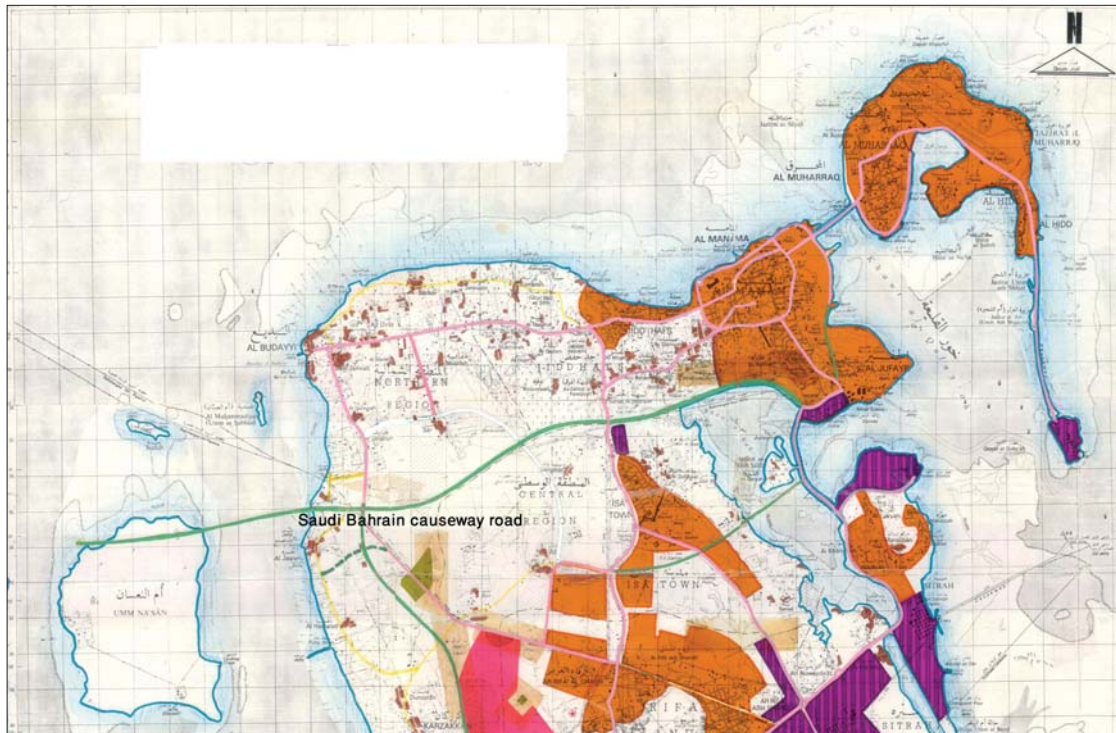
Ministry of Labour and Social Affairs was responsible for Social housing and was building houses mainly in Isa Town. There was serious shortage of housing around 1974. So Lewyen and Davis Consultants were engaged in 1974 to come up with proposals to satisfy housing needs. Consultants produced many reports and many recommendations. One of their recommendation was to create a new Ministry of Housing. Cabinet was reshuffled in August 1975 and new Ministry of Housing was created under H.E. Khalid Bin Abdulla Al Khalifa as Minister. Physical Planning Unit was transferred from Ministry of Municipalities and Agriculture to Ministry of Housing as one Directorate of that Ministry and the Planning Coordination Board was cancelled. The Ministry started in the private new 4 storied building at the east end of Govt. Avenue where now is Paradise Restaurant. Technical Affairs Directorate of the Ministry was mainly responsible for building houses.

Physical Planning Directorate had not much staff. Mr. Ebrahim Al Moayyed in 1973 became Technical Affairs Director of Municipality, he left that job in 1975. Only Mr. Abdulla Abdul Ghaffar, architect qualified from Saudi Arabia joined Physical Planning in 1974. There was too much pressure related to implementation of Master Plans already prepared from Govt. Ministries and private land owners.

Sites for new schools, health centers, mosques etc, identification of Master Plan road corridors for laying services and construction of roads, finding sites for major services – Primary substations, water storage tanks etc. all needed Planning input and follow up. There were six survey technicians in Planning but no qualified surveyor. There was two qualified surveyor in PWD only for their jobs. I had to, more or less, supervise all these activities. Mr. Wissa was mainly handling Arabic correspondence of the ministry.

Saudi Bahrain Causeway

In 1975 Consultants fixed the alignment of Saudi Bahrain causeway to connect to Manama south ring road extension to Sk Salman Road. The alignment of the causeway road inland is shown on the Topo map below.



Causeway Alignment

The causeway alignment passed through private properties and ancient burial mounds at the south of Saar. Compensation of affected private properties by 300 feet (91.45m) causeway alignment was handled by Mr. Wissa. Most of these property owners were compensated by land at the north of Wali Al Ahad road opposite BATELCO at Hamala east of Jasrah junction.

The causeway was built at the cost of BD450 million (U.S. \$ 1.2 billion). On 26 November 1986, the causeway was officially inaugurated by King Fahed bin Abdul Aziz and sheikh Isa bin Salman Al-Khalifa as the 'King Fahad Causeway'.

Housing Projects of Ministry of Housing and Selection of Housing Projects' sites

Undertaking Housing Projects became top priority of Ministry of Housing immediately after creation of the Ministry. Ministry only had area for extension of Isa Town for housing initially. I was always asked by H.E. Sk Khalid Bin Abdulla to propose sites on Govt. land for new housing projects. I proposed sites taking into consideration of all relevant factors. Some sites like Umm el Hassam, North west Muharraq, Busaiteen , A'ali, Daraz were within Master Plans already prepared as mentioned earlier I had to initially identify these sites and propose for housing. Some sites like East Riffa I proposed adjacent outside of outer ring road of Master Plan. Most of the sites I proposed was approved by H.E. Sk Khalid Bin Abdulla. 7 blocks of apartments with 42 apartments at the left side of entrance of Hidd was built on site proposed by me though initially Technical Affairs Directorate of Ministry of Housing gave opinion about the site as unsuitable. I convinced H.E. Sk Khalid Bin Abdulla about suitability of the site and he ordered to build apartments there. Following Table shows details of Housing Projects between 1975-1999 of Ministry of Housing.



Author in his office - 1978.

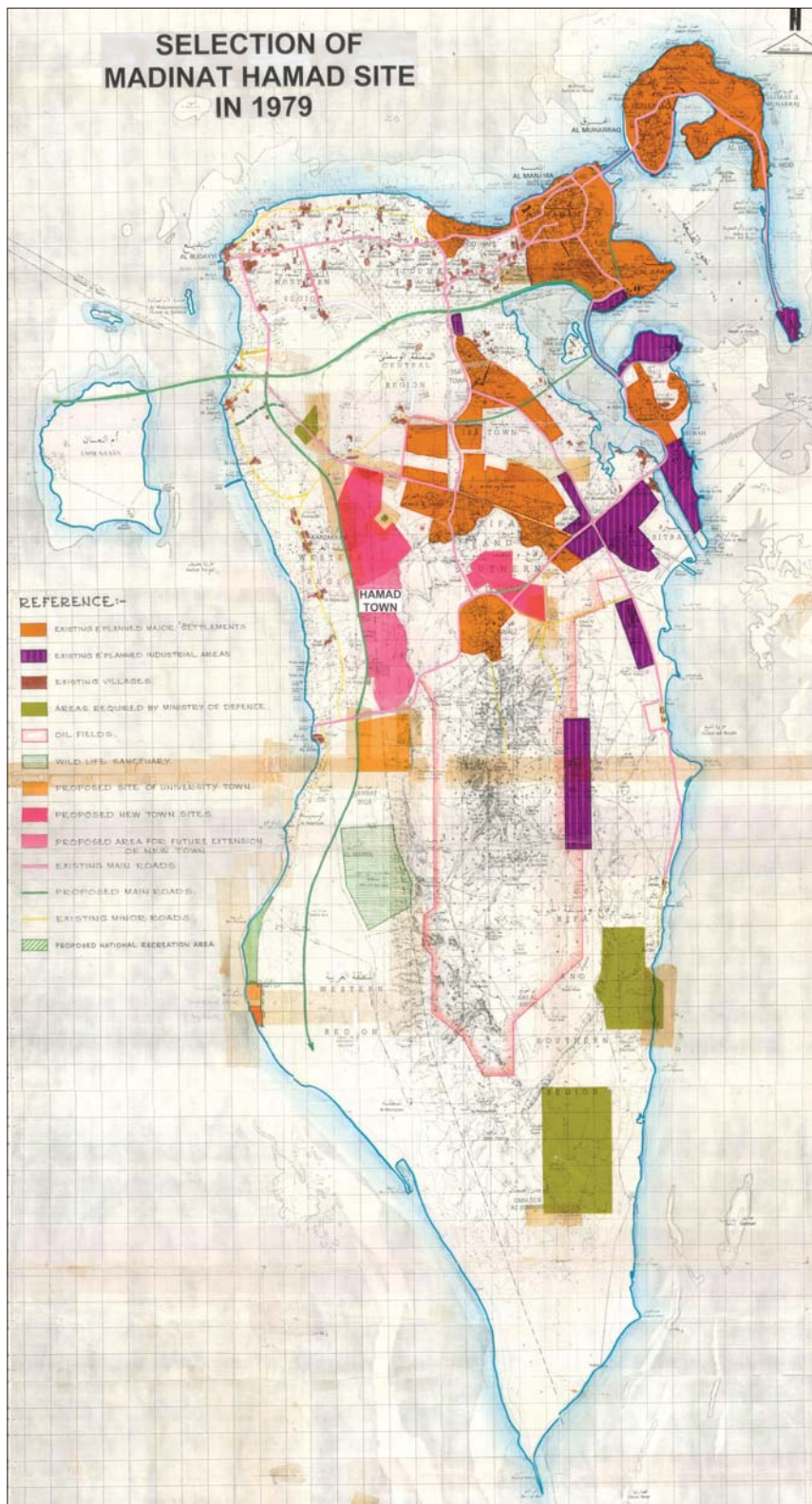
HOUSING PROJECTS IN BAHRAIN
1975 –1999

No	Project Location	Number of Houses	Apartments		Total D.U. *	Construction Period
			Flats	Blocks		
1	Hidd	122	42	7	164	1976-1980
2	N.W.Muharraq	134	354	57	488	1977-1997
3	Busaytin	131	152	23	283	1981-1997
4	Arad	669	-	-	669	1976-1979-1981
5	U. Al Hassam	233	350	49	583	1975-1982
6	Jidhafs	196	-	-	196	1976-1980
7	Sanabis	168	302	42	470	1979-1980-1996
8	Karana	10	-	-	10	1985-1986
9	Duraz	40	-	-	40	1976
10	Budaiya	34	-	-	34	1983-1985-1997
11	Sitra	165	-	-	165	1976-1977
12	A' ali	740+(22)	-	-	762	1976-1981-(1999)
13	Isa Town	4694	1054	127	5748	1963-1974-1975-1983-1996
14	West Riffa	56	-	-	56	1976-1977
15	East Riffa	1040+(93)	-	-	1133	1976-1981-1997-(1999)
16	Askar	90+(13)	-	-	103	1976-1982-1997-(1999)
17	Jaww	63+(15)	-	-	78	1976-1988-1997-(1999)
18	Al Dur	8	-	-	8	1976-1977
19	Safirah	215	(80)	(5)	295	1979-1984-1997-(1999)
20	Jasrah	91	-	-	91	1977-1988-1997
21	Dumistan	62	-	-	62	1986
22	Zallaq	98	-	-	98	1976-1977-1997
23	Hawar	54	-	-	54	1997
24	Hamad Town	7621+(454)	120+(32)	15+(4)	8228	1982-1985-1986-1997-(1999)
Grand Total		16734+(597)	2374+(112)	322+(9)	19817	1975-1997-(1999)

* Total D.U. = Houses + Flats
() Housing units under construction
(The 1999 Housing Programme)

Selection of Madinat Hamad Site

By 1978 Isa Town site was almost utilized by Housing Project. Ministry of Housing was looking for a new town site for housing. Dar Al Handasah Consultants were engaged for the job. Group of 4 Americans, one of whom acted as Director of Physical Planning Directorate worked for one year in the Directorate in 1979. They were also asked to find a suitable site for a New Town. None of their proposals were accepted. In 1979 while I was discussing other issues with H.E. Sk Khalid Bin Abulla he mentioned about failure of Consultants and American Team to propose an acceptable New Town site. I volunteered to his Excellency to find a site. His Excellency encouraged me to put my proposal. I had Madinat Hamad site in my mind. The site on a narrow plateau between Zallaq highway and Wali Al Ahad highway overlooking the depression at the east and slopping towards western villages Karzzakkan – Shaharakkan and greenery, to me was an ideal site for a New Town. I went to see the site with my trusted and valued colleague Abdul Jaleel Sebah who is now promoted to the position of a Director in Ministry of Housing. I found the site, about 10km long, a suitable site for a New Town. To my knowledge, nobody else proposed any development here before this. There was only one copy of Survey map newly issued based on aerial photograph of July 1976 available in Physical Planning Directorate. I highlighted relevant topographic information on photocopy of the survey map with the help of another valued staff of Physical Planning for long time, Mr. Delawar Hossain. I went to H.E. Sk Khalid Bin Abdulla to propose the site. When I proposed the site his Excellency said it is a graveyard but when I have explained to him the topographic information showing available buildable land in the site, excluding 3 main burial mound sites in the area, he at once liked the idea. H.E. asked me how long I would take to prepare a presentation plan I said one week. He asked me to do so. I came back to my office but after about 10 minutes H.E. phoned me and asked me to prepare the presentation plan in 3 days. I utilized Delawar and his colleague to prepare the Master Plan below, on a photocopy of only survey map Physical Planning Directorate had, proposing the site for Hamad Town and gave to H.E. Sk Khalid after 3 days as he wanted. Next day H.E. presented the proposal to H.H. The late Amir Sk Isa Bin Salman Al Khalifa and H.H. The Prime Minister Sk Khalifa Bin Salman Al Khalifa and got their approval. This is in short the story how the biggest housing project site in Bahrain was selected.



His Highness Sheikh Isa Bin
Salman Al Khalifa



His Highness Sheikh Khalifa Bin
Salman Al Khalifa



His Excellency Sheikh Khalid
Bin Abdulla Al Khalifa



1973 topo map of region in and around Hamad Town site

Preparation of Master Plan of Hamad Town

After that preparation of Master Plan of the Town became a priority. Dr. Abu Hamda who was leader of UNDP Project, was Director of Physical Planning from January 1980 to December 1982, was asked to prepare the Master Plan. Also Associated Consulting Engineers (ACE) was engaged for the job. They could not come up with a satisfactory road network proposal. I noticed this. I thought people living in this town will move towards east to go to Manama, Riffa, Refinery, ALBA etc. so logically there should be an arterial road connecting Wali Al Ahad road with Zallaq road at the eastern perimeter of the town. I made a sketch plan proposing this road (known as eastern arterial road of Madinat Hamad and now part of Sk Khalifa Bin Salman highway) and went to H.E. Sk Khalid Bin Abdulla and showed him the proposal. He at once approved this proposal of eastern arterial road of the town and ordered others to work on the Master Plan adopting this road proposal. ACE prepared the Master Plan adopting this road as main of Road framework of the town.



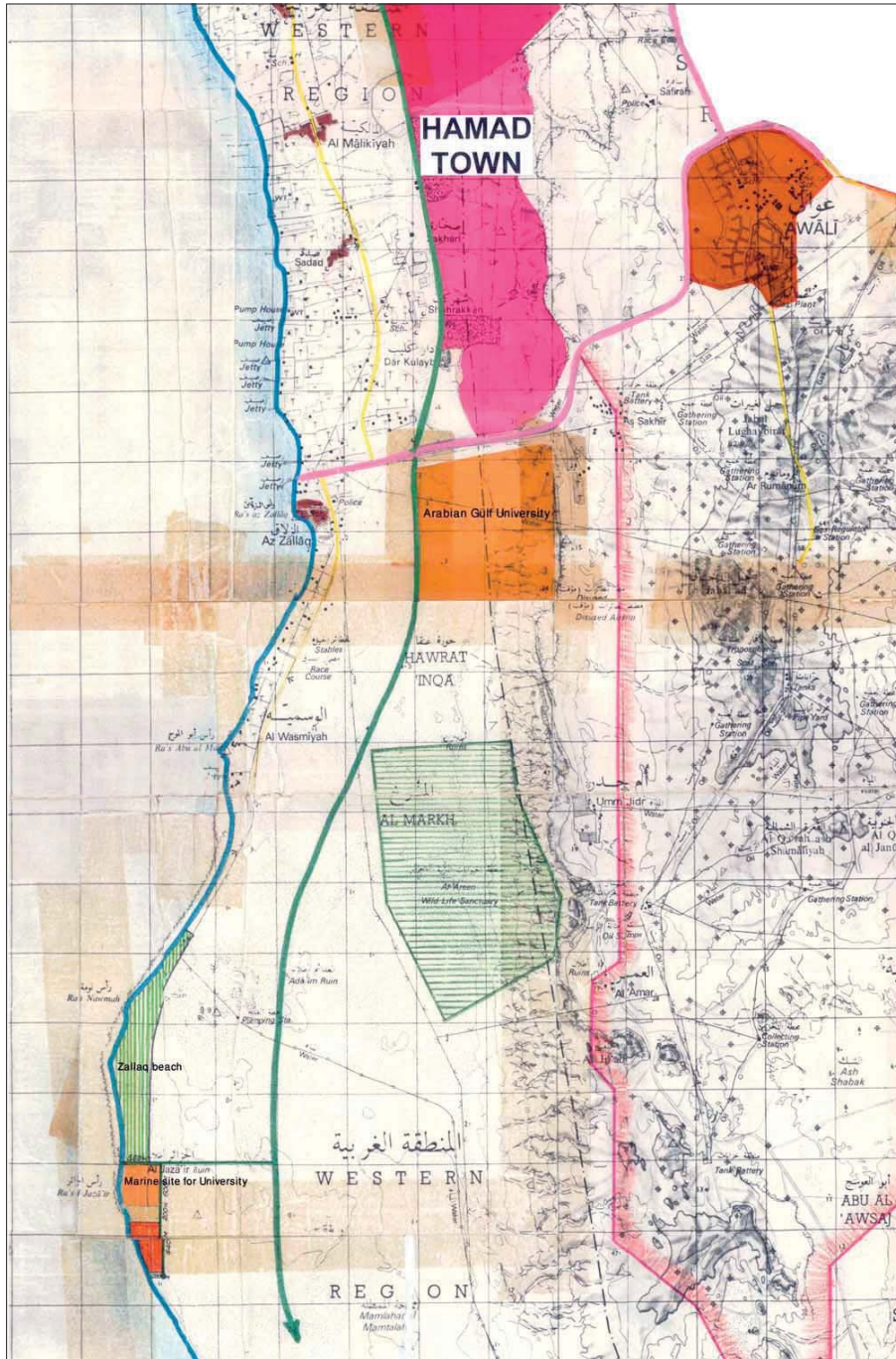
Eastern Arterial of Hamad Town shown on Topo map of 1973

Foundation of the Town was laid by late Amir H.H. Sk Isa Bin Salman Al Khalifa in 1982 and construction of the town started immediately 8075 houses and 152 apartments were constructed in the town between 1982 and 1999. Required schools, health center, mosques, markets etc. also were constructed in the town. 2001 census recorded population of the town 52,718 (8.10% of total population of the country).

Selection of site for Arabian Gulf University

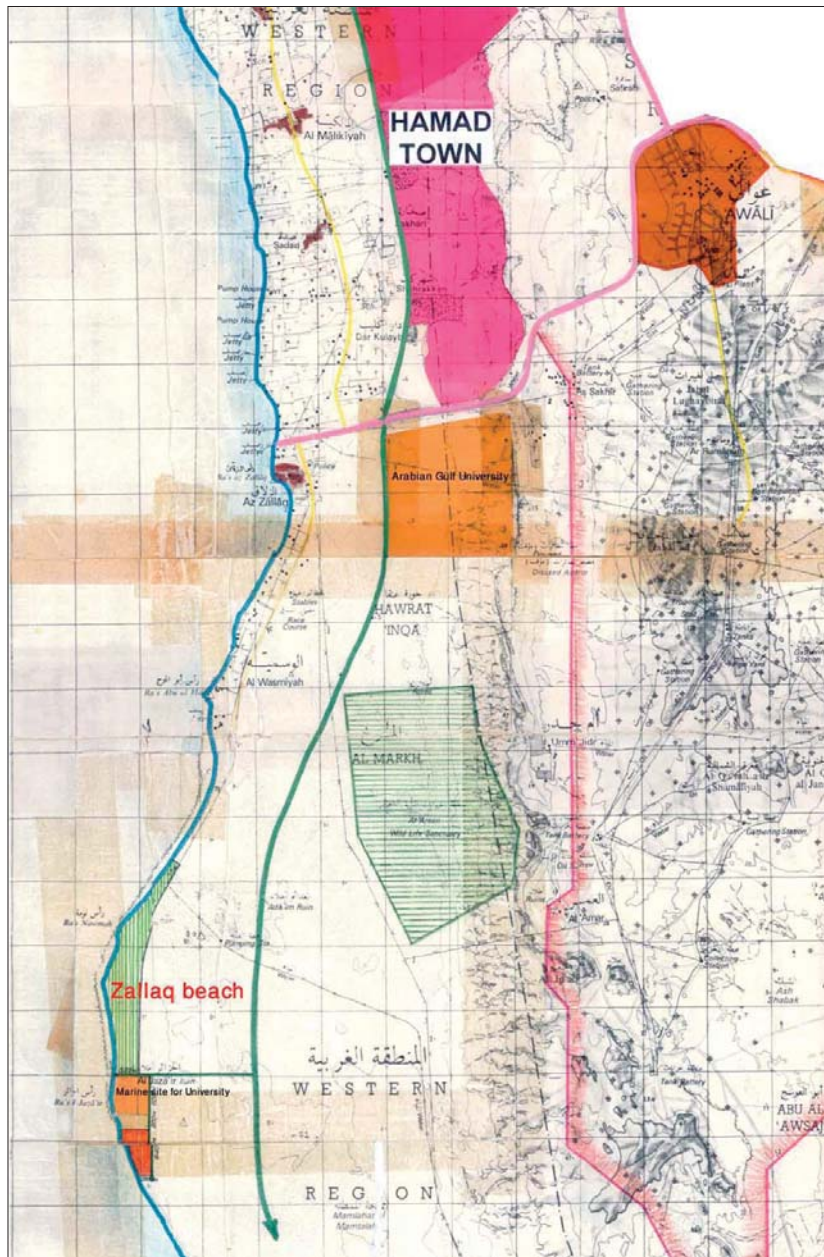
In 1979 the Minister of Education H.E. Sk Abdul Aziz Bin Mohammed Al Khalifa sent a letter to the Minister of Housing requesting a 16km² site for the University. American team in Physical Planning was asked to propose a site. They proposed a site in Hurat Aáli. The proposal was rejected. H.E. Sk Khalid Bin Abdulla asked me to propose a site. I proposed the site covering 4km² adjacent south of Zallaq highway west of Sakhir Palace. When delegation of seven sponsors of the University: Iraq, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates came to Bahrain in 1979 they visited the site and approved it. They also wanted a marine site for marine research and I proposed a site at the south of Zallaq beach as shown below and it was approved.

In 1981 April, plan to establish the University in Bahrain was given the go-ahead at a meeting held in Bagdad of the education ministers of the seven Gulf State sponsors and was intended to accommodate 10,000 students by the year 2000A.D.



Zallaq Beach

About 6 km south of Zallaq village about 4.5 km length of sea shore was open to public use. People used to go there for picnic and swimming. In mid 1970's the site was allocated for public beach. Municipality provided facilities for swimming , restaurant , toilet , seats etc and the area was very popular for public recreation.



Location of Zallaq Beach

Preparation of Regional Master Plan of Isa Town, Riffa and Refinery Area

Preparation of Master Plan for south side of Al Estaqlal Highway

H.E. Sk Khalid Bin Abdulla asked me to prepare Master Plan for the area along south side of Refinery road (now Al Estaqlal Highway). The area had big properties without any proper plan, some of them with direct access from Refinery road. There was overhead high voltage electricity lines on pylons along the south side of the road. I prepared a detail plan by adjusting properties giving access to all properties from service road along the Refinery road. Also proper road network was put in the eastern part of the plan. Following detail plan was approved and implemented.



Preparation of detail plan for west side of Sk Salman highway at the west of Isa Town

There were private properties along west side of Sk Salman Road from Bahrain Gas junction to Isa Town Gate junctions. These properties were not based on any road network plan. I studied the area and provided a service road along Sk Salman road and adjusted all properties to have access through the service road (please see plan on page 181). I also accommodated existing service corridor through the area and other services in the area. The plan was approved and the area developed based on this plan. Abdul Rahman Kanoo school is also built within the fram work of this plan.

Planning of the area at the north of Wali Al Ahad road opposite BDF hospital in West Riffa

Gift lands were given in the area without any plan. I prepared a Master Plan for the area. I proposed a Green Belt between this area and new planned area at the east of A'ali to maintain separate identity of the two areas and to provide public open space (please see the plan on page 181). Road network was proposed in the plan. One primary school site and public open space also proposed in the plan. The plan was approved and implemented generally.

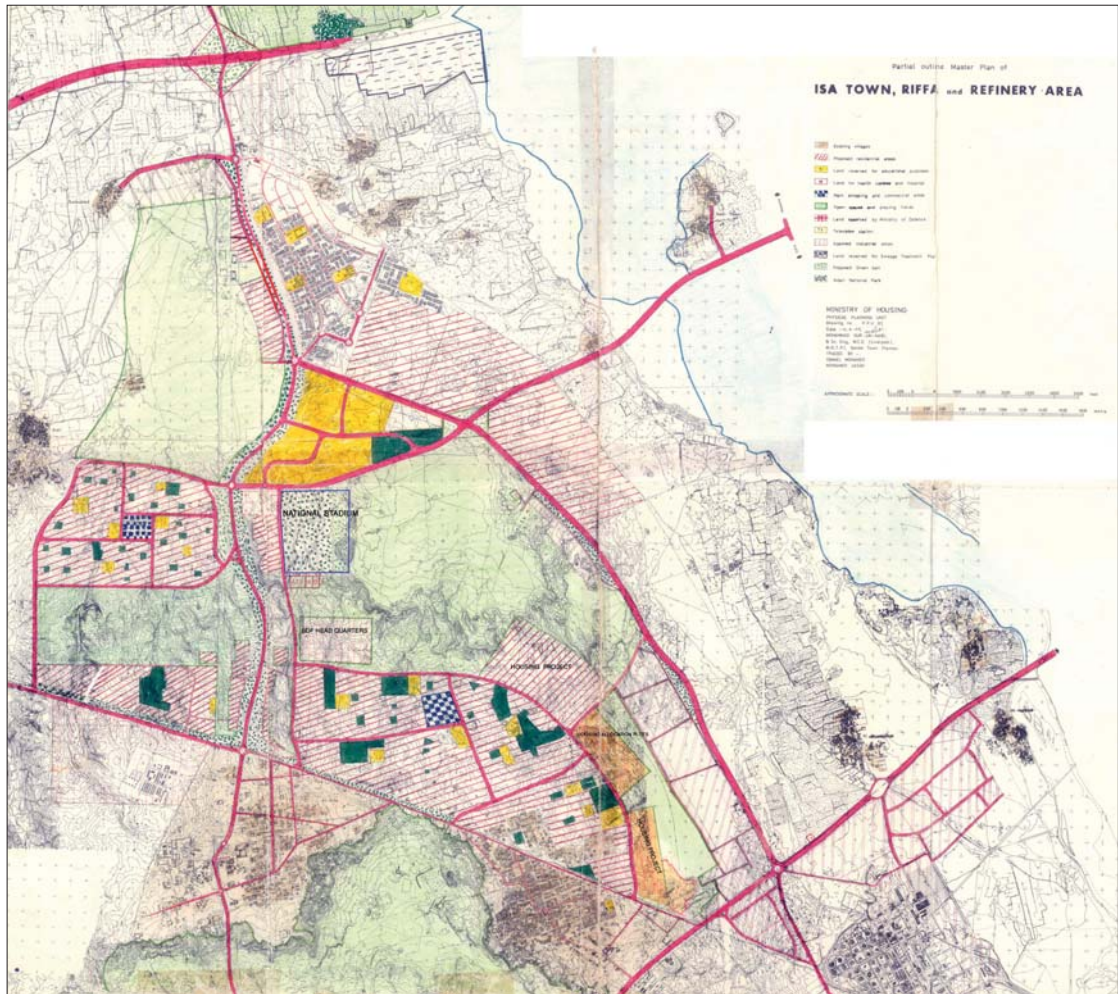
Allocation of National Stadium Site

National stadium site was allocated at the east of Traffic Head Quarters based on road network plan of Riffa as mentioned earlier (please see page 181). I proposed the site along proposed extension of 16 December highway to Sitra causeway and extension of A'ali road (Sk Zayed road later) to Sk Khalifa Bin Salman highway to give good access to the stadium, to traffic Head quarters and to Bahrain University and other institutions in the area.

Allocation of Bahrain Defense Force Head Quarters Site

Bahrain Defense Force Head Quarter site was allocated at the north of Riffa Master Plan ring road taking road network of Master Plan as base (please see plan on 181).

Incorporating all above mentioned plans and planning decisions I prepared a regional Master Plan for Isa Town, Riffa and Refinery area. I proposed Buhayer area and Hunaniya area as green belt. Also I proposed Hurrat A'ali as public open space. The following regional Master Plan was approved in principle.



Regional Master Plan of Isa Town, Riffa and Refinery Area

Sitra Island

Sitra was an island until it was connected by BAPCO by a causeway to Bahrain island when BAPCO constructed oil storage tanks in Sitra in late 1930's. In 1977 the island was connected with Manama with a new causeway. Sitra had sweet water springs Ain Ar-Raha and Ain Al-Mahzza. Inhabitants of Sitra villages had their drinking water from these springs. Villages here were surrounded by date palm gardens. Inhabitants of Sitra depended on these gardens and fishing for living.

In 1976 I took initiative to prepare a Master Plan for Sitra. At that time Sitra had Kharjia, Wadiyan, Markuban, Sufalah, Mahzzah and Kuriyah villages. Population of these villages in previous census was as follows:

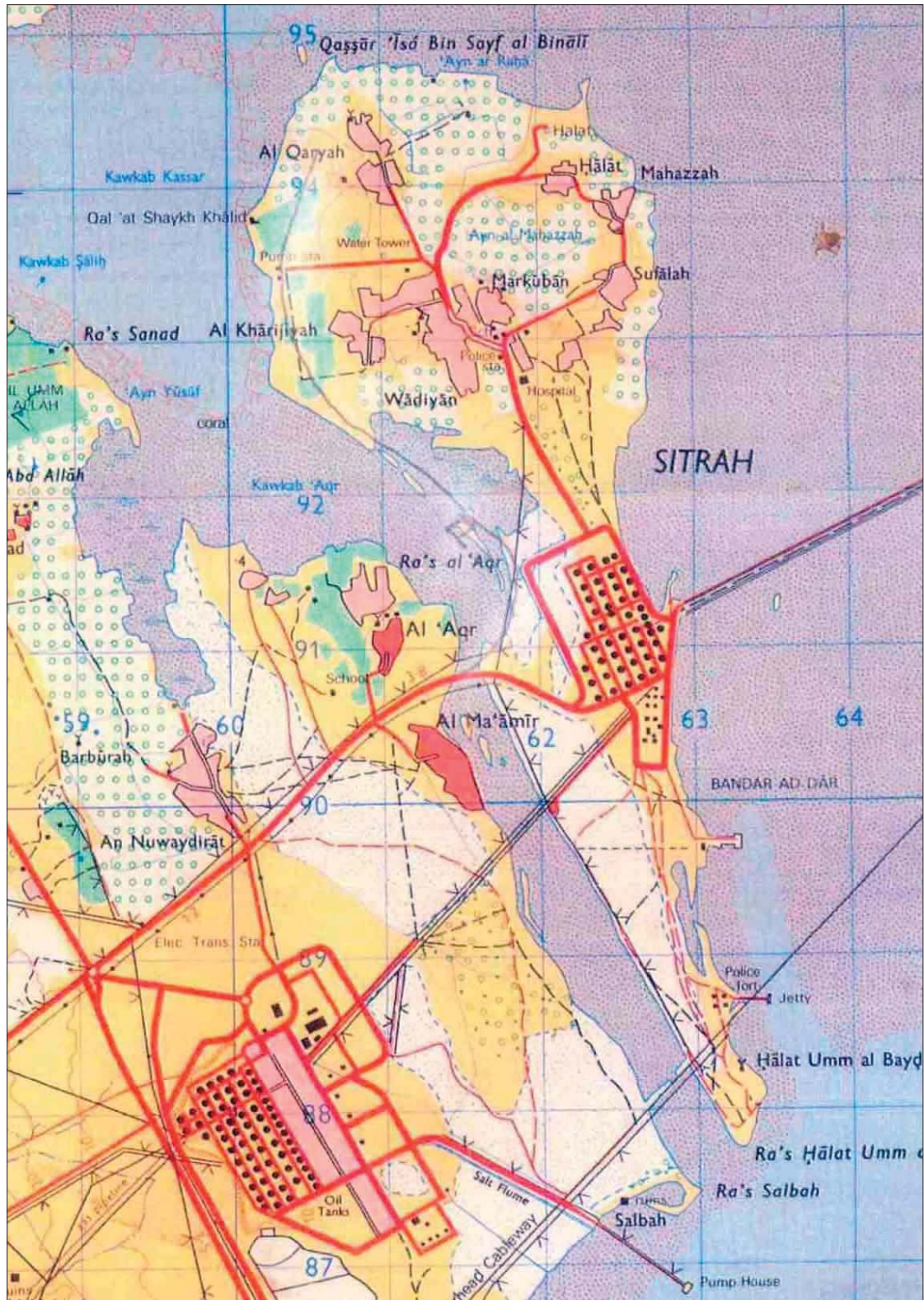
1959- 3,926

1965 - 5,075 (Annual growth nearly 4.5%)

1971 - 6,663 (Annual growth over 4.5%)

There were two schools, a Municipality office, a Police Station, a Clinic with maternity facilities, a Club, one small market within and close to Wadiyan and Markuban. There were eight football pitches at that time on private land and there was no public garden.

Following topographic map of 1973 and Aerial photograph of 1976 shows how the island was at that time.



1973 Topographic Map



1976 Aerial Photo

Before this Master Planning exercise Sitra Power house was constructed at the north east of Sitra Island and was connected to Sitra causeway by a new road along north coast of the island. Also decision was taken to reclaim 187 hectares of land at the north of this new road for a new industrial area which was subsequently reclaimed.

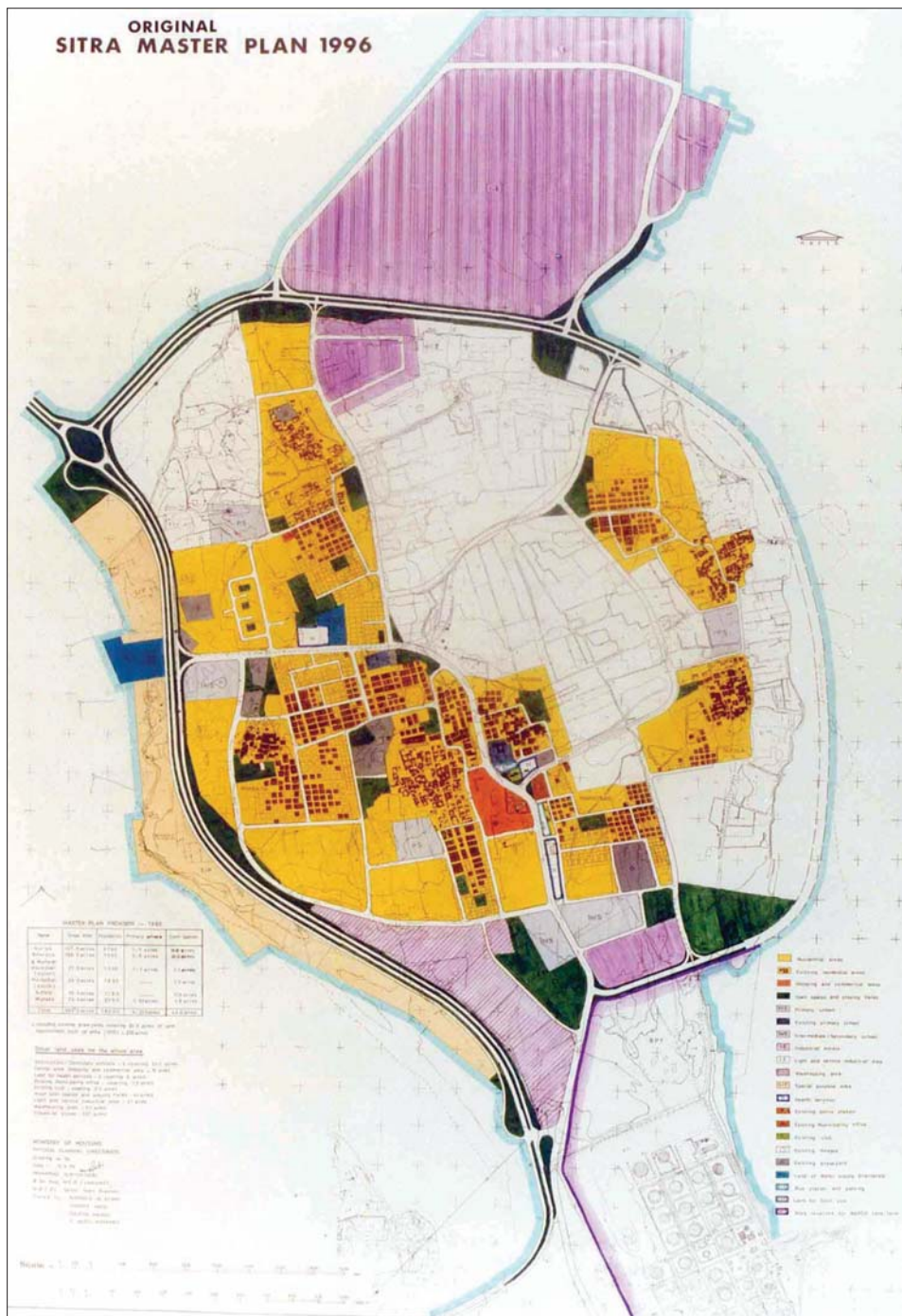
In this connection one incidence is worth mentioning. The area shown shaded yellow, on 1976 aerial photograph below, at the south east of the junction of Sitra Causeway and the road leading to Sitra Power house was Govt. land. I proposed to use this area for accommodation of expatriate labours but Planning Coordination Board did not approve the proposal. Later on the area was gifted.

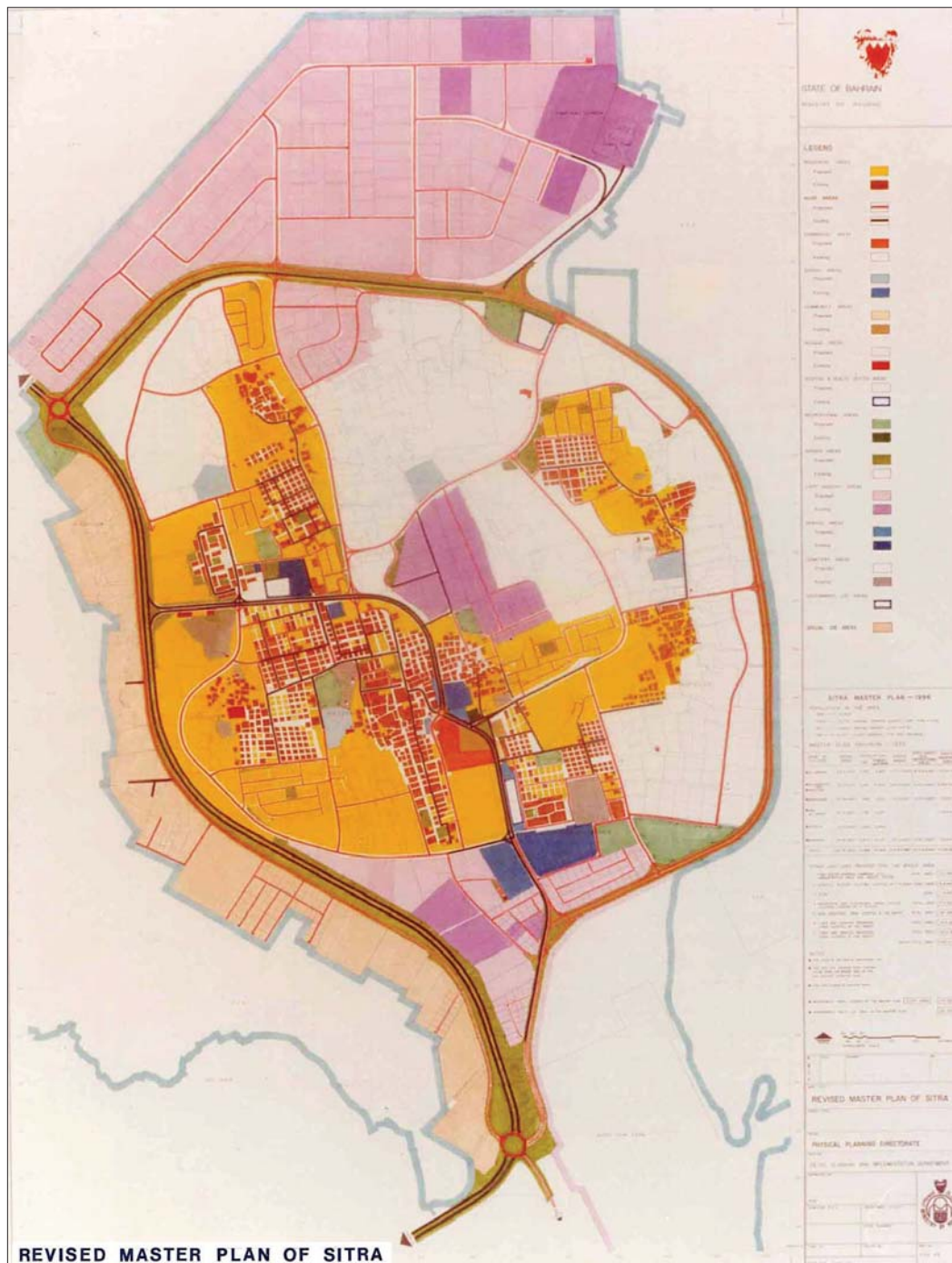


Site Plan

To prepare the Master Plan I visited the area, collected topographic map and available land ownership information from Land Registration Directorate. Population projected for 1996 and estimated needs of schools and other services. Road network was proposed with main roads by passing the villages to avoid movement of through traffic through villages. A service road is provided in the Master Plan along west side of Sitra causeway road to give access to

private properties along west side of this main road. All available Govt. land was proposed for use for public purposes – Schools health center, play grounds etc. A copy 1976 Master Plan which was approved and implemented substantially is include here. Below is the approved 1979 zoning map incorporating original Master Plan proposals is given.





SITRA MASTER PLAN-1979 BUILDING REGULATION MAP

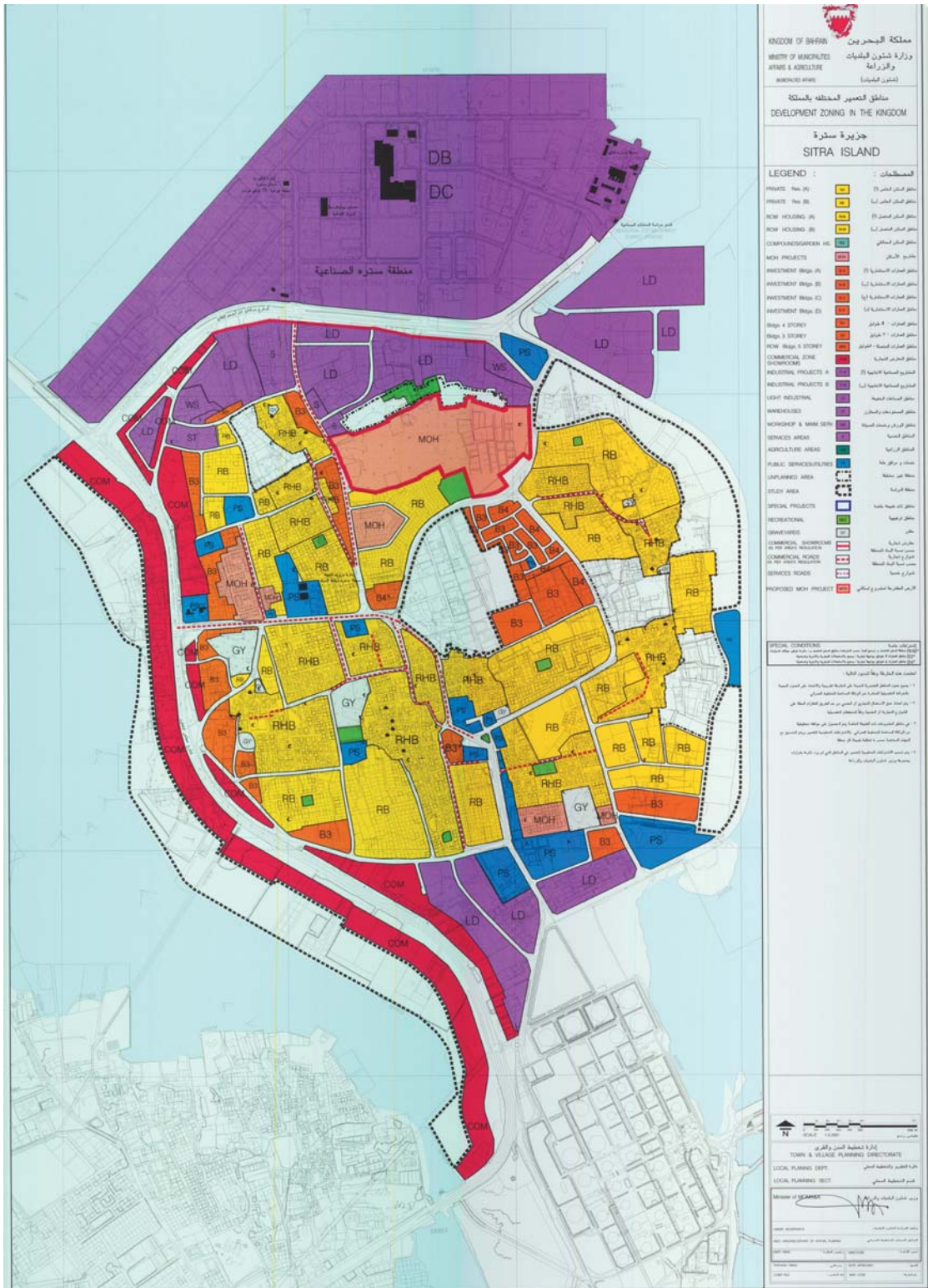


1979 Zoning Map

Following table shows provisions of 1976 Master Plan

SITRA MASTER PLAN - 1996						
POPULATION IN THE AREA						
1959 - - 3,926						
1965 - - 5,075 (ANNUAL GROWTH SLIGHTLY LESS THAN 4.5%)						
1971 - - 6,663 (ANNUAL GROWTH OVER 4.5%)						
1981 - - 12,591 (11,812 BAHRAINI, 779 NON-BAHRAINI)						
MASTER PLAN PROVISION - 1996						
NAME OF VILLAGE	GROSS AREA	POPULATION		SCHOOL AREAS	OPEN SPACES AND RECREATIONAL AREAS	EXISTING GRAVEYARD AREAS
		1981	Projec. (up to 1996)			
o AL QARYAH	60.5 HECT	2,357	4,800	1 TO 1.7 HECT	8 TO 2.3 HECT	1 TO 0.2 HECT
o AL KHARJIYA AND o WADIYAN	78.23 HECT	4,661	9,400	2 TO 1.9 HECT	5 TO 2.0 HECT	5 TO 5.0 HECT
o MARQUBAN	20.00 HECT	742	1,350	1 TO 1.0 HECT	2 TO 1.0 HECT	1 TO 0.3 HECT
o ABU AL AYASH	22.50 HECT	1,166	2,350			1 TO 2.4 HECT
o SUFALA	12.00 HECT	1,249	2,600			
o MAHAZZA	25.50 HECT	2,413	4,100	1 TO 1.2 HECT	3 TO 1.3 HECT	1 TO 0.14 HECT
TOTAL	218.75 HECT.	12,588	24,600	5 TO 5.8 HECT	18 TO 6.6 HECT	9 TO 8.86 HECT
OTHER LAND USES PROVIDED FOR THE WHOLE AREA :-						
1. TOWN CENTER, SHOPPING, COMMERCIAL, CIVIC, ADMINISTRATIVE AREA AND HEALTH CENTER.				TOTAL AREA = 5.2 HECT.		
2. SCHOOLS OUTSIDE VILLAGES LOCATED AT 3 PLACES				TOTAL AREA = 8.8 HECT.		
3. CLUB				AREA = 1.6 HECT.		
4. RECREATION AND PLAYGROUND AREAS OUTSIDE VILLAGES LOCATED AT 2 PLACES.				TOTAL AREA = 6.4 HECT.		
5. MAIN INDUSTRIAL AREA LOCATED IN THE NORTH				TOTAL AREA = 187 HECT.		
6. LIGHT AND SERVICE INDUSTRIAL AREA LOCATED IN THE NORTH.				TOTAL AREA = 14.5 HECT.		
7. LIGHT AND SERVICE INDUSTRIAL AREA LOCATED IN THE SOUTH				TOTAL AREA = 34.5 HECT.		
				GROSS TOTAL AREA = 242.4 HECT.		

I monitored Sitra Master Plan implementation continuously. H.E. Sk Khalid Bin Abdulla Al Khalifa in most cases approved my proposals and suggestions in detail aspects of the Master Plan. Master Plan road corridors through private properties were created by detail re-planning and evaluating the prices of properties (by compensation Valuation Committee) before and after planning and implementing these valuations by Ministerial Decree. As a result these road corridors did not require any cash compensation for building roads. Schools, Post Office, Gardens were built (without requiring any land acquisition) as per Master Plan and subsequent detail planning exercises. Following approved latest zoning map of the area shows the final product incorporating provisions of original Master Plan and subsequent many local detail planning exercises.



Current Zoning Map

South side of Sitra Island

Until mid 1970's in the south half of Sitra Island there was BAPCO tank farm and BAPCO Jetty, a fishing jetty at Bander ad Dar and a jetty for use of Police and Coast guard. Old maps shows some ruins of houses at the south of coast guard area. The rest of southern half of Sitra Island was barren (please see topo map on page 184). Subsequently many developments took here.

Gulf Petro-chemical Industry (GPIC)

Decision was taken to establish a petro chemical industry in Bahrain. A big area was reclaimed along the south side of the road leading to BAPCO jetty and Petrochemical Industry was established covering 1km x 600m (60 hecets) site in December, 1979 as shown on the map (page 195). Production started in 1981.

Bahrain Yacht Club

Land was leased to Bahrain Yacht Club at the south tip of Sitra island and the Club developed and functioning there (Please see the map on page 195) since 1979.

Bander Al Dar Fishing Harbour

Existing Fishing harbour here re-built in an extended form with much bigger capacity and facilities.

Al Bander Resort

Next to the Yacht Club, at the north, this resort developed in mid 1980's and is quite popular.

Coast Guard Base

Existing Coast Guard here was developed into Coast Guard Head Quarters.

Slaughter House

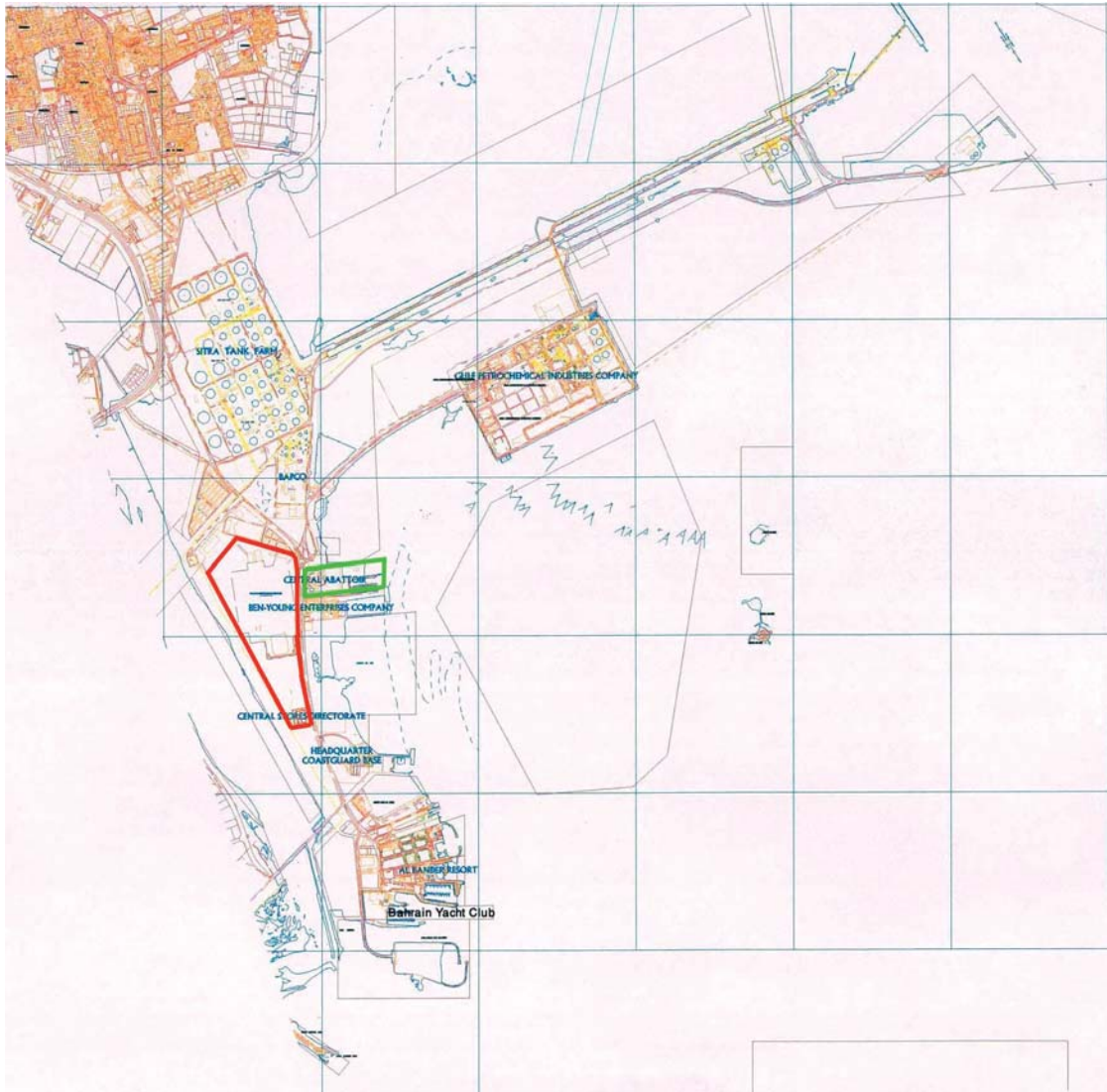
In 1980 UNDP team in Physical Planning Directorate was asked to propose a site for building slaughter house. Their proposals were not approved. Present slaughter house site (central abattoir) in south Sira I proposed (please see map below).

Ministry of Finance and National Economy Store Area, Godown area and Animal Yard

Sites for above mentioned facilities allocated at the middle west side of south Sitra as shown in the map below.

Private residence at the south

At the south of original south tip of Sitra Island known as Ra's Salbah a substantial area is reclaimed and developed for a private residence.



Map of South Sitra

Framing Zoning and Building Regulations

A Committee was established under chairmanship of H.E. Sk Khalid Bin Abdulla Al Khalifa with Director of PWD, Mr. Ali Murad, Mr. Yahiya and Majidee from the Municipality, Mr. Wissa and me as members to frame zoning and Building Regulations. Though Physical Planning was shifted to Ministry of Housing in 1975 function of granting Building Permission remained with Central Municipal Council. Ministry of Works, Power and Water engaged Hoff and Overgaard, Danish Consultants to study Bahrain Road and Traffic in 1976. They recommended right of way for major roads like Sk Salman Road, Budaiya Road etc. The Committee for framing zoning and building regulations met several times, each time the meeting lasted hours and discussed all issues related to zoning and building and finalized the regulations. In the regulations reservations for major roads were decided more or less as per recommendations of Hoff and Overgaards Consultants. Following Prime Ministerial Edict No. 10/1981 was issued for regulations adopted by the Committee.

PRIME MINISTERIAL EDICT

PRIME MINISTERIAL EDICT NO. 10/1981 CONCERNING RE-DETERMINATION OF ZONING REGULATIONS FOR CONSTRUCTION IN VARIOUS PARTS OF THE STATE

The Prime Minister, having reviewed Amiri Decree No. 16/1973 concerning the establishment of the Central Provisional Municipal Council for Administration of Municipalities Affairs, and to Article 20 of the Law on Constructional Organization of Buildings promulgated by Amiri Decree No. 13 of 1977, and to

Prime Ministerial Edict No. 8/1979 with respect to determining zoning regulations for construction in various parts of the State, and upon the submission of the Minister for Housing, and upon the consent of the Council of Ministers, hereby orders:

Article 1

The zoning regulations for construction in various parts of the State, which are attached to this Edict, shall come into operation.

Article 2

The Minister for Housing shall specify by order to be issued by him the areas which shall be subject to the application of the aforementioned regulations.

Article 3

The aforesaid Prime Ministerial Edict No. 8/1979 with respect to determining zoning regulations in various parts of the State shall be repealed.

Article 4

The Minister for Housing and the Chairman of the Central Municipal Council, each in his respective capacity, shall implement the provision of this Edict which shall come into force after two months from the date of its publication in the Official Gazette.

Signed: Khalifa bin Salman Al Khalifa
Prime Minister

Dated: 19 March 1981

ZONING REGULATIONS FOR CONSTRUCTION IN VARIOUS PARTS OF THE STATE

FIRSTLY: REGULATIONS FOR CONSTRUCTION OF MULTI-PURPOSE BUILDINGS IN SHOPPING AREAS

Article 1

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 500% of the area of the land, with the exception of the Diplomatic Area where the total floor area of buildings may reach 700% of the area of the land.
2. The above-mentioned percentages shall be inclusive of all premises with all the relevant arcades and facilities, but with the exception of staircases, lifts, ventilation shafts and projections.
3. A garage, which shall not be calculated within the above-mentioned areas and which shall not be less than 60% of the floor area of the land, shall be built to be used for parking.

Article 2

Building-lines in such areas shall be as follows:

1. Building may be permitted on the border of any road provided that an arcade having a width of 3.60 metres shall be constructed.
2. The line of other facades shall not be less than 1/8 of the height with a minimum of 3 metres from the borders of the land they overlook.
3. The width of any road in such area shall not be less than 20 metres.

Article 3

The height of buildings in such areas shall be as follows:

1. The height shall not be more than 20 storeys including the ground floor and groundwork.
2. The height of an arcade shall not be less than 5.80 metres from the top of the pavement to the lower part of the ceiling and it shall have the full height of the ground-floor.
3. The arcades shall continue along the entire length of the land's borders overlooking the streets and shall be parallel with the pavement.

SECONDLY: REGULATIONS FOR CONSTRUCTION IN CONVENTIONAL AREAS

- A) Buildings overlooking shopping areas

Article 4

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 400% of the area of the land.
2. The above-mentioned percentages shall be inclusive of all premises with the relevant arcade, projections, ventilation shafts and facilities. A mezzanine not exceeding 50% of the ground-floor area and exclusive of the said percentage is permissible.

Article 5

Building-lines in such areas shall be as follows:

1. Building may be permitted on the borders of land situated in streets with a width of 10 metres or more.

2. In case construction takes place in streets with a width of less than 10 metres, provision shall be made so that the building-line shall be to a distance which equals half the difference between the present width and the said 10 metres, unless there is an approved building line for the relevant street where construction is to take place.

Article 6

The height of buildings in such areas shall be as follows:

1. Five storeys provided that the maximum height shall not be more than 20 metres and provided that the said height shall not be in excess of one and a half times of the width of the street to which shall be added the projection distance from the land intended for construction therein.
 2. Two storeys, provided that the maximum height shall not be more than 8 metres if the land intended for construction is less than 60 square metres.
- B) Buildings overlooking residential streets

Article 7

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 200% of the area of the land.
2. The above-mentioned percentage shall be inclusive of all parts of any building such as projections, ventilation shafts and facilities as well as arcades, if present.

Article 8

Building-lines in such areas shall be as follows:

1. Building may be permitted on the borders of land situated in streets having a width of six metres or more.
2. In case construction shall take place in roads having a width of less than six metres, provision shall be made so that the building-line shall be to a distance which equals half the difference between the present width and the said six metres unless there is an approved line for the relevant road where construction is to take place.

Article 9

The height of buildings in such areas shall be as follows:

1. Three storeys provided that the maximum height shall not be more than 12 metres, with the proviso that the said height shall not be more than one and a half times the width of the road plus the distance to the building-line to the land intended for construction.

2. Two storeys only so that the maximum height shall not be more than 8 metres if the area of the land intended for construction is less than 60 square metres.
3. Additional buildings may be constructed on an area of 60 square metres of the roof if the floor area is no more than 150 square metres and if it exceeds 150 square metres such additional buildings may only occupy 40% of the floor area.

THIRDLY: REGULATIONS FOR CONSTRUCTION IN NEW AREAS, WHICH ARE DIVIDED INTO FOUR ZONES

1. Investment Residential Areas (a)

Article 10

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 300% of the area of the land.
2. The total area of any floor shall not be more than 60% of the area of the land.
3. The ground floor shall be left supported by columns for the purpose of using it as a car park, with the exception of the entrance, power and pumps room, if any. There may be added thereto a room and a toilet for the door-keeper, or alternatively, the landlord may provide a car park having an area of 80% of the ground floor area to be adjacent to the premises in a manner which shall be approved by the Municipality.

Article 11

Building lines in such areas shall be as follows:

1. Building may be permitted on the borders of land situated in streets having a width of 12 metres or more.
2. In case construction shall take place in roads having a width of less than 12 metres, provisions shall be made so that the building line shall be to a distance which equals half the difference between the present width and the said 12 metres, unless there is an approved building line for the relevant street, where construction is to take place.
3. Projections of facades overlooking another neighbour, garden, open space or pedestrian crossing shall be to a percentage of $\frac{1}{6}$ of the height at least, or alternatively they shall not be less than 3 metres.

Article 12

The height of buildings in such areas shall be as follows:

Ten storeys provided that the maximum height shall not be more than 40 metres.

2. Investment Residential Areas (b)

Article 13

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 240% of the area of the land.
2. The total area of any floor shall not be more than 60% of the area of the land except for ground floors overlooking commercial streets where building is permitted over the entire area of the land.
3. The ground floor shall be left supported by columns for the purpose of using it as a car park, with the exception of the entrance and power and pumps room, if any. There may be added thereto a room and a toilet for the door-keeper, or alternatively the landlord may provide a car park having an area of 80% of the ground floor area to be adjacent to the premises in a manner which shall be approved by the Municipality.

Article 14

Building lines in such areas shall be as follows:

1. Building may be permitted on the borders of land situated in streets having a width of 9 metres or more.
2. In case construction shall take place in roads having a width of less than 9 metres, provision shall be made so that the building line shall be to a distance which equals half the difference between the present width and the said 9 metres, unless there is an approved building line for the relevant street, where construction is to take place.
3. Projections of facades overlooking another neighbour, garden, open space or pedestrian crossing shall be to a percentage of 1/6 of the height at least; or alternatively they shall not be less than 2 metres.

Article 15

The height of buildings in such areas shall be as follows:

Four storeys provided that the maximum height shall not be more than 16 metres.

3. Private Residential Areas (a)

Article 16

The percentages for construction in these areas shall be as follows:

1. The total floor area of the buildings shall not be more than 120% of the area of the land.

2. The total area of any floor shall not be more than 60% of the area of the land.
3. Construction of a park for no more than two vehicles; a room and a toilet for the servant both having an area of no more than 15 square metres, is permitted provided all these constructions shall be outside the main building and not be included within the permitted area.

Article 17

Buildings lines in such areas shall be as follows:

1. The building line of the main premises shall be at a distance of 3 metres at least from each street and 2 metres at least from each of the other facades overlooking another neighbour, garden, open space or pedestrian crossing. In case the building overlooks more than one road, provision shall be made so that the construction line shall be at a distance of 3 metres from the main access road to the site and 2 metres from the other sides.
2. In case the building is situated in a road having a width less than 6 metres, the building line must be at a distance which equals half the difference between the present width and the said 6 metres unless there is an approved building line for the relevant street, where construction is to take place.
3. Where the building site has a frontage of less than 12 metres, the prescribed projections must be complied with only on the front and rear sides provided that building is permitted on the other two sides of the site.

Article 18

The height of buildings in such areas shall be as follows:

Two storeys provided that the maximum height shall not be more than 8 metres.

4. Private Residential Areas (b)

Article 19

The height mentioned in the foregoing Article may be exceeded in case the ground floor is built in such a way as to be left supported by columns in accordance with Articles 20, 21 and 22.

Article 20

The percentages for construction in these areas shall be as follows:

1. The total floor area of buildings shall not be more than 180% of the area of the land.

2. The total area of any floor shall not be more than 60% of the area of the land.
3. The ground floor, which shall be left supported by columns, shall be mainly used for parking and it may not be used for residence in any manner whatsoever.

Article 21

Building lines in such areas shall be as follows:

1. The building line of the main premises shall be at a distance of 3 metres at least from each street and two metres at least from each of the other facades overlooking another neighbour, garden, open space or pedestrian crossing. In case the building overlooks more than one road, provision shall be made so that the construction line shall be at a distance of 3 metres from the main access to the site and 2 metres from the other sides.
2. In case the building is situated in a road having a width less than 6 metres, the building line must be at a distance which equals half the difference between the present width and the said 6 metres unless there is an approved building line for the relevant street, where construction is to take place.
3. Where the building site has a frontage of less than 12 metres, the prescribed projections must be complied with only on the front and rear sides provided that building is permitted on the other two sides of the site.

Article 22

The height of buildings in such areas shall be as follows:

Three storeys provided that the maximum height shall not be more than 12 metres including the ground floor which is left supported by columns.

FOURTHLY: REGULATIONS FOR CONSTRUCTION IN AREAS ASSIGNED FOR LOCAL STYLE BUILDINGS FOR RESIDENTIAL AND INVESTMENT PURPOSES

Article 23

Local style buildings for residential and investment objects may be permitted to be constructed in the areas assigned for this purpose in accordance with the rules hereinafter mentioned.

Article 24

The percentages for construction in such areas shall be as follows:

1. The total floor area of the buildings shall not be more than 120% of the area of the land.
2. The area of the ground floor shall not be more than 65% of the area of the land.

Article 25

Building lines in such areas shall be as follows:

1. Building may be permitted along the borders of the land.
2. Building lines shall be determined in accordance with the distances stipulated in the Articles relating to residential areas according to the type of building to be constructed and in view of the width of the street which the land overlooks and the approved building line for that particular street.
3. In case of the presence of any neighbouring open space, any projection shall not be less than 2 metres.
4. One or more inner yards may be built provided that the length of each side shall not be less than 3 metres. It is essential that the total area of such yard(s) shall not be less than 16 square metres which shall not include the arcade, if any.

Article 26

The height of buildings in such areas shall be as follows:

Two storeys provided that the maximum height shall not be more than 9 metres.

FIFTHLY: REGULATIONS FOR CONSTRUCTION IN RURAL AREAS AND EXTENSIONS - DIVIDED INTO (A) AND (B)

(A) Old Areas

Article 27

The percentage for construction in such areas shall be as follows:

1. The total floor area of the building shall not be more than 200% of the area of the land.
2. The above mentioned percentage shall be inclusive of the entire premises together with the relevant arcade, projections, ventilation shafts and facilities.

Article 28

Building lines in such areas shall be as follows:

1. Building may be permitted on the borders of land situated in streets with a width of 6 metres or more.
2. In case construction takes place in roads having a width of less than 6 metres, provision shall be made so that the building line shall be at a distance equalling half the difference between the present width and the said 6 metres unless there is an approved line for the relevant road where construction is to take place.

Article 29

The height of buildings in such areas shall be as follows:

Two storeys, provided that the maximum height shall not be more than 9 metres including the roof enclosure and that the height of the building shall not exceed the width of the road by more than one and a half times.

(D) Areas Designated For Rural Extension

Article 30

The percentages for construction in such areas shall be as follows:

1. The total floor area of the building shall not be more than 200% of the area of the land.
2. The said percentage shall be inclusive of the entire premises together with the relevant arcade, projections, ventilation shafts and facilities.

Article 31

Building lines in such areas shall be as follows:

1. The building line of the main premises shall be at a distance of 3 metres at least from the road with the main access to the site and 2 metres at least from the other sides. Where the area of the land is less than 270 square metres, the building lines of the main premises shall be at a distance of 2 metres from the main access to the site and one and a half metres from the other sides.
2. In case construction takes place in a road having a width of less than 6 metres, provision shall be made so that the building line shall be at a distance which equals half the difference between the present width and the said 6 metres unless there is an approved line for the relevant road where construction is to take place.

Article 32

The height of buildings in such areas shall be as follows:

Two storeys, provided that the maximum height shall not be more than 9 metres including the roof enclosure and that the height of the building shall not exceed the width of the road by more than one and a half times.

SIXTHLY: REGULATIONS FOR CONSTRUCTION IN RURAL AREAS OUTSIDE THE BORDER LINES APPROVED FOR THE CONSTRUCTION OF VILLAGES AND TOWNS

Article 33

Areas and percentages for construction shall be determined in the following manner:

1. In case of subdividing land in these areas, each parcel shall have an area of 4,000 square metres.
2. No more than two residential units may be built on each parcel of land.
3. The total floor area of the buildings including the carport servants quarters, etc., shall not be more than 25% of the area of the parcel of land.

Article 34

Building lines in such areas shall be as follows:

1. The distance left between any of the borders of the parcel of land and the main building line shall not be less than 6 metres, and such space shall be used for landscaping.
2. Servants quarters and a carport may be built outside the main building on one side of the parcel of land and along its borders.

Article 35

The height of buildings in such areas shall be as follows:

1. The height of any building shall not be more than 9 metres including the roof enclosure.
2. The height of the servants quarters and the carport shall not be more than 3.66 metres.

Article 36

Landlords who have already obtained a permit for construction on one fourth of the area of their land in accordance with the previous regulations and who have built two residential units or more on each 4,000 square metres of the total area may not build on the remaining area of their land.

SEVENTHLY: REGULATIONS FOR CONSTRUCTION IN INDUSTRIAL ZONES

Article 37

The percentages for construction in such areas shall be as follows:

1. The total floor area of the buildings shall not be more than 80% of the area of the land the total area of each floor shall not be more than 50% of the area of the land without prejudice to the laws and regulations enforced for eliminating hazards of fire and the provision of safety.
2. The basement, if any, shall not be calculated within the above mentioned percentages, provided that it shall be used for storage and parking purposes. However, the parking area shall not be less than 50% of the basement's area.

3. No extensions may be built in open spaces.

Article 38

Building lines in such areas shall be as follows:

1. Building may be permitted along the borders of the land if the width of the street which the land overlooks is 15 metres or more or if there is an approved building line or if the said line is delineated on the approved plans.
2. In case the building is situated in a street with a width of less than 15 metres, the building line shall be at a distance which shall equal half the difference between the present width and the said 15 metres.
3. Projections of the other facades which do not overlook the street shall be at a distance of no less than 4 metres from the borders of the land without prejudice to the laws and regulations enforced for fire fighting and provision of safety.

Article 39

The height of buildings in such areas shall be as follows:

1. Two storeys, provided that the maximum height shall be 12 metres, save such cases involving industrial installations which require special specifications.
2. A mezzanine whose area shall be about 20% of the building's area may be built for use as offices.

Article 40

Showrooms for displaying the industry's products may be built on all parcels of land in the industrial zone after compliance with the following:

1. The total floor area of showrooms shall not be more than 20% of the area of the parcel of land.
2. Showrooms may be built in all streets and yards inside the industrial zone. However, showrooms may not be built in closed yards or lanes.

EIGHTHLY: REGULATIONS FOR CONSTRUCTION ALONG MAIN ROADS IN SUBURBAN AREA - DIVIDED INTO EIGHT ZONES

- a) Shaikh Salman Road on both sides from Gufool Roundabout to Al Kawari Reclaimed Land with a depth of 150 metres from the border of the road.

Article 41

Buildings in this zone may be used as showrooms, offices and residential buildings.

Article 42

The percentages for construction in this zone shall be as follows:

1. The total floor area of the buildings shall not be more than 100% of the total area of the land.
2. The total area of each floor shall not be more than 50% of the area of the land.

Article 43

Building lines in this zone shall be as follows:

1. Buildings may be constructed along the borders of the road at a distance of 25 metres from the middle of the road.
2. Buildings lines of other facades shall be at a distance of 3 metres at least from the borders of the land.

Article 44

A parking space with an area of 50 square metres of the total area of the building should be provided.

Article 45

The height of buildings in this zone shall be as follows:

Two storeys provided that the height shall not be more than 12 metres.

- b) Shaikh Salman Road from Al Kawari Reclaimed Land to Toobli Roundabout.

Article 46

This zone shall be subject to the regulations applicable to construction in industrial zones on the eastern side. Permits may be issued for the construction of showrooms.

Article 47

The building line of this zone shall be at a distance of 45 metres from the middle of the road on the western side. Showrooms may be built provided that ingress and exit shall take place from a back street.

- c) Shaikh Salman Road from Isa Town's Southern Roundabout to Awali Roundabout, Except Rifaa.

Article 48

The distance to be allowed for the width of the road shall be 240 metres, i.e., 120 metres on each side from the middle of the road.

- d) Shaikh Salman Road Running Within Rifaa on both sides.

Article 49

Building lines in this zone shall be at a distance of 30 metres from the middle of the road.

Article 50

This zone shall be subject to regulations for construction in private residential areas.

- e) The Road from Awali Roundabout to Entrance of Zallaq Deach to the West and Entrance of East Rifaa.

Article 51

The distance to be allowed for the width of the road shall be 240 metres, i.e., 120 metres on each side from the middle of the road.

- f) Dudaiya Road from Jidhafs Roundabout to Dudaiya Village.

Article 52

Building shall be permitted on both borders of the road and the building line shall be at a distance of 25 metres from the middle of the road on each side. This zone shall be subject to construction regulations for rural areas.

- g) Sehla Road.

Article 53

Building shall be permitted on both borders of the road at a distance of 20 metres from the middle of the road. This zone shall be subject to construction regulations for private residential areas which shall have a depth of 60 metres from each side.

- h) Road Linking Dudaiya with Hamala Road.

Article 54

Building shall be permitted on both borders of the road at a distance of 25 metres from the middle of the road. This zone shall be subject to construction regulations in rural areas.

- i) Western Part of the Refinery Road from TV Building to the Refinery Roundabout.

Article 55

This zone shall be subject to construction regulations for industrial zones.

NINTHLY: GENERAL PROVISIONS

Article 56

The level of facades should be approved by the Central Municipal Committee.

Such approval shall be issued after obtaining the view of a committee to be named the Facades Committee, which shall be formed by virtue of a municipal bye-law to be issued by the Chairman of the Central Municipal Committee.

Article 57

Permission may not be given for building stores, showrooms, garages or such other premises which may obstruct the flow of traffic in the main roads or such roads indicated in the approved plans save in the sites determined for this purpose with a depth of 30 metres in the side streets which are intersecting with the main roads. The said distance shall be measured from the intersection point.

Article 58

No openings may be made in the main roads except as provided in the approved plans.

Article 59

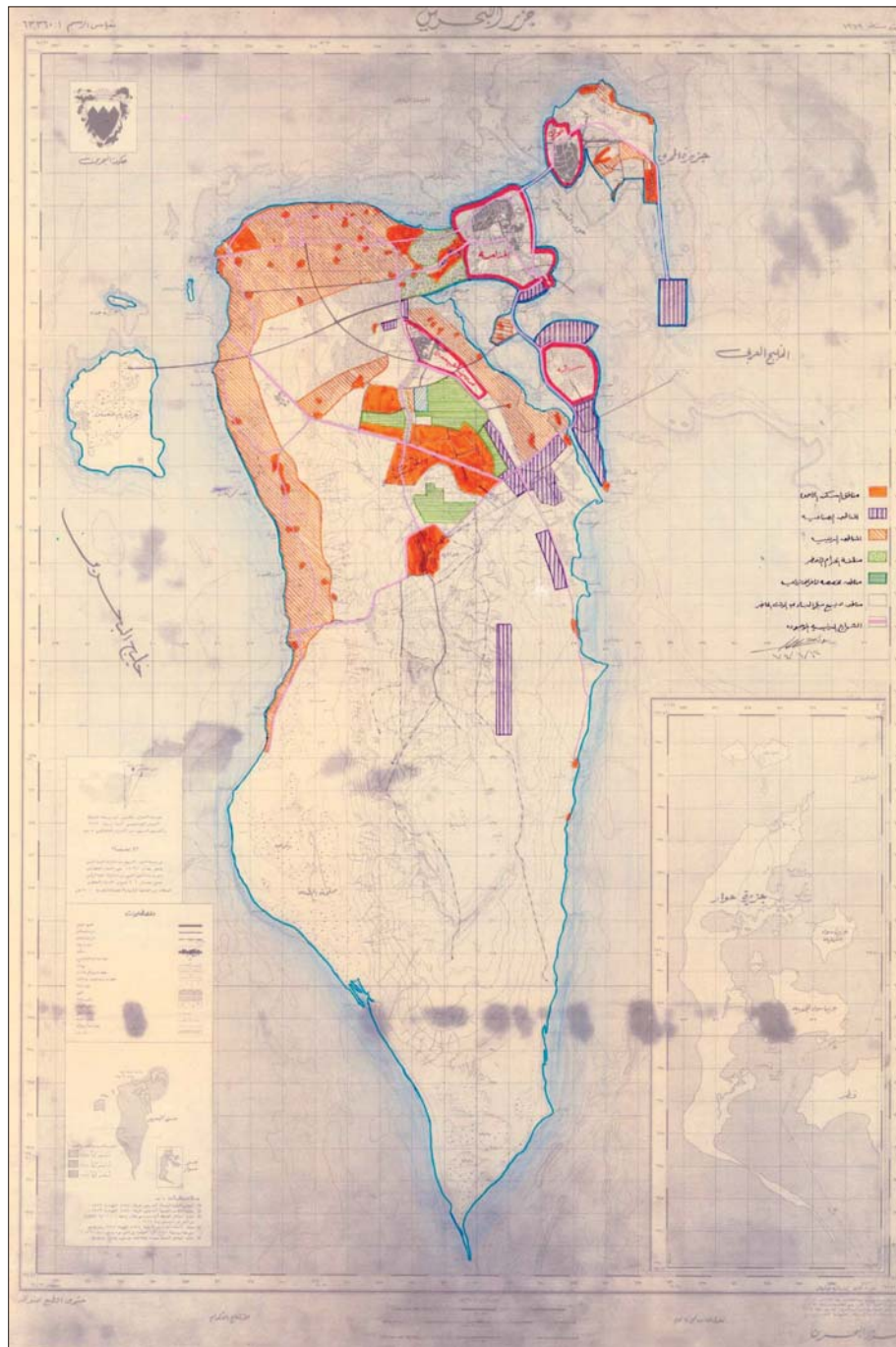
Landlords are required to provide post boxes to be installed in an independent prominent place at the entrance of the building. A post box shall be assigned for each residential unit.

Article 60

All the cases which have not been provided for in these regulations and all other individual cases shall be referred by the Central Municipal Committee to the Ministerial Committee for Public Utilities to issue the relevant decisions with regard to such cases.

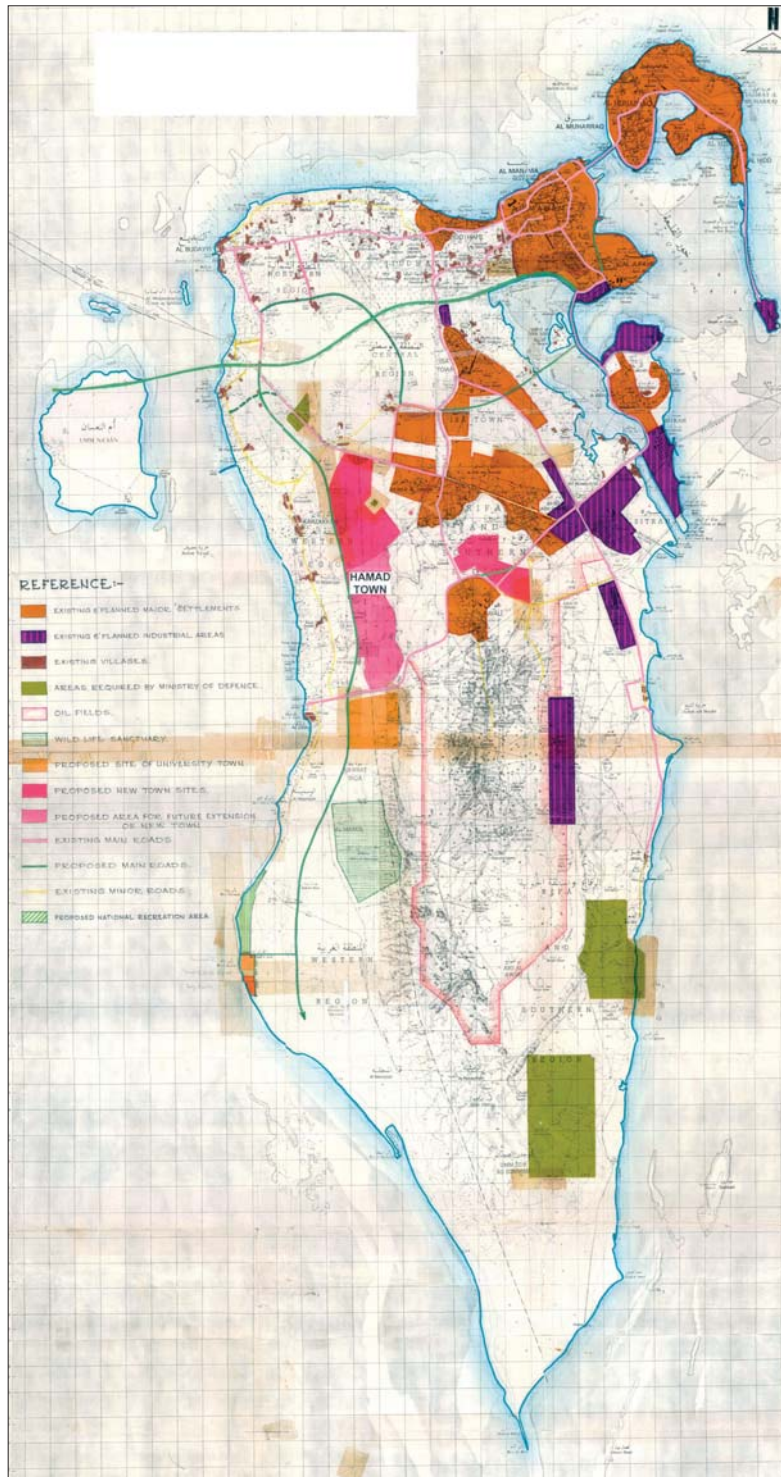
National Zoning Map

Following National Zoning map incorporating above mentioned zoning and building regulations was signed by H.E. Sk Khalid Bin Abdulla Al Khalifa, Minister of Housing on 12.6.1979 and Implemented.



Zoning Map

Subsequently following Bahrain Development Plan was prepared and used as a guide for development.

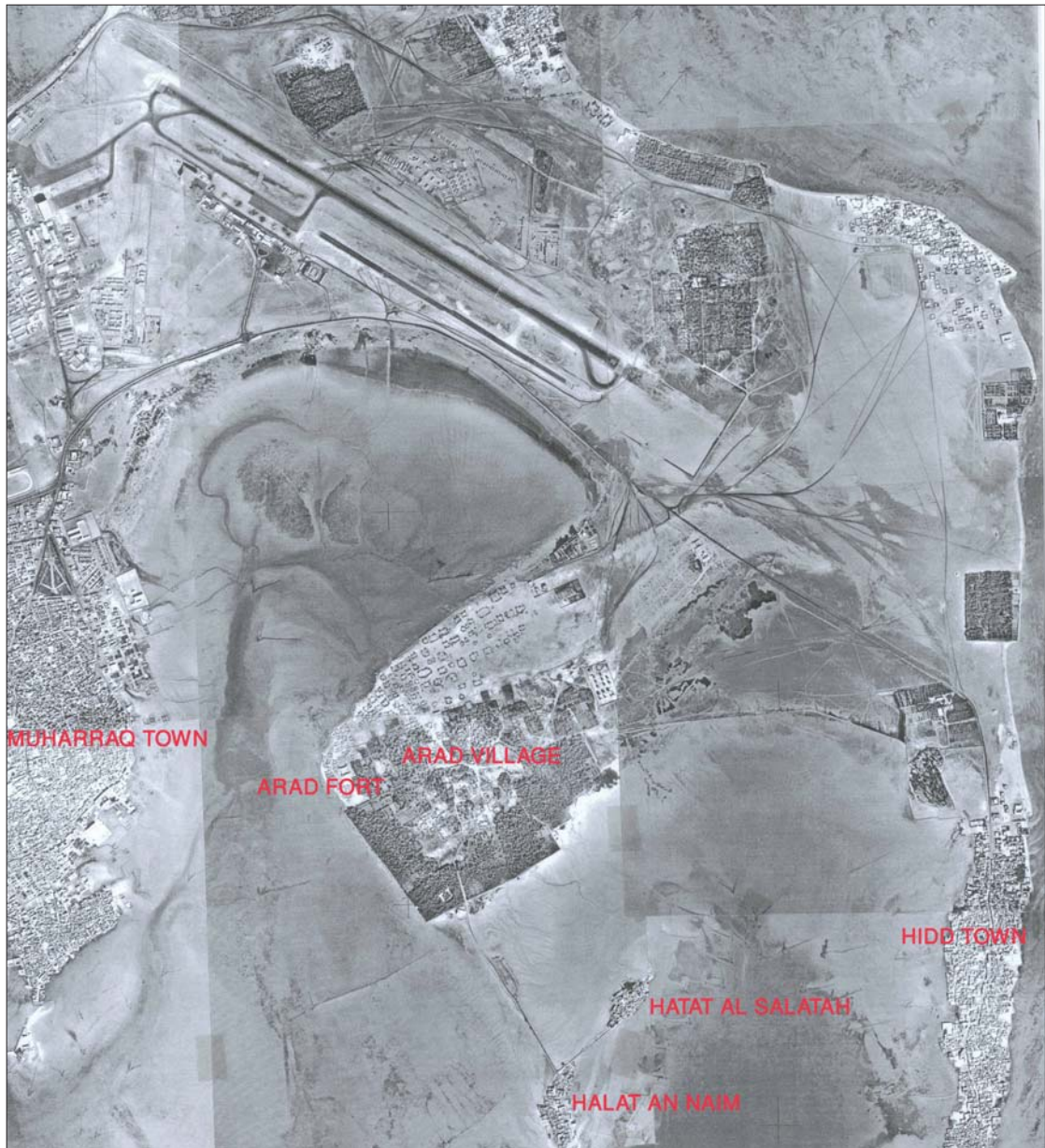


Bahrain Development Plan

In above mentioned regulations maximum floor area ratio permitted was 500% with exception of Diplomatic area where permitted floor area ratio was 700%. The next high floor area ratio was 400% for buildings overlooking shopping streets. Highest floor area of residential areas was 300% for Investment residential area (a). These densities agreed on the basis of available roads, road widths, car parks, schools, health centers, open spaces, play grounds provided in Master Plans. Subsequently many amenities from original Master Plans even car parks and school sites disappeared but in subsequent zoning exercises densities were increased substantially though the same roads and same road reservations only were available. No additional amenities or car parks were added. Huge areas were added to original Master Plan area of Juffair in unplanned manner without any proper road network and no amenity like school, car park, open space was added to the area yet very very high density was allowed in the area. The result is obvious.

Arad and West Hidd Area

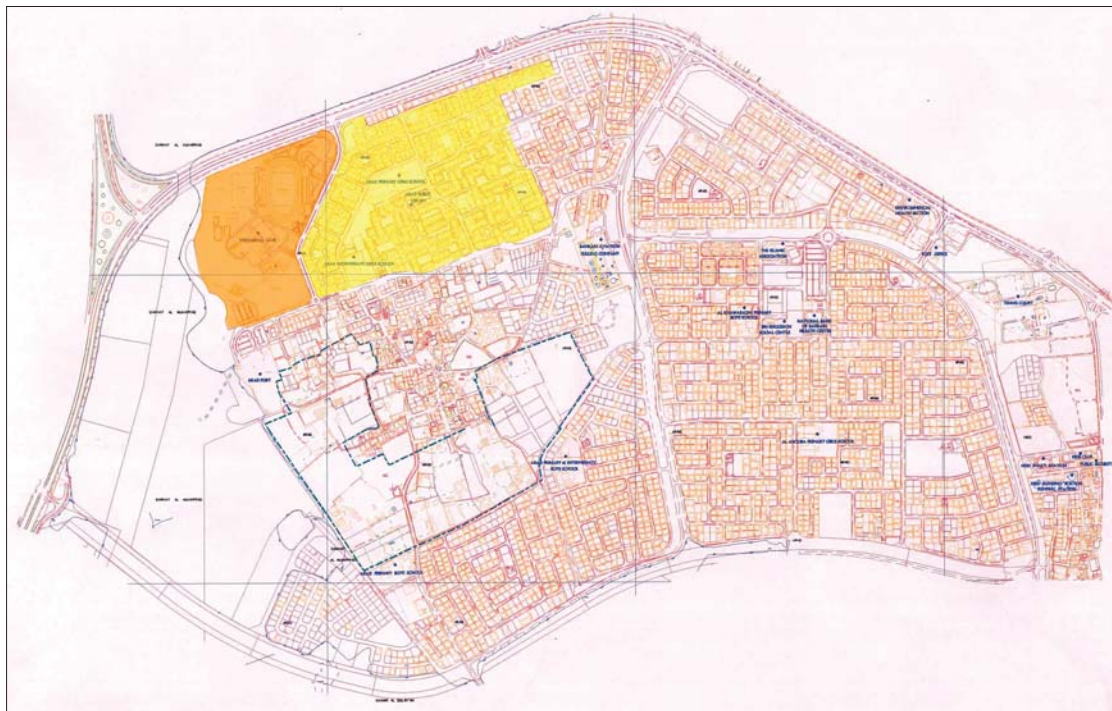
Arad is a historical Place in Bahrain. Arad Fort was originally built by Portuguese. Omani's during their brief occupation around 1800 rebuilt the fort. It's position is a strategic one between Muharraq peninsula and Muharraq Town as well as overlooking the straits which provide a channel to Bahrain Island. A depression in the central court yard indicates the presence of a well or spring which was source of drinking water. To the east of the fort is the Arad village. In early 1980's the village was surrounded by palm tree gardens. Road from the village through palm tree gardens linked small settlements of Halat al Naim and Halat al Sulatah by a small causeway. 1981 census recorded population of Arad village 1807, of Halat Naim 83 and of Halat Saletah 283. At the north of Arad village was a barren area which was occupied by barastis as can be seen in the following aerial photograph of December 1966.



Aerial photo of 1966 of Arad area.

Just after the green area was storage tanks of Airport fuel. To the east of this was a barren area upto the gardens at the north west of Hidd along south side of the road leading to Hidd from Muharraq. An abandoned palace was along the south side of the road. Following topographic map of 1968 also shows the area.

Arad area developed very quickly. Housing consultants Lewyn and Davies proposed a housing project in the area which was covered by barastis as mentioned above and one of the earliest housing project of Ministry of Housing was built here during 1976 – 1980 with 669 houses. This housing project area is shown shaded yellow in the recent topographic map of the area below.

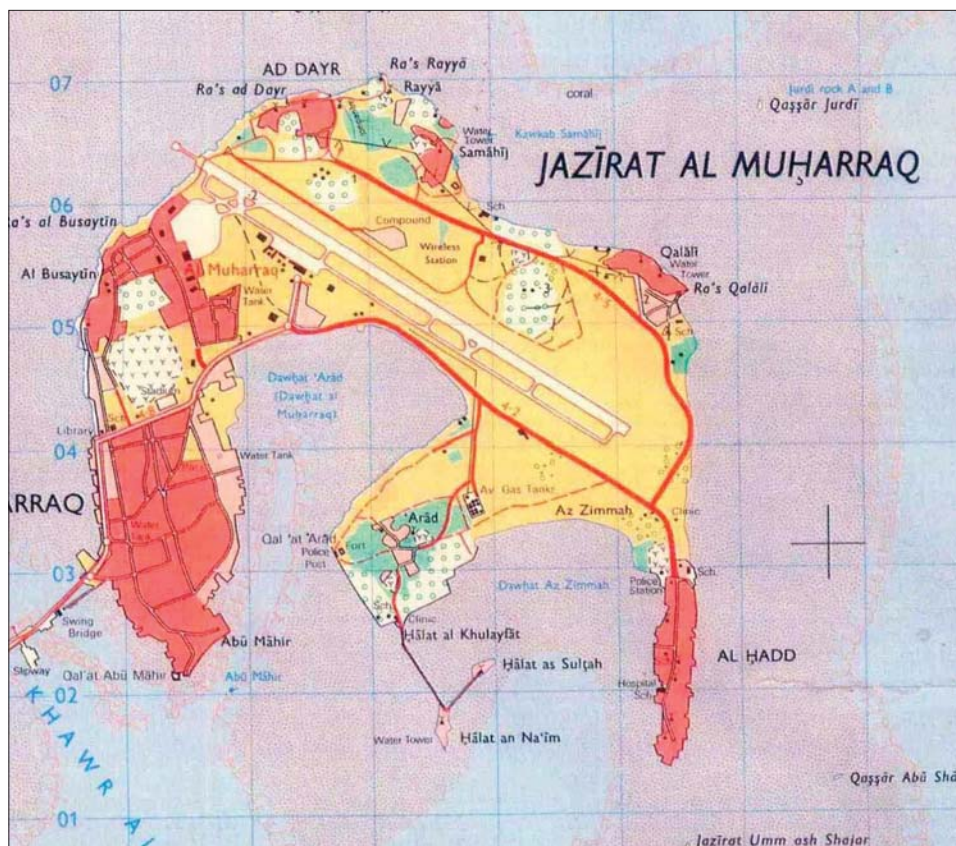


About the same time (in early 1976) land was allocated for Muharraq club at the west of the above mentioned housing scheme at the north of Arad Fort in shallow sea area which was reclaimed and the club was built there. The club site is shown (shaded orange) on the recent topographic map of the area above.

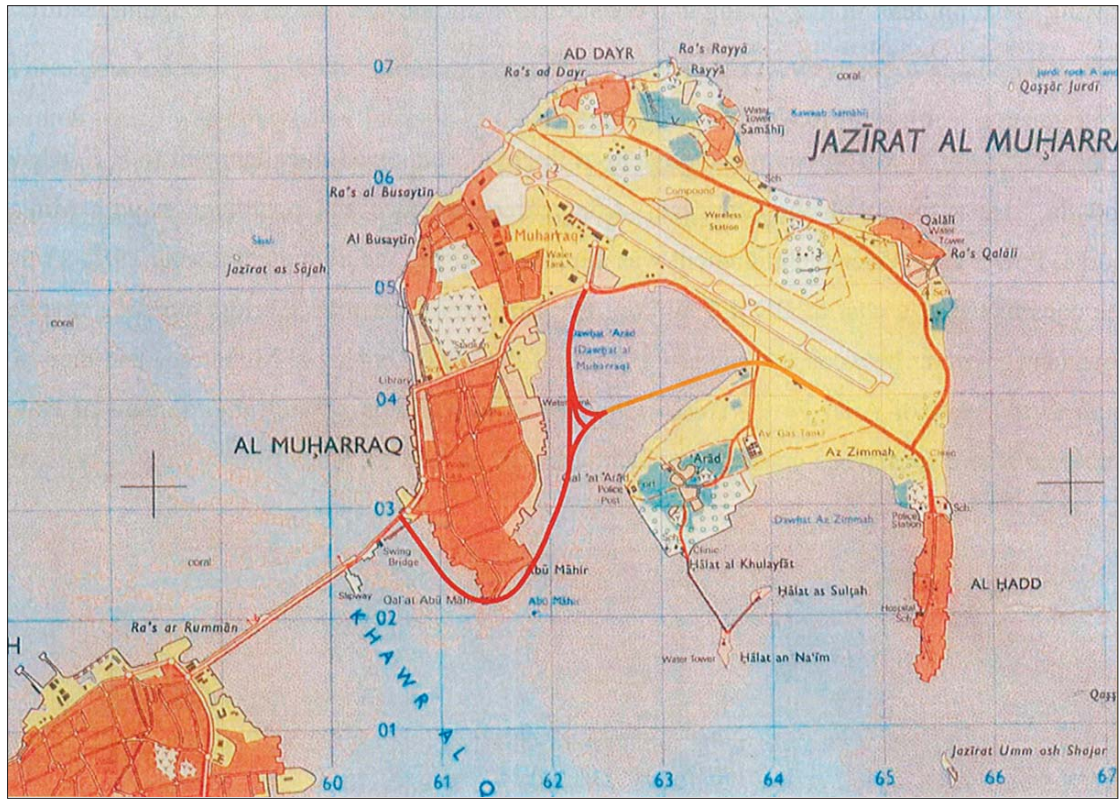
Fixing alignment of Arad Bay Crossing

The road leading to Hidd from Airport was running very close to airport runway. There was discussions here and there about necessity of shifting this road away from the runway. In early 1980 Mr. John Stor Stein, traffic engineer in PWD came to my office to discuss some other issues related to new roads in Master Plans. During discussion the issue of fixing a new road alignment as alternative to existing road at the south of Airport to Hidd arose. Both of us discussed the issue and started drawing the alignment on map taking into consideration all relevant factors and existing features in the area.

In the same meeting we agreed the alignment of the proposed road. I showed the alignment to H.E. Khalid Bin Abdulla. He agreed with the proposal. After correspondence and coordination with Ministry of Works, Power and Water the alignment was approved. Using this alignment during 1982-83 the road was constructed at a cost of BD 4.3 million. In constructing the road a bridge opening was kept for movement of water between the bay at the north of the road (Dawhat al Muharraq) and the sea at the south to the west of Arad Fort. This bridge helped to maintain natural environment of Dawhat al Muharraq where special sea grass grew which was used as feed for Shafi fish.



Topographic map of 1973 showing Muharraq Island

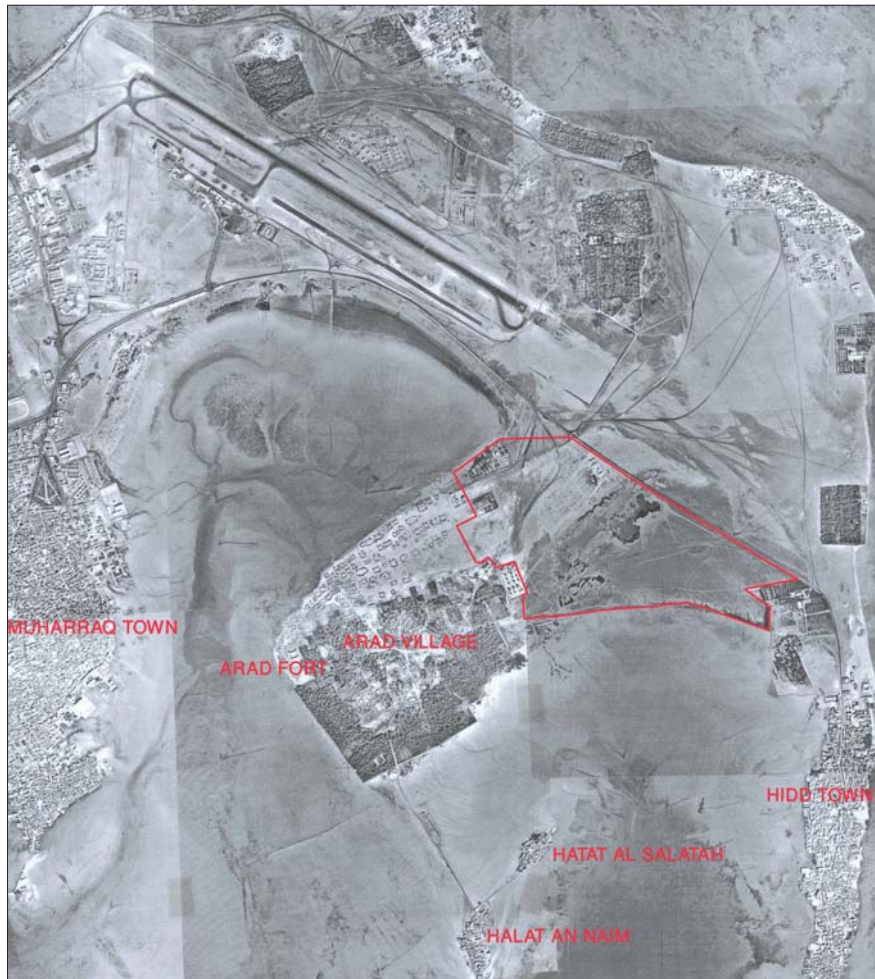


Alignment of Muharraq east and south ring road with Arad Bay crossing on 1973 Topographic map

Preparation of Master Plan of Arad Area

There was shortage of housing land in Muharraq Island. Muharraq being a small island had very limited land. In those days reclamation was not very popular and attractive, land price was relatively low. Also in Muharraq island there was no planned area for garages and workshops like Salmabad in main island as mentioned before. Garages and workshops were located in unsuitable areas in Muharraq Town and other residential areas of the island.

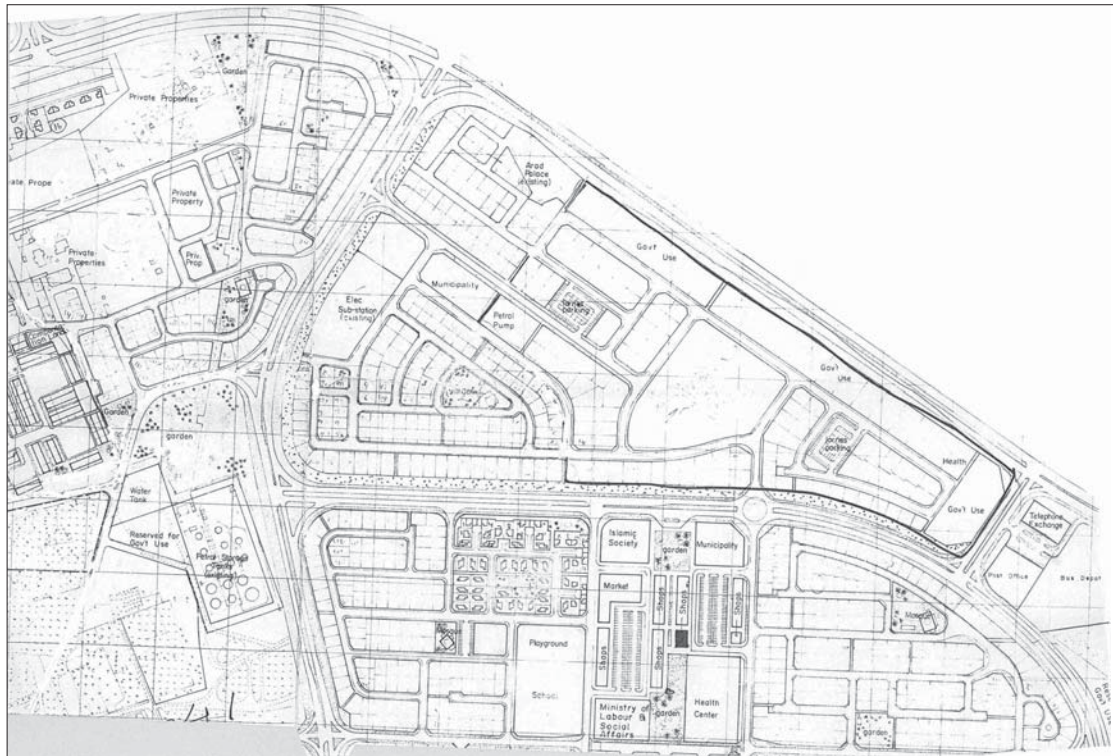
I was looking for a suitable area to plan for these two purposes in 1980. I selected the barren area at the east of Arad as shown by red border on the aerial photo of 1966 below.



Area selected for Master Planning for housing and light and service industry

The plan covered the desert area between Arad and Hidd upto the existing coast of that time as I wanted to make an acceptable implementable plan. The area was not at all attractive at the time but I foresaw the importance and potential of the area.

Road network was proposed in a manner to keep option open for extending the network to cover more areas in future expansions towards south and also to integrate existing Arad and Hidd Town. Light and service industrial area was proposed in the area at the north close to airport taking into consideration of noise from movement of planes on the runway due to which residential area was not suitable there. Green Belt was proposed along south side of the block along main road at the middle of the block. In the plan 533 residential plots in three blocks were available. A central area was proposed with Health center, Social Center, Islamic center, shops, market, car parks and garden. Sites for Post office, telephone, bus station, one school, mosques, major electric substation and gardens provided in the plan.



Layout plan of 1st phase of Arad Master Plan

After preparation of Master Plan of the area, under my guidance, with 3 options, (above mentioned plan was one of the 3 options), Dr. Abu Hamda who was Director of Physical Planning from 1980 to 1982 (He was team leader for UNDP Project) asked me to present the plan to entire staff of Physical Planning Directorate and Technical Affairs Directorate. In the presentation I explained the 3 options and all questions raised I answered. The plans remained in display in Physical Planning Directorate for 3 months without any action taken by Dr. Abu Hamda. In the mean time I showed the plan to H.E. Sk Khalid Bin Abdulla Al Khalifa, the Minister of Housing.

One day H.E. Sk Khalid came to Physical Planning and saw the plan with Habib Hassan who was working as a counter part of Dr. Abu Hamda and later on became Director of Physical Planning in 1983 and was in that position until 1996. H.E. Sk Khalid wanted to discuss the plan in senior staff meeting of the Ministry. After my presentation in that meeting he ordered to implement the plan. H.E. Sk Khalid ordered to under take a housing scheme within the plan and 52 houses were built, at the north west of central area in the plan, under the scheme. The plan became very popular and lands were allocated for housing and workshops very quickly and the area developed based on original Master Plan with minor changes in the original Master Plan.



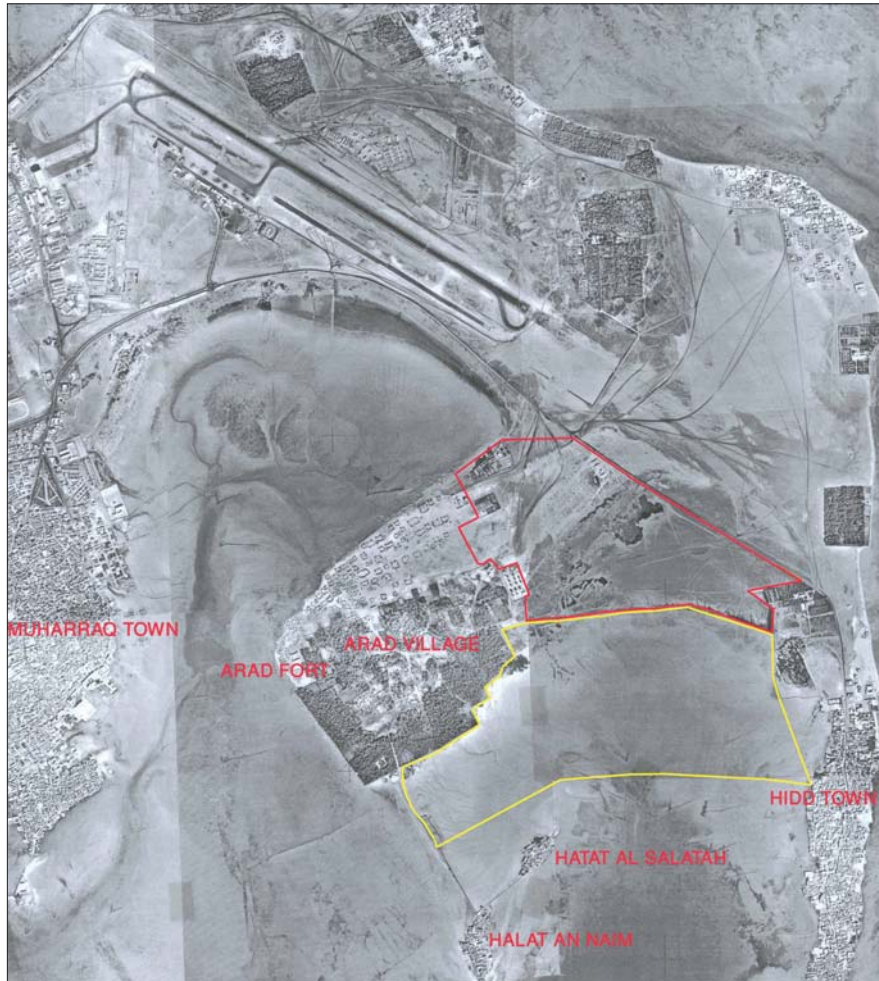
Current topo map showing developments within 1st phase of Arad Master Plan



Aurthor receiving outstanding performance certificate from the Minister of Housing in 1982, in the picture also is Doctor Abdul Latif Kanoo, Under Secretary Ministry of Housing.

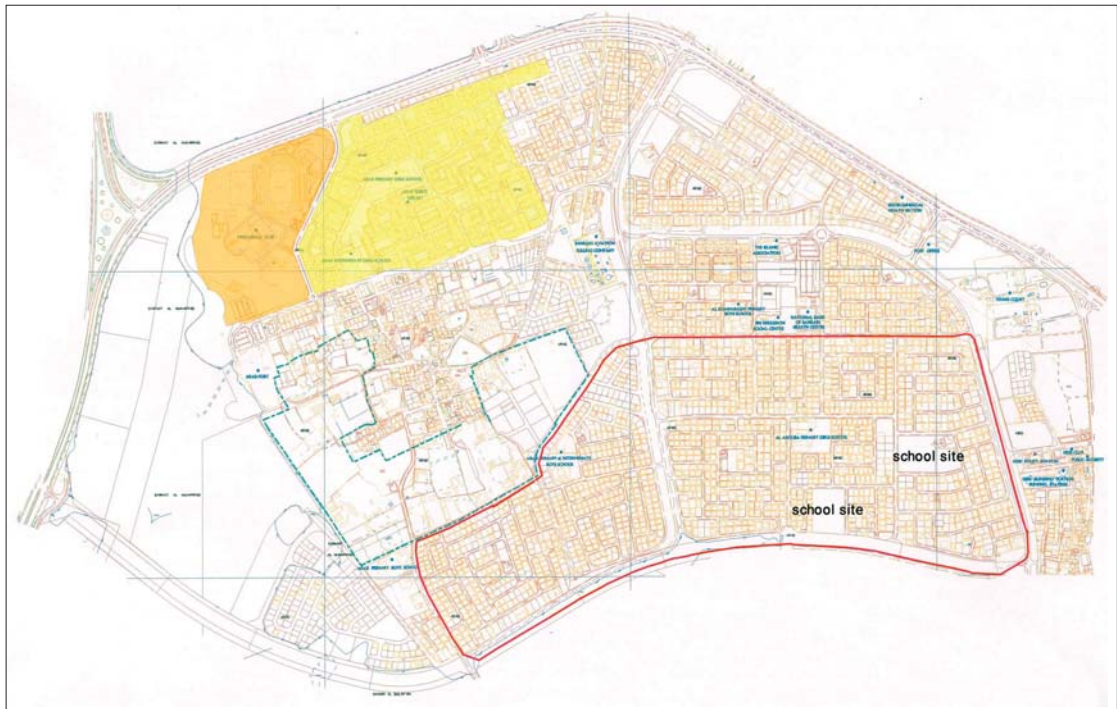


Soon there was demand for extending the area in the sea at the south. As usual I was asked to do the job. I prepared a master plan covering the shallow sea area at the east of gardens in Arad and at west of Hidd Town as shown by yellow border on 1968 aerial photograph below.



2nd phase of Arad Master Plan area

In fixing the limit of this area I considered special nature of Halat al Sulatah and Halat an Naim and kept a buffer sea area between the area to be planned and these two special villages. Also I properly integrated proposed road system within this phase with overall road system of Arad and Hidd Town. Earlier Hatem al Tai road at the west perimeter of old Hidd town was built by reclaiming the sea by order of H.E. Sk Khalid Bin Abdulla Al Khalifa as president of Planning Coordination Board in early 1970's. I proposed road system in this plan to connect properly and logically with Hatem al Tai road. Also I made proposal in the plan to have a major southern perimeter road connecting east ring road of Muharraq with Hatem al Tai road. Recent topographic map below shows within red border the area covered by this phase of the Master Plan.



Topographic map showing 2nd phase of Arad Master Plan with red border

In this plan about 1350 residential plots were provided. Requirement of schools, mosques and all other services were calculated. Sites for 4 schools provided of which 2 schools Al Arouba Primary Girls school and Arad primary and intermediate boys school already built, two other sites are still available for building schools. Six neighbourhood garden sites were provided in the plan.

In early 1981 this plan was prepared. H.E. Sk Khalid Bin Abdulla Al Khalifa approved the plan. Soon plots were allocated from the plan for different purposes. Plots were reclaimed individually and were built upon. The area developed very fast. Basic Master Plan was implemented. Changes like converting proposed garden areas into residential plots happened.

Arad Green Belt

The area at the south east of Arad Fort was green with healthy date palm trees (please see aerial photograph of 1966 on page227). His Highness the Amir Shaikh Isa Bin Sulman Al Khalifa was very fond of greenery and gardens. After construction of Muharraq east ring road in 1980 he was going to the Airport by this road and noticed the gardens close to the Arad Fort. He told H.E. Sk Khalid Bin Abdulla Al Khalifa to take steps to preserve these gardens. So H.E. sk Khalid asked to demarcate the area of Arad Green Belt. The green belt border is shown by green dotted border on topo map below.



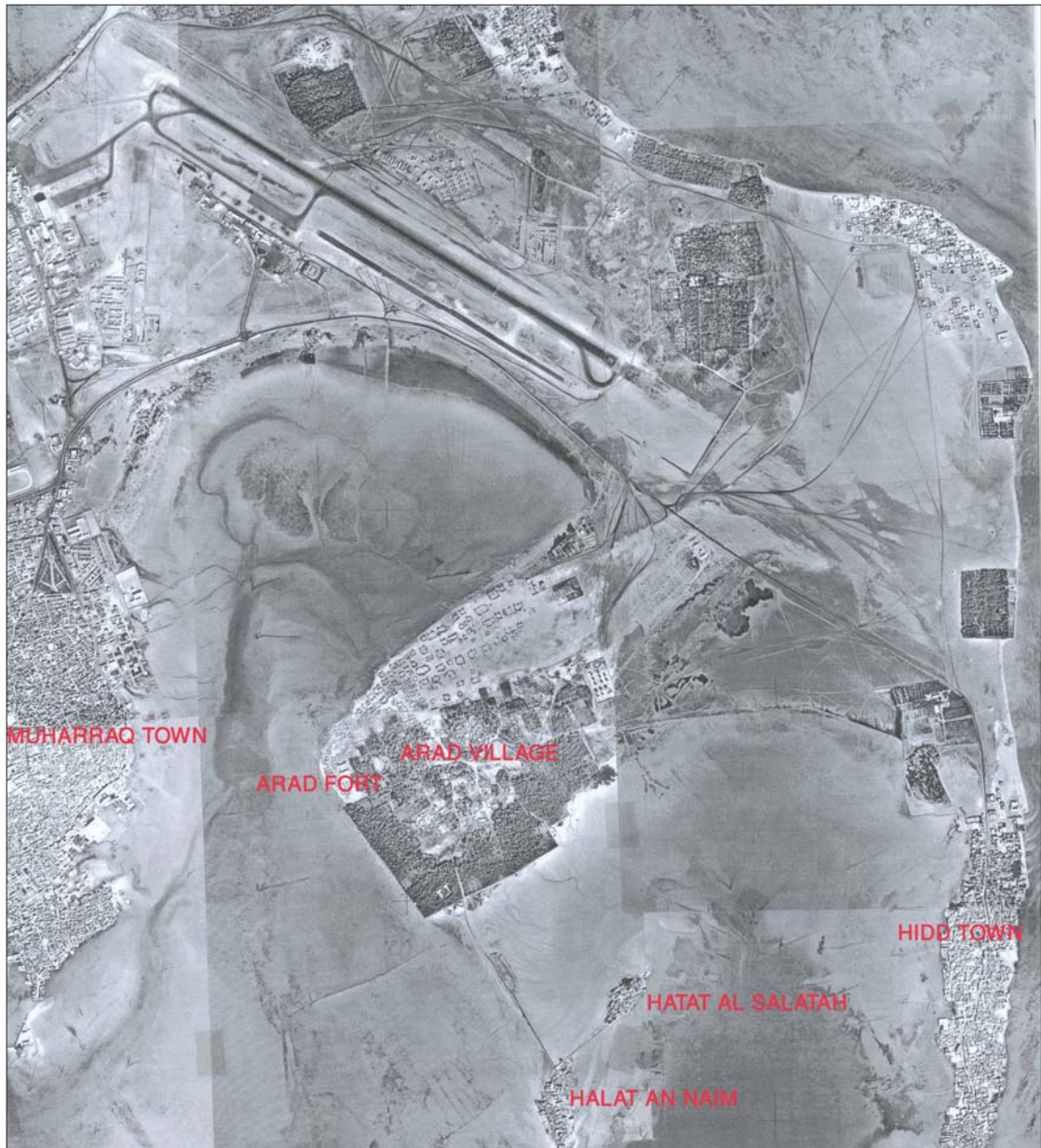
Green Belt border shown dotted in green

Unfortunately for lack of strict implementation of regulations many developments, though temporary in nature, took place inside the green belt. Palm trees died for lack of care and lack of water. Only few patches of greenery now exist in the area.

Hidd Town

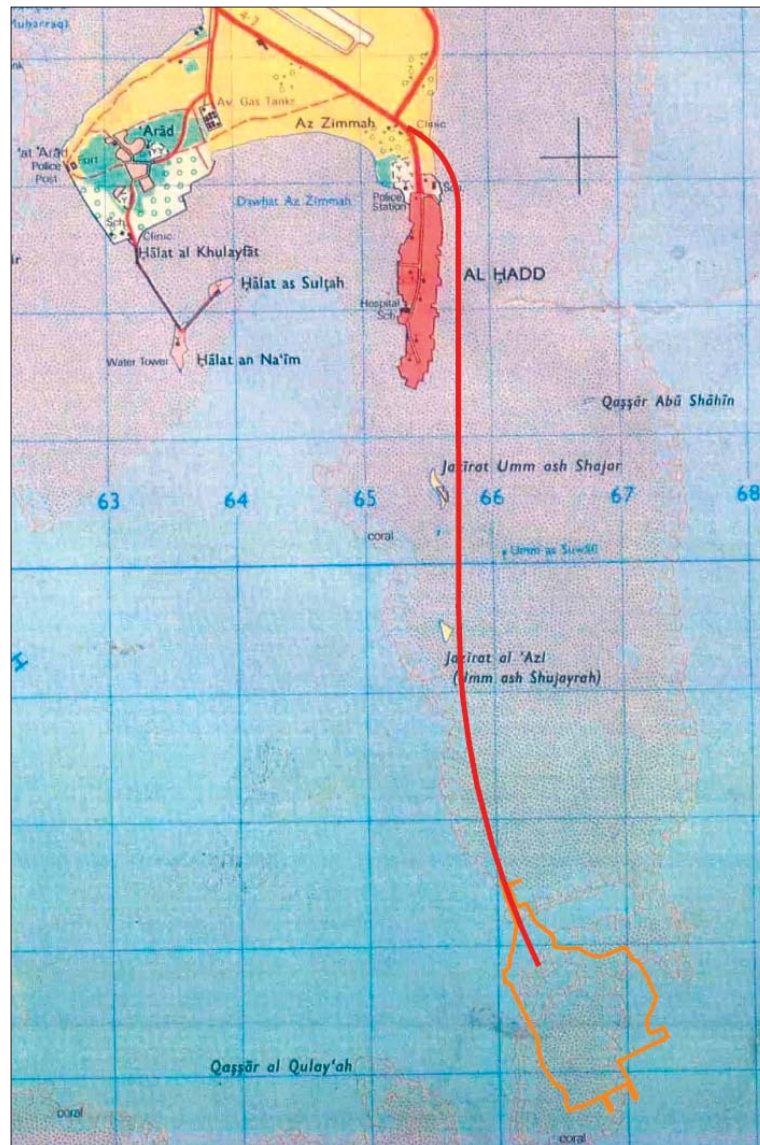
Hidd Town was a narrow peninsula at the south east of Muharraq Island. When Bahrain had thriving pearl fishing Hidd was a dormitory for pearl divers. Off shore fresh water sea-bed spring Qassar Abu Shahin at the south east of the town provided drinking water to the town. Later on this small settlement developed into a small town about 1.5 km long and about 0.3 km wide (at widest point), providing houses for many residents who made the daily journey into Manama for employment. The town developed along a central spine road of irregular width with shops and other facilities along this road. A big graveyard at the north of the town along west side of the spine road met the requirement of the town. Census record shows population and no. of houses of Hidd Town as follows:

	1959	1965	1971
Population	4,440	5,230	5,269
Houses	803	778	803



Aerial photo of 1966

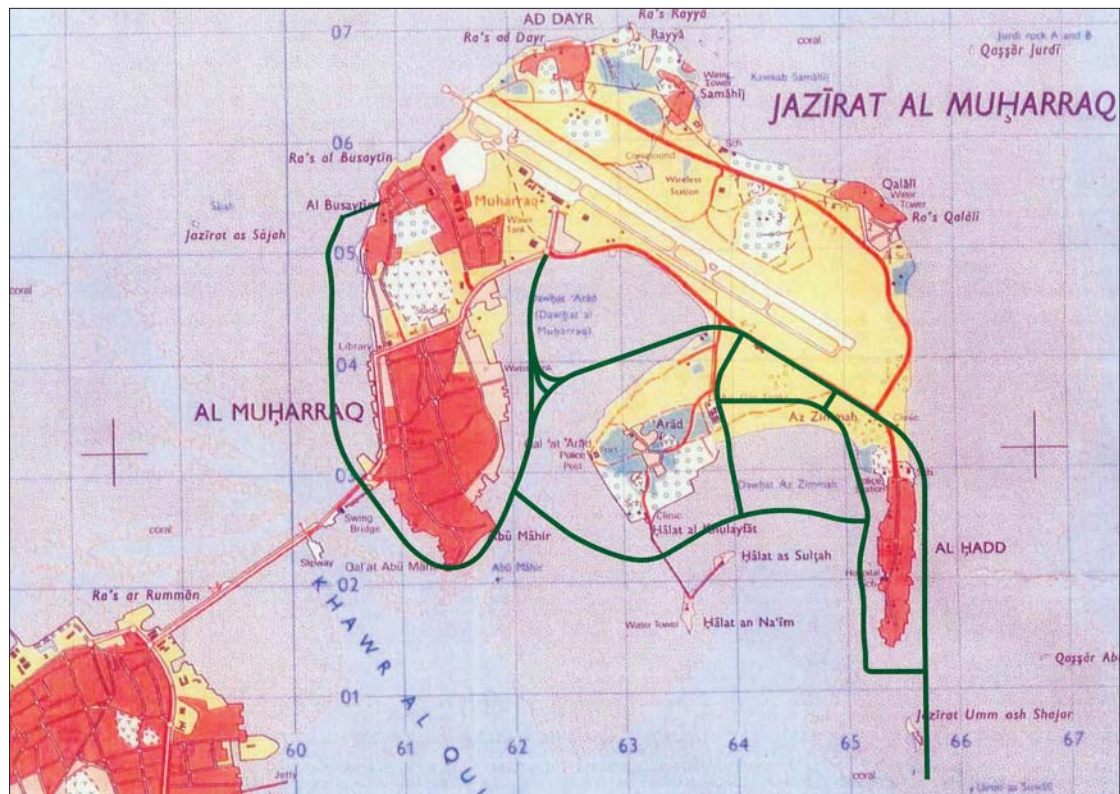
After construction of Arab Shipbuilding and Repair Yard (ASRY) and approach road to it at the east of Hidd Town in later 1970's a gap was created between the town and this road as shown in the Topo map below.



There was high demand for this area. Ministry of Housing appointed Consultants to plan housing sites here. According to Consultants plan 122 houses were built here during 1976-1980. Five schools were also built within this area. Small scale layout plans were prepared based on which plots were gifted.

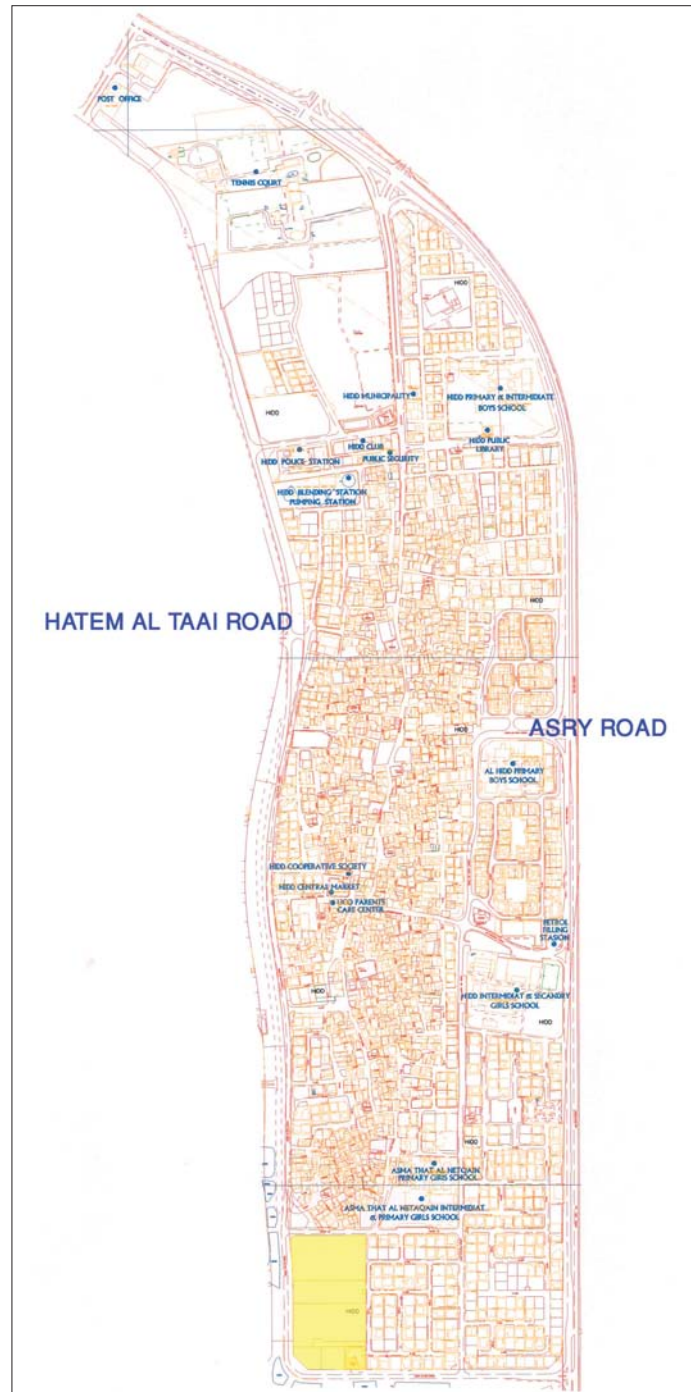
At the west periphery of the town a coastal road was constructed (Hatem al Tai road). After completion of above mentioned Arad Master Plan area I undertook an exercise to prepare a plan for Hidd Town incorporating above mentioned small plans and developments. Hatem al Tai road was joined at the north with road system of Arad Master Plan and at the south it was joined to ASRY road. Area added to the town at the south by this road was used for housing plots and the south west corner shaded yellow in the map on page 230 was proposed for playground, garden, mosque and other community facilities. Later on some of these uses like playground converted to health center site etc.

On 1973 Topographic map main roads of initial Master Plan of Muharraq island are shown below.



Main Road system as per initial Master Plan of Muharraq island

Recent topographic map below shows the town incorporating developments as per above mentioned plans.



Recent topo map of Hidd Town

2001 census recorded population of Hidd Town 11,637 compared to 1971 population of 5269.

Establishment of Survey Directorate

Survey is a very important tool of planning and implementation of Plans. There was no formal Survey Department in Bahrain until 1978. I felt seriously the lack of survey organization as I was mainly doing plans and was monitoring survey to implement plans prepared under my supervision mainly to mark properties on the ground as per approved detail plans. Survey technicians in Physical Planning were also doing some field survey works required in connection with preparation of Master Plans and detail plans. As these technicians were not properly qualified and experienced surveyors and they had no upto date survey equipments, did not know modern survey techniques, survey jobs moved slowly and not always accurately. There was a separate Survey Section in PWD with 2 better qualified surveyors. They were only doing works of PWD and was only keeping Cadastral Survey maps which were prepared by outside survey firms as contract job. They were not helping in survey jobs of Physical Planning Directorate.

I was meeting almost daily his Excellency Sk Khalid Bin Abdulla in meetings, and privately one to one, to get his approval on Planning issues. Any time I had opportunity I used to tell him, since he became Minister in August 1975 , the requirement of a proper Survey Department. By late 1977 he was convinced about the need of Survey Department. He made the request and negotiated with appropriate authorities and got approval of Govt. in 1978 to establish Survey Directorate in the Ministry of Housing. He personally negotiated with Mr. Majeed Asgar who was working in Bahrain Petroleum Company (BAPCO) in charge of their survey and appointed him Director of Survey Directorate. In those days though I was not designated as Director of Physical Planning Directorate, in practice I was doing the job of Director. There was weekly meeting with the Minister on Physical Planning issues.

I was preparing almost everything for that meeting and was presenting plans and issues in the meeting. As per order of the Minister Mr. Majeed Asgar was attending these meetings to know the nature of work. Soon 4 qualified and well experienced surveyors were appointed in Survey Directorate and the Directorate built up quickly both in staff and equipments. There were plenty of jobs related to implementation of plans and updated maps required for planning. So plan preparation and plan implementation by survey became integral functions of Ministry of Housing. Initially the two Directorates used to have lots of correspondence between them to clarify and resolve issues. To avoid that and to make the system more efficient and effective I suggested to have coordination meeting between the

two Directorates. As a result Technical Coordination Committee (TCC) was established between Survey Directorate and Physical Planning Directorate.

This committee became very effective. Electricity Directorate and later on Central Planning Unit of Ministry of Works joined it. The committee was having weekly meetings. From the beginning I represented Physical Planning in the committee for over 15 years. Though the task was labourious and time consuming I always volunteered to do so to put required input and clarify issues related to implementation of plans prepared under my supervision. Copy of Minutes of one of TCC meeting is given below as reference and example.

**MINUTES OF THE TECHNICAL COORDINATION COMMITTEE
MEETING HELD ON 29.04.1997 (PAGE 1 OF 4)**

Meeting Started at 08.00 and closed at 09.30.

Present : AJS(SD), NUN(PPD), SJ(EDD), DAS(EDD), DMP(CPU).

1. ACTION BY P.P.D.

- a) Consultation no. 97/01/PPD at Sa'ar. Requested EDD's trial holes data passed to PPD.
- b) Consultation no. 96/376/CPC at E. Riffa. PPD confirms that no master plan is available for the area.

X REFERENCES

TCCM of 8.4.97
item 3(j)

2. ACTION BY S.D. FILED

- a) Job no. 541/97 at Gudaibiya. Plan from Road's Directorate passed to S.D. by CPU for implementation.
- b) Job no. 3684/96 at Arad. S.D. to apply for WSD trial holes. EDD confirms that the cables affecting the plot are service cables.
- c) Job no. 616/97 at Sanad. No objection from PPD to the replanning as proposed by the surveyor by give and take for plot no. 06-01-4317 and no services enquiry is required.
- d) Job no. 1233/97 at Jasrah. E.D. to check and report back regarding the existing underground cables.
- e) Job no. 832/97 at Isa Town. PPD confirms that there is no objection to extend the corner upto the north west corner of plot no. 08-01-0387 as shown at page 7.1.
- f) Job no. 1902/94 at Shahrakkan. CPU to expedite the trial holes data required.
- g) Job no. 910/97 at Aker. EDD confirms that trial holes to locate the underground cables to the south are required, PPD confirms that the area at south west which is in conflict with the coordinated road to be excised.
- h) Job no. 225/97 at Arad. CPU to check with WSD and to report back regarding the possibility of relocating the pipe affecting the plot.
- i) Job no. 389/97 at Naem. CPU to follow up with WSD.

Consultation no.
95/450/SD

Consultation no.
96/103/SD

Consultation no.
94/191/SD

Consultation no.
97/39/SD

Consultation no.
96/354/CPC

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MINUTES OF THE T.C.C MEETING HELD
ON 29.04.1997 (PAGE 2 OF 4)

X REFERENCES

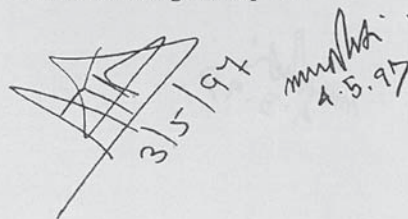
2. j) Job no. **1050/97** at Burhama. PPD confirms that the building line A - B as shown at page 22.2, to be followed and the balance area to the north to be shown as encroaching into Budaiya Highway.
- k) Job no. **1044/97** at Mahooz. PPD and CPU confirms that the road to the east to be maintained as 15.0m in width.
- l) Job nos. **1215** and **1255/97** at Suqaiya. No objection from PPD to issue L.C's as surveyed.
- m) Job no. **1040/97** at Muharraq. No objection from PPD to replan plot no. **1201** to widen the road following line A - B with a **3.0 x 3.0m** splay at north west corner utilizing the gap to the east.
- n) Job no. **1062/97** at E. Riffa. PPD confirms that the existing building to be followed.
- o) Job no. **860/97** at E. Riffa. PPD has no objection to issue D.P. and L.C. for the plot as per the title deed following the existing building regardless of what is shown in PPD plan at page 8.1.
- p) Job nos. **1415, 1416, 1418, 1419, 1421, 1422 & 1423/96** at Isa Town. Plans to be attached to services replies passed to S.D. by CPU.
- q) Job no. **2369/96** at Muharraq.
1. S.D. to liaise with PPD to obtain detail plans for new airport site boundary not shown on PPD plan (SD 236 C).
2. The 100m wide road is to be excluded from the Title Deed for the airport. (2 plot nos. to be allocated).
3. Plot no. **02-01-0650** is to be replanned in accordance with PPD plan (SD 236 C), to eliminate the conflict with the proposed Airport site.

Consultation nos.
96/177-183/SD

3. ACTION BY S.D. CADASTRAL

- a) Consultation no. **97/61/SD** at Manama (Sugaiya). CPU to check with Road's Directorate regarding their comments.
- b) Jafferiya Waqf request to add a corner to a mosque at Arad. PPD confirms that there is no objection, provided abutting owner's approvals are obtained.
- c) Job no. **3757/96** at Hidd. Revised comments from Sewerage & Drainage Directorate passed to S.D. CPU confirms that Road's Directorate requested to freeze the case until the road design is completed.

CD/1-07/96-16


3/5/97
4.5.97

**MINUTES OF THE T.C.C. MEETING HELD
ON 29.04.1997 (PAGE 3 OF 4)**

X REFERENCES

- | | | | |
|---|----|---|----------------------------|
| 3. | d) | Jeffrey's Waqf request to add a corner at north west to a mosque at Bani Jamrah. No objection from PPD as shown in the plan following the line A - B, provided no existing services are affected. | CD/1-07/97-55 |
| | e) | Request from Compensation and Acquisition Section to issue a C.O.S. for plot nos. 03-26-1833 & 1832 at Bilad Al Qadim. PPD confirms that the roads as shown in PPD plan to be followed. | |
| | f) | Request from Islamic Affairs to survey a land for mosque at Aker. PPD confirms the request should come from the Minister of Justice and Islamic Affairs. | CD/1-07/97-53 |
| | g) | EDD's request to demarcation substation site no. 119/93 at E. Riffa. S.D. confirms that job no. 2132/94 was previously raised for the same purpose but it was cancelled as there was no response from EDD to S.D.'s query in TCCM of 31.5.94 item 2(a). EDD to write to S.D. requesting the demarcation. | TCCM of 22.4.97 item 3(b) |
| 4. <u>MAJOR SUBDIVISION</u> | | | |
| | a) | PPD/SDN 06/97 at Aker. Passed to PPD on 27.4.97 with all documents for H.E.'s approval. | |
| | b) | PPD/SDN 19/96 at Maqsha. Revised plan passed to S.D. for Director's signature. | |
| | c) | <ul style="list-style-type: none"> i) PPD/SDN 13/97 at Kawarah ii) PPD/SDN 14/97 at Dumistan <p>Passed to S.D. and CPU for comments.</p> | |
| 5. <u>ACTION BY M.O.W.A & M.O.E.W.</u> | | | |
| | a) | EDD's request to demarcate substation site (31/96) at Abu Ghazal (block 333). The site was demarcated under S.D. Job no. 746/97 and a copy of C.O.S. passed to EDD representative. | CD/1-08/97-20 |
| | b) | Consultation no. 96/376/CPC at E. Riffa. PPD confirms that no master plan is available for the area. | |
| | c) | Job no. 1233/97 at Jasrah. E.D. to check and report back regarding the existing underground cables. | Consultation no. 96/103/SD |

31/5/97

mmsh
4.5.97

MINUTES OF THE T.C.C MEETING
HELD ON 29.04.1997 (PAGE 4 OF 4)

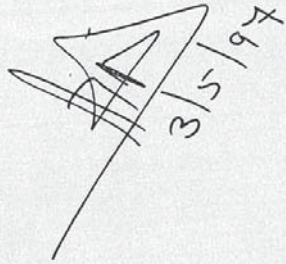
5. d) Job no. **1902/94** at Shahrakkan. CPU to expedite the trial holes data required.
- e) Job no. **225/97** at Arad. CPU to check with WSD and to report back regarding the possibility of relocating the pipe affecting the plot.
- f) Job no. **389/97** at Naem. CPU to follow up with WSD.
- g) Consultation no. **97/61/SD** at Manama (Sugaiya). CPU to check with Road's Directorate regarding their comments.

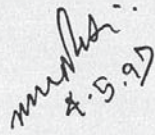
X REFERENCES

Consultation no.
94/191/SD

Consultation no.
97/39/SD

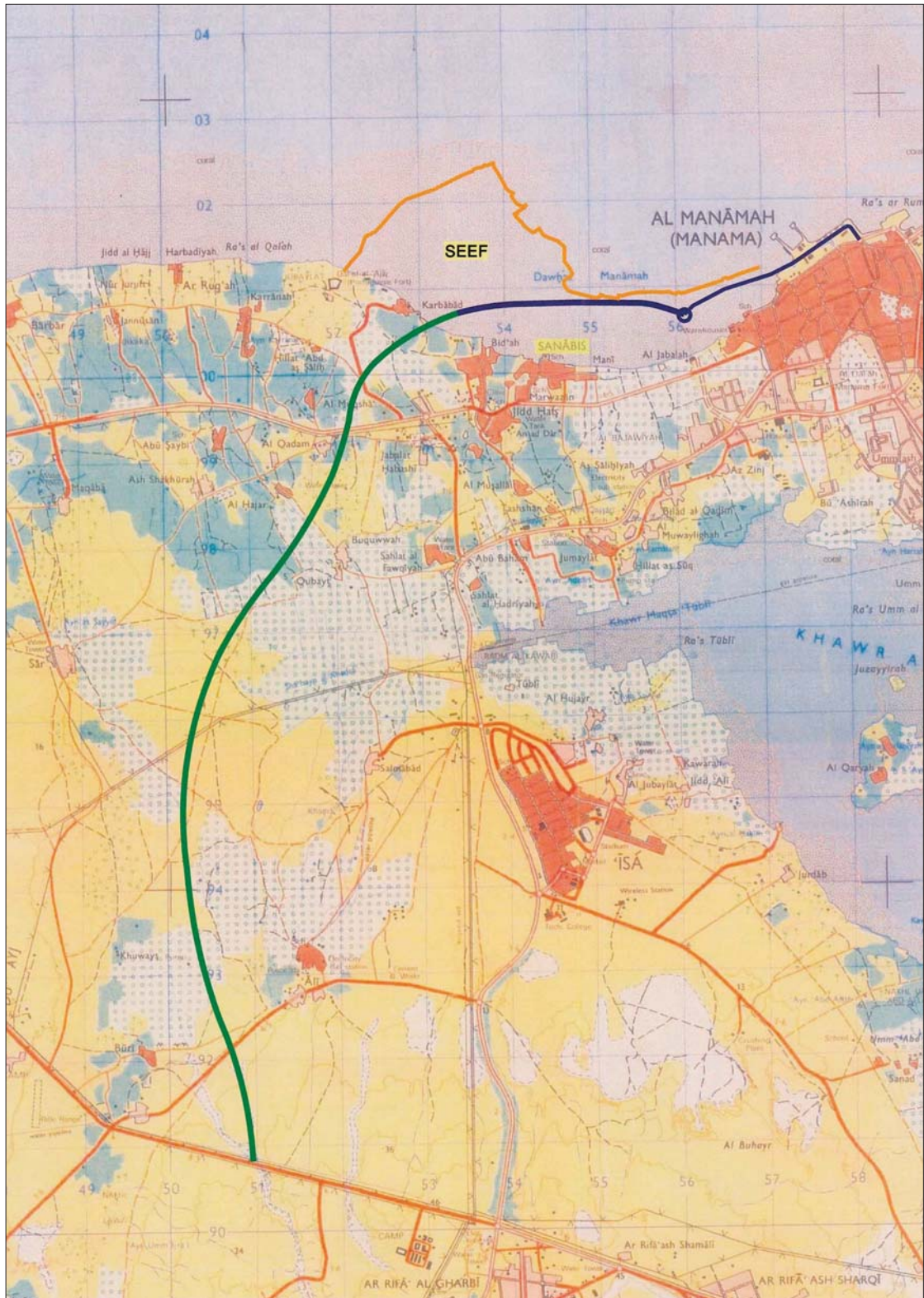
Consultation no.
96/354/CPC

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A handwritten signature, possibly 'M. Al-Sayid', is written above the date '4.5.97'.

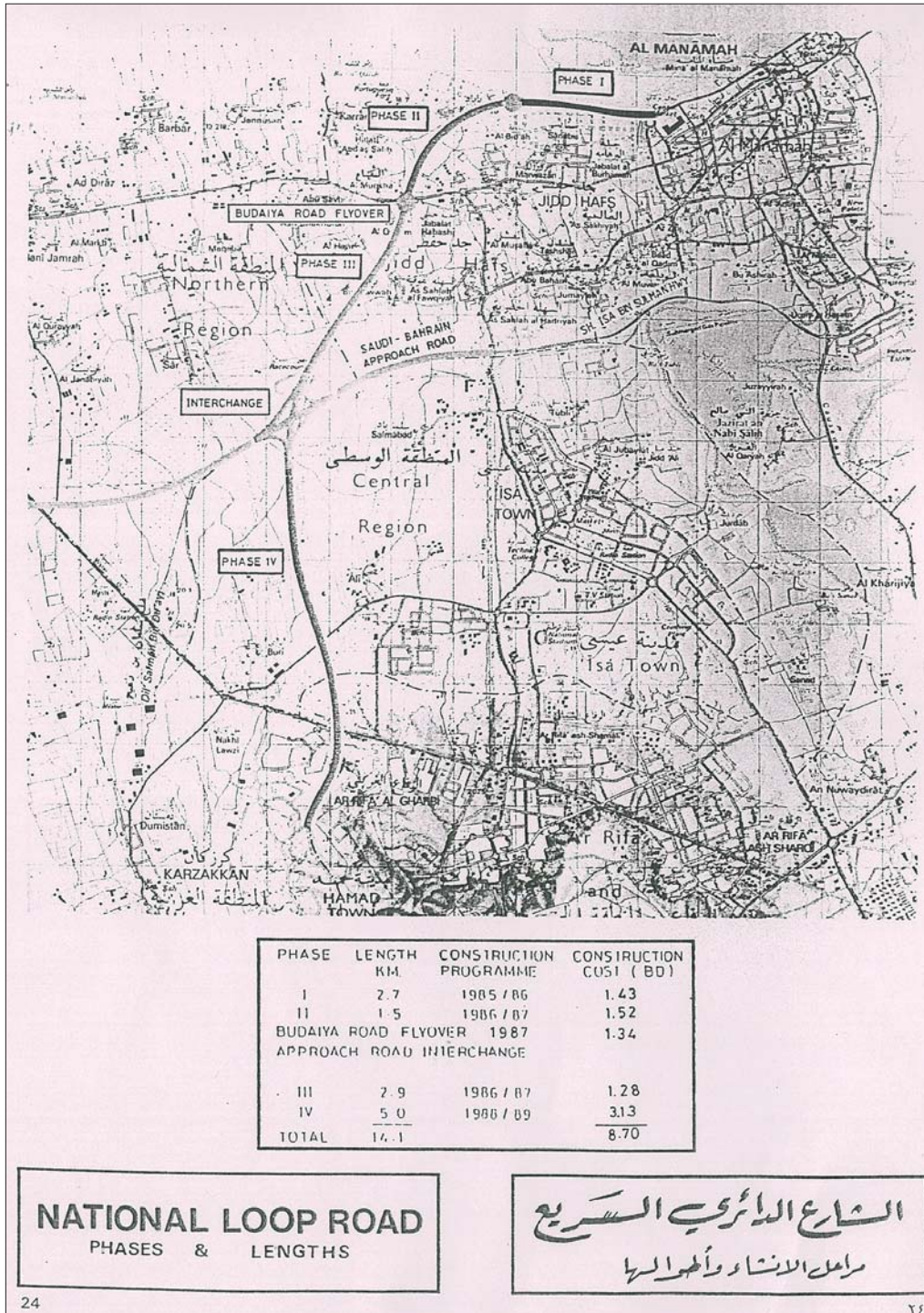
Sk Khalifa Bin Salman Highway

As Madinat Hamad Town master plan preparation was progressing ideas were coming from different quarters how to link the town with Manama for faster movement between the two towns. As a first step Wali al Ahad highway (pipeline road) was made dual carriage way from Madinat Hamad north entrance to Sk Salman road at the north round about of west Riffa. UNDP team in Physical Planning brought Dr. Grava from New York for a short time in 1981 to advise on road planning and traffic. At the same time decision was taken to reclaim at the north of Sanabis to accommodate Exhibition Center, which was located temporarily on Municipality land in Hoorā within Hoorā Master Plan of Manama (That is how name of Exhibition road in Hoorā came). There was also demand from 3 Ministries for plots for building Ministry offices. So Manama North Ring Road was to be extended to the west beyond pearl roundabout. Dr. Grava proposed to extend eastern arterial road of Madinat Hamad to north upto Manama north ring road to create a parallel road to Sk Salman road in the middle of Bahrain island. This concept was approved. Different alignments were proposed by different people for this road. Roads Consultants proposed the alignment on which the road is constructed. Width of the road corridor was fixed 70m through ancient burial mounds at the east of Buri, from Wali al Ahad highway to Aáli Buri road and from there to Karbabad junction (Seef junction), (upto which Manama north ring road extension through shallow sea already decided) through private properties. Now this 11 km alignment of the road through private properties covering over 77 hecets of land became a big constraint for implementation of the plan because budget for paying estimated BD 10 million cash compensation to property owners was not available. H.E. Sk. Khalid Bin Abdulla, the Minister of Housing realized the necessity and importance of the project. He decided on proposal made by Mr. Noor Al Alawi, to compensate these property owners by reclaiming Seef district. He has given all attention and guidance for preparation of Master Plan of Seef area and resolving compensation issues for private properties affected by the road.



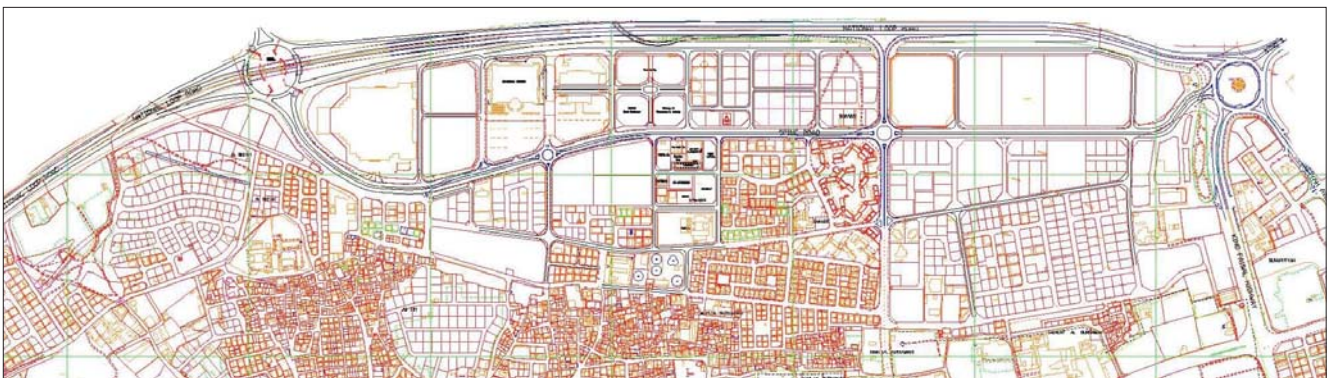
Alignment of the road on 1973 Topo map upto Karbabad junction shown by green colour.

This road from Madinat Hamad to Pearl roundabout, 14.1 km, was constructed in 4 phases starting from 1985 to 1989 at the cost of BD8.70 million as shown on the following map of Ministry of Works Power and Water.



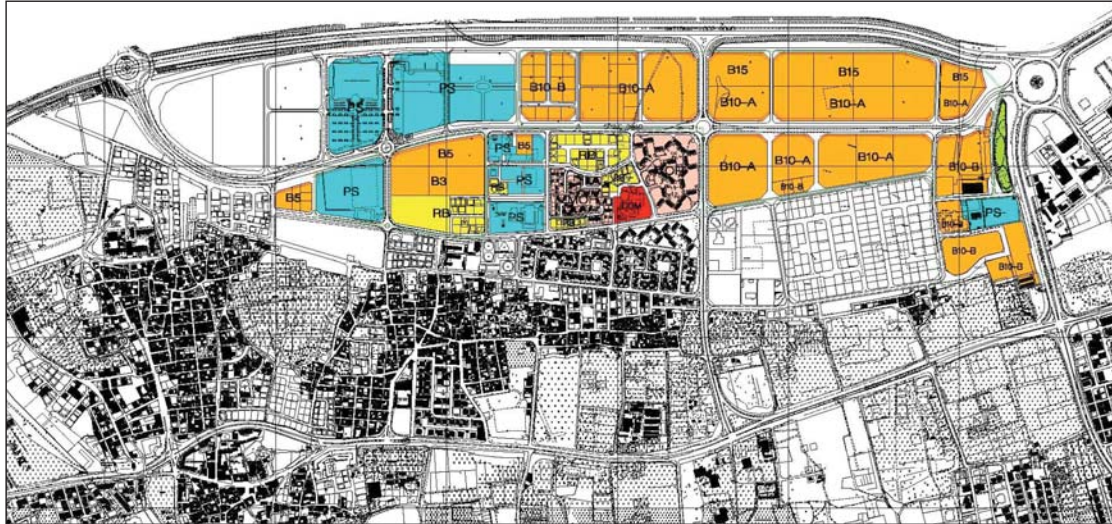
Preparation of Master Plan of Sanabis Area

Initially Consultant Mr. Yousuf Dawood proposed Master Plan of this area. The Master Plan was finalized in early 1980's mainly under supervision of Mr. Noor Al Alawi who worked in Physical Planning from 1980 till 2003 and was Director from 1996 to 2003. Earlier Ministry of Housing reclaimed a small area immediately at the north of Mani (al Burhama) and built 168 houses in 1979 – 1980. Further area was reserved for Housing Project where 302 apartments in 42 blocks were built later. The Master Plan incorporated these housing sites. The Master plan provided a spine road from Pearl roundabout to Al Seef junction. Area in the south of the spine road was intended to be low density predominantly residential area. At the north of the spine road upto extension of Manama north ring road (initially known as National Loop Road, now Sk Khalifa Bin Salman highway) site for Exhibition Center was provided and at the east of that area sites for other Ministries and Govt. Offices provided. In the original Master Plan there was no thought of building shopping malls in the area. The area was reclaimed in early 1980's and immediately the Exhibition center was built. Ministry of Commerce and other Ministries and Govt. offices were not built. The area remained mostly undeveloped and unbuilt for long time. Bahrain Mall and Dana Mall were built in late 1990's. Zoning of the area initially was for mainly housing, maximum initial permitted density in the area was 300% floor area ratio. As usual, zoning was changed many times, always increasing density without any increase in road capacity, road widths and junction reservations. These remained same as was in the original Master Plan. No other basic amenities like school sites and sites for mosques, gardens etc. are available in the area.



Main features of the Master Plan (in 1997) are shown above.

Zoning (1998) of the areas is shown below.



Example of allowing high density development in the area, without taking into consideration of capacity of roads and available public services in the area, is Abraj Al Lulu Project of 860 Apartments plus 12 Pent Houses in two fifty storey and one forty storey apartment blocks on a plot of 17140 sq.m. For these projects Traffic Impact Analysis (T.I.A) is normally made. But the positive input of TIA in the project and in infrastructure provision is subject to serious question. To supply electricity to this project Govt. had to build a primary substation on Govt. land at the cost of BD 6 million

Master Plan of Al Seef area

Immediately about one year after preparation of Master Plan of Sanabis area Master Plan of Al Seef area was prepared mainly to compensate property owners affected by Sk Khalifa Bin Salman highway, as mentioned before. This Maser Plan was finalized after many revisions. At one stage H.E. Sk Khalid Bin Abdulla Al Khalifa chaired meetings of technical staff of Ministry of Housing to review and finalize blocks of this Master Plan. Under Mr. Noor Al Alawi's supervision detail exercises were done to finalize compensation of properties affected by Sk Khalifa Bin Salman highway.

The Master Plan included Karbabad village and lands already allocated for expansion of the village. In the east later on an area was added for embassies and further to the east area was added mostly for gift plots.

The spine road in the plan is 40m wide running east west and from this road two perpendicular roads of 35m width to the north were provided. In the block between these two roads commercial and mixed use development with maximum floor area ratio of 300% was initially proposed. The area initially was planned mainly for residential development for population of 23,000 with 3 types of land uses – 10% of the area for commercial use, 30% of the area for offices and 60% for residential purpose. In the original Master Plan 4 school sites, sites for mosques, gardens and other residential community uses were provided.

The areas was reclaimed, reclamation work was completed in 1984. Initially there was no development except construction of Le Meridian Hotel (now Ritz Callton Hotel) in late 1990's. In later 1990's Haji Hassan al A'ali Mall and immediately after that Seef Mall was constructed. Again at the time of initial Master Planning there was no idea of having such malls in the area. Area of City Center mall and adjacent properties were added to the area at a later stage.

When Haji Hassan Al Aáli Mall was proposed, it was approved on condition that 2/3rd of the plot area will be kept as parking and open space. Later on this condition was not implemented and further buildings were built on this 2/3rd area. Most probably people in charge were not aware of this condition. One problem in Bahrain is absence of basic requirement of sound planning “Consistency and continuity in framing and execution of planning policies”. Humiliating people who were in charge in the past and giving importance to new comers in important positions without any proof of their ability and competence is a common practice in Bahrain.

It is obvious the road network in the initial Master Plan was not intended to accommodate all these huge traffic generating developments in later stage. Yet the zoning of the area was revised several times, every time increasing density of the area. Special Project was undertaken to study the strip between Seef Mall and Ritz Carlton hotel between two 35m wide roads. Again density of the strip was increased substantially without any change in original Master Plan road widths and road junction reservations. After opening of Seef Mall and Aáli Mall entrance and exit from Seef area to Sk Khalifa Bin Salman highway was very congested and difficult, so flyover junctions were constructed in Karbabad junction and Lulu roundabout junctions replacing roundabout junctions. After construction of City Center Mall a left turn flyover from King Abdulla Road in Seef to Sk Khalifa Bin Salman highway for eastward movement to Manama was constructed at a cost of BD 6 million and was opened on 31.12.2008. Even then at peak time the spine road in front of Seef Mall and City Center Mall at the north remains very congested. It takes over half an hour to come out of City Center Car Park. Now Seef area is developed about 10-15%. So when the area will be 50 to 60% developed the situation will be unbearable.



Main features of the Master Plan (in 1997) are shown above.

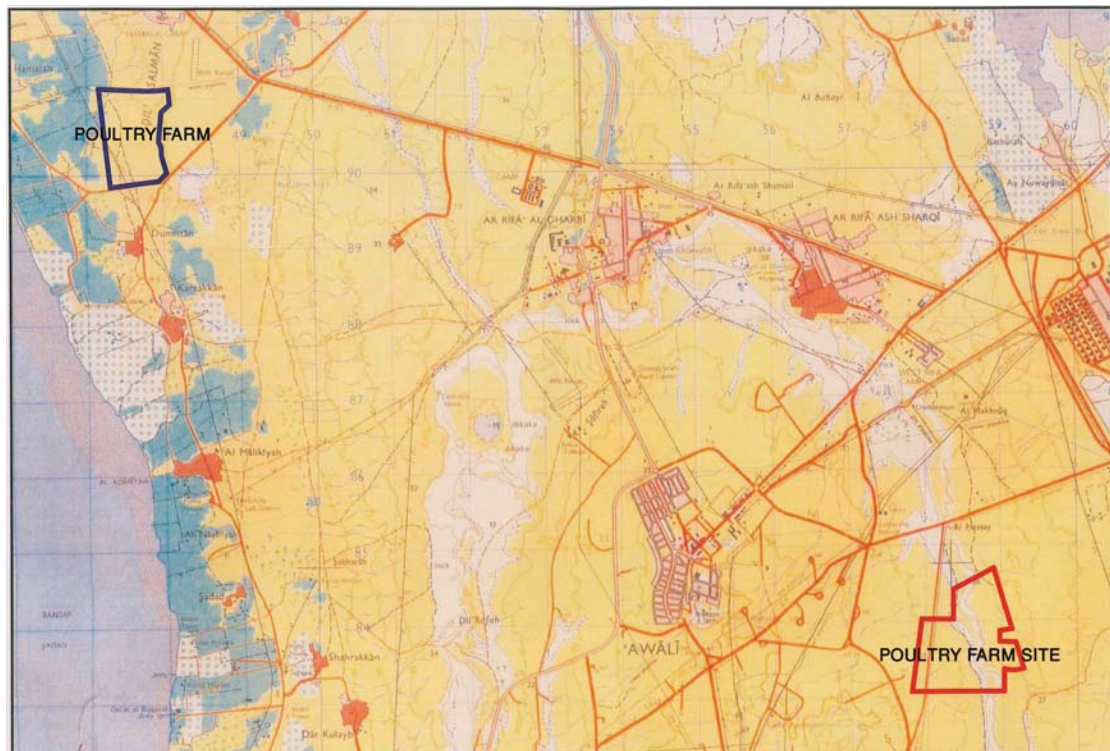


Zoning (1998) of the area is shown above.

Selection of Sites for some Major Projects Poultry Farms

Bahrain has small private Poultry Farms here and there. Some of these farms were and some of them still are very close to residential areas. In early 1970's H.E. Sk Abdulla Bin Khalid Al Khalifa as Minister of Municipalities and Agriculture took the lead to find suitable site to establish proper poultry farm in Govt. level. Traditionally in Bahrain for any Govt. project generally a Govt. land is preferred. A desert area at Hamala at the north of Dumistan, covering 98.47 hec, as shown by blue border on 1973 topo map below was available and was allocated for poultry farm. Soon poultry farm was established there in big scale. The project was very successful and is still functioning.

After that many exercises were done to allocate further sites for poultry farms for new poultry farms as well as to relocate existing farms in unsuitable locations close to residential areas. A site was allocated at the west of ALBA in 1986 covering 155.8 hec as shown by red border on 1973 topo map below but the site was not utilized. Until now no other site is allocated for poultry farms though there is very high demand for the purpose.



Hamala Poultry farm site shown by blue border,
Site allocated for Poultry farm west of ALBA shown by red border

Major sites for Agriculture

Hurat Aáli

In the past palm tree gardens and other agricultural areas were mostly on private land. Govt. had a small agricultural farm in Budaiya with Agriculture office within it. After Master Planning of Daraz in 1974 another small area at the west of Daraz village was given to Agriculture Directorate. Due to change of economic situation and shortage of water people started to neglect their traditional gardens and agricultural areas as a result many areas which were green and agricultural became barren. To compensate this Govt. allocated in mid 1980's two big areas for Agriculture – one at Hurat Aáli at the west of Isa Town covering 190 hecets and the other one covering 160 hecets at Buhayr and adjacent areas at the north of Riffa. These areas are shown as site 1 (Hurat A'ali) and site 2 (Buhayer) in the Master Plan below. This regional Master Plan incorporating major planning decisions was prepared under my supervision.

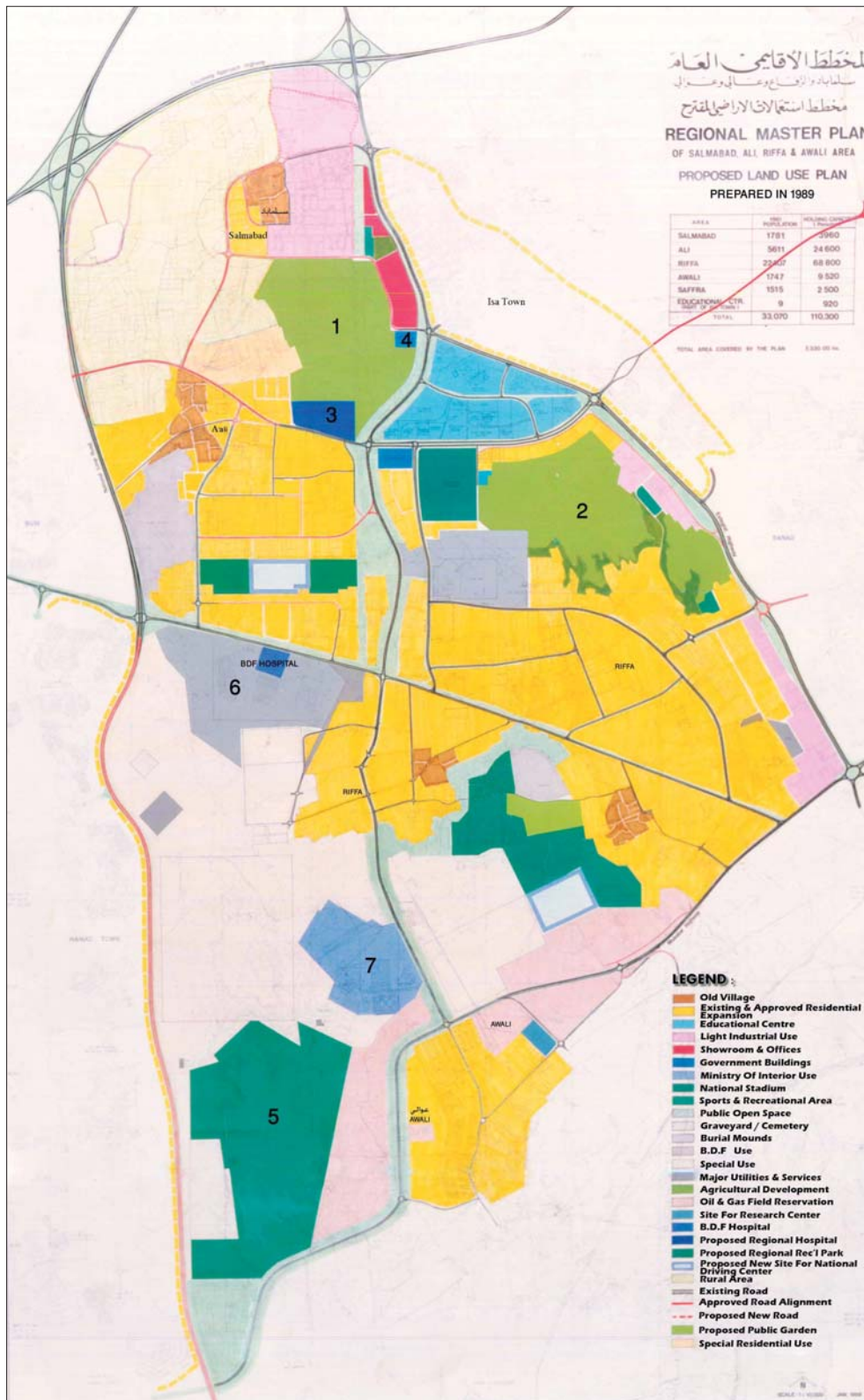
Hurat Aáli is covered by good agricultural soil. The area was fenced. Arrangement was made to bring Treated Sewage Effluent (TSE) from Tubli Sewage Treatment plant to irrigate the site. TSE storage tank was constructed at the south east side of the site at the west of Sk Salman highway. Irrigation and Drainage system were provided. Mainly fodder crops are grown in the area. Some fruit trees and vegetables in green houses are grown here.

When His Highness Sk Zayed Bin Sultan Al Nahyan provided money for construction of Zayed Town portion of this area was utilized for construction of the town. Areas were taken out for other purposes also. Now 120 hecets remained for agriculture.

With rapid development of Bahrain and joining together of towns and villages by expansion will logically demand this area to be eventually a regional park.

Buhayer

Initially in Buhayer 160 hecets were allocated for agriculture in mid 1980's. The area was fenced. Storage tank was constructed for storing Treated Sewerage Effluent to irrigate the area. Irrigation system was constructed and the area was put under productive Agriculture. The soil of the area is not good for agriculture.



Regional Master Plan

Site for Driver Training Center at A'ali

With increase of vehicles in Bahrain and increase of population demand increased for driver training facilities. So Ministry of Interior asked for a site for this purpose in mid 1980's. A site measuring 24.94 hec was allocated for this along Sk Zayed road, at A'ali at the south side of Hurat A'ali (please see site no. 3 on the plan on page 246). The site was a barren land. One reason to allocate the site was its closeness to Traffic Head Quarters on the other side of Sk Salman highway. Also the site was at the center of the country and was easily accessible from all parts of the country by existing road system of that time.

Ministry of Labour Site

Up to early 1980's the Ministry of Labour was in Gudaibiya at the west of Sk Hamad Palace. The building was very old and small. Ministry of Labour asked for new site in 1983. I was asked to propose a new site. I wanted to propose a site outside Manama to take away traffic of the Ministry from Manama also to make the site easily accessible from the road system of that time. I proposed the present Ministry site which was a barren land, on the west side of Sk Salman road opposite to entrance to Isa Town. H. E. Sk Khalid Bin Abdulla agreed with my proposal and the site measuring 3 hec was approved and immediately built. (Site No. 4 on plan on page 246). I also proposed 3 other small plots at the west of the site for other Directorates but those plots were not utilized.

Sakhir Race Course

In the past there was an informal race course in Manama at Adliya at the south of present Adhiliya Post office. After that there was a proper race course at the north of Awali on the east side of Sk Salman highway. Need for a bigger and proper race course was felt in late 1970's and a site covering 350.96 hec was allocated at the north of Sk Salman highway near Sakhir Palace which is on the south of Sk Salman highway (Site 5 on plan on page 246). The race course was built and was opened by The Amir in March 1981.

BDF Hospital and BDF area in West Riffa

In mid 1970's Bahrain Defence Force (BDF) was allocated a site along south side of Wali Al Ahad highway covering 111.95 hecets of land , (Site 6 as shown on plan on page 246). BDF Hospital was built within the site. The hospital developed in stages and is now a big and important hospital of Bahrain.

Safra Police Training College and other facilities

In the north west of Awali a site along west side of Sk Salman highway was allocated to Ministry of Interior in mid 1980's (Site 7, see plan on page 246). Police Training College and other facilities developed there. Substantial housing development with schools and other facilities also took place in the area. 295 dwelling units for police were built in the area between 1979 and 1999.

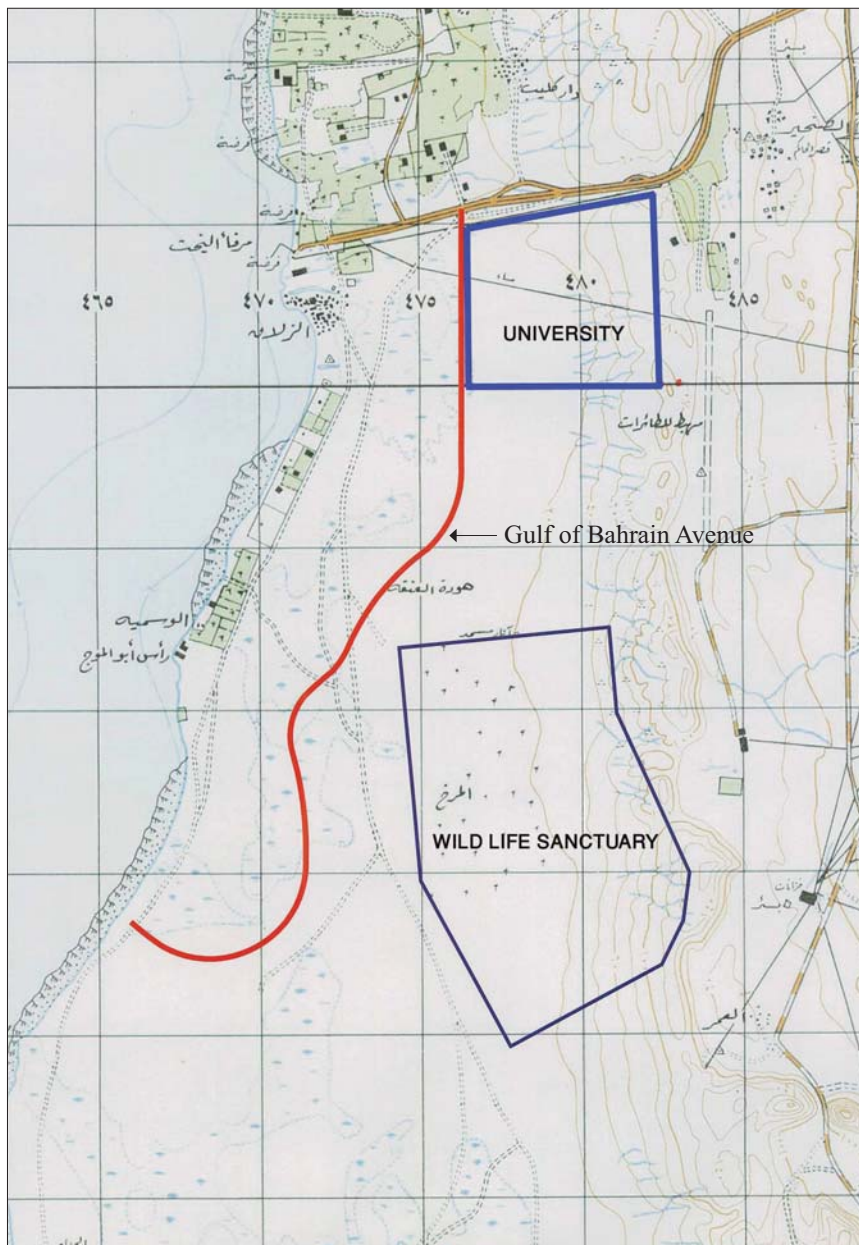
Gulf of Bahrain Avenue at the west of Arabian Gulf University

In the past to go to Al Jazer Beach (Zallaq beach) there was a road at the east of Zallaq village along the east side of private gardens along the coast as shown in the topographic map of 1968.



1968 Topo Map

With allocation of site for Arabian Gulf University in 1979 and opening of Al-Areen wide life reserve in 1982 there was order to Ministry of Works, Power and Water from Dewan Amiri to construct a new road in the area so that public could go to Zallaq beach without using the road along private properties, as mentioned, and also to give access to Al Areen Wild life reserve. Roads Directorate in coordination with Physical Planning Directorate selected the route of the road which was approved and the road was constructed as shown in the plan below.



Gulf of Bahrain Avenue shown by red line, Al Areen Wild Life Reserve shown by blue border

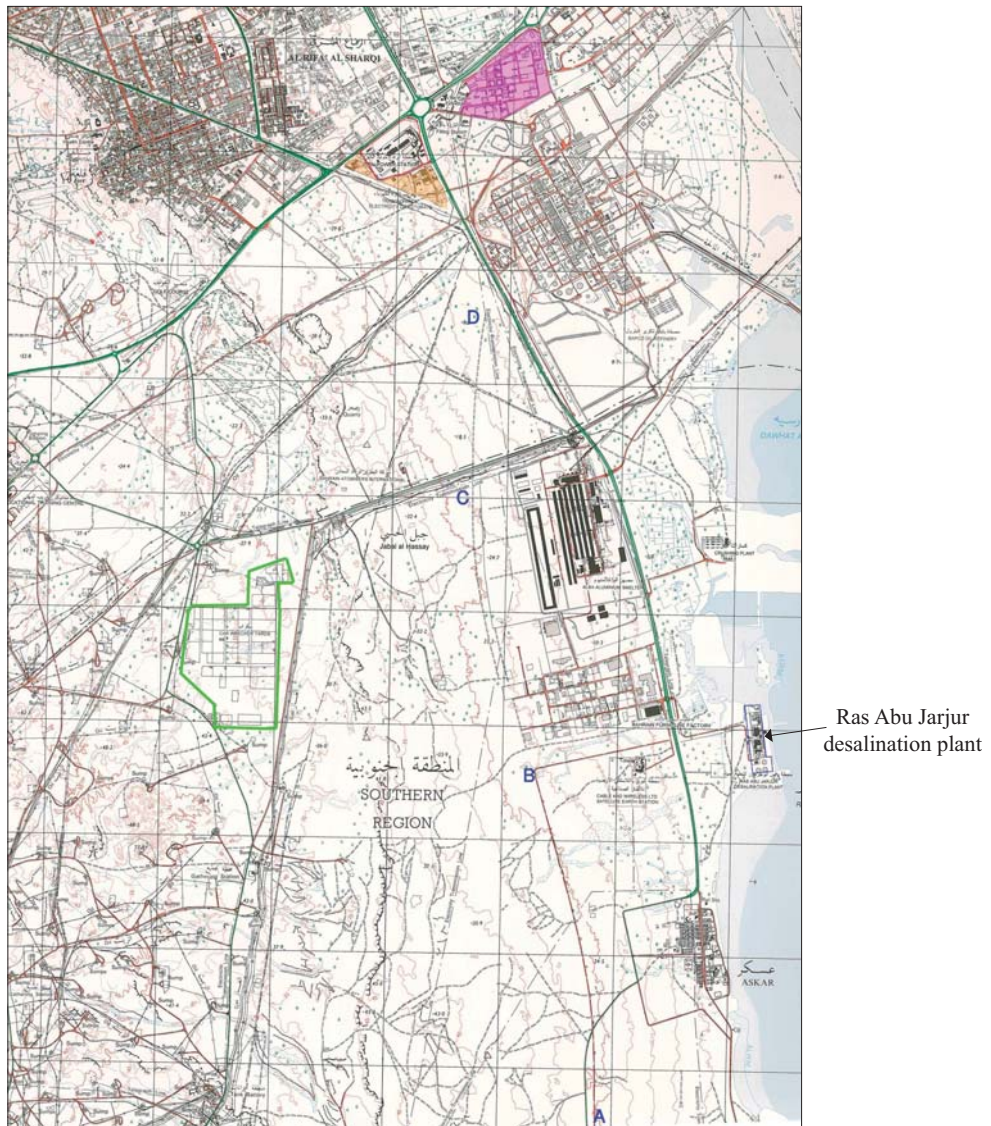
Al Areen Wild Life Reserve

Decision was taken in mid 1970's to establish a wild life sanctuary 2kms away from the south side of the site selected for Arabian Gulf University. The site covering about 730 hecets of land was partly covered by wild plantations at the north west corner of the site. Western part of the site was plain but eastern side was sloppy between 20ft to 120ft contours as shown in the above plan. Animals were brought to the site, facilities were provided for public to visit the area and see the animals. The site was opened to public in 1982.

Early developments in the south east of Bahrain

North Refinery Industrial Area

In early 1970's decision was taken to utilize Govt. land at the north of Refinery for Industrial purpose. Initial planning of the area was done by Physical Unit. Final plan for the area was prepared by Consultants of Ministry of Development and Industry and the area shaded pink colour in the plan below at the north of Refinery covering 36 hecets was planned for 54 industrial plots and was allocated for establishing industries. The industrial area started in 1976.

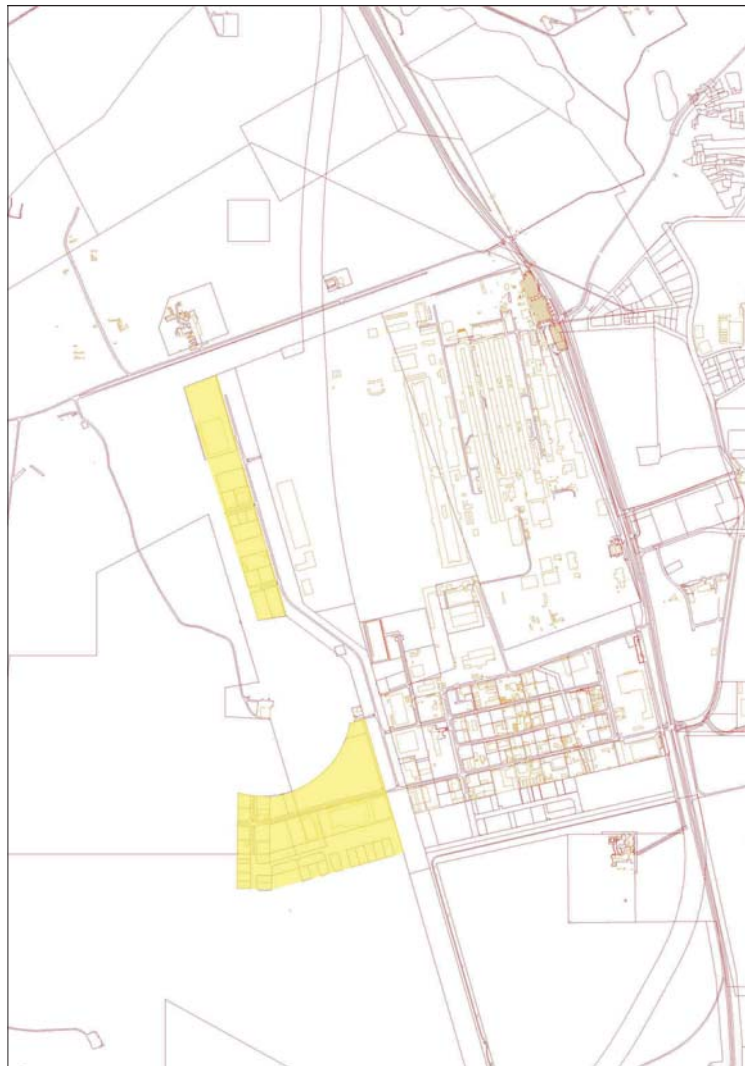


Industrial area at the south of Riffa Power House

A small area covering 14 hec as shown by orange colour in plan on page 252 was opened in this area for 17 tenants on 17 plots in 1976 for light industrial area.

South ALBA Industrial Area

Ministry of Development and Industry developed an Industrial area as shown on the plan on page 252 at the south of ALBA covering 188 hec in 1976. This industrial area accommodated 75 tenants. Later on the area was further extended to the west and to the north west of original site as shown in the plan below (shaded yellow).



Plan of extended south ALBA industrial area.

Site for Scrap Vehicles

In early 1970's (around 1973) a big site was allocated for disposing scrap vehicles at the north east of Awali shown by green border on the plan on page 252 The then Director General of Municipality Mr. Abdulla Saad al Shurugi discussed with me to finalize the location and parameters of the site before deciding to use the site for the purpose.

Riffa Power House

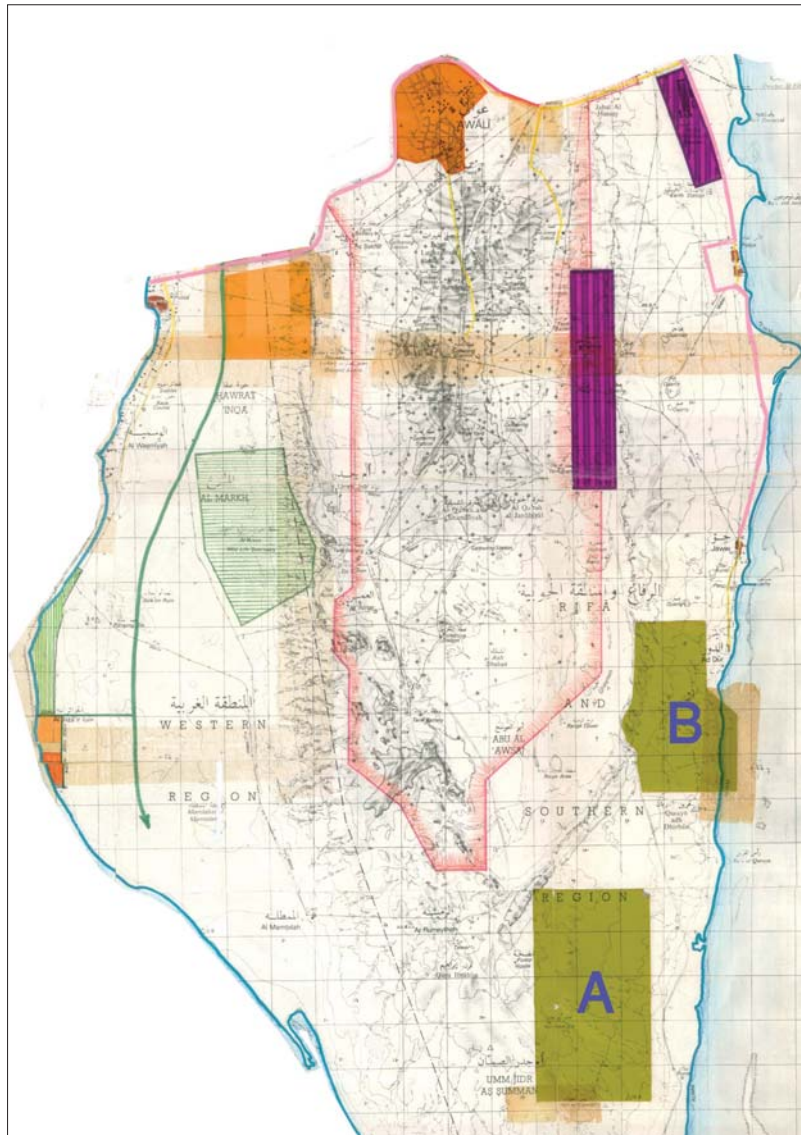
With many new developments, both Private and Govt., taking place in Riffa and south east of Bahrain a new Power House to supply electricity needs of the area became essential. So decision was taken to establish a Power House on the site as shown by red border on the plan on page 252 along the south side of Refinery roundabout as per recommendation of Consultants of Ministry of Works Power and Water. The Power House was commissioned in 1984.

Ras Abu Jarjur Desalination Plant

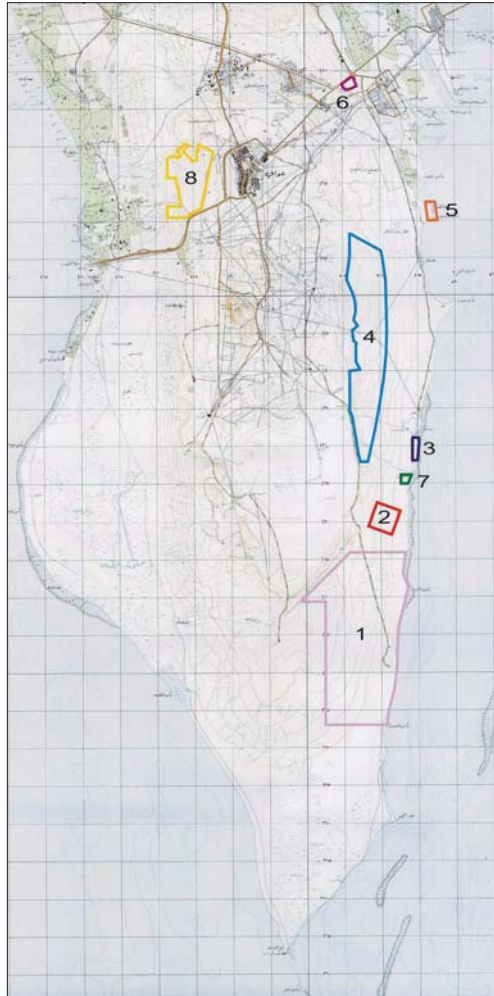
To supply water to new developments domestic, industrial and other purposes a desalination plant was opened in Ras Abu Jarjur east of earth satellite station as shown on plan on page 252 in the mid 1980's. Part of water supply to the plant was obtained form wells along the road from A to B as shown on Plan on page 252 In this connection it is worth mentioning that in 1980 I proposed road along this route ABCD to connect south of Bahrain with North. These water wells were along east side of that proposed route. Later on King Hamad highway was constructed mostly following this road corridor proposed in 1980.

Lands for Ministry of Defense at the south east of Bahrain
Sk Isa Air Base

Plots A and B as shown in the plan below were allocated to Ministry of Defense in mid 1970's



In mid 1980's decision was taken to construct an airbase in the area. I was partly involved to fix the site for the airbase. Above mentioned two plots were repositioned and plot 1, as shown in the plan below, was created for the airbase. Work on construction of the airbase started in 1987 and the airbase was opened in 1989.



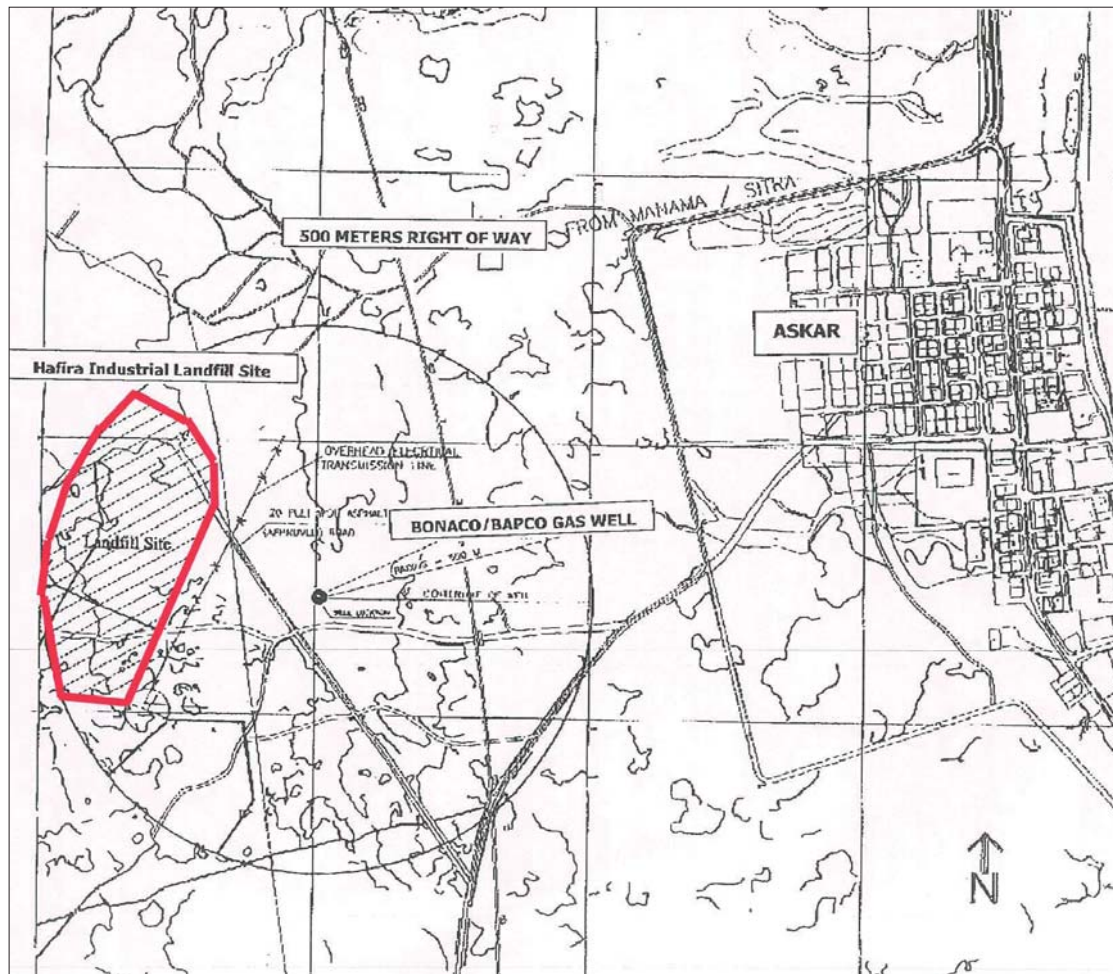
Stone Quarry Site

Stone was needed for construction. For construction of Saudi Bahrain Causeway in early 1980's stones were needed in bulk. So an area at the west of Jaww and Askar (Plot 4 in the plan on this page) was selected for stone quarry. A company was established for the job. Quarrying started from the north end of the site.

Industrial Waste Disposal Site

For many years a committee comprising members from relevant Govt. Ministries including Physical Planning worked to find a suitable site for disposal of Industrial waste (toxic waste especially). Finally site 2 shown by red border on plan on this page measuring 1km² was

selected in 1985. One cell was prepared on one corner of the site and use of the cell started in 1990 but use of the site for waste disposal was stopped in 1991 mainly for security concern for Sk Isa Airbase. Later on a site was prepared at Hafira at the north west corner of plot 4 on plan at page 256 west of Askar. The site is shown by red border in the plan below.



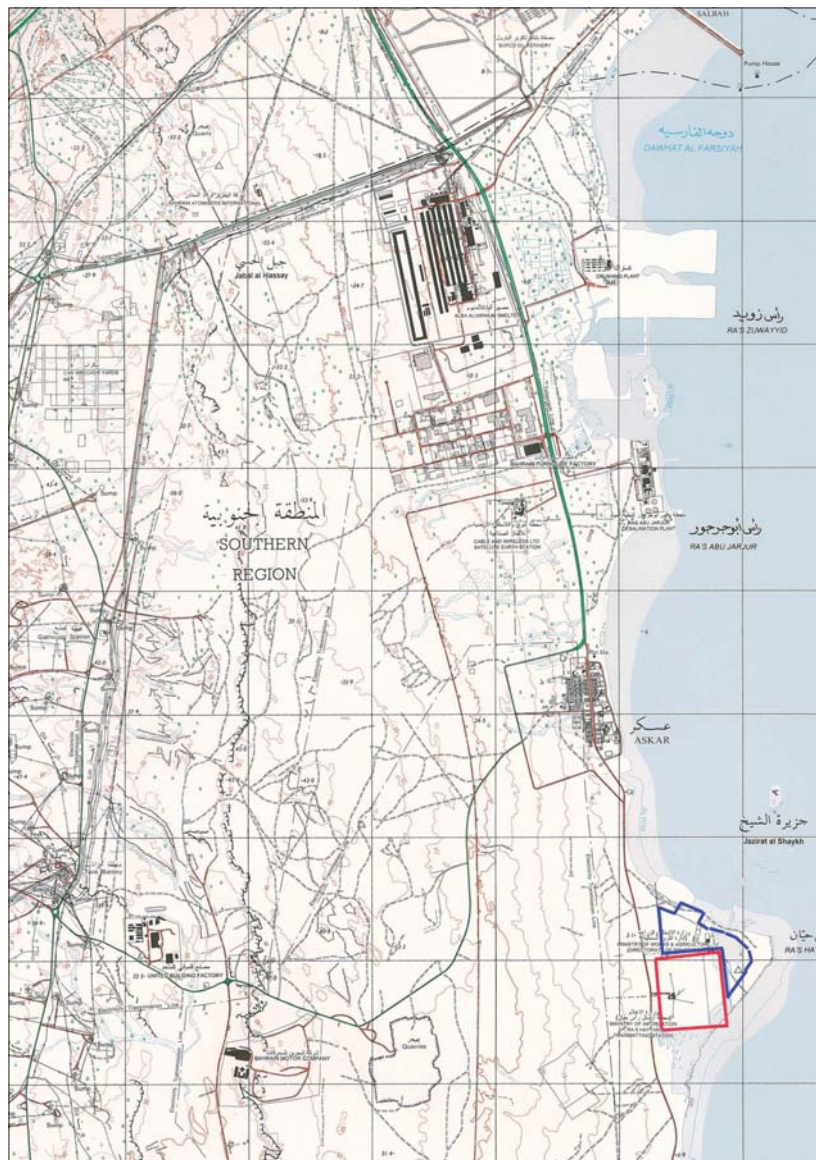
The site area is 125400 sq.m. The site was prepared at a cost of US\$1.213 million (BD458,514) during 1998 – 2000 and use of it started in 2001. This site is in use now for industrial waste disposal.

Rass Hayyan

Ras Hayyan is a triangular Peninsula at the south of Askar. The area was barren with shallow sea on three sides where seasonal birds – Flemings used to come. The area with quick sand on surface was difficult to access.

Radio Signal Transmission Site

In late 1970's I was asked by H.E. Sk Khalid Bin Abdulla to go to H.E. Tariq Almoayed, the then Minister of Information. When I met the Minister of Information he told me the requirement of a site for a radio transmission and told me the technical requirements and some parameters to be satisfied by proposed site. I organized a required study and proposed the site at Ras Hayyan shown by red border in the plan below measuring 36 hecets. H.E. Sk Khalid and H.E. Tariq Almoayed agreed with the proposal and the site was approved for the purpose. Soon after the site was utilized by Ministry of Information for radio transmission.

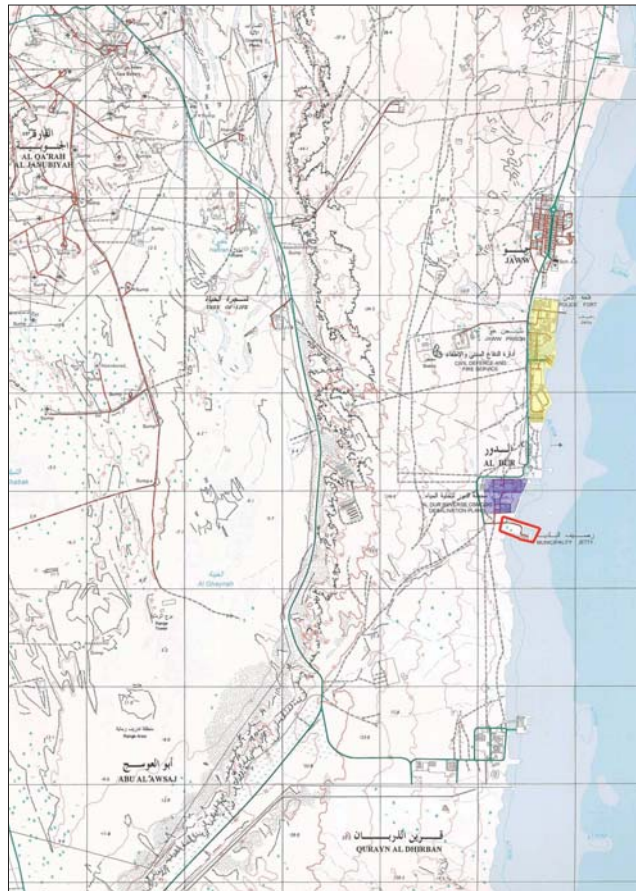


Fish Nursery Center in Rass Hayyan

Soon after allocation of the plot for Radio Transmission there was demand for allocation of a plot for Fisheries by Fisheries Directorate. So the plot shown by blue border measuring 16.66 hec, on plan on page 258 at Rass Hayyan was allocated for the purpose. A project under UNDP project for laboratory related to fisheries were established on the plot in 1979. Later on ponds were created in the area and fish nursery and other uses related to fisheries developed in the area.

Al Dur Reverse Osmosis Desalination Plant

For satisfying requirement of Defense and other developments in the south a Desalination plant was established at the south of Al Dur Village in the site, measuring 12.87 hec, shown shaded blue in the plan below. The building of the plant started in 1983 but due to some technical reasons the plant started operation and production in 1993.



Municipality Jetty

At the south of the Dur desalination plant Municipality developed a jetty shown by red border on plan on page 259 mainly for boats going to Hawar.

Jaww Prison and Ministry of Interior facilities

An area at the south of Jaww village (as shown shaded yellow) on plan on page 259 was developed as main prison of Bahrain with other related facilities covering 31.32 hecets of land and opened in July 1979.

Extending Area of Original Master Plan of Manama

Mr. Munro's conception for Manama Master Plan was that the sea should be visible while driving on Manama North ring road and Manama east ring road (Al Fatah highway) upto original Master Plan area to be reclaimed at the north of Juffairs. He wanted same situation along Manama south ring road. In the past Manama was exposed to sea on three sides, except the west side. But pressure built up later on for extending the Master Plan area beyond ring road for gift lands and for other purposes.

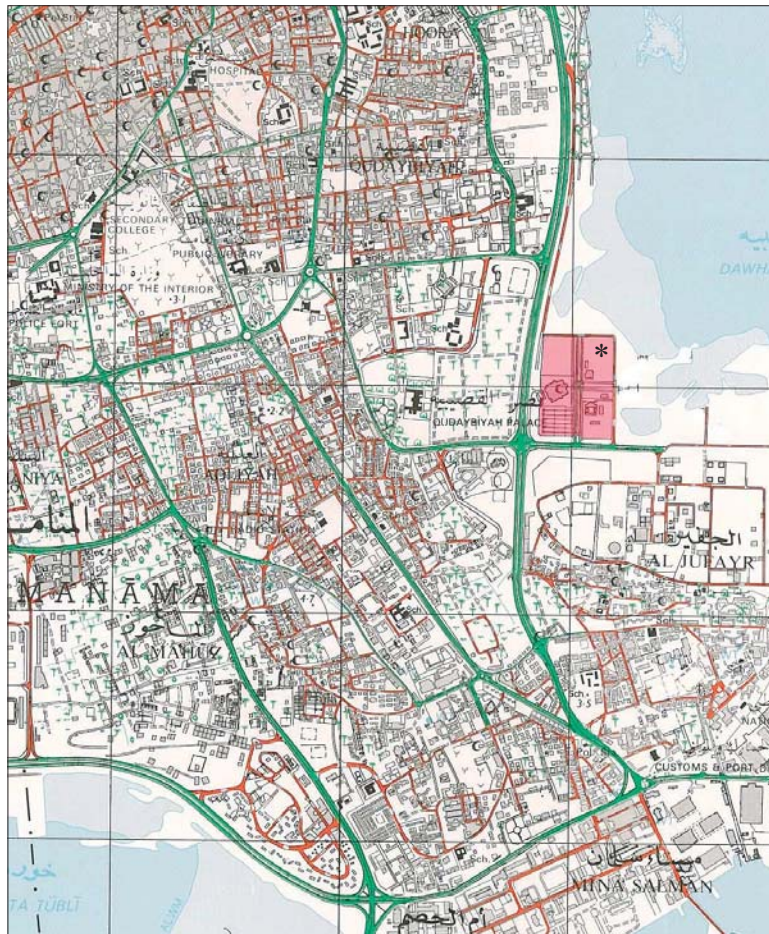
First extension of Juffair area

There was order to provide gift land at the north of Juffair in 1982. I was asked to prepare plan for the purpose. First thing I did was to propose a major road (present Awal Avenue) at the north and east of Juffair as shown in the plan here. I proposed this road to extend to spine road within Mina Salman port to give an alternative new access to the port also to provide quick access to old Juffair British Naval Base. This area was under use by different Ministries and offices and Bahrain school was opened there. The proposal was accepted and strip of gift land was allocated by Dewan Amiri as shown shaded red in the plan.



Grand Mosque – Ahmed Al Fatah Islamic Center

In 1983 H.E. Sk Abdulla Bin Khalid Al Khalifa the then Minister of Justice and Islamic Affairs called me to his office in old court building in Manama. He asked me to work on proposal for a site for Grand Mosque and he proposed the site where the Grand Mosque was constructed. My job was to fix the site perimeter and propose surrounding roads. H.E. wanted a site 1500' x 1000' (457.3m x 305m = 15.13 hecets). When I said the site will be too big. His Excellency again showed his wisdom and asked me to put the site as big as he proposed. So I proposed the site with road from Awal Avenue at the east of the site and another road at the north of the site. The site was approved. The mosque was built at western part of the site at the center and car parks at the south and north of the mosque. Dar Al Handash consultants planned the site and designed the building. Construction of the mosque began on 17th December 1984. The mosque was opened for prayer on 2nd June 1988. Later on religious Institute was built at the south east corner of the site. The total cost of building the mosque including all it's extension, was BD7,500,000 (about US \$ 20 million). In early 2000 decision was taken to build Sk Isa Bin Salman Library at the north part of the site. The Library is built and opened in 2008.



* Site of Ahmed Al Fatah Islamic Center and Sk Isa Library

Marina Club site

There was demand for a site for Marina Club in early 1980's and the site in L shape was allocated at the south of present Bahrain Museum at the east of Manama east ring road as shown in the plan below. Subsequently the club was constructed. Part of the site along the highway was used as store for boats and other things of the club giving unpleasant appearance from the road (Plot 1, plan on this page).



Municipality Cornice

Municipality initially started building a cornice covering the area south of Marina Club extending upto Awal Avenue at the north of Juffair but the project was abandoned after construction progressed substantially. Later on they constructed a cornice covering the plot area 2 on plan on page 263 This cornice was initially very popular. But later on facilities worn out and become unattractive because of parking of boats facing the cornice etc.

Bahrain Museum

For long time a small plot at the south of British Embassy in Ras Ruman in Manama was in consideration for building National Museum. Museum was temporarily located in the former RAF officer's Mess building at Muharraq Busaiteen RAF Air Base in late 1970's and early 1980's. There was search for a new site for Museum. When H.E. Tariq Almoayed was Information Minister in early 1980's there was serious search for a new site for Museum and present site (plot 3, plan on page 263) was selected. Many consultants and experts including Sir Basil Spence who was Architect of Coventry Cathedral made proposals for the Museum plan and building. The Museum was built at cost of BD 10 million between 1985 and 1988 and opened on 15 December 1988 . Cowi Consultants of Denmark made the final design and supervision of construction of the building.

Plot for H.H. The Prime Minister's Office

There was study and proposals for H.H. The Prime Minister's office site in early 1980's. Plot 4 on plan on page 263 was approved in 1983 covering 22.44 hecets of land. But later on the Prime Minister's office was decided to be in the new building built by demolishing Gudaibiya Palace.

Najma Club Site

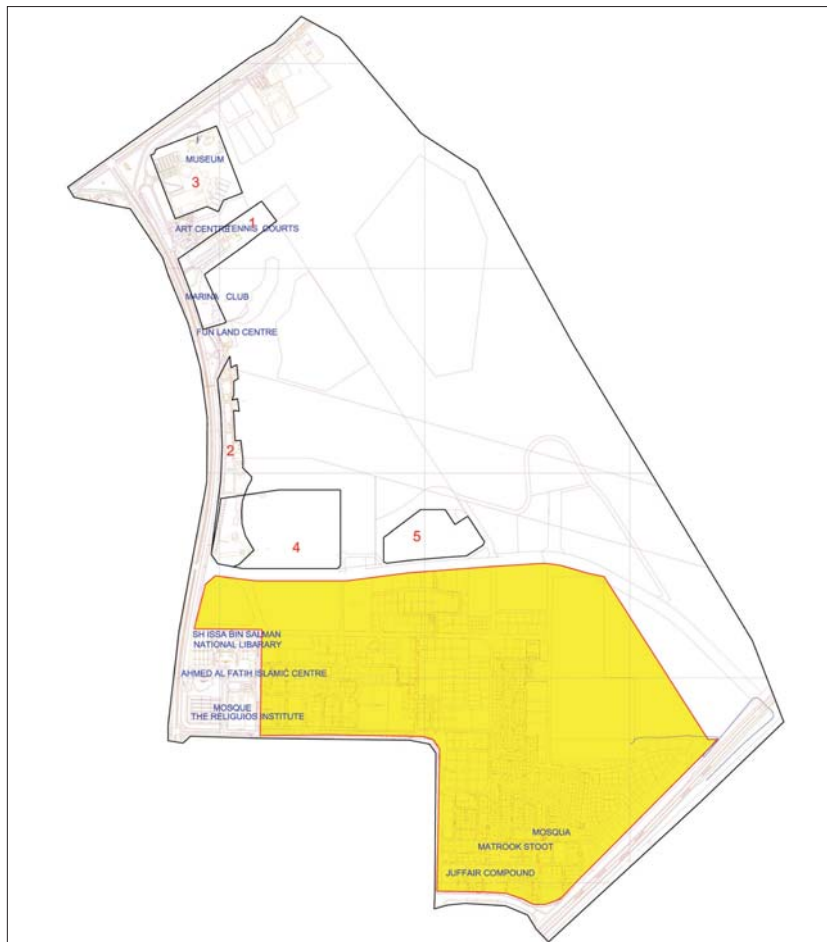
In June 2003 a letter came to the Minister of Housing from H.H. The Prime Minister's office attaching a letter from H.H. the Crown Prince to allocate above mentioned site for Nazma Club. I thought the site will be better utilized as a cornice for residents of Manama to have sea side recreation and to have view of sea and proposed to shift the site of Nazma Club to plot 5 on plan on page 263 to H.E. Sk Khalid Bin Abdulla Al Khalifa. H.E. Sk Khalid agreed with the idea and asked to prepare a letter in response to the letter from H.H. The Prime Minister's office giving reasons for the proposal. Accordingly letter was sent to H.H. the Prime Minister's office suggesting the club on plot 5 and the proposal was approved. The site was reclaimed for construction of the club.

Site for Parliament Building

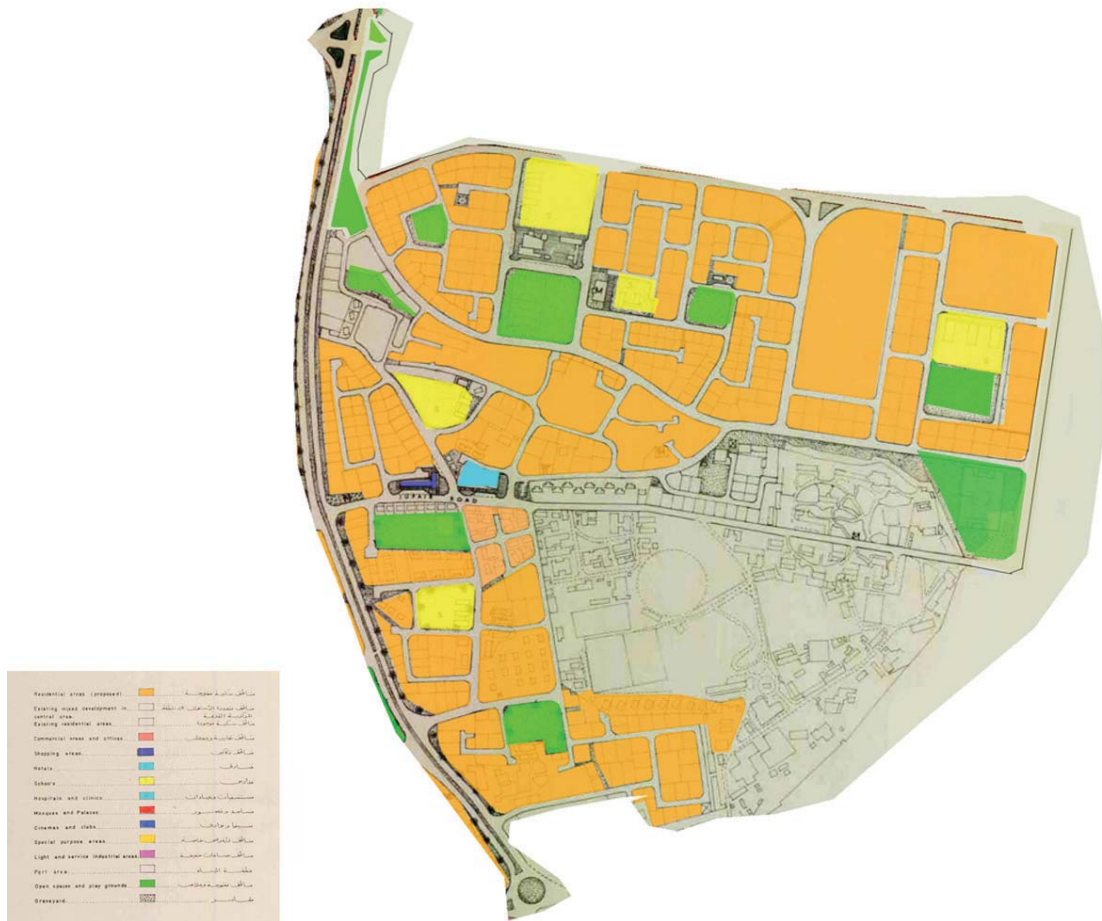
Later on above mentioned plot 4 was allocated for Parliament building. Again those who handled this allocation either did not know or did not mention the issues, mentioned in previous paragraph, regarding importance of using the area as cornice to higher authorities.

Extension of Juffair towards north east

Area east of Al Fatah highway & North of Juffair, shaded yellow on the plan below, is privately owned with gross area of 278.29 hec. This area is covered mostly by lands originally gifted or land given as compensation in piecemeal manner on case by case manner, not based on a overall Master Plan for the area. There is no proper road network or road hierarchy. Some initial gift lands and compensation lands later subdivided. The area has no site for public facilities like schools, gardens, mosques etc.

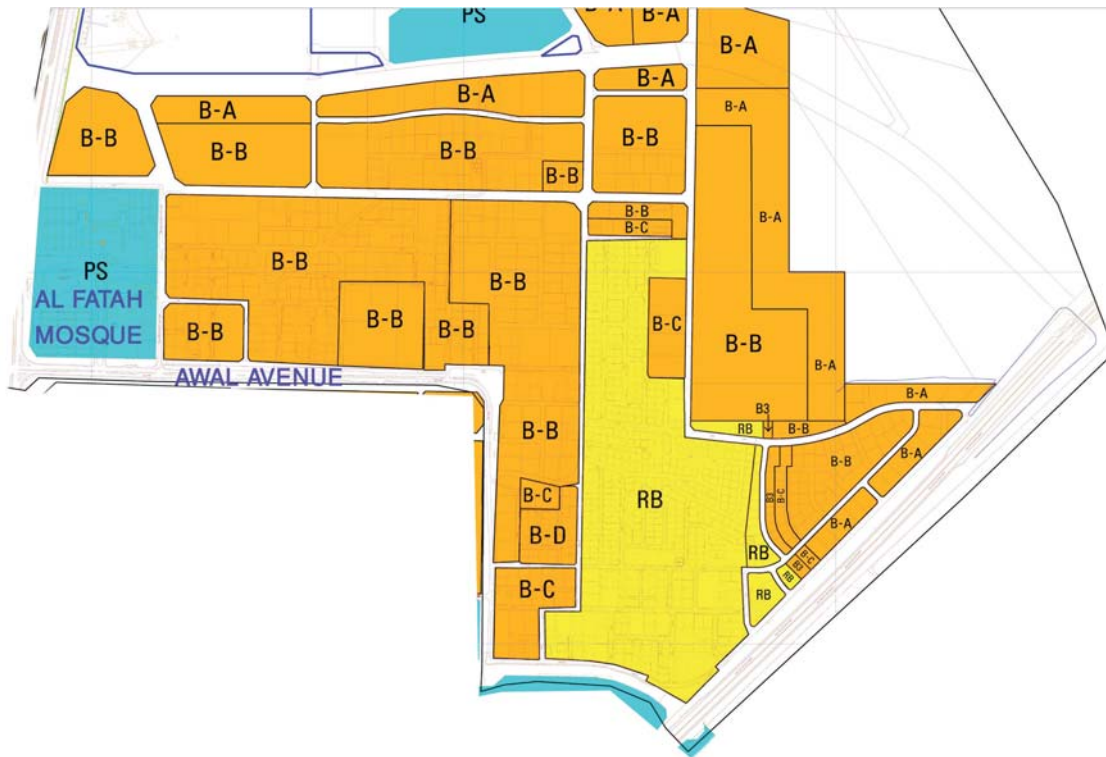


This area can be compared with original Master Plan area of Juffair shown below. That plan covered 85.80 hec (which was new area outside existing areas of Juffair at the time of Master Planning), With so many schools and open spaces and other facilities as shown in the plan on page 75 and below.



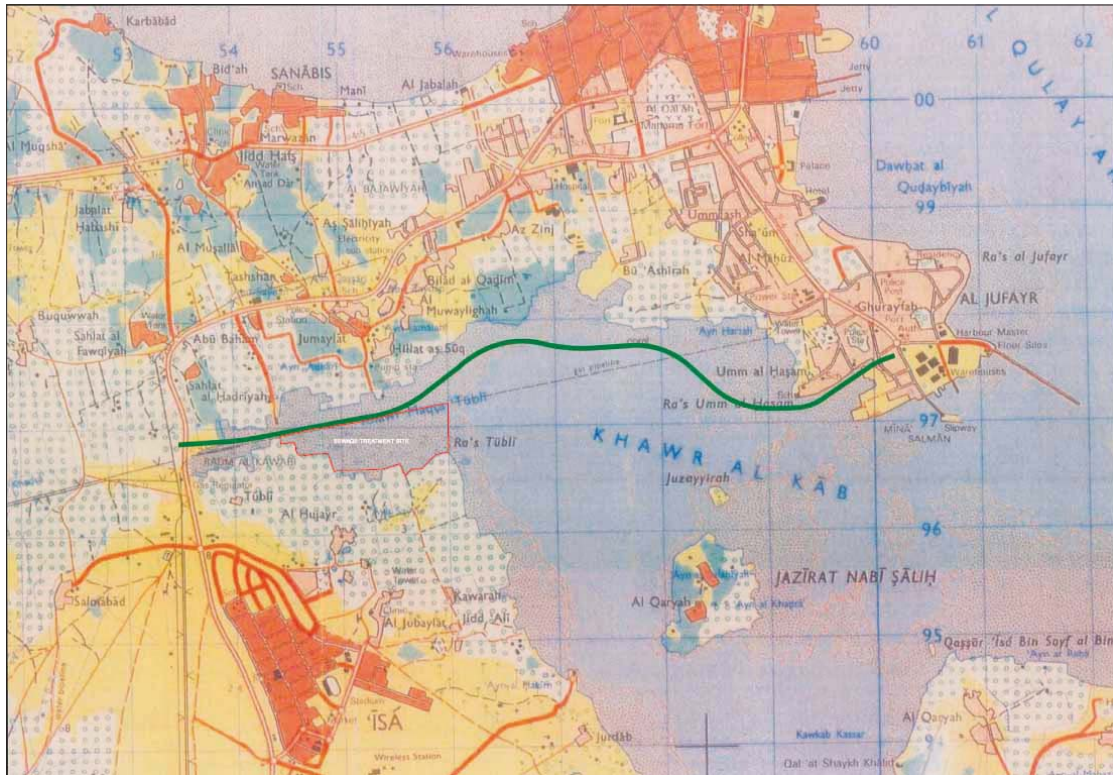
Original juffair plan

Current zoning plan of the area, shown shaded yellow on page 265, with very high density as shown in the next plan without any public facility in the area, as mentioned, how arrived at is worth studying.



Extending Manama Master Plan towards south in Tubli Bay.

Manama south ring road (Sk Isa Bin Salman Highway) was proposed on shallow sea as shown by green line on the map below.



Original Master Plan conception was not to allow any private development at the south of the road so that the sea will be visible while driving on the road. In mid 1980's the entire south side of the road from the Tubli Sewage Treatment site upto Sitra causeway was covered by a row of gift plots with direct access from the south ring road. Obviously the gift land plan with direct access to gifted properties could not be implemented. Under my supervision a detail plan for the area was prepared. Taking into consideration of regional road network requirement a road starting from Tubli road at the north of Isa Town going north and running parallel to Sk Isa Bin Salman highway along the south side of the road was proposed as shown in the plan below. Proposed gift plots were adjusted to fit into road system and two public open spaces on plots X and Y as shown in the plan opposite to Abdur Rahman Kanoo Avenue and Avenue 35 were created along with open spaces shown on the plan. But later on these two plots were used for other purposes.



Later on some of these big lands were subdivided. Further lands were added. The plan below shows current properties in the area.



Adding area at the north of Sk Isa bin Salman highway after the gardens at the south of Khamis, Biladel Qadeem and Zinj

After reclamation for construction of south ring road at the north of Tubli Sewage Treatment Plant at early 1980's a gap of reclaimed land was created between date palm gardens and the road (Area A in above plan). Soon there was pressure to get gift land and compensation land in the area. The area should have been logically, part of Manama Green Belt. Physical Planning Directorate proposed to use the area for compensation to implement Manama Master Plan. Though initially the proposal was accepted later on the area was used for gift lands and other purposes. A layout plan was prepared for the area under my supervision with a service road parallel to Sk Isa Bin Salman highway as shown on the plan below. There was a informal football pitch in the area. To accommodate that a play ground along with a club site was proposed in the plan. Later on original lands were subdivided and the area developed very fast. Current topographic map of the area is given below.



Manama Muharraq Second Causeway

Traffic volume on Sk Hamad causeway between Manama and Muharraq was increasing rapidly because of rapid developments in Muharraq island and in Manama in early 1980's. In 1988 the causeway was carrying 90,000 vehicles per day on its 3 lane dual carriage ways. So studies were undertaken by Physical Planning Directorate as well as Ministry of Works, Power and Water using Consultants to select route of a 2nd causeway between Manama and Muharraq and finally in mid 1980's the route of 2nd causeway (Sk Isa Bin Salman Causeway) was approved. Reclamation for construction of the causeway started in 1992 and construction of the causeway completed and opened to traffic in 1996. This causeway provided direct link between main office and commercial areas at north Manama with the airport.



Manama Muharraq Second Causeway

Around 1980's lands were gifted along north side of Sk Hamad causeway. With reclamation of 2nd causeway some land was reclaimed along east side of Al Fatah highway (opposite to Crown Plaza Hotel) to use as compensation for acquiring private properties in front of Immigration and Passport offices to create a car park there. Cadastral plan below shows present private properties between Sk Hamad causeway and Sk Isa Bin Salman causeway in Manama side.



Cornice at North of Manama

In mid 1980's land was reclaimed along north side of King Faisal Highway at the north of Manama and cornices were constructed at the east and west side of Mina Manama. These cornices facing the sea were very attractive and for many years were very popular recreation areas for people. Attraction of these areas as recreation areas diminished after reclamation for old Lulu Island (now Reef Island) and Bahrain Financial harbour project and Bahrain Bay Projects.



North Manama Cornice (shaded green)

South Hidd Industrial Area

As mentioned earlier Dry Dock (ASRY) was opened in 1977 and the link road to it provided the base for further developments in the area. A steel factory by Gulf Industrial Investment Company was built immediately after that to the east of the Dry Dock. Along the west side of the link road to ASRY a cement factory was developed by HYUNDAI at the same time. Plan below shows initial industrial developments in the area and general situation of the area at that time.



Later on the area at the west of the road was developed into a marine related industry covering 85 hecets of land which was reclaimed in 1997 (site A) in the plan below A 10m deep channel was constructed to the site.

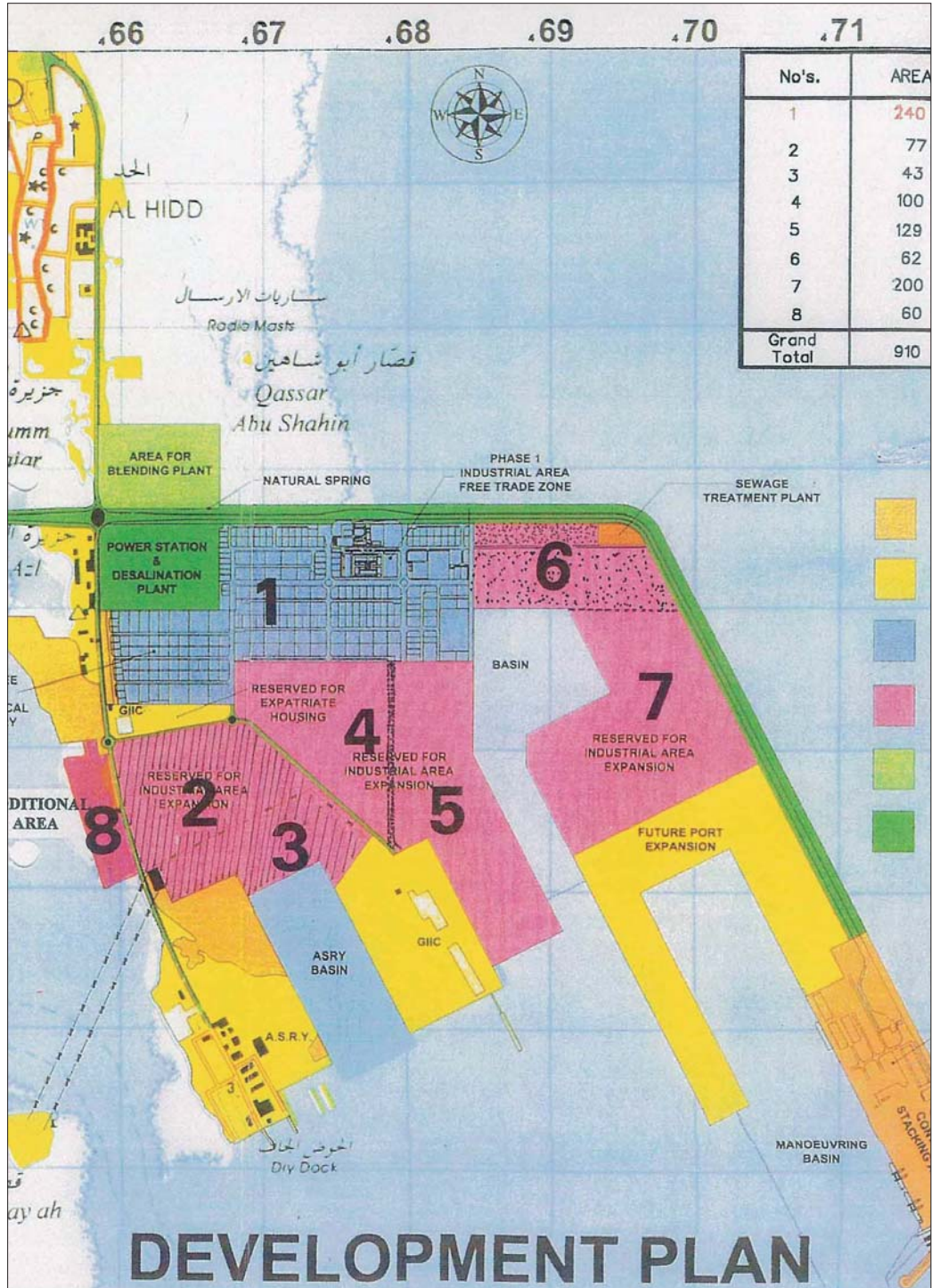
Consultants were engaged to study and Master Plan the are at the east of ASRY road for industry and port facilities as Mina Salman port was already old and became outdated and new port for the country became necessary. The Consultants submitted report and proposal for the area in December 1996 and the proposal was approved in 1997. The Master Plan shows below proposed industrial area and the port. A 7km long cause way from ASRY road to the port was proposed. Initially 240 hecets for industry was selected at estimated cost of BD40 million for reclamation, infrastructure and initial buildings. Reclamation work for initial phase for industry started in 1998 and finished in 2001.



Master Plan

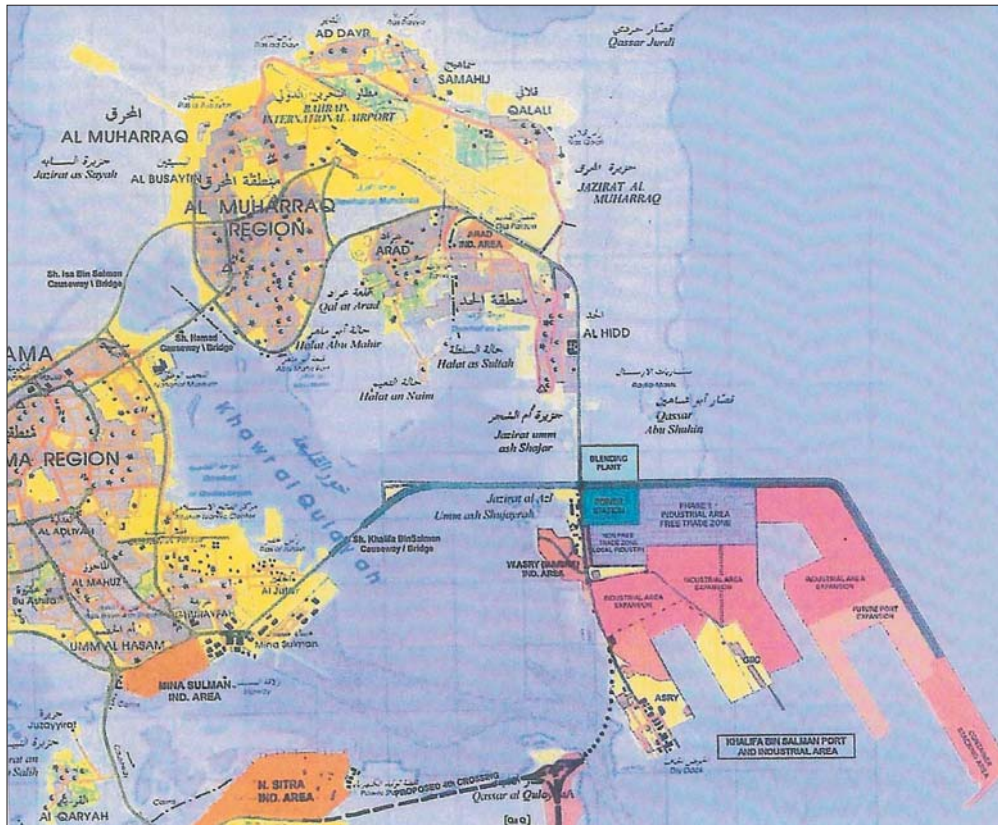
Port reclamation started in January 2003 and infrastructure, building and installation of equipments completed in 2006.

Following plan shows proposed phases for development of the industrial area.



Phases plan

The industrial area is quite big, its size compared to other developments in Muharraq island in 1996 can be seen from the plan below.

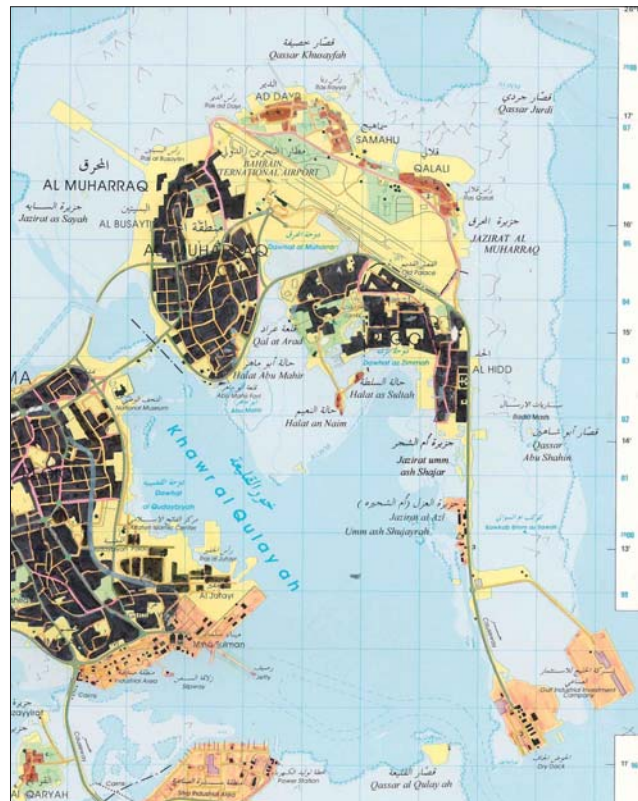


Hidd Power Station and Desalination Plant

From early 1990's there was discussion and study for new Power and Water Station for Bahrain. Decision was taken to set up a Power plant and water desalination plant within Hidd Industrial area. Initially 41.96 hecets of land was allocated for the plant at the south side of causeway to the new port (please see the plan on page 276). Later on another 41.96 hecets on the other side of the causeway was allocated for the blending station. Construction of 1st phase of the project started in 1997 and completed and made operational in September 1999 to produce 272 mega watt of electricity and 30 million gallon of desalinated water per day. 2nd phase of the project was completed in July 2004 to produce 720 mega watt of electricity and 3rd phase was completed in May 2007 producing 60 million gallons of drinking water per day.

Sk Khalifa Bin Salman Causeway

As mentioned earlier Manama Muharraq 2nd causeway (Sk Isa Bin Salman causeway) was under construction during 1992 and 1996 and it was opened to traffic in 1996. At that time no body was thinking about a 3rd causeway between Manama and Muharraq Island. Master Plan preparation was in process for Hidd industrial area. Decision was taken to build Hidd Power and Water Plant in the north west corner of Hidd industrial area as mentioned before. Studies were conducted how to bring water and electricity form the station to Manama. Submarine water pipes and cables were considered but estimated cost was very high. In march 1996 The Director of Industrial Areas sent a letter to Physical Planning Directorate proposing to allocate a plot at the north of HUNDAI Cement Factory at the west side of ASRY road. This plot was right opposite to the causeway from ASRY road to New Port. When this letter came to me for study and comment I immediately realized that if this plot is allocated it will stop extending the road to New Port towards Manama. I discussed this with Mr. Noor Al Alawi, the then Acting Director of Physical Planning. He agreed with me. So reply was sent to the Director of Industrial area letter not to allocate the proposed plot. Available topographic map of the area of that time below shows how the area along the causeway was at that time.



I immediately started working on proposing a causeway from Hidd Industrial area to link Sk Isa Bin Salman highway to provide direct accesses to the new port from Saudi Bahrain causeway and proposed the route of present Sk Khalifa Bin Salman Causeway to H.E. Sk Khalid Bin Abdulla. H.E. liked the proposal but proposed to move the route of the causeway to further south to have more areas for expansion of Hidd but when I pointed out it is necessary to have the causeway in the location to give direct access to the new port he agreed. The proposal was sent to Ministry of Works, Ministry of Electricity and Water and finally to Ministry of Finance. One reason which inspired me to make this proposal was to save the huge cost of submarine water pipes and cables to bring water and electricity to Manama from Hidd Plant by providing the causeway as alternative. Once the proposal went to Ministry of Electricity and Water that Ministry supported the proposal for above mentioned reason. There was negotiation with Mina Salman Port authorities as the route was through Mina Salman area under use at that time. Initially Roads Directorate opposed the proposal on consideration of expected low traffic volume initially on the proposed causeway. Finally decision was taken to build the causeway.

Please see alignment of the causeway on plans in page 276 and 278

In 1997 reclamation work for the causeway was undertaken and work on building the causeway started. The causeway was built at the cost of over BD 30 million. In 2004 the causeway was commissioned. Water and Electricity from Hidd to Manama was brought through the causeway. Saving for this compared to submarine water pipes and cables was more than the construction cost of the causeway.

Muharraq Outer Ring Road and Airport's Second Runway

Airport in their plan had a 2nd runway running parallel to the present runway at the north west of it for long time. That plan stopped any expansion of Muharraq at the north and west of Busaiteen as shown in the original Master Plan of Muharraq Town in page 102. I was instructed by H.E. Sk Khalid Bin Abdulla Al Khalifa to study with Civil Aviation Affairs to finalize the requirement of Airport in early 1995. I met several times Mr. Dyeya A. Aziz Towfiqui, Acting Director of Engineering and Maintenance, Civil Aviation Affairs. Civil Aviation also had a Consultant at that time to study future requirements of the Airport. As a result of this coordination final airport boundary was agreed as shown by red dotted border in the Master

Plan below (page 282) with future runway at the north west of present runway at the north of Dayer village instead of previous plan of having it at the south west of present runway. Coordination was made with other Ministries especially with Ministry of Works and Ministry of Electricity and Water. They wanted a 100m wide road corridor from Hidd Power Water station to Busaiteen especially to lay water mains. So the 100m road corridor as shown in the following plan (page 282) at the north of Galali, Samahij and Dyer was proposed and approved.

There were private properties in the area which were adjusted to create the road corridor. This road in future to be under future airport runway in tunnel. Decision on new airport boundary and 100m road was taken quickly by H.E. Sk Khalid Bin Abdulla and he got necessary Govt. approval. These provided basis for all future developments at the north of Muharraq island and at north west Busaiteen beyond limit of original Master Plan in page 100 and 104.



Author 1995

Muharraq island and airport before outline Master Plan in 1995



Outline Master Plan with revised airport area and 100m ring road

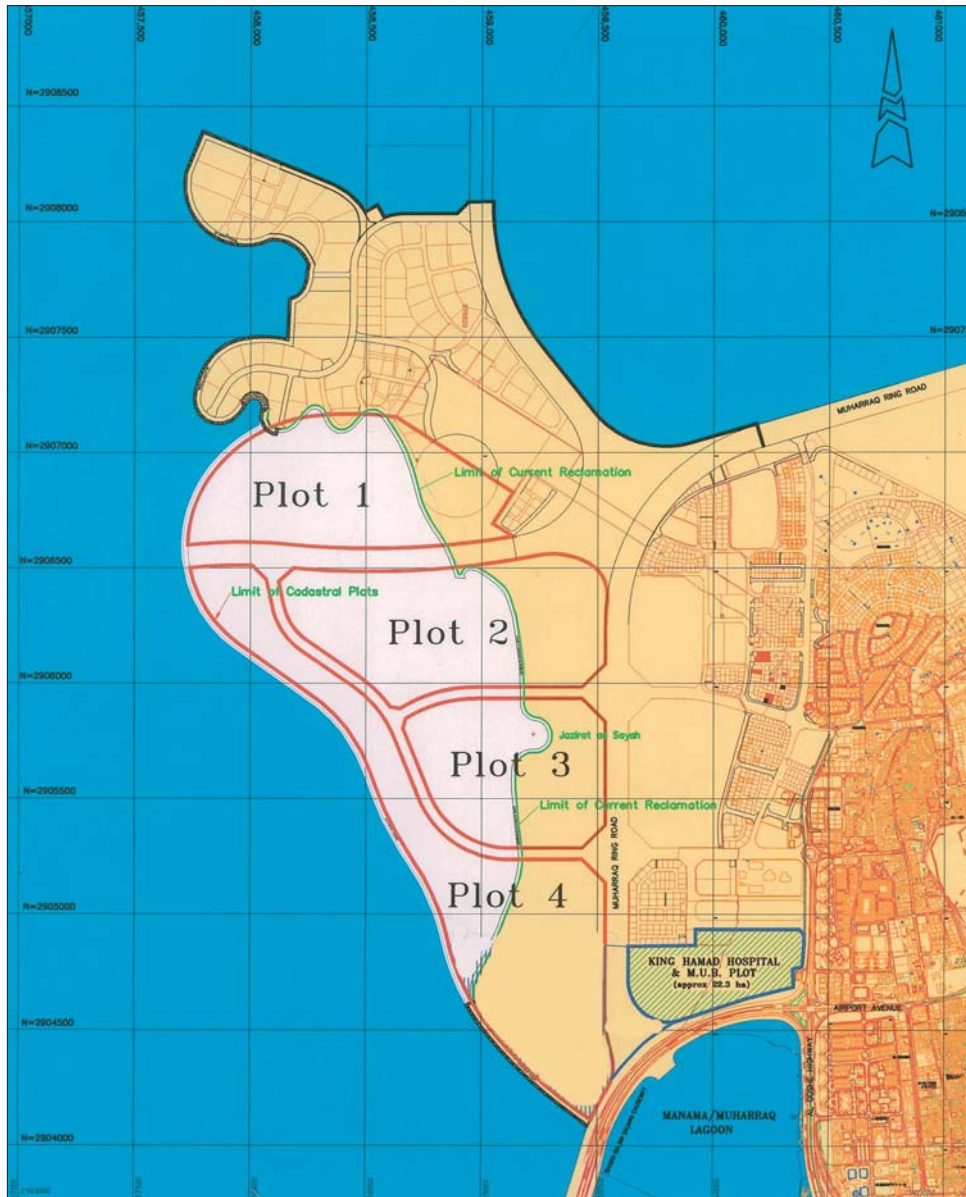
Addition of new areas to Muharraq Town Master Plan

Original Master Plan of Muharraq Town at Busaiteen was limited to red line as shown in the plan below. After that areas were added to the north and west as shown in that plan. I supervised preparation of Master Plan for the area. The plan below is final plan revised from previous plans. In the plan in the north mainly residential development was proposed. Block A was reserved for housing project for Ministry of Housing and Block B was given to Municipality. In the plan Three School Sites **a, b, c**, One Health Center Site **d**, One Mosque Site **e**, One Children Center **f** and One Common Parking Space **g** were provided. Also site for Primary Substation **h** was provided. Sites were provided also for Water Supply **(i)**, French School **(j)**, Petrol Station **(k)**, Public Library **(l)** and land for High Council of Youth and Sport **(m)** for play ground.



In the south along north side of Sk Isa Bin Salman Causeway decision was taken earlier to build Muharraq General Hospital (King Hamad Hospital). The hospital is now under construction. Hospital plot is 22.67 hect out of which 9.65 hect leased to Medical University of Bahrain. The University building here opened in October 2008. The University moved here from Seef where it initially started in 2004.

The area was further extended to the west as shown in the plan below and plots 1, 2, 3 and 4 were proposed with the road network shown in the plan for use of Housing Bank.



Subsequently Housing Bank in Ministry of Housing appointed HOK Consultants of Canada to revise above mentioned plan. They produced the plan below. In plan on page 284 there was no proposal for land to the north of plot 1. HOK proposed additional land in their plan to the north of plot 1 which was used by Royal Court for gifting land.

Bandar Seef














LAND USES

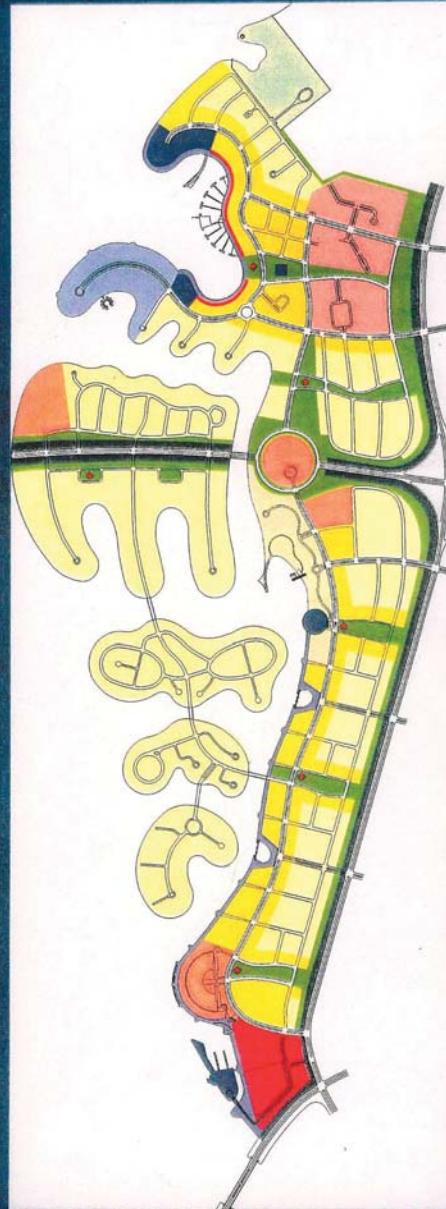
The primary land use is a mix of residential uses at a variety of densities. The primary residential type is garden villas on lot sizes ranging from smaller 400-500 square metre lots to luxury waterfront lots in the range of 3,000 - 5,000 square metres. These different sized lots are available in distinct neighbourhoods. The largest lots are located in the exclusive "Islands Neighbourhood" across from the public promenade. Medium density condominium apartments will be located along the public promenade and in the North Marina District in the north part of the site. High density condominium towers will be located in four focal point locations - at the south end of the site adjacent to the Tourist Souk (Phase 1); in the vicinity of the public beach near the intersection of Arterial Roads 1 and 2; in the centre of the Arterial Road 2 traffic circle; and at the promontory at the west end of Arterial Road 2.

Other land uses are concentrated at the south and north ends of the site. At the south end, the Tourist Souk is a major retail and entertainment attraction. Across the north end of the site are a variety of different land uses.

The North Marina District includes retail and entertainment uses focused along the public promenade encircling the marina. On the north side of the Marina there is also a cruise ship terminal. On the promontory along the north side of the Marina is a Concert Hall designed to be a landmark building that will give identity and international recognition to the overall development. On the south side of the Marina are a number of hotel and resort properties. These lots are oriented to both the Marina to the north and the beaches along the south side of the District.

To the east of the Marina District is a business park planned as a series of low-rise commercial office buildings (2500 square metre floor plates @ 4 floors) within a campus setting. A technical university is also planned within this corporate campus environment.

	ARTERIAL R.O.W.
	PUBLIC OPEN SPACES
	WOMEN'S PRIVATE BEACH CLUB
	MEN'S BEACH CLUB & PUBLIC OPEN SPACE
	MOSQUE
	PUBLIC WATERFRONT PROMENADE
	PUBLIC ATTRACTION
	BUSINESS PARK / I.T. UNIVERSITY
	HOTEL RESORT ZONE
	RETAIL / SOUK
	LOW DENSITY VILLA RESIDENTIAL
	MEDIUM DENSITY RESIDENTIAL
	HIGH DENSITY RESIDENTIAL

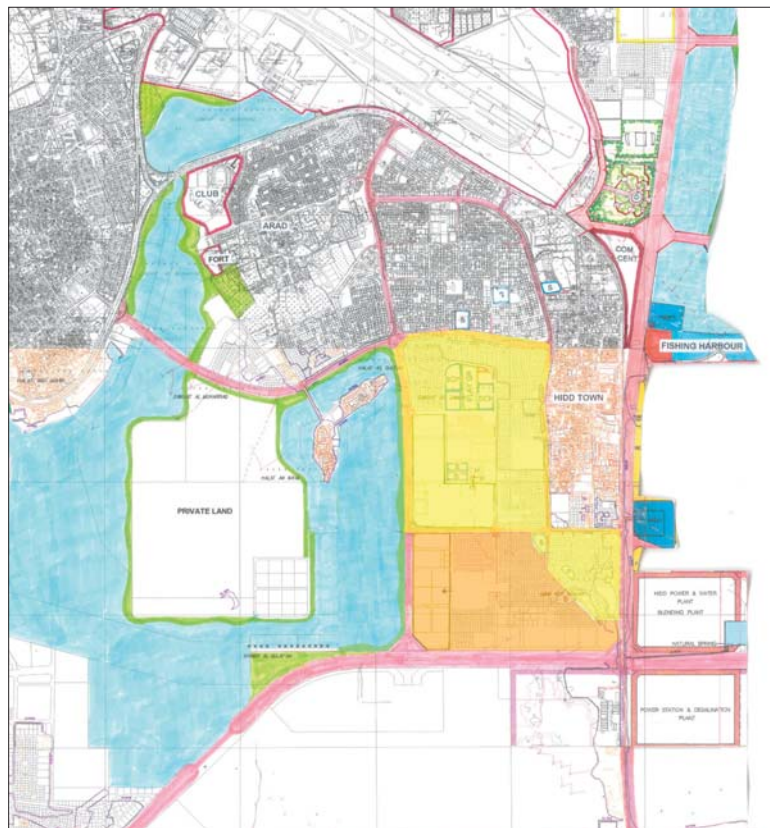


Land Use Plan

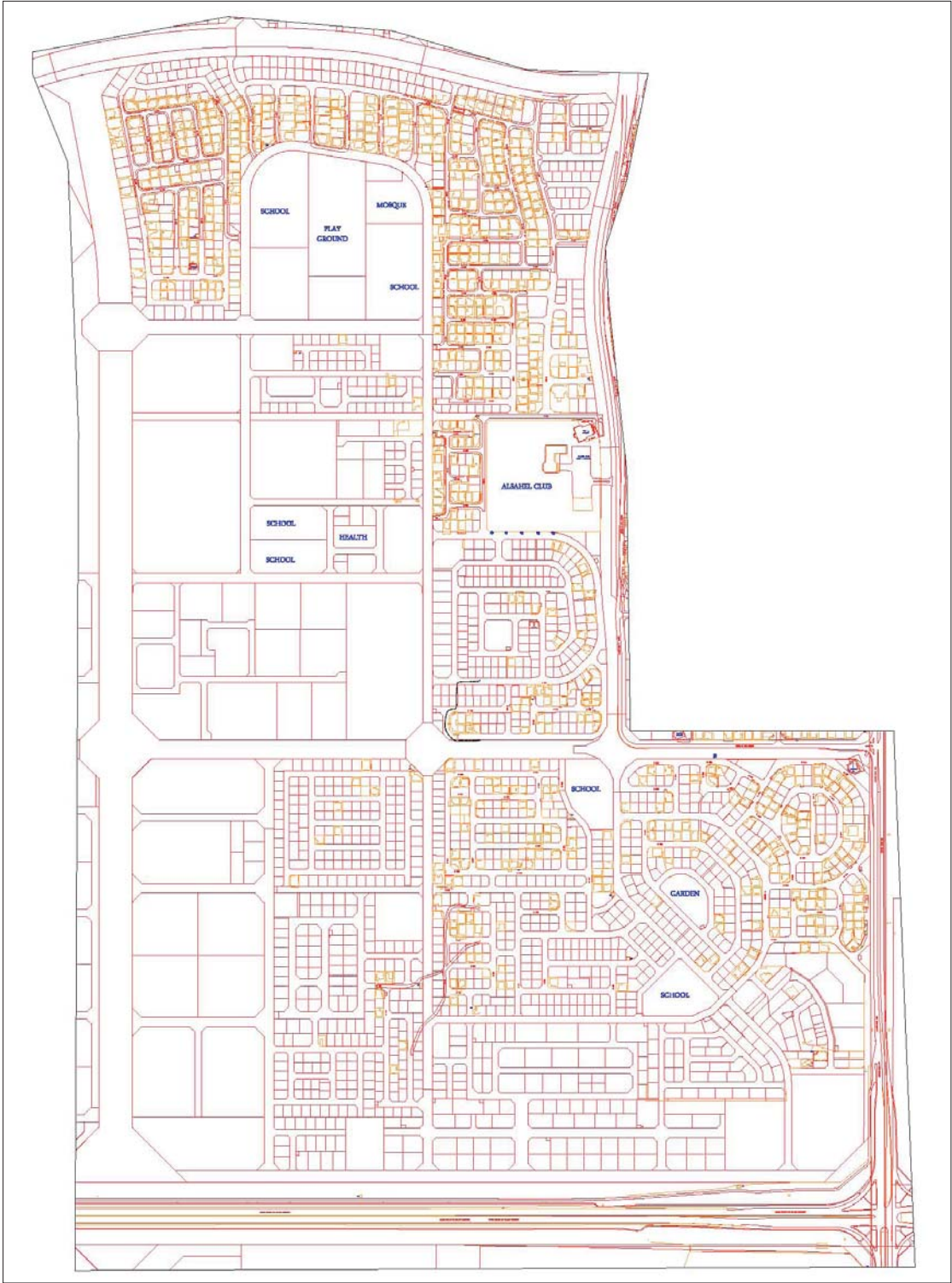
Master Plan of Bander Al Seef by H.O.K.

Expansion of Arad Master Plan towards south and Hidd Town towards west and south

As mentioned earlier Arad was expanded twice to provide land for housing (page 223 and 224). Soon after pressure built up for further extension of the Master Plan. So initially the area shaded yellow in the plan below was planned with mainly residential plots with required public facilities sites. Six school sites, a big play ground and a small garden, one health center site, a big mosque site, post office site etc provided in the plan. When this exercise was done there was no idea of Sk Khalifa Bin Salman Causeway. When in the middle of 1996 proposal for the causeway came and proposal was approved pressure was enormous to distribute remaining available area up to the causeway. Quickly main road network plan was proposed providing a major road connection to Sk Khalifa Bin Salman causeway as shown in the plan below. Channel was proposed to have water connection around Halat Naim and Halat Salatah to the sea. There was private property already at the west of Halat Naim. This property were accommodated in the plan. The new area, shaded orange in the plan below was disposed of quickly without keeping any provision for even mosque.



Following map shows present land ownership situation of this area





Author receiving certificate and plaque in recognition of his contribution to Town planning in Bahrain from His Excellency Shaikh Khaled Bin Abdulla Al Khalifa, Minister of Housing, Municipality and Environment in 1996.

Master Planning Village Expansions

In the old days Bahrain villages expanded organically based on gift lands from the Amir. These gift plots were planned by Municipality technicians. Obviously there was no road hierarchy or basic Master Plan elements in these small plans. Initially gift plots were small 50' x 50' or 60' x 60' but later on tradition developed to gift big lands as a way of helping people by the Amir. As a result available Govt. lands near villages were gradually becoming private properties which property owners were subdividing and selling. I always believe planning should improve physical conditions of human settlements as much as possible, no matter how small is the improvement. Generally village planning was not a priority in 1970's and 1980's but I took initiative and was supported initially by H.E. Sk Abdulla Bin Khalid and later on by H.E. Sk. Khalid Bin Abdulla to plan for expansion of villages starting with Daraz village in 1974 as mentioned in page 151. Subsequently plans were prepared for

1. Saar
2. Aáli Village
3. Buri Village
4. Salmabad Village
5. Dumistan
6. Riffa As Sharqui near the fort
7. East side of Biladel Qadim
8. Sehla Al Fauqiya
9. Sehla Al Hadriya
10. Ma'amir
11. Sanad, Nuwaidrat and Aker
12. Galali
13. Samahij
14. Zallaq village
15. Shakura- Abu Saiba
16. Ad Dah

Above mentioned villages were covered by Master Planning exercise mainly because of availability of some Govt. land adjacent to those villages. Plans provided road network for expansion of villages and Govt. lands were used for public housing, schools, health centers etc.

Budaiya had a Master Plan prepared under supervision of Mr. Noor Al Alawi with substantial reclamation of adjacent sea at the west for expansion of the village. Jasra village was Master Planned, houses were rebuilt (91 houses) by Technical Affairs Directorate of Ministry of Housing between 1977 and 1997.

Sk Zayed Road and Salmabad by Pass Road

When decision was taken to build Sk Khalifa Bin Salman highway in 1981 and the road building started in 1985 there was no idea or proposal to have present Sk Zayed road and Salmabad by pass road from any quarter. There was existing A'ali Buri Road from Sk Salman highway through A'ali village and Buri village to Wali AlAhad highway and to Dumistan. The plan below shows the road situation of that time of the area.



I felt the need of connecting Sk Salman highway with Sk Khalifa Bin Salman highway in 1987. The existing road mentioned above was not suitable for the purpose as the road was passing through A'ali village. So I studied the properties and existing features of the area and proposed A'ali by pass road, with reservation width 40m, currently known as Sk Zayed road in 1987 as shown by red colour in the plan below. I also felt the need of a road connecting this road with Sk Salman road by passing Salmabad and joining with Sk Salman Road at

Bahrain Gas Junction to serve the area on both sides of this road, as shown by green colour in the plan below in the middle of the country and proposed 40m road corridor. When I presented the proposals in weekly meeting with the Minister H.E. Sk. Khalid Bin Abdulla agreed with the proposals. After that these proposals were negotiated with Ministry of Works and Electricity and other Govt. agencies and was approved. Private properties were adjusted and compensation was provided for affected properties by planning available Govt. lands in the area. So the road corridors were made available without requiring substantial cash compensation. Mr. Ahmed Mansoor Al Ali did not like the proposal of Sk Zayed road and he approached H.E. Majid Al Jishi, the then Minister of Works to cancel the road proposal. I was sent with my colleague Mr. Abdul Jalil Sebah by Director of Physical Planning to Mr. Ahmed Mansoor Al Ali to explain the road proposal. When we explained to him the advantages and requirement of the road he withdrew his objection.



Sk Zayed road was constructed in 2001 and Salmabad by pass road was constructed in 2002-2003. As per proposal of Roads Directorate Salmabad by pass road was connected to Sk Isa Bin Salman highway as shown by blue colour in above plan.

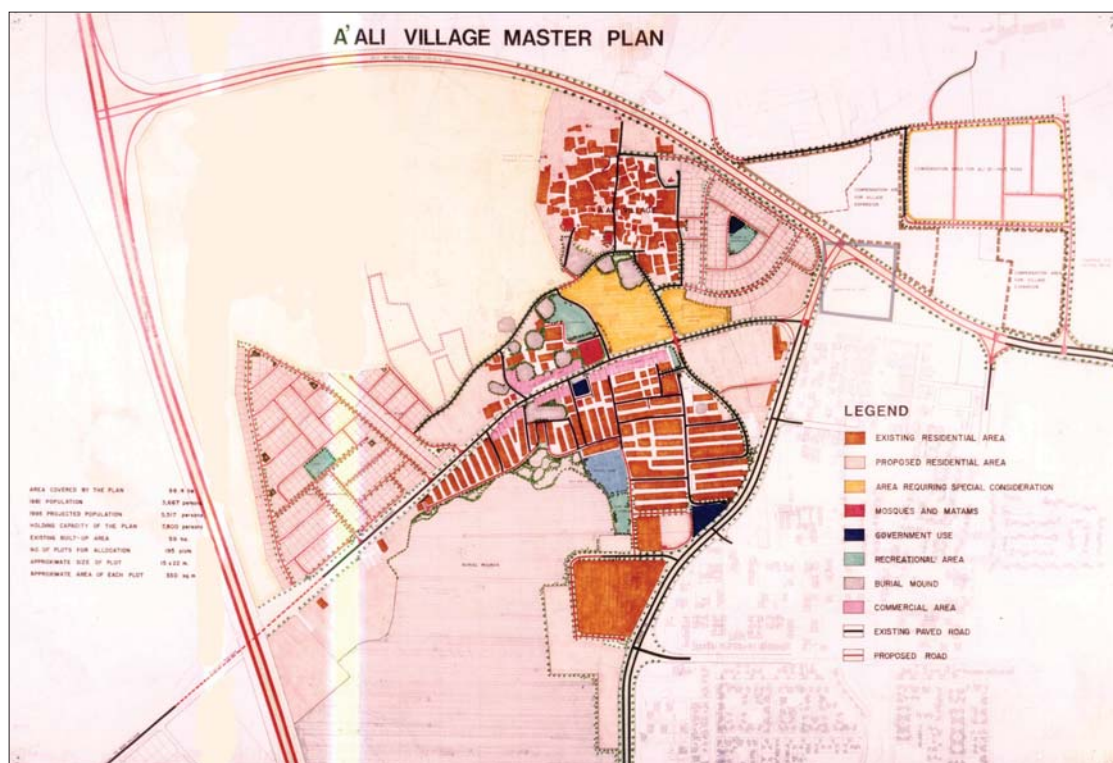
A'ali Village Plan

A'ali is very old village of Bahrain. A'ali is famous for pottery, Nura (lime) kilns and Tumuli (ancient burial mounds). Compared to burial mounds in other places of Bahrain A'ali mounds are high, the tallest one here is over 24 meters high. Almost all of the mounds of the village were opened and entered in antiquity and robbed off their contents. The old village was a small distance away to the north of A'ali – Buri road. Between the road and the village were work shops and at the south west of old village at the north of the road are big burial mounds. The village expanded at the south of the road based on typical plot layout plans prepared by Municipality upto big burial mounds site at the south. In 1981 population of the village was 3,667 and existing built up area of the village at the time of planning was 59ha (gross). Following aerial photograph of 1977 shows the village on both sides of A'ali Buri Road.



Aerial Photograph

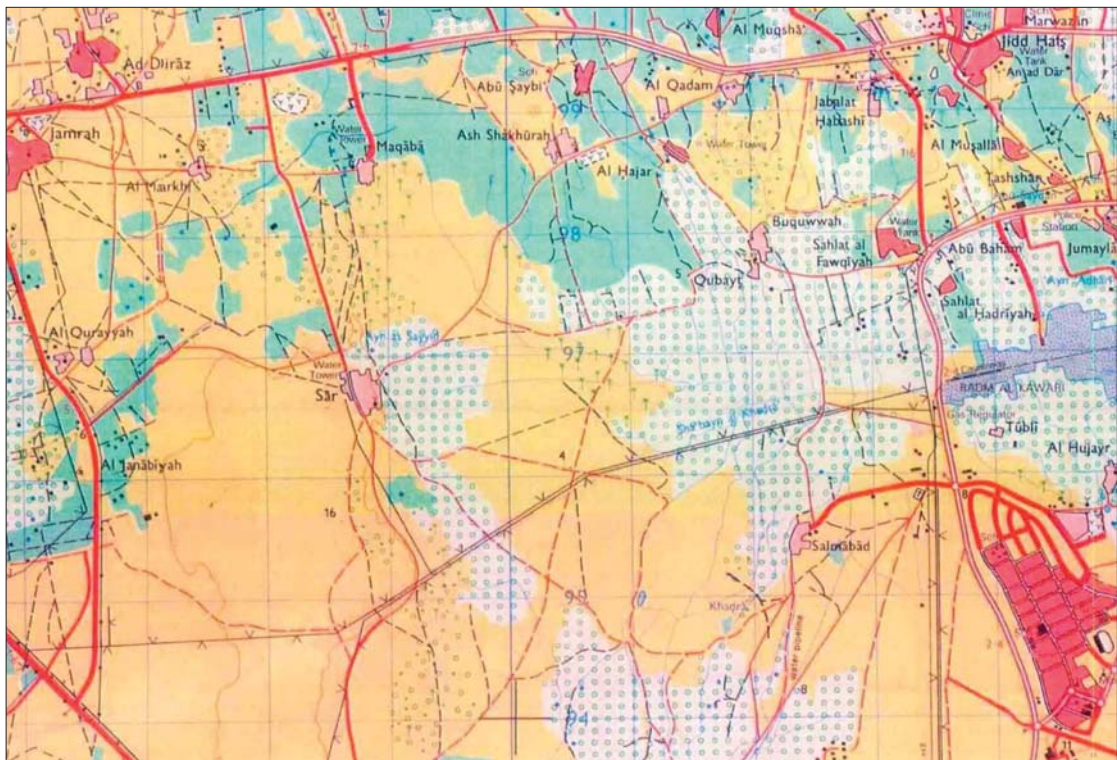
In the Master Plan major road (Sk Zayed road) at the north and Avenue 38 at the east provided main road frame work for the village beyond expansion limit of the village. Long distance through traffic via existing A'ali highway is diverted to these main roads. There was a big private subdivision at the west side of the village along north side of A'ali highway which was incorporated in the plan. At the north east of the village 195 residential plots were planned for allocation for public housing. The Master Plan proposed preservation of ancient burial mounds within the village and at the south of the village.



Master Plan of A'ali Village

Saar Village

Saar was a small village connected by road to Budaiya highway. It was about 2.5 km at south of that road. The village was connected to Janabiya highway also by road and was about 2km away from that road. Upto mid 1970's there was no development along these two roads to Saar. Saar was a distinct village of its own. The village was close to ancient burial mounds at the south. Following map shows the village and its surroundings in 1977.

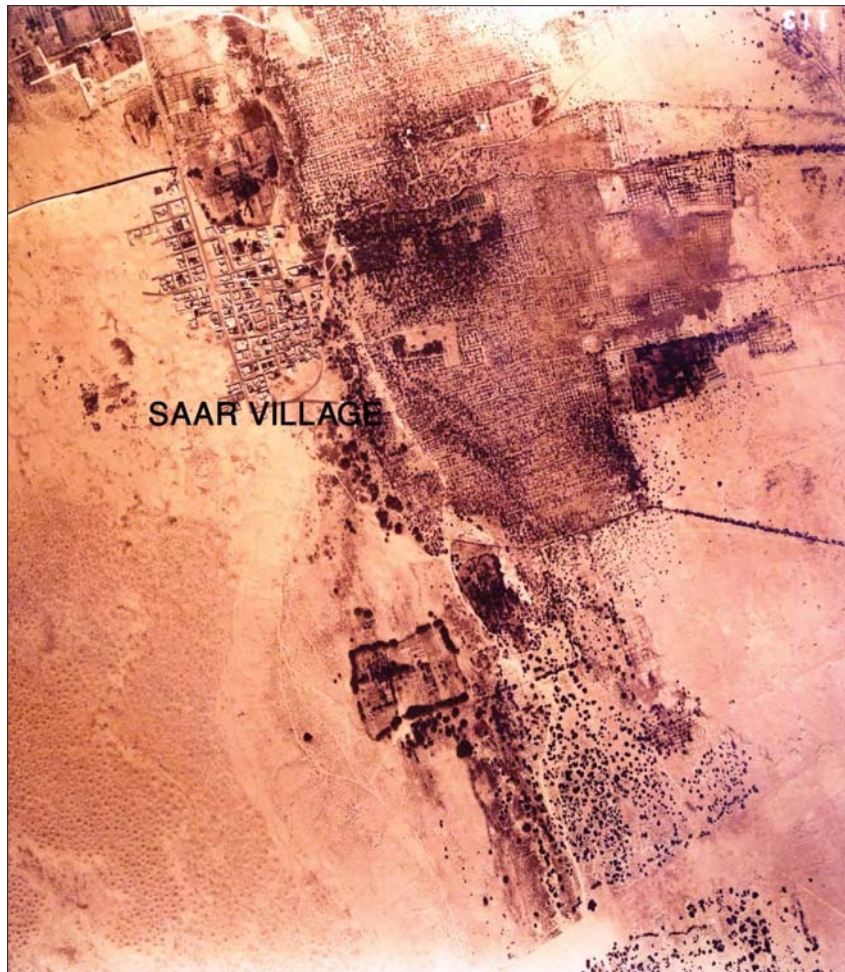


1973 map



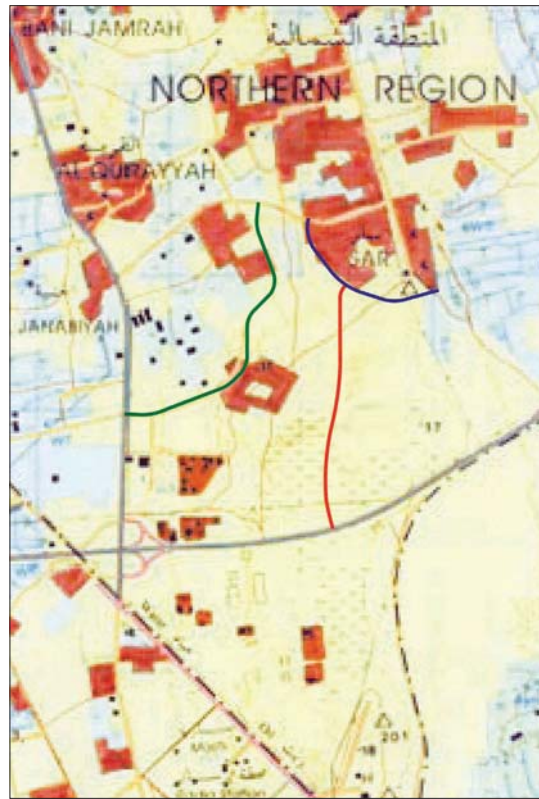
Initial improvement was in alignment of Avenue 35 in Section zyxw in above map. I proposed to improve the alignment of this section by adjusting private properties to present situation zyxw as shown on plan on page 299 H.E. Sk Khalid Bin Abdulla Al Khalifa approved my proposal. I negotiated with property owners about adjustment of their properties. Roads Directorate implemented the improvement proposal in 1999.

Following aerial photograph shows how the village was in 1977.

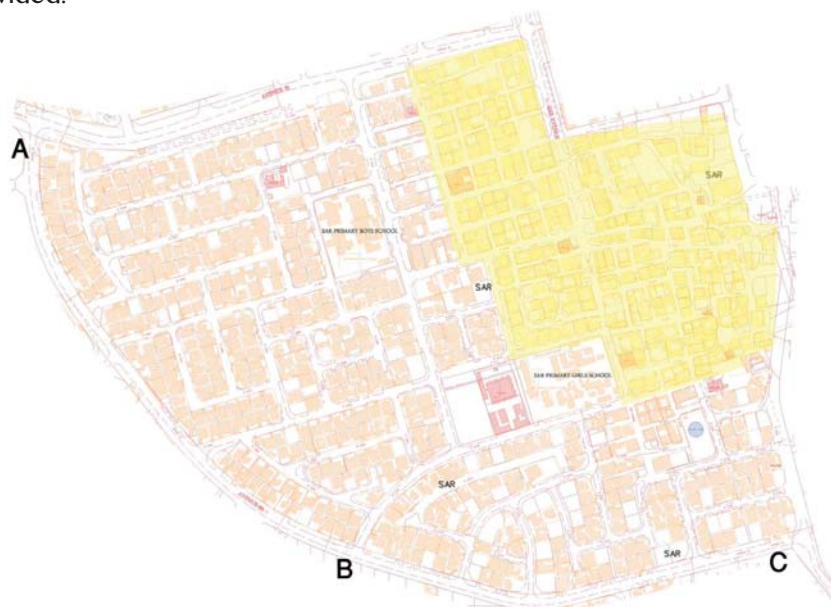


1977 Aerial photograph

As part of village planning exercise I selected Saar village for Master Planning its expansion in early 1980's. Initial Master Planning was until the perimeter road shown by blue colour in the plan below.



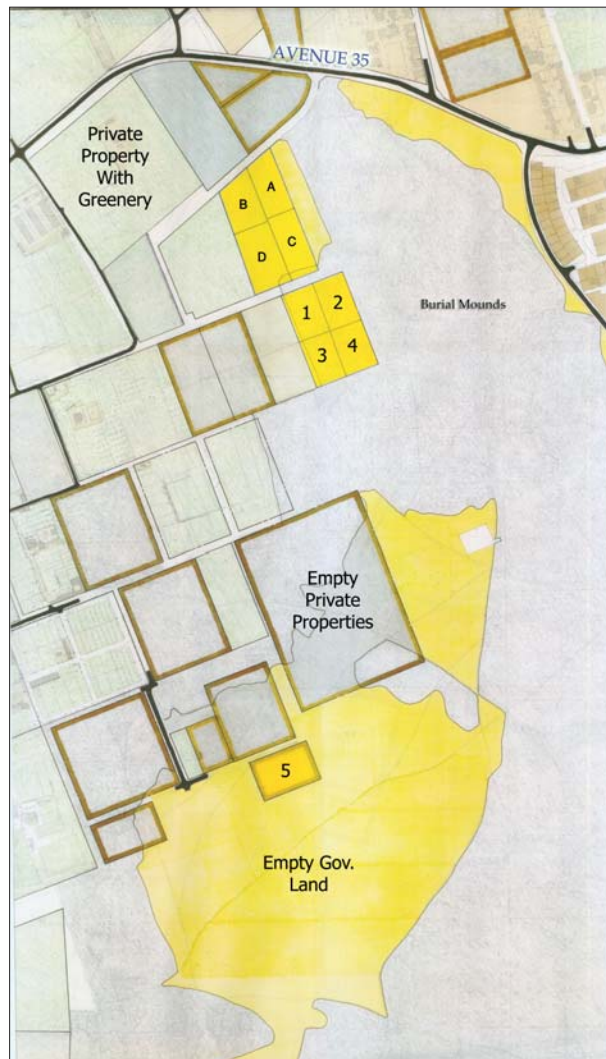
Old village (shaded yellow) and expansion area (shaded brown) is shown in recent map of the area below. In expansion area 2 school sites, site for big Matam and a big site for Water Supply provided.

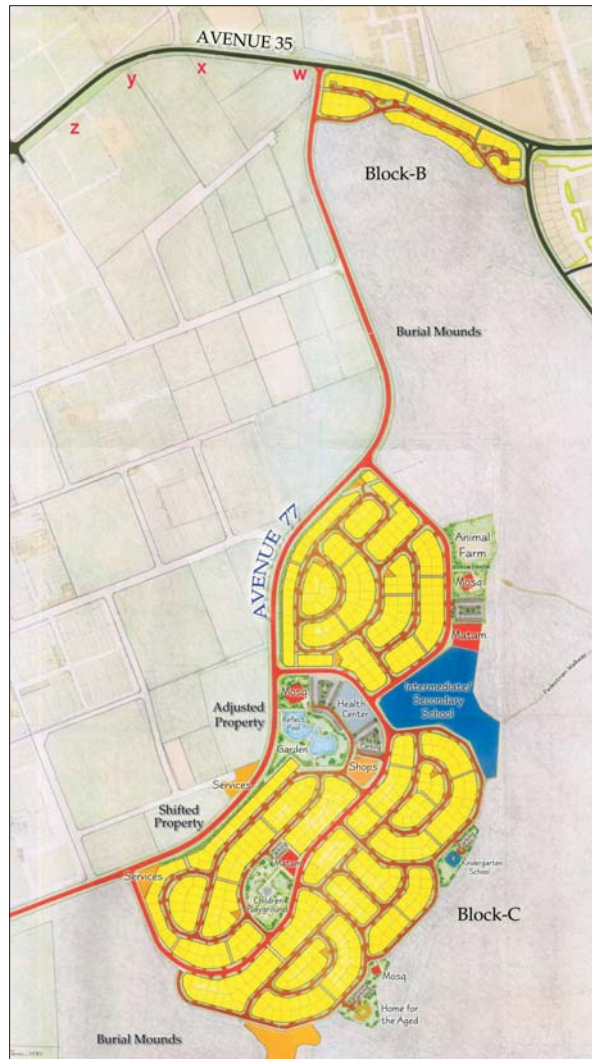


Recent Map of the Village

Soon the lands in the Master Plan for expansion of the village were utilized and there was demand for more land. Initial Master Plan for expansion of the village already utilized the available land upto ancient burial mounds upto the road A B C as shown in the above mentioned plan and in the plan below. Beyond burial mounds at the west there were private properties. As I was looking for land for further expansion of the village I found one small piece of empty Govt. land along south side of Avenue 35 and two big pieces in the south between burial mounds and private properties as shown by yellow colour in map below.

I instructed my assistant Rogelio Ungria, who worked with me from 1981 till 2005, to undertake a planning exercise in the area. We thought about requirement of a good road in the middle of the area and we proposed avenue 77 as shown in the plan below connecting Avenue 35 with Janabiya highway. This road corridor was created by adjusting private properties, so no compensation was needed to get the road corridor for construction of the road. The road was constructed in 1996. We proposed residential plots as shown by yellow colour on the plan below on available Govt. land with community facilities as shown in the plan. An intermediate /secondary school site was proposed which was built immediately. In this plan we proposed curved roads instead of usual straight roads always planned in Bahrain.





The plan was presented to H.E. Sk Khalid Bin Abdulla Al Khalifa after going through procedure and committees. H.E. approved the plan and the plan was implemented. Plots were allocated for housing and were built upon quickly. This area and its environment is different and more attractive than areas developed with straight roads.

Three roads on the plan on page 297 are three important roads in the area. The road shown by red colour connecting Sk Isa Bin Salman highway with initial perimeter road of Saar Village shown by blue colour was introduced in late 1990's when burial mounds of the area were converted into private properties.

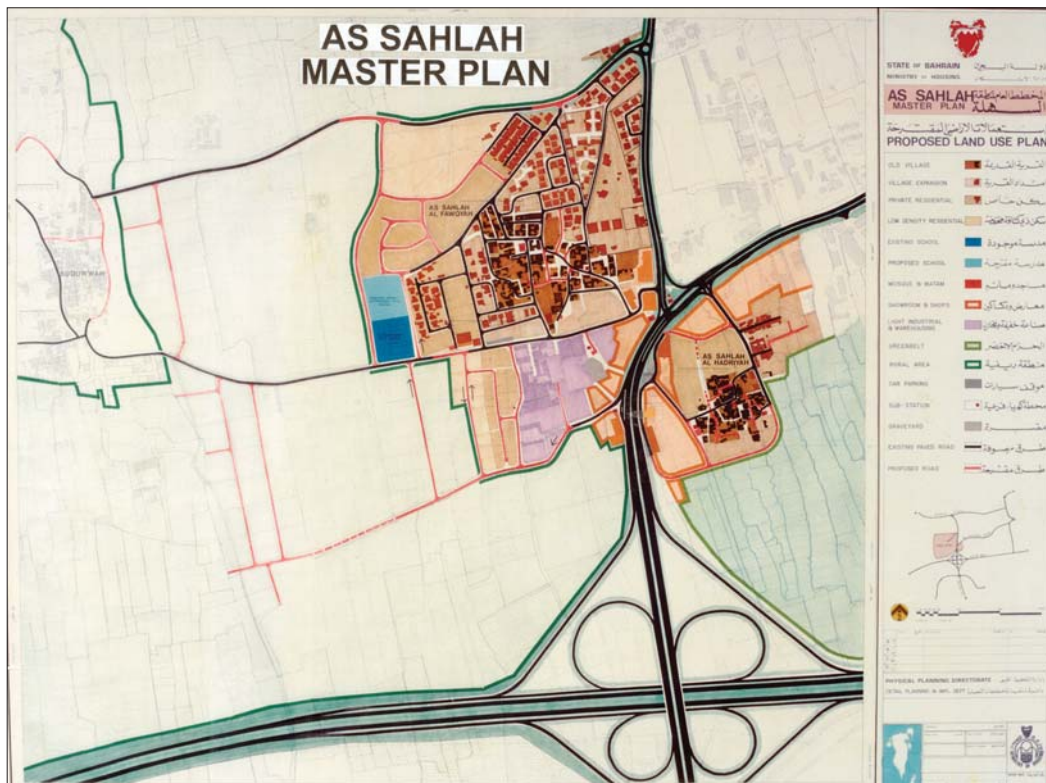
Planning of Sahlah Al Fawqyah

I initiated a planning exercise for Saleh al Fawqyah in 1987. It was a small village with existing buildings shown by black colour in plan below. The village was surrounded by private compounds and villas. In the south of the village there was garages and workshops area. 1977 topographic map below shows the village and nearby areas.



1977 Topo map

Under my supervision my assistant Rogelio Ungria prepared Master plan of both Sahlah Al Fawqyeh and Sahlah Al Hadriya as shown below. Two school sites were proposed for Sahlah Al Fawqyah and were built upon.



Master Plan

Planning of Buri Village

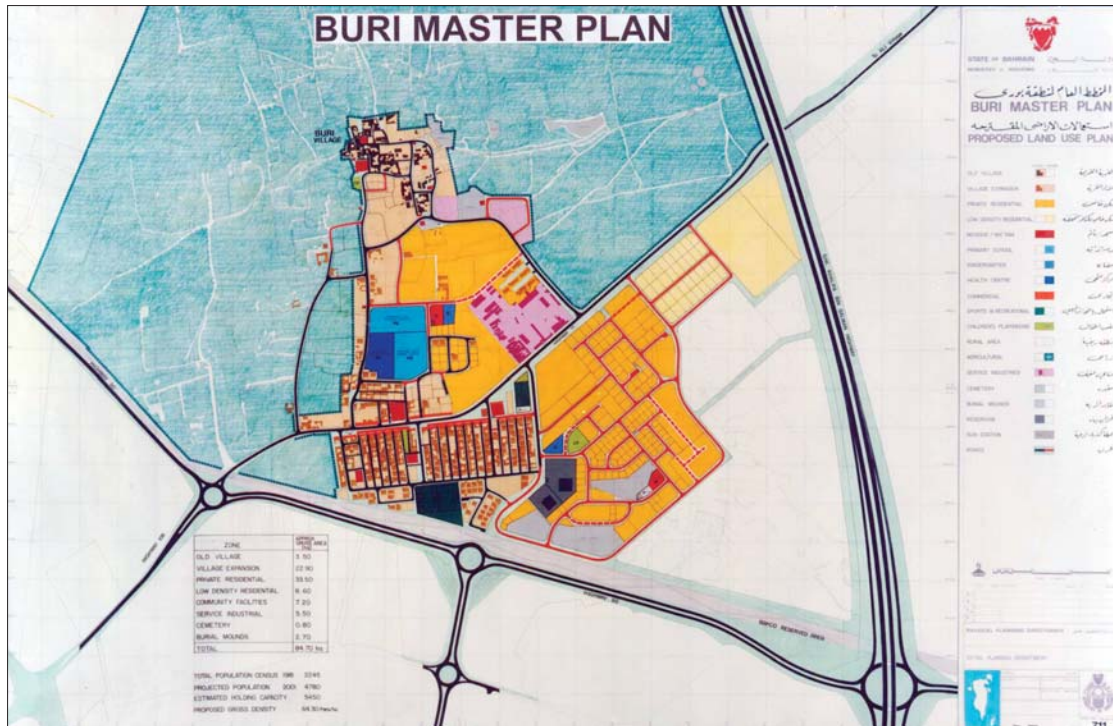
In 1989 a Master Planning exercise was done for Buri village under my supervision by my assistants Rogelio Ungria and Delwar Hossain. The village was in two parts. The older part was at the north and new part was on both sides of highway (71) as shown in Topo map of 1977 below. Population of the village was 2245 as per 1981 census.



Topo map of 1977

In the old days north part of the village was surrounded by greenery. Southern part was in desert at the north of A/B pipe line (Saudi Arabia – Bahrain Petrol Pipeline).

Properties and existing conditions were studied. Master Plan was proposed with road system. Available Govt. land was used for schools, health center, playground and other community uses and housing plots as shown in the Master Plan below. The Master Plan was approved and implemented. Based on this Master Plan main community facilities were developed in the village.



Master Plan

Al Maqsha Master Plan

Al Maqsha is a small village. In 1981 population of the village was 972 with 157 dwelling units. The village and its surroundings area is shown in topographic map of 1973.



Topographic map of 1973

A Master Plan for the village was prepared in 1988. The Master Plan proposed road network for the village and adjacent areas as shown below. Road network in the area developed mostly based on this plan.



Master Plan of 1988.

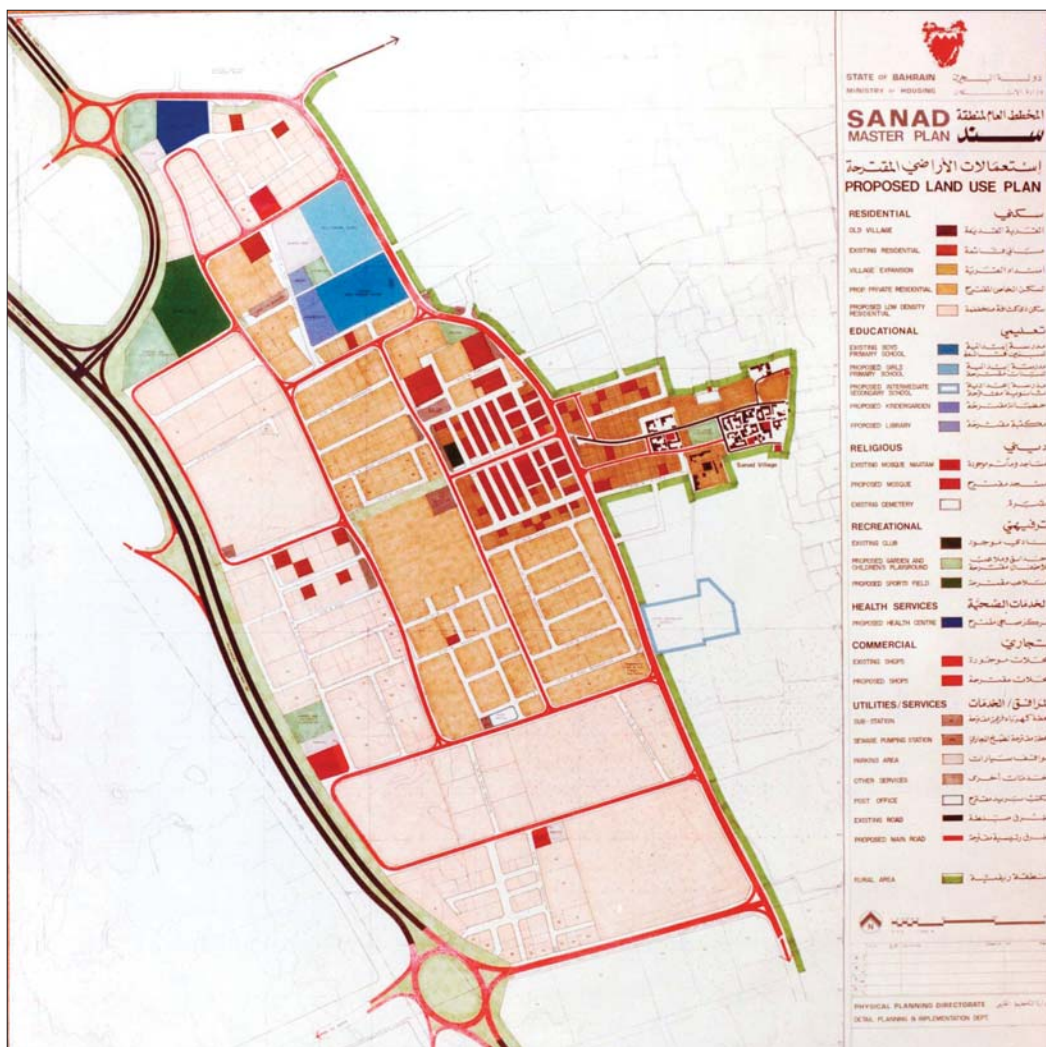
Sanad Area Master Plan

A master planning exercise for Sanad area was undertaken under my supervision in 1984. Sanad was a tiny village away from Al Istaglal highway connected to it by a road. The village was surrounded by gardens. Extension of the village took place towards Istaglal highway mainly on gift plots planned by Municipality. There were big private properties as well between the village and the highway. Some un committed Govt. lands were also available. 1977 topo map below shows the village and its surroundings at that time.



1977 topo map of Sanad and adjscunt areas

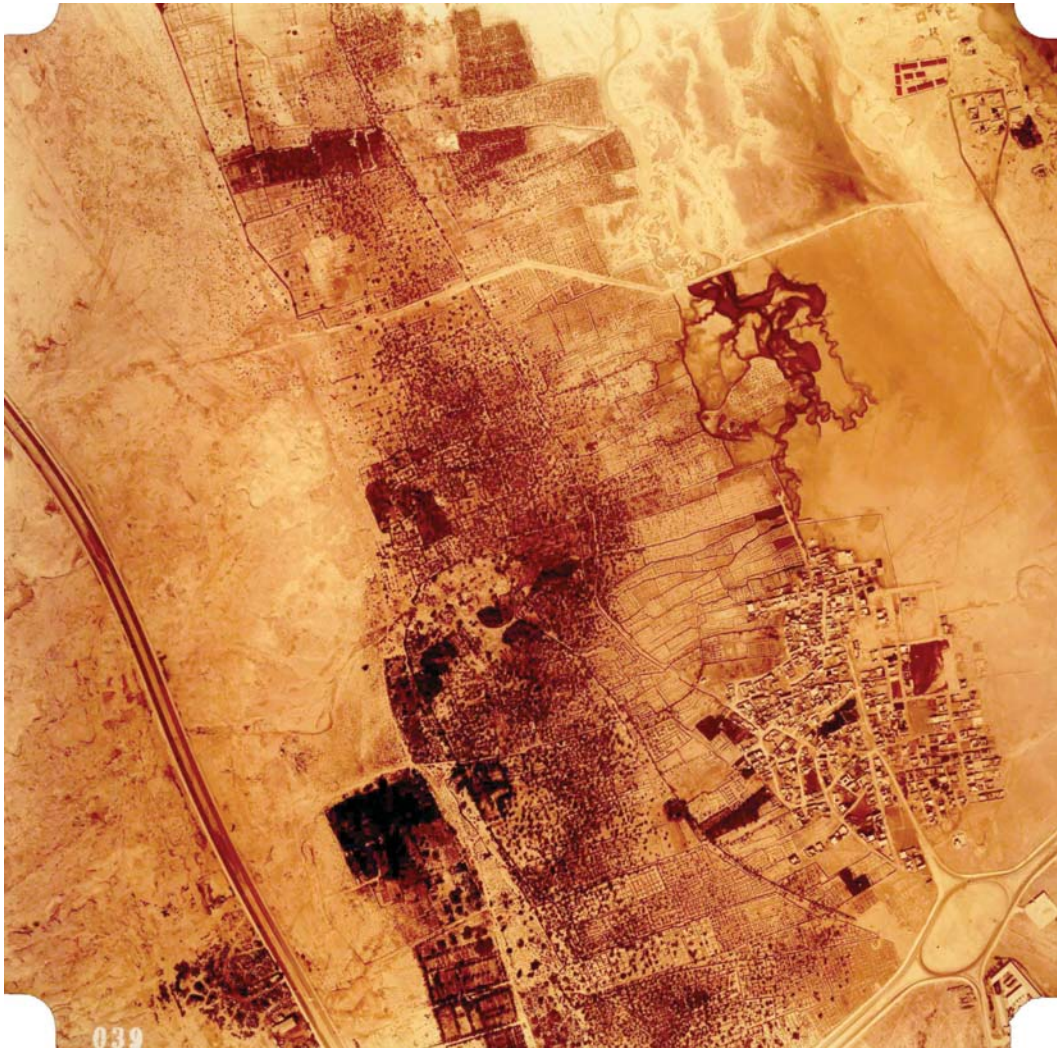
After analyzing properties in the area and existing situation main road network was proposed and available Govt. lands were mostly proposed for schools, one health center, gardens etc. The plan was approved and implemented. In the Master Plan a garden and a health center were proposed adjacent to the roundabout on Isa Town spine road. This garden was later given for Al Hekma school which later on was converted into private university. The health center was immediately built.



Sanad Master Plan of 1984

Nuwaidirat – Aker Master Plan

Nuwaydirat village is shown in the aerial photograph of 1977 below. The village with narrow unplanned roads had natural organic growth. On the west side of the village were palm tree gardens. At the east of the village there was a mud field which used to get flooded at high tide. The village was extending on this mud field.

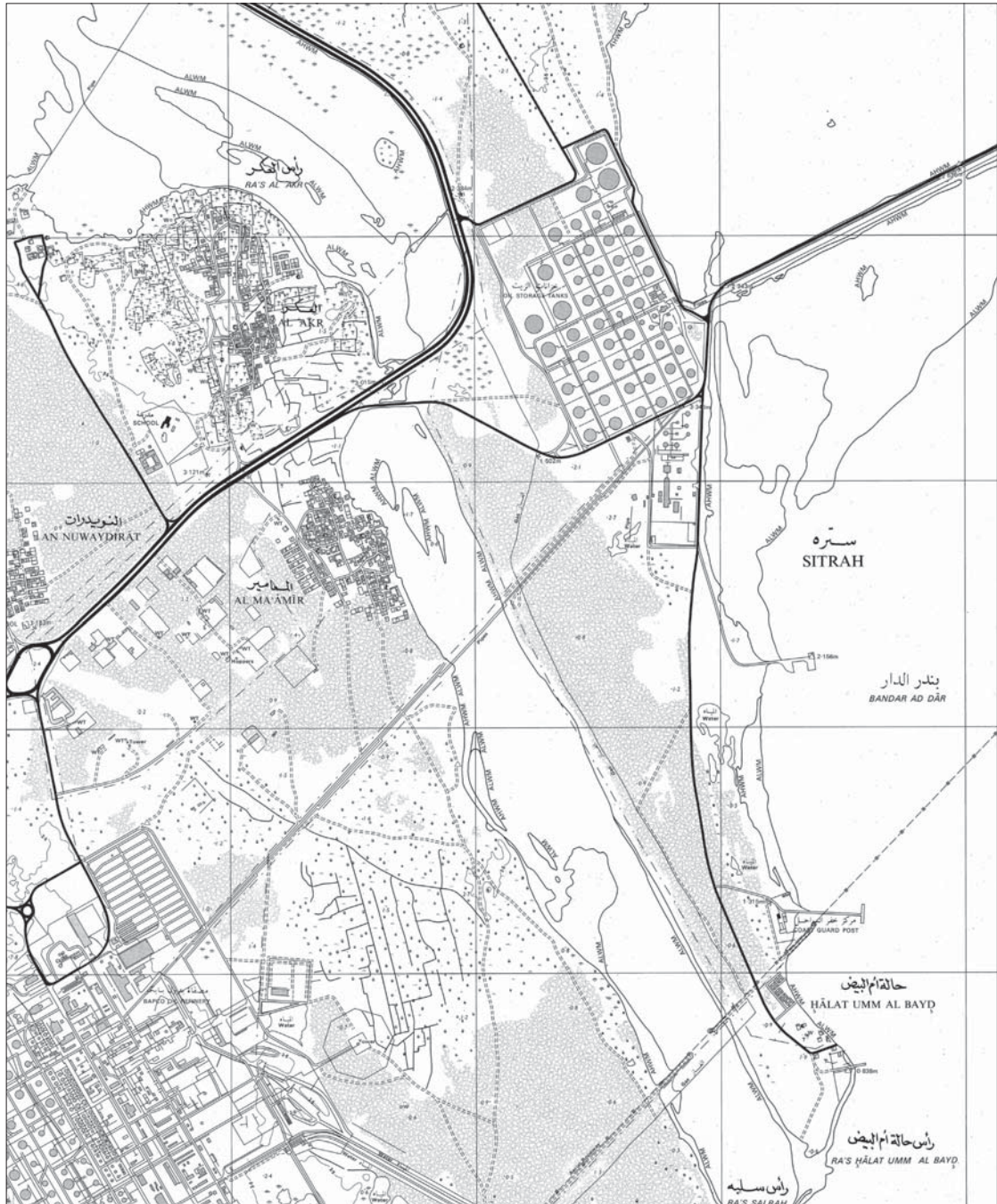


Aerial photo of 1977 of Nuwaydirat

Aker village was dense in the southern part and extended to the north with less density. Following aerial photo and topographic map of 1977 shows the village and its surroundings at that time.



Aerial photo of 1977 of Aker



Topographic map of 1977 of Aker

In 1985 a Master Planning exercise was undertaken under my supervision for the area. After analyzing properties, available vacant Govt. lands and existing situation a Master Plan was proposed. Road network and sites for school, Library, Health Center, Post Office and other community facilities were proposed in the Master Plan in coordination with Roads Directorate and other relevant authorities. H.E. Sk Khalid Bin Abdulla Al Khalifa approved the Master Plan and it was implemented.



Master Plan of Nuwaydirat and Aker of 1985

Plans were prepared for other villages expansion listed in the beginning of this chapter as well as small improvements and expansions were planned for many other villages.



Author receiving 30 years service completion certificate from
H.E. Dr. Mohammad Ali Sitri, Minister of Municipalities and Agriculture.

Private Land Subdivision

As mentioned earlier Physical Planning Directorate prepared Master Plans for all major towns and settlements of Bahrain. These Master plans proposed land for requirements – housing, commercial, office development, industry, schools and services for present and at least 20-30 year's future needs of these towns and villages. Basically all developments should have been within Master Plans following framework of Master Plans. Initially land subdivisions were allowed only within Master Planned areas and within logical limits of expansion of villages with minimum plot size of 300m² for residential purpose. As per Prime Ministerial Edict No. 10/1981 subdivision was allowed outside limits of towns and villages in 'Rural Areas' with minimum plot size of 4000m². Not many subdivisions were approved following this regulation as speculative property owners for selling land as a business did not find this regulation very attractive for business. But subdividing land and selling land outside Master Plan areas developed as a profitable business and pressure was brought to approve such land subdivisions. Though many committees studied issues related to these subdivisions no firm regulations and procedures were adopted for handling and approving these subdivision applications. In spite of many attempts to fix size of (% of total area of land to be subdivided) spaces especially small gardens, Children's playing space etc to be taken when a land is subdivided no firm law or regulation was adopted for implementation. Land subdivision law approved and published in official Gazette on 16 February 1994 also did not have any clear provision for this. Initially after establishment of Physical Planning Directorate in the Govt, from subdivisions of big lands small areas were taken for garden and Children's play areas but later on with increase of land price land owners were reluctant to give anything from lands to be subdivided for community use except sites for small electric substations and access roads. Land Subdivision Law, as mentioned, and regulations related to this were not clear and firm on this issue.

Two issues are worth mentioning in this connection. As Physical Planning initially restricted subdivisions within logical growth limits of villages and within Master Planned areas with minimum plot size of 300m² and beyond that subdivision was allowed with minimum plot size of 4000m² there was enormous pressure to change these rules. One idea was brought to allow 1000m² plots for residential purpose beyond the natural growth limit of settlements. This idea got support form Dr. Abu Hamada who was UNDP team leader and Director of Physical Planning in 1981. With his support the idea got acceptance and provided the first tool to have subdivisions in loose and scattered manner beyond logical growth limits of villages

without Master Plans. Second issue was width of roads within subdivisions. Bahrain used to have 10ft(3.04m), 20 ft (6.08m) roads in new residential areas. Physical Planning from early 1970's used 30 ft (9.14m) as standard road reservation for access roads for new residential areas.

Even this was not followed by private land subdividers and used to put pressure to have roads of less width in subdivisions. In mid 1980's Roads Directorate sent a proposal to Physical Planning Directorate for widths of different categories of roads. There proposal for residential access roads was 18m width. There were discussions and joint meetings to finalize this proposal. I took the lead to fix this residential access road width and proposed 12.5m width for this. I discussed this with H.E. Sk Khalid Bin Abdulla Al Khalifa and H.E. supported the proposal. Finally the proposal was approved and since then is followed in case of all plans prepared by all agencies including in private land subdivisions. This is a big planning achievement in circumstances of Bahrain.

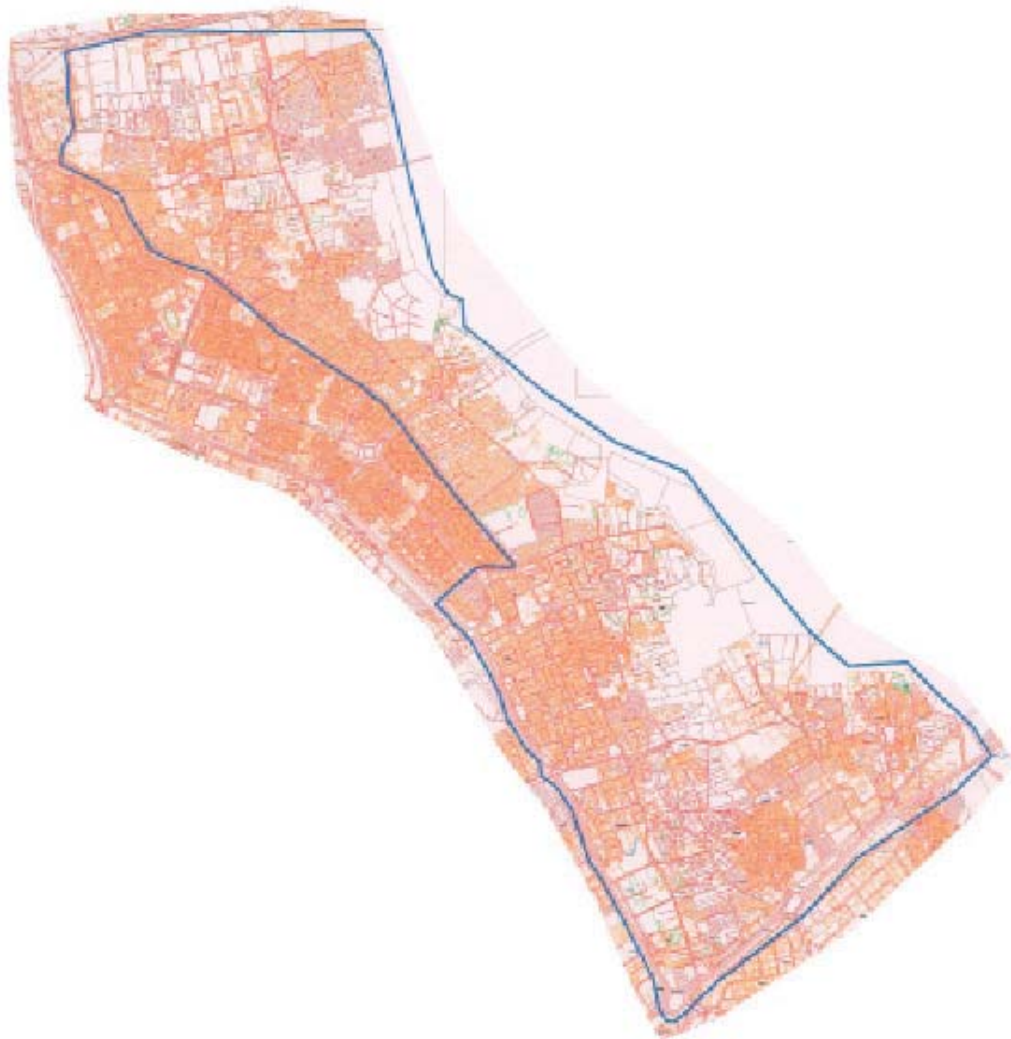
Always people dealing in lands as business want to do land subdivision just out side Govt. projects. First land subdivisions came next to Zinj village just west of Manama Master Plan and there was tremendous pressure to allow land subdivisions east of Jidhafs and west of Manama Master Plan as mentioned earlier in the chapter on Manama Green Belt.

With inauguration of Isa Town in 1968 applications started coming to approve land subdivisions east of Isa Town. At that time there were distinct separate villages – Tubli, Kawara, Jid Ali, Jurdab and Sanad surrounded by privately owned palm tree gardens as shown in 1973 topographic map of the area.



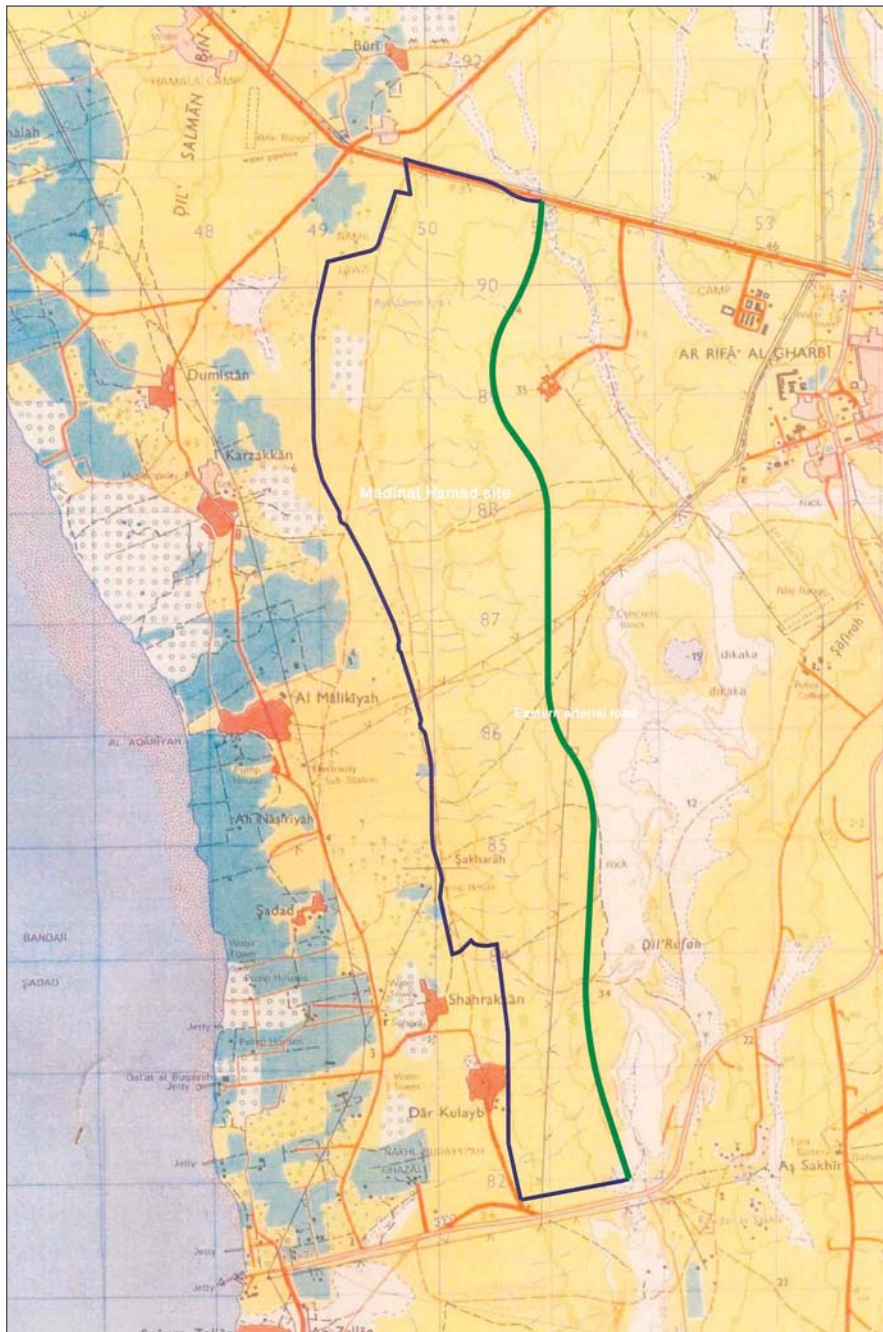
1973 topo map of east of Isa Town.

80 Subdivisions were approved in the area between 1981 and 1998 with total 998 plots. These subdivisions took place without any road network and road hierarchy in the area and without taking into consideration of need of schools and other facilities required to serve developments in these subdivisions. Current map of the area below shows how the area developed mainly based on these subdivisions

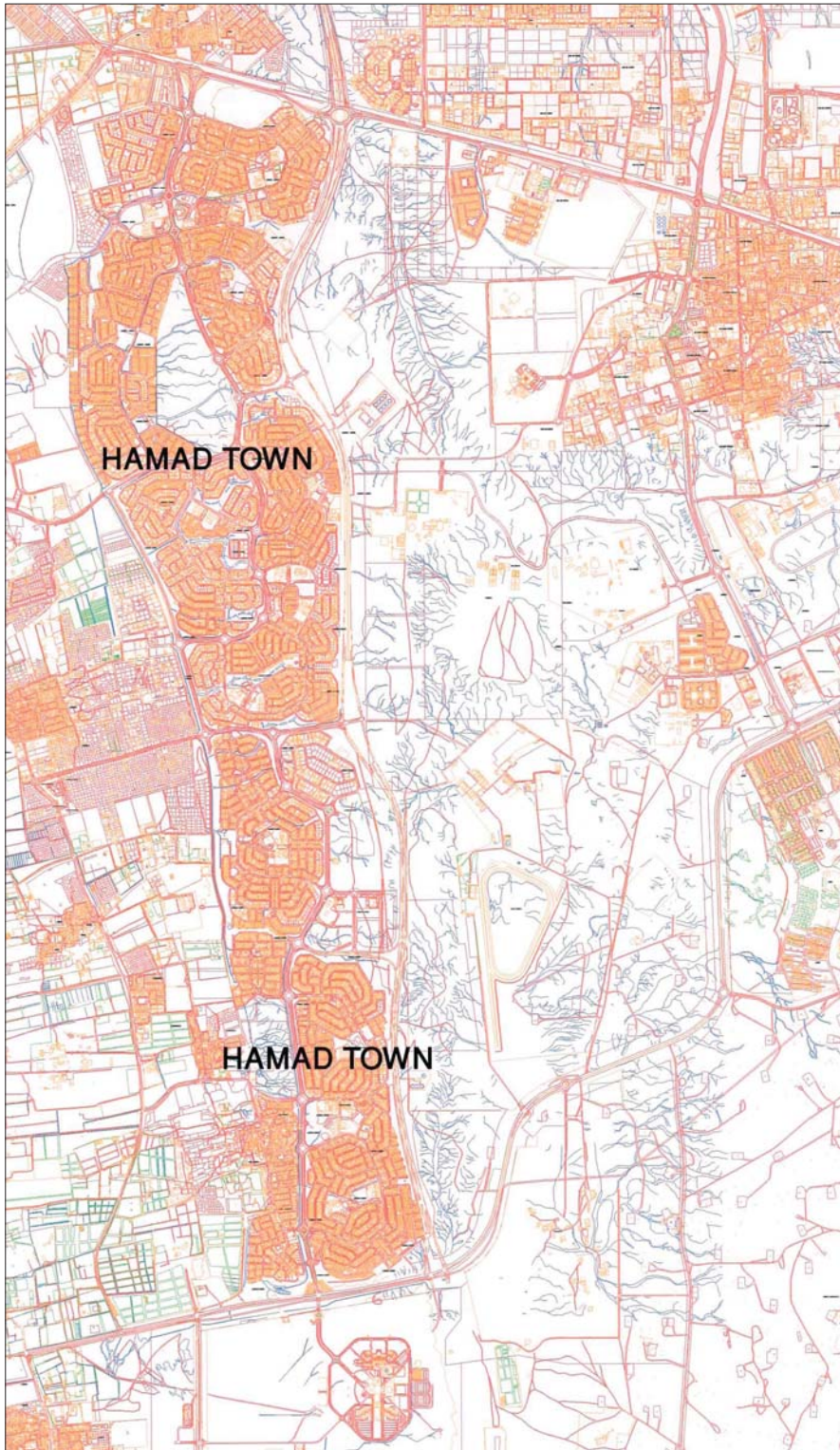


Private subdivisions at the west of Hamad Town

Madinat Hamad site was selected in 1979 and construction of the town started in 1982. At that time at the west of the Town site there were separate distinct villages Dumistan, Karzakkān, Al Malikiya, Sadad, Shahrakān and Darkulib as shown in the map below.



Map of the area of 1973



Between the town site and these villages there were large properties. But with the start of building of the town applications started coming for subdividing these lands. 25 subdivisions approved in the area between 1983 and 1998 with total 1244 plots again without any Master Plan and road network plan. More subdivisions were approved after 1998. The area at present is as shown above, mainly because of private subdivisions.

Above two areas are mentioned as example of private subdivisions in Bahrain. A study was undertaken in 1998 about private land subdivisions for the period 1981 to 1998. Later on this study was updated upto 2001. Following table shows no. of private land subdivisions approved in the country between 1981 and 2001 with creation of 31,310 plots and the analysis after the table shows the requirement of basic services like schools, health centers etc. to meet the requirement of developments within these subdivisions requiring Govt. to buy private lands for these purposes when need will arise.

**PRIVATE SECTOR LAND SUBDIVISION
FOR HOUSING
Schedule of Approved Subdivisions**

YEAR	NO. OF PLANS	NO. OF PLOTS
1981	28	906
1982	20	432
1983	34	1498
1984	39	1258
1985	42	1179
1986	45	1027
1987	58	1530
1988	62	1741
1989	81	2427
1990	58	1396
1991	71	2140
1992	68	1613
1993	59	1475
1994	57	1701
1995	40	1461
1996	26	996
1997	45	1703
1998	46	1836
1999	60	1516
2000	38	1260
2001	46	2215
Total	1023	31310
Yearly average	49	1491

Madinat Hamad has provision of approximately 10826 Housing Units.

So, 31310 housing plots created by subdivision has approximately 3 times housing capacity of Madinat Hamad.

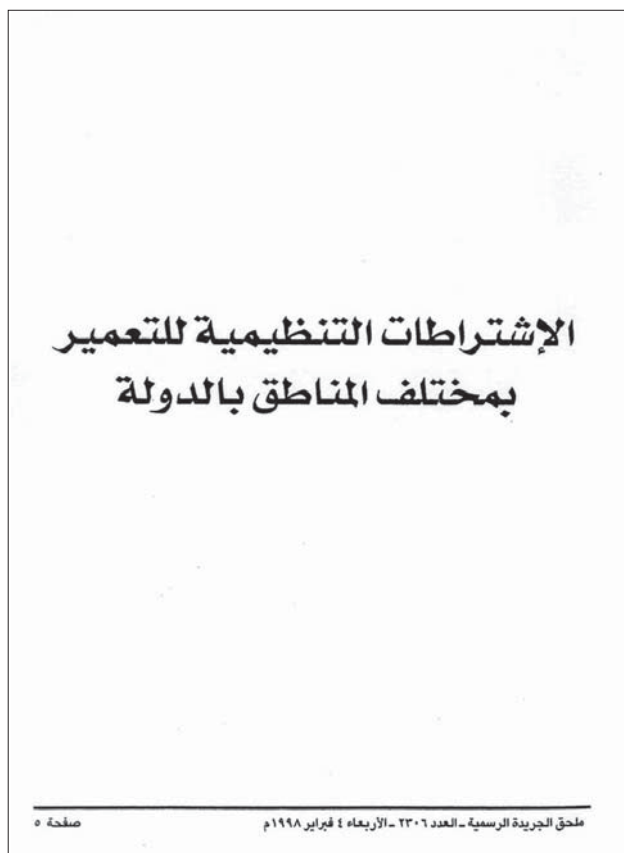
Comparative requirement of some basic services for approved subdivisions

Type of Service	Madinat Hamad (made provision)	Approved Subdivisions
Schools	26 nos	78 nos
Health Centres	2 nos.	6 nos.
Mosques	23 nos.	69 nos.
Primary Substations	5 nos.	15 nos.
Water Supply sites	2 nos.	6 nos.

Revised Building and Zoning Regulations of 1998

From early days of establishment of Physical Planning Unit in Bahrain Building Permits were issued based on basic Planning Principles. As mentioned earlier (Page 197) Zoning and Building Regulations were published in Prime Ministerial Edict No. 8/1979 and 10/1981 applicable to the whole country. A Zoning map was signed by H.E. Sk Khalid Bin Abdulla Al Khalifa the then Minister of Housing, responsible for Physical Planning on 12.6.1979 (please see page 212) and was followed.

In January 1998 a Committee was established under chairmanship of Mr. Ismail Al Shafei who was Assistant Undersecretary for Survey and Physical Planning from 1996 to 2002 with Directors from Municipality, Ministry of Electricity and Water, Ministry of Works, Physical Planning, Agriculture, Environment Affairs as members as well as representatives of Bahrain Society of Engineers, Directorate of Industry etc. to review above mentioned regulations. The committee after many meetings came up with following regulations which were scrutinized thoroughly by H.E. Sk Khalid Bin Abdulla Al Khalifa and after going through approval process in the Govt. was published in official gazette on 4th February 1998.



الباب الأول التعمير

مادة -1-

في تطبيق أحكام هذا القرار يقصد بالكلمات والعبارات ما يقابلها من معانٍ .

التعمير : القيام بعملية البناء أو الأعداد له أو تجزئة الأرض تمهيداً لأقامة منشآت عليها أو الردم لأجل التعمير أو الحفر لأجل التعدين أو أية عمليات فوق أو في باطن الأرض أو إجراء تغيير أساسي في استعمال المباني أو الأراضي أو الفراغات .

مناطق التعمير : المناطق التي يصدر بتحديداتها قرار من وزير الإسكان والبلديات والبيئة والتي تنطبق عليها الاشتراطات التنظيمية للتعمير المنصوص عليها في المادة (٢٠) من قانون تنظيم المباني الصادر بالمرسوم بقانون رقم (١٣) لسنة ١٩٧٧ والمعدل بالمرسوم بقانون رقم (١٥) لسنة ١٩٩٣ .

أراضي التعمير : هي جميع الأراضي الصالحة للتعمير والمطلقة على شارع واحد نافذ ومعتمد أو أكثر على أن يكون مرتبطاً بشبكة الطرق والمرافق العامة .

منطقة السكن الخاص : هي مناطق سكنية يسمح فيها ببناء وحدة سكنية واحدة أو أكثر لكل قطعة أرض وذات كثافة بنائية منخفضة أو متوسطة .

منطقة السكن المتصل : وهي المناطق السكنية الواقعة في قلب المدن والقرى وإمتدادها ويسمح فيها ببناء وحدة سكنية واحدة متصلة مسن جانب واحد أو أكثر ذات كثافة بنائية متوسطة أو عالية .

منطقة السكن الحدائقي : وهي منطقة سكنية واقعة خارج حدود المدن والقرى و ذات كثافة بنائية منخفضة .

السقيفة : هي وحدة سكنية واحدة منفصلة وتبنى فوق السطح العلوي للمباني .

المناطق الصناعية : وهي المناطق المخصصة للأغراض الصناعية والإنتاجية بمختلف فئاتها والتي يتم فيها تحويل المواد المصنعة وشبه المصنعة إلى منتجات أخرى .

المنطقة الزراعية الإنتاجية : وهي مناطق مخصصة للأغراض الزراعية والأنشطة المرتبطة بها مثل البيوت المحمية والمشاتل والحظائر والأسبيلات وتنمية الثروة الحيوانية مع ضرورة الالتزام بالقواعد الصحية العامة حسب شروط ومواصفات الجهات ذات العلاقة .

منطقة الحزام الأخضر : وهي مناطق مخصصة للأنشطة الزراعية فقط وذلك بغرض الحفاظ عليها وتمييزها والحفاظ على البيئة المحيطة بها، ولا يسمح بالتعمير فيها .

البيت السكني : هو مبني مستقل أو متصل على قطعة أرض ويشتمل على غرف المعيشة والنوم والطعام والمرافق الصحية والفراغات المغلقة والمكشوفة ويكون مستقلاً بمداخله ويسلمه الداخلي أن وجد عن أي بيت سكني آخر .

مرافق السكن : هي عناصر استعمالات تخدم المسكن مثل المطبخ الخارجي وغرفة الحارس والمجلس الخارجي (الديوانية) وغرفة الغسيل والمخازن ومافي حكمهم وتكون داخل قطعة الأرض سواء متصلة بالبناء الرئيسي أو منفصلة عنه .

ملاحق المبنى : هي عناصر استعمالات تخدم المبنى (كالعمارة السكنية أو العمارة التجارية أو ما في حكمها) وتشمل غرفة الحارس وغرف الغاز ومحطات الكهرباء الفرعية الخاصة بالمبنى والمرافق والمخازن وما في حكمها وتكون داخل قطعة الأرض سواء كانت متصلة بالبناء الرئيسي أو منفصلة عنه .

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صفحة ٧

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صفحة ٦

الشقة : هي كل جزء من طبقة يكون وحدة سكنية مستقلة عن باقي الطبقة ويتكون من غرف تشتمل على مطبخ ومرافق صحية كحد أدنى ، ويمكن لها شاطها التدخول إليها أو الخروج منها دون المرور عبر وحدة سكنية أخرى في نفس الطبقة أو المبنى .

المحل التجاري : هو بناء متصل بممر عام أو بطريق عام معتمد بواجهة أو أكثر داخل قطعة الأرض ويسمح باستعماله للأنشطة التجارية .

المجمع السكني الحدائقي : هي مساحة من الأرض تشتمل على بيوت سكنية لها خدمات ومرافق وحدائق ومرمرات مفتوحة مشتركة ويمكن للمجمع الواحد أن يكون له مدخل واحد أو أكثر .

العمارة : هي مبنى مستقل مكون من مجموعة طوابق ويجوز له أن يحتوي على شقق سكنية أو إدارية أو محلات تجارية مستقلة قد تشترك في مداخل عامة أو في سلم مشترك .

نسبة البناء : هو أقصى نسبة مئوية مسموح بها لجملة مسطحات المباني إلى مساحة قطعة الأرض ما لم يرد خلاف ذلك .

مسطحات المباني : ويقصد بها المساحات المبنية لكافة الأدوار في المبنى أو المباني الواقعة في قطعة الأرض مقاسة من الوجه الخارجي للحوائط الخارجية أو من الخط المنصف للحوائط المشتركة وتشتمل هذه المسطحات على مايلي :

- السرداب والمخازن تحت منسوب الرصيف والمسطحات المستخدمة في مرافق لازمة لاصال التشغيل والصيانة للمبنى نفسه .
- مسطحات كافة الأدوار في الفراغات المغلقة للمبنى ومن ضمنها الأبراج .
- الفراغات الناتجة من عناصر انشائية والتي يمكن أن تصبح صالحة للسكن .
- كافة المسطحات المبنية التي لم يتم استئثارها في هذه الاشتراطات .

الميزانين : وهو دور مقطوع من ارتفاع الدور الأرضي سواء كان محلاً تجارياً أو مصنعاً أو ورشة أو محلاً للخدمة ولا تزيد النسبة المبنية فيه على ٥٠% (خمسين في المائة) من مساحة الدور الأرضي ويخصص لأغراض التخزين والإدارة والمكاتب وأغراض العمل ، ولا يسمح بعمل مداخل مباشرة له من الخارج بحيث تكون المداخل من الدور الأرضي ولا يزيد ارتفاع الميزانين فسي المحلات التجارية على ٢,٦٠ متراً (مترين وستين سنتيمتراً) .

مناطق إرتدادات البناء : هي المناطق المحصورة بين حد الملكية وخط البناء لكل واجهة من واجهات المبنى وتنقسم أنواع الردود إلى التالي :

- إرتداد أمامي** : وهو الحد الأدنى للمسافة بين حد الملكية المطل على شارع وخط البناء للواجهة المطلقة عليه بالطابق الأرضي .
- إرتداد خلفي** : هو الحد الأدنى للمسافة بين حد الملكية المطل على الجار الخلفي في الجهة المقابلة للواجهة الأمامية وخط البناء للواجهة المطلقة عليه سواء كان الجار قطعة أرض أو حديقة أو بركة أو ممر مشاة .
- إرتداد جانبي** : وهو الحد الأدنى للمسافة بين حد الملكية المطل على الجار الجانبي في الجهة المتعامدة على الواجهة الأمامية وخط البناء للواجهة المطلقة عليه سواء كان الجار قطعة أرض أو حديقة أو بركة أو ممر مشاة .

ارتفاع البناء : هو البعد الرأسي أمام واجهة البناء من منسوب أعلى سطح الرصيف إن وجد والا فمن سطح محور الطريق إلى أعلى سطح سقف الطابق العلوي ويقاس من منتصف واجهة البناء في حالة الشوارع المنحدرة ذات الميول ولا يدخل في حساب هذا البعد الرأسي كل من القباب والمآذن في المباني الدينية وآبار السلام أو غرف آلات المصاعد وخزانات المياه واجهزة التكيف إن وجدت .

خط البناء : هو الخط الذي يحدد المساحة المسموح بالبناء فيها بالدور الأرضي داخل قطعة الأرض وقد يتطابق مع خط التنظيم إن وجد أو يرتد عن حد الطريق أو الشارع أو الحديقة أو ممر المشاة بإرتدادات تحدها الاشتراطات التنظيمية للتعمير للواجهات المطلقة عليها .

خط التنظيم : هو الخط الذي يسمح بالبناء عليه حسب ما تبينه المخططات التفصيلية المعتمدة .

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صفحة ٩

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صفحة ٨

محور الطريق : هو مسار الخط الذي يحدد منتصف عرض الطريق .

حد الطريق : هو الخط الذي يحدد نصف عرض الطريق من جهة واحدة من محور الطريق ، ولكل طريق حدان .

حرم الطريق : ويقصد به ذلك الحيز المحصور بين الملكيات المتقابلة والمطللة على الطريق ويشمل زوايا الرؤية والتقاطعات والمساحات المحجوزة للمرافق العامة على طول الطريق .

ممرات المشاة والخدمات : يقصد بها الحيز الذي يفصل بين الأملاك أو الموازي للطرق ويستخدم لمرور المشاة أو الخدمات أو كليهما ولا يسمح بمرور العربات الآلية من خلاله .

مواقف السيارات المغطاة : هي مساحة تصلح كموقف لسائرة أو أكثر لها سقف لحمايتها من كافة العوامل الخارجية .

مواقف السيارات غير المغطاة (المفتوحة) : هي مساحة تصلح كموقف لسائرة أو أكثر ليس لها سقف .

مواقف السيارات متعددة الأنوار : هي مبان من دور واحد أو أكثر هي مبنى مستقل أو جزء من مبنى وتحتل كموقف للسيارات .

الشارع التجاري (المعتد) : وهو الشارع الذي يسمح بفتح محلات تجارية في قطع الأراضي المطللة عليه وذلك وفقاً للخرائط المعتمدة للتعمير .

الشارع الخدمي (المعتد) : وهو الشارع الذي يسمح بفتح ورش خدمية في قطع الأراضي المطللة عليه وذلك وفقاً للخرائط المعتمدة للتعمير .

الورشة الخدمية : هي بناء متصل بممر أو بطريق معتمد بواجهة أو أكثر داخل قطعة الأرض ويسمح باستعماله لانشطة خدمية .

الخرائط المعتمدة للتعمير : وهي خرائط المخططات التصريفية المعتمدة للمنطقة التعميرية وتتضمن تحديد مناطق التعمير فيها و الاشتراطات التنظيمية للتعمير لأراضيها والطرق العامة وخطوط التنظيم ان وجدت والمناطق المفتوحة والمناطق التي يسمح فيها بالتعمير وفقاً لشروط خاصة .

الموافقة التخطيطية على صلاحية الموقع للتعمير :

هي شهادة تصدرها وزارة الاسكان والبلديات والبيئة بناء على طلب محدد يتقدم به مالك العقار أو من ينوب عنه وتحدد الوزارة الاشتراطات التنظيمية للتعمير للعقار شاملة الاستعمالات والاشتراطات البنائية وشروط توفير مواقف للسيارات وغيرها من الاشتراطات التنظيمية وذلك وفقاً للمخططات العمرانية المعتمدة .

المناطق ذات الاشتراطات الخاصة :

ويقصد بها المناطق المخالفة للمعالم ذات الطابع المميز أو المناطق الأثرية أو التاريخية أو المناطق المحددة لأغراض تخطيطية هامة وتحددها خرائط تصنيف مناطق التعمير بالدولة أو التي يصدر بتحديداتها قرار من وزير الاسكان والبلديات والبيئة .

الباب الثاني مناطق الجيوب السكنية

الفصل الأول منطقة السكن الخاص - أ

مادة -٢-

الاستعمالات : يسمح فيها بالاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٣-

نسب البناء :

- ١- لا تزيد نسبة البناء على ١٨٠٪ (مائة وثمانين في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٣- يسمح بنسب بناء إضافية لا تزيد على ١٠٪ (عشرة في المائة) من مساحة الأرض ويحدد أقصى قدره ٥٠ متراً مربعاً (خمسون متراً مربعاً) تخصص لمرافق السكن فقط ، على أن لا يزيد ارتفاعها عن دور واحد بحد أقصى قدره ٤ أمتار (أربعة أمتار) مقاساً من منسوب الرصيف .
- ٤- يسمح بعمل مجلس لا تزيد مساحته على ١٠٪ (عشرة في المائة) من مساحة الأرض ويحدد أقصى قدره ٧٥ متراً مربعاً (خمسة وسبعون متراً مربعاً) وتحتسب من نسبة البناء المسموح بها . ويسمح ببناء المجلس على حد الأرض الأممي المطل على شارع أو طريق بشرط استحداث ليون بعرض لا يقل عن ٢ متراً (مترين) ويستثنى من نسبة البناء المسموح بها بحيث لا يزيد طول المجلس عن ٢٥٪ (خمس وعشرين في المائة) من طول الواجهة الأمامية للأرض ، كما يسمح بالبناء على حد الجار الجانبين من جهة واحدة فقط بحيث لا يزيد ارتفاع المجلس عن دور واحد بحد أقصى قدره ٤ أمتار (أربعة أمتار) من منسوب الرصيف .

- ٥- يلزم توفير موقف لسائرتين على الأقل داخل الأرض ، على أن لا يزيد عدد مداخل مواقف السيارات عن اثنين لكل وجهة ولا تحتسب مواقف السيارات ضمن نسبة البناء .

مادة -٤-

الارتدادات :

١- الارتداد الأمامي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٥ أمتار (خمس أمتار) من حد الأرض للواجهة المطللة على شارع أو طريق ويسمح بعمل بروزات علوية كأبراج وشرفات تطل الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) . وفي حالة وقوع المبنى على أكثر من شارع يرتد البناء مسافة ٥ أمتار (خمس أمتار) من جهة الشارع الأكثر أهمية للموقع .

٢- الارتداد الخلفي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من حد الأرض الخلفي للواجهة الخلفية المطللة على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروزات علوية بالأدوار التي تطل الدور الأرضي .

٣- الارتداد الجانبي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من حد الأرض الجانبي للواجهة الجانبية المطللة على جار أو حديقة أو بركة أو ممر مشاة ولا يسمح بعمل بروزات علوية بالأدوار التي تطل الدور الأرضي .

مادة -٥-

الارتفاعات :

- ١- لا يزيد ارتفاع البناء على ٣ طوابق (ثلاثة طوابق) بحد أقصى قدره ١٣ متراً (ثلاثة عشر متراً) .
- ٢- لا يزيد ارتفاع البناء على طابقين ويحدد أقصى قدره ٩ أمتار (تسعة أمتار) في المناطق ذات الاشتراطات الخاصة التي تحددها خرائط تصنيف المناطق التعميرية في الدولة .

الفصل الثاني

منطقة السكن الخاص - ب

مادة ٦-

الاستعمالات: يسمح فيها بالاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٧-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٨٠٪ (مائة وثمانين في المائة) من مساحة الأرض.
- ٢- لا يزيد مسطح البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٣- يسمح بنسب بناء إضافية لا تزيد على ١٠٪ (عشرة في المائة) من مساحة الأرض ويحدد أقصى قدره ٥٠ متراً مربعاً (خمسون متراً مربعاً) تخصص لمرافق السكن فقط ، على أن لا يزيد الارتفاع عن دور واحد بحد أقصى قدره ٤ أمتار (أربعة أمتار) مقاساً من منسوب الرصيف .
- ٤- يسمح في الأراضي التي تزيد مساحتها على ٧٠٠ مترمربع (سبعمئة مترمربع) بعمل مجلس لا تزيد مساحته على ٧٪ (سبعة في المائة) من مساحة الأرض ويحدد أقصى قدره ٥٠ متراً مربعاً (خمسون متراً مربعاً) وتحتسب من نسبة البناء المسموح بها ويسمح ببناء المجلس على حد الأرض الأماسي المطل على شارع أو طريق بشرط استحداث ليون يعرض لا يقل عن مترين بمسكني من نسبة البناء المسموح بها وبحيث لا يزيد طول المجلس على ٢٥٪ (خمس وعشرين في المائة) من طول الواجهة الأمامية للأرض ، كما يسمح بالبناء على حد الجار الجانبي من جهة واحدة فقط بحيث لا يزيد ارتفاع المجلس على دور واحد بحد أقصى قدره ٤ أمتار (أربعة أمتار) من منسوب الرصيف .
- ٥- يلزم توفير موقف لسيارتين على الأقل داخل الأرض ، على أن لا يزيد عدد مداخل مواقف السيارات عن اثنين لكل واجهة ولا تحتسب مواقف السيارات ضمن نسبة البناء .

ملحق الجريدة الرسمية - العدد ٣٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ١٤

مادة ٨-

الارتدادات :

١- الارتداد الأماسي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من حد الأرض الأماسي للواجهة المطلقة على شارع أو طريق ويسمح بعمل بروجزات علوية كأبراج وشرفات تملو الدور الأرضي بحد أقصى قدره ٢٠,٢٠ متراً (متر وعشرون سنتيمتراً). وفي حالة وقوع المبنى على أكثر من شارع فيرتد البناء مسافة ٣ أمتار (ثلاثة أمتار) من جهة الشارع الأكثر أهمية للموقع .

٢- الارتداد الخلفي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٢ متراً (مترين) من حد الأرض الخلفي للواجهة الخلفية المطلقة على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروجزات علوية بالأدوار التي تملو الدور الأرضي .

٣- الارتداد الجانبي :

أ- يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٢ متراً (مترين) من حد الأرض الجانبي للواجهة الجانبية المطلقة على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروجزات علوية بالأدوار التي تملو الدور الأرضي .

ب- إذا كان طول واجهة الأرض المقام عليها المبنى يقل عن ١٢ متراً (اثني عشر متراً) يرتد البناء من الجهة الأمامية والخلفية فقط ، على أن يسمح بالبناء على الحدين الآخرين من الأرض .

مادة ٩-

ارتفاع البناء :

- ١- لا يزيد ارتفاع البناء عن ٣ طوابق (ثلاثة طوابق) ويحدد أقصى قدره ١٣ متراً (ثلاثة عشر متراً)
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي عن ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب سطح الرصيف .
- ٣- لا يزيد ارتفاع البناء عن طابقين ويحدد أقصى قدره ٩ أمتار (تسعة أمتار) في المناطق ذات الاشتراطات الخاصة التي تحددها خرائط تصنيف المناطق التعميرية في الدولة .

ملحق الجريدة الرسمية - العدد ٣٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ١٥

الفصل الثالث

منطقة السكن المتصل - أ

مادة ١٠-

الاستعمالات: يسمح فيها بالاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ١١-

نسب البناء :

- ١- لا تزيد نسبة البناء على ٢١٠٪ (مائتين وعشرة في المائة) من مساحة الأرض.
- ٢- لا يزيد مسطح البناء لأي دور على ٧٠٪ (سبعين في المائة) من مساحة الأرض شاملة مرافق السكن .
- ٣- يلزم توفير موقف لسيارة واحدة على الأقل داخل الأرض ، على أن لا يزيد عدد مداخل مواقف السيارات على اثنين لكل واجهة ، ولا تحتسب مواقف السيارات ضمن نسبة البناء .

مادة ١٢-

الارتدادات :

١- الارتداد الأماسي :

يسمح بالبناء في الدور الأرضي على مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من حد الأرض الأماسي للواجهة المطلقة على شارع ويسمح بعمل بروجزات علوية كأبراج وشرفات تملو الدور الأرضي بحد أقصى قدره ٢٠,٢٠ متراً (متر وعشرون سنتيمتراً) وفي حالة وقوع المبنى على أكثر من شارع يرتد البناء مسافة ٣ أمتار (ثلاثة أمتار) من جهة الشارع الأكثر أهمية للموقع و ٢ متراً (مترين) من جهة الشارع الاخر .

٢- الارتداد الخلفي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من حد الأرض الخلفي للواجهة الخلفية المطلقة على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروجزات علوية بالأدوار التي تملو الدور الأرضي .

ملحق الجريدة الرسمية - العدد ٣٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ١٦

٣- الارتداد الجانبي :

- أ- يسمح بالبناء بالدور الأرضي على حد الأرض الجانبي للواجهة الجانبية المطلقة على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروجزات علوية بالأدوار التي تملو الدور الأرضي.
- ب- في حالة وجود فتحات على الجار الجانبي يلزم أن لا يقل ارتداد البناء عن ٢ متراً (مترين) من حد الأرض الجانبي في الجهة التي يوجد بها فتحات .

مادة ١٣-

ارتفاع البناء :

لا يزيد ارتفاع البناء على ثلاثة أدوار ويحدد أقصى قدره ١٣ متراً (ثلاثة عشر متراً) .

مادة ١٤-

اشتراطات خاصة :

يسمح ببناء شقة سكنية واحدة فقط لكل دور مع ضرورة توفير موقف سيارة لكل شقة سكنية ولا تحتسب ضمن نسبة البناء .

الفصل الرابع

منطقة السكن المتصل - ب

مادة ١٥-

الاستعمالات: يسمح فيها بالاستعمالات السكنية (بيوت وشقق سكنية) حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ١٦-

نسب البناء :

- ١- لا تزيد نسبة البناء على ٢٥٠٪ (مائتين وخمسين في المائة) من مساحة الأرض .
- ٢- تكون النسب المذكورة شاملة جميع المباني بما فيها الليوان والخدمات ويستثنى من ذلك آبار السلام والمنابر .

ملحق الجريدة الرسمية - العدد ٣٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ١٧

مادة ٢٠-

نسب البناء :

- ١- لا تزيد نسبة البناء على ٣٥ ٪ (خمسة وثلاثين في المائة) من مساحة الأرض لكافة الأبنية حيث يسمح بإنشاء أكثر من وحدة سكنية داخل قطعة الأرض على أن لا يقل نصيب الوحدة السكنية عن ١٥٠٠ متر مربع (الف وخمسمائة مترمربع) من مساحة الأرض .
- ٢- يسمح بنسب بناء إضافية لا تزيد على ٥ ٪ (خمسة في المائة) من مساحة الأرض وبحد أقصى قدره ٧٥متراً مربعاً (خمس وسبعون متراً مربعاً) تخصص لمرافق السكن ، على أن لا يزيد الارتفاع على دور واحد بحد أقصى قدره ٤ أمتار (أربعة أمتار) مقاساً من منسوب الرصيف .
- ٣- يسمح بعمل مجلس خارجي لا تزيد مساحته على ٦٠ متراً مربعاً (ستين متراً مربعاً) تحسب من نسبة البناء المسموح بها ويسمح ببناء المجلس على حد الأرض المطله على شارع أو طريق أمامي شريطة استحداث ليون بعرض لا يقل عن ٢متراً (مترين) ويستثنى من نسبة البناء المسموح بها ، بحيث لا يزيد طول المجلس على ٢٥ ٪ (خمس وعشرون في المائة) من طول الواجهة الأمامية للأرض ، كما يسمح بالبناء على حد الجار الجانبي للأرض ومن جهة واحدة فقط على أن لا يزيد ارتفاع المجلس على دور واحد وبحد أقصى قدره ٤ أمتار (أربعة أمتار) من منسوب الرصيف .
- ٤- يلزم توفير موقف لسائرتين على الأقل داخل الأرض ، على أن لا يزيد عدد مداخل مواقف السيارات على اثنين لكل واجهة ولا تحسب مواقف السيارات ضمن نسبة البناء .

مادة ٢١-

الارتدادات :-

١- الارتداد الأمامي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (ستة أمتار) من حد الأرض الأمامي للواجهة المطله على شارع أو طريق يسمح بفتح مداخل عليه ويسمح بعمل بروزات علوية كإبراج وشرفات تعلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- يسمح بتوفير مواقف للسيارات داخل قطعة الأرض على أن لا يزيد عدد مداخل مواقف السيارات على اثنين لكل واجهة ، ولا تحسب مواقف السيارات ضمن نسبة البناء .

مادة ١٧-

الارتدادات :

١- الارتداد الأمامي :

يسمح بالبناء بالدور الأرضي على حد الأرض المطل على طريق لا يقل عرضه عن ٦ أمتار (ستة أمتار) ، وفي حالة وقوع الأرض على طريق عرضه أقل من ٦ أمتار (ستة أمتار) يرتد البناء مسافة تساوي نصف القسورق بين عرض هذا الطريق و ٦ أمتار (ستة أمتار) ما لم يكن هناك خط بناء معتمد .

٢- الارتداد الخلفي والجانبي:

يسمح بالبناء على حد الأرض الخلفي والجانبي وفي حالة عمل فتحات مطلة على الجار الخلفي أو الجانبي ، يجب عمل مناور حسب ما تنص عليه اللائحة التنفيذية للرسوم بقانون رقم (١٣) لسنة ١٩٧٧ بتنظيم المباني .

مادة ١٨-

ارتفاع البناء :

لا يزيد ارتفاع البناء على ٣ طوابق (ثلاثة طوابق) وبحد أقصى قدره ١٣متراً (ثلاثة عشر متراً)

الفصل الخامس منطقة السكن الحدائقي

مادة ١٩-

الاستعمالات : يسمح فيها بالاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

الباب الثالث

مناطق العمارات

الفصل الأول

مناطق العمارات - ٣٠ ملاحقاً

مادة ٢٣-

الاستعمالات : يسمح فيها بتعدد الاستعمالات السكنية أو التجارية أو الادارية أو جميعها حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٢٤-

نسب البناء :

تحدد نسب البناء في هذه المناطق على النحو الآتي :

- ١- لا تزيد نسبة البناء على ٨٠٠ ٪ (ثمانمائة في المائة) من مساحة الأرض .
- ٢- لا تزيد مسطحات البناء لأي دور على ٥٠ ٪ (خمس في المائة) من مساحة الأرض.
- ٣- يسمح ببناء سرداب لا تحسب مساحته من ضمن نسبة البناء المذكورة على أن يستعمل جزء لا تقل مساحته عن ٨٠ ٪ (ثمانين في المائة) كمواقف للسيارات .

مادة ٢٥-

الارتدادات :-

يرتد البناء مسافة لا تقل عن ٦ أمتار (ستة أمتار) من جميع الجهات ويسمح بعمل بروزات علوية كإبراج وشرفات تعلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) من الواجهة الأمامية و ٦٠ سنتيمتراً (ستون سنتيمتراً) للواجهات الأخرى .

٢- الارتداد الخلفي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٤ أمتار (أربعة أمتار) من حد الأرض الخلفي للواجهة الخلفية المطله على جار أو حديقة أو بركة أو ممر مشاة ، ولا يسمح بعمل بروزات علوية بالأدوار التي تعلو الدور الأرضي .

٣- الارتدادات الجانبية :

- أ- يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٤ أمتار (أربعة أمتار) من حد الأرض الجانبي للواجهة الجانبية المطله على جار أو حديقة أو بركة أو ممر مشاة ولا يسمح بعمل بروزات علوية بالأدوار التي تعلو الدور الأرضي .
- ب- لا تقل المسافة بين الوحدات السكنية المنفصلة داخل قطعة الأرض عن ٤ أمتار (أربعة أمتار) ويسمح باستغلال مناطق الرود بين الوحدات كمواقف مسقوفة للسيارات لا يزيد ارتفاع سقفها على ٣ أمتار (ثلاثة أمتار).
- ج- يسمح بإنشاء وحدات سكنية متصلة (فيلات متصلة) سواء من جهة واحدة أو جهتين أو أكثر داخل الأرض بشرط توزيعها داخل الأرض بحيث لا تترك مساحة مجمعة من أرض غير مشغولة بالمباني تزيد مساحتها على ٢٥ ٪ (خمسة وعشرون في المائة) من مساحة الأرض الكلية في أي جهة واحدة من الجهات للأرض .

مادة ٢٢-

ارتفاع البناء :

لا يزيد ارتفاع البناء على طابقين وبحد أقصى قدره ٩ أمتار (تسعة أمتار) .

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ٢٠ طابقاً (عشرين طابقاً) بحد أقصى قدره ٩٠ متراً (تسعون متراً) .
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

اشتراطات خاصة :

- ١- يسمح ببناء سقفية في سطح الدور الطوي على أن لا تزيد مساحته على ٥٠٪ (خمس في المائة) من مساحة الدور الطوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقلماً من أرضية سطح المبنى ، ويحسب من نسبة البناء .
- ٢- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأقل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ١٥٠ متراً مربعاً (مائة وخمسين متراً مربعاً) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الاداري والتجاري وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات أما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لا تحسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- ٣- في الأراضي الواقعة في المنطقة الدبلوماسية لا تزيد نسبة البناء على ٧٠٪ (سبعمائه في المائة) ويسمح بالبناء بالطابق الأرضي على حد الأرض الأممي بشرط استحداث لوان بعرض ٣,٦٠ أمتار (ثلاثة أمتار وستين سنتيمتراً) وارتفاع ٥,٨٠ أمتار (خمسة أمتار وثمانين سنتيمتراً) على أن يرتد البناء من باقي الجهات مسافة لا تقل على ٣ أمتار (ثلاثة أمتار) مع الأخذ في الاعتبار توفير مواقف للسيارات أما بعمل سرداب أو بالدور المتكررة .
- ٤- في حالة تعدد الاستعمالات يلزم فصل المدخل والمساعد والسلام المؤدية إلى الشقق السكنية عن باقي الاستعمالات الأخرى .

الفصل الثاني**مناطق العمارات - ١٥ طابقاً**

الاستعمالات : يسمح فيها بتعدد الاستعمالات السكنية أو التجارية أو الادارية أو جميعها حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

نسب البناء :

تحدد نسب البناء في هذه المناطق على النحو الآتي :

- ١- لا تزيد نسبة البناء على ٦٠٪ (ستمائه في المائة) من مساحة الأرض .
- ٢- لا تزيد مسطحات البناء لأي دور على ٥٠٪ (خمس في المائة) من مساحة الأرض .
- ٣- يسمح ببناء سرداب لا تحسب مساحته من ضمن نسبة البناء المذكورة على أن يستعمل جزء لا تقل مساحته عن ٨٠٪ (ثمانين في المائة) كمواقف للسيارات .

الارتدادات :-

يرتد البناء مسافة لا تقل عن ٦ أمتار (ستة أمتار) من جميع الجهات ويسمح بعمل بروزات علوية كإبراج وشرفات تطلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) من السوراجه الأمامية و ٦٠ سنتيمتراً (ستون سنتيمتراً) للواجهات الأخرى .

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ١٥ طابقاً (خمس عشرة طابقاً) بحد أقصى قدره ٧٠ متراً (سبعون متراً) .
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

اشتراطات خاصة :

- ١- يسمح ببناء سقفية في سطح الدور العلوي على أن لا تزيد مساحتها على ٥٠٪ (خمس في المائة) من مساحة الدور العلوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقلماً من أرضية سطح المبنى ، ويحسب من نسبة البناء .
- ٢- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأقل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ١٥٠ متراً مربعاً (مائة وخمسين متراً مربعاً) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الاداري والتجاري وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات إما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لا تحسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- ٣- في حالة تعدد الاستعمالات يلزم فصل المدخل والمساعد والسلام المؤدية إلى الشقق السكنية عن باقي الاستعمالات الأخرى .

الفصل الثالث**مناطق العمارات - ١٠ طوابق - أ**

الاستعمالات : يسمح فيها بالاستعمالات السكنية أو التجارية أو الادارية أو جميعها حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

نسب البناء :

تحدد نسب البناء في هذه المناطق على النحو الآتي :

- ١- لا تزيد نسبة البناء على ٥٠٪ (خمسائه في المائة) من مساحة الأرض .

- ٢- لا تزيد مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٣- يترك الدور الأرضي معلقاً على أعمدة ويستخدم كمواقف للسيارات على أن لا تقل المساحة المخصصة لمواقف السيارات على ٨٠٪ (ثمانين في المائة) من مساحة الدور الأرضي ولا يحسب ضمن نسبة البناء .
- ٤- يسمح ببناء سرداب لا تحسب مساحته من ضمن نسبة البناء المذكورة على أن يستعمل جزء لا تقل مساحته عن ٨٠٪ (ثمانين في المائة) كمواقف للسيارات .

الارتدادات :-**١- الارتداد الأمامي :**

يسمح بالبناء بالطابق الأرضي على حد الأرض الأمامي ما لم يكن هناك خط بناء معتمد بالمخططات التصريفية ويسمح بعمل بروزات علوية كإبراج وشرفات تطلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- **الارتداد الجانبي والخلفي :** لا يقل الارتداد بالدور الأرضي عن ٦ أمتار (ستة أمتار) من حدي الأرض الجانبي والخلفي ويمكن استخدامه كممر ومواقف للسيارات ، ويسمح بعمل بروزات علوية بالدور التي تطلو الدور الأرضي بحد أقصى قدره ٦٠ سنتيمتراً (ستون سنتيمتراً) .

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ١٠ طوابق (عشرة طوابق) بحد أقصى قدره ٤٥ متراً (خمسة وأربعون متراً) .
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

مادة -٣٧-

اشتراطات خاصة :

- 1- يسمح ببناء سقفة في سطح الدور العلوي على أن لا تزيد مساحتها على ٥٠٪ (خمس في المائة) من مساحة الدور العلوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقاساً من أرضية سطح المبنى ، ويحتسب من نسبة البناء .
- 2- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأكل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ٥٠متر مربعاً (مائة وخمسين متراً مربعاً) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الإداري والتجاري وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات إما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لن تحتسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- 3- في حالة تعدد الاستعمالات يلزم فصل المداخل والمصاعد والسلام المؤدية إلى الشقق السكنية عن باقي الاستعمالات الأخرى .
- 4- في الأراضي المطلة على شوارع تجارية معتمدة يسمح بالاستعمالات التجارية والإدارية على أن يرتد البناء مسافة لا تقل عن ٦ أمتار (ستة أمتار) من الواجهة الأمامية تستخدم كمستترات للمشاة ومواقف للسيارات .

الفصل الرابع

مناطق العمارة - ١٠ طوابق - ب

مادة -٣٨-

الاستعمالات : يسمح فيها بالاستعمالات السكنية أو التجارية أو الإدارية أو جميعها حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ٢٦

مادة -٣٩-

نسب البناء :

- تحدد نسب البناء في هذه المناطق على النحو الآتي :
- 1- لا تزيد نسبة البناء على ٤٠٠٪ (أربعمئة في المائة) من مساحة الأرض .
 - 2- لا تزيد مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
 - 3- يترك الدور الأرضي معلقاً على أعمدة ويستخدم كموقف للسيارات على أن لا تقل المساحة المخصصة لموقف السيارات عن ٨٠٪ (ثمانين في المائة) من مساحة الدور الأرضي ولا يحتسب ضمن نسبة البناء .
 - 4- يسمح ببناء سرداب لا تحتسب مساحته من ضمن نسبة البناء المتكررة على أن يستعمل جزء لا تقل مساحته عن ٨٠٪ (ثمانين في المائة) كموقف للسيارات .

مادة -٤٠-

الارتدادات :-

١- الارتداد الأمامي :

يسمح بالبناء بالطابق الأرضي على حد الأرض الأمامي ما لم يكن هناك خط بناء معتمد بالمخططات التفصيلية ويسمح بعمل بروزات علوية كأبراج وشرفات تعلق الدور الأرضي بحد أقصى قدره ١,٢متر (واحد وعشرون سنتيمتراً) .

٢- الارتداد الخلفي : لا يقل الارتداد بالدور الأرضي عن ٦ أمتار (ستة أمتار) من حد الأرض الخلفي ويسمح بعمل بروزات علوية بالدور التي تعلق الدور الأرضي بحد أقصى قدره ٦٠ سنتيمتراً (ستون سنتيمتراً) .

٣- الارتداد الجانبي : لا يقل الارتداد بالدور الأرضي عن ٣,٥ أمتار (ثلاثة أمتار ونصف المتر) من حد الأرض الجانبي ولا يسمح بعمل بروزات علوية بالدور التي تعلق الدور الأرضي .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ٢٧

مادة -٤١-

الارتفاعات :

- 1- لا يزيد ارتفاع المبنى على ١٠ طوابق (عشرة طوابق) بحد أقصى قدره ٤٥ متراً (خمس وأربعون متراً) .
- 2- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

مادة -٤٢-

اشتراطات خاصة :

- 1- يسمح ببناء سقفة في سطح الدور العلوي على أن لا تزيد مساحتها على ٥٠٪ (خمس في المائة) من مساحة الدور العلوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقاساً من أرضية سطح المبنى ويحتسب من نسبة البناء .
- 2- في الأراضي المطلة على شوارع تجارية معتمدة يسمح بالاستعمالات التجارية والإدارية على أن يرتد البناء مسافة لا تقل عن ٦ أمتار (ستة أمتار) من الواجهة الأمامية تستخدم كممرات للمشاة وموقف للسيارات .
- 3- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأكل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ٥٠متر مربعاً (مائة وخمسين متراً مربعاً) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الإداري والتجاري وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات إما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لن تحتسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- 4- في حالة تعدد الاستعمالات يلزم فصل المداخل والسلام المؤدية إلى الشقق السكنية عن الاستعمالات الأخرى .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م

صفحة ٢٨

الفصل الخامس

مناطق العمارة - ٧ طوابق

مادة -٤٣-

الاستعمالات : يسمح فيها بالاستعمالات السكنية أو التجارية أو الإدارية أو جميعها حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٤٤-

نسب البناء :

- تحدد نسب البناء في هذه المناطق على النحو الآتي :
- 1- لا تزيد نسبة البناء على ٤٠٠٪ (أربعمئة في المائة) من مساحة الأرض .
 - 2- لا تزيد مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
 - 3- يترك الدور الأرضي معلقاً على أعمدة ويستخدم كموقف للسيارات على أن لا تقل المساحة المخصصة لموقف السيارات عن ٨٠٪ (ثمانين في المائة) من مساحة الدور الأرضي ولا يحتسب ضمن نسبة البناء .
 - 4- يسمح ببناء سرداب لا تحتسب مساحته من ضمن نسبة البناء المتكررة على أن يستعمل جزء لا تقل مساحته عن ٨٠٪ (ثمانين في المائة) كموقف للسيارات .

مادة -٤٥-

الارتدادات :-

١- الارتداد الأمامي :

يسمح بالبناء بالطابق الأرضي على حد الأرض الأمامي ما لم يكن هناك خط بناء معتمد بالمخططات التفصيلية ويسمح بعمل بروزات علوية كأبراج وشرفات تعلق الدور الأرضي بحد أقصى قدره ١,٢٠متر (واحد وعشرون سنتيمتراً) .

٢- الارتداد الجانبي : لا يقل الارتداد بالدور الأرضي على ٣,٥ أمتار (ثلاثة أمتار ونصف المتر) من حد الأرض الجانبي ويمكن استخدامه كممر يؤدي إلى مواقف للسيارات ولا يسمح بعمل بروزات علوية بالدور التي تعلق الدور الأرضي .

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صفحة ٢٩

الفصل السادس مناطق العمارات - ٥ طوابق

مادة -٤٨-

الاستعمالات: يسمح فيها بالاستعمالات السكنية أو التجارية أو الإدارية أو جميعها حسب ما يتيحه خرائط تحديد مناطق التعمير في الدولة .

مادة -٤٩-

نسب البناء :

تحدد نسب البناء في هذه المناطق على النحو الآتي :

- ١- لا تزيد نسبة البناء على ٣٠٠٪ (ثلاثمائة في المائة) من مساحة الأرض .
- ٢- لا تزيد مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض.
- ٣- يترك الدور الأرضي مطلقاً على أصدده لاستعماله كمواقف للسيارات على أن لا تقل المساحة المخصصة لمواقف السيارات عن ٨٠٪ (ثمانين في المائة) من مساحة الدور الأرضي ولا يحضب ضمن نسبة البناء .
- ٤- يسمح ببناء سرداب لا تحسب مساحته من ضمن نسبة البناء المذكورة على أن يستعمل جزء لا يقل مساحته عن ٨٠٪ (ثمانين في المائة) كمواقف للسيارات .

مادة -٥٠-

الارتدادات :-

١- الارتداد الأماسي :

يسمح بالبناء بالطابق الأرضي على حد الأرض الأماسي ما لم يكن هناك خط بناء معتمد بالمخططات التفصيلية ويسمح بعمل بروزات علوية كأبراج وشرفات تطلو الدور الأرضي بحد أقصى قدره ١,٢٠ متر (عشرون سنتيمتراً) .

٢- **الارتداد الجانبي:** لا يقل الارتداد بالدور الأرضي عن ٣,٥ أمتار (ثلاثة أمتار ونصف المتر) من حد الأرض الجانبي و يمكن استخدامه كمر لسيارات ولا يسمح بعمل بروزات علوية بالدور التي تطلو الدور الأرضي .

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٣- **الارتداد الخلفي:** لا يقل الارتداد الخلفي عن ٦ أمتار (سنة أمتار) من حد الأرض الخلفي ويستخدم كمواقف للسيارات ويسمح بعمل بروزات علوية بالدور التي تطلو الدور الأرضي بحد أقصى قدره ٦٠ سنتيمتراً (ستون سنتيمتراً) .

مادة -٤٦-

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ٧ طوابق (سبعة طوابق) بحد أقصى قدره ٣٤ متراً (أربعة وثلاثون متراً)
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

مادة -٤٧-

اشتراطات خاصة :

- ١- يسمح ببناء سقيفة في سطح الدور العلوي على أن لا تزيد مساحتها على ٥٠٪ (خمس في المائة) من مساحة الدور العلوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقلداً من أرضية سطح المبنى ويحسب ضمن نسبة البناء .
- ٢- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأقل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ١٥٠ متر مربعاً (مائة متر مربع) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الإداري والتجاري ، وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات إما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لن تحسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- ٣- في الأراضي الواقعة على شوارع تجارية معتمدة يسمح بالاستعمالات التجارية والمكاتب على أن يرتد البناء مسافة لا تقل عن ٦ أمتار (سنة أمتار) من الوجهة الأمامية تستخدم كممرات ومواقف مفتوحة للسيارات .
- ٤- في حالة تعدد الاستعمالات يلزم فصل المداخل والمساعد والسلام المؤدية إلى الشقق السكنية عن الاستعمالات الأخرى .

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الفصل السابع مناطق العمارات - ٣ طوابق

مادة -٥٣-

الاستعمالات: يسمح فيها بالاستعمالات السكنية أو التجارية أو الإدارية أو جميعها حسب ما يتيحه خرائط تحديد مناطق التعمير في الدولة .

مادة -٥٤-

نسب البناء: تحدد نسب البناء في هذه المناطق على النحو الآتي :

- ١- لا تزيد نسبة البناء على ١٨٠٪ (مائة وثمانين في المائة) من مساحة الأرض .
- ٢- لا تزيد مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض.
- ٣- يسمح ببناء سرداب لا تحسب مساحته ضمن مساحة البناء المذكورة ، على أن يستعمل جزءه لا يقل مساحته عن ٨٠٪ (ثمانين في المائة) كمواقف للسيارات .

مادة -٥٥-

الارتدادات :-

١- **الارتداد الأماسي:** يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (سنة أمتار) من حد الأرض الأماسي للواجهة المطلة على شارع سكني أو تجاري أو خدمي ويسمح بعمل بروزات علوية كأبراج وشرفات تطلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (عشرون سنتيمتراً) وفي حالة وقوع المبنى على أكثر من شارع يرتد مسافة ٦ أمتار (سنة أمتار) من جهة الشارع الأكثر أهمية للموقع ومسافة ٢ متراً (مترين) من جهة الشارع الأخرى .

٢- **الارتداد الخلفي والجانبي:** لا يقل الارتداد بالدور الأرضي عن ٢ متراً (مترين) من حد الأرض الخلفي والجانبي ، ولا يسمح بعمل بروزات علوية خلفية بالدور التي تطلو الدور الأرضي .

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٣- **الارتداد الخلفي:** لا يقل الارتداد الخلفي عن ٦ أمتار (سنة أمتار) من حد الأرض الخلفي ويستخدم كمواقف للسيارات ويسمح بعمل بروزات علوية بالدور التي تطلو الدور الأرضي بحد أقصى قدره ٦٠ سنتيمتراً (ستون سنتيمتراً) .

مادة -٥١-

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ٥ طوابق (خمس طوابق) بحد أقصى قدره ٢١ متراً (واحد وعشرون متراً) .
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) .

مادة -٥٢-

اشتراطات خاصة :

- ١- يسمح ببناء سقيفة في سطح الدور العلوي على أن لا تزيد مساحتها على ٥٠٪ (خمس في المائة) من مساحة الدور العلوي بارتفاع لا يزيد على ٤ أمتار (أربعة أمتار) مقلداً من أرضية سطح المبنى ويحسب ضمن نسبة البناء .
- ٢- يلزم توفير مواقف للسيارات داخل قطعة الأرض وذلك بواقع سيارة لكل شقة على الأقل بحيث لا يقل عدد مواقف السيارات عن موقف واحد لكل ٥٠ متر مربعاً (مائة متر مربع) للمساحات البنائية المخصصة للسكن و ١٠٠ متر مربع (مائة متر مربع) للمساحات البنائية المخصصة للاستعمال الإداري والتجاري ، وفي حالة عدم إمكانية توفير عدد مواقف السيارات المطلوبة على قطعة الأرض بالدور الأرضي ، يلزم توفير مواقف للعدد المتبقي من مواقف السيارات إما بالدور المتكررة أو بعمل سرداب أو كليهما حيث لن تحسب الدور الإضافية من نسبة البناء والارتفاع المقررين .
- ٣- في الأراضي الواقعة على شوارع تجارية معتمدة يسمح بالاستعمالات التجارية في الدور الأرضي فقط والمكاتب في الدور المتكررة على أن يرتد البناء مسافة ٦ أمتار (سنة أمتار) من حد الأرض الأماسي .

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مادة ٥٦-

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ٣ طوابق (ثلاثة طوابق) بحسب أقصى قدره ١٣ متراً (ثلاثة عشر متراً) .
- ٢- في حالة عمل سرداب يجب أن لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متراً (متر وأربعين سنتيمتراً) من منسوب الرصيف .

مادة ٥٧-

اشتراطات خاصة :

- ١- يجب أن لا تقل عروض الشوارع التجارية والخدمية المعتمدة بهذه المناطق عن ١٥ متراً (خمسة عشر متراً) وفي الأراضي المطلة على شوارع تجارية أو خدمية معتمدة يقل عرضها عن ١٥ متراً (خمسة عشر متراً) يرتد البناء للواجهة الأمامية المطلة على الشارع مسافة لا تقل عن نصف الفرق بين عرض الشارع والخمسة عشر متراً بالإضافة إلى الارتداد المبين أعلاه على أن تستخدم كمواقف للسيارات وعمارات للمشاة .
- ٢- يلزم توفير مواقف للسيارات بمعدل موقف واحد لكل شقة إضافة إلى موقف واحد لكل محل تجاري .

الفصل الثامن

مناطق العمارات المتصلة

مادة ٥٨-

الاستعمالات : يسمح فيها بالاستعمالات السكنية أو التجارية أو الإدارية أو جميعها حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٥٩-

نسب البناء :

- ١- لا تزيد نسبة البناء على ٣٠٠٪ (ثلاثمائة في المائة) من مساحة الأرض .

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صفحة ٢٤

- ٢- في المناطق التجارية لا تزيد نسبة البناء على ٥٠٠٪ (خمسمائة في المائة) من مساحة الأرض .

- ٣- في المناطق التجارية يسمح بإضافة (ميزانين) لا يدخل ضمن النسبة المذكورة ولا تزيد مساحته على ٥٠٪ (خمس في المائة) من مساحة الطابق الأرضي .

مادة ٦٠-

الارتدادات :

١- الارتداد الأمامي :

- أ- يسمح البناء بالطابق الأرضي على حد الأرض الأمامي في الشوارع التي عرضها ١٠ أمتار (عشرة أمتار) فأكثر .
- ب- في حالة وقوع المباني على شارع عرضه أقل من ١٠ أمتار (عشرة أمتار) فإنه يجب الارتداد إلى مسافة تساوي نصف الفرق بين العرض الحالي والعشرة أمتار ما لم يكن هناك خط بناء معتمد بالمخططات التفصيلية ، على أن يتقدم المالك أو من ينوب عنه بإقرار بالتنازل عن هذه المساحة دون مقابل تعويض .

٢- الارتداد الجانبي والخلفي :

- يسمح بالبناء على حد الأرض الخلفي والجانبي ، وفي حالة عمل فتحات مطلة على الجار يتم عمل فتحات سمويه (مناور) حسب ما تنص عليه اللائحة التنفيذية لقانون تنظيم المباني .

مادة ٦١-

الارتفاعات :

- ١- لا يزيد ارتفاع المبنى على ٣ طوابق (ثلاثة طوابق) بحسب أقصى قدره ١٣ متراً (ثلاثة عشر متراً) .
- ٢- في الأراضي الواقعة ضمن المناطق التجارية أو المطلة على الشوارع التجارية يجب أن لا يزيد ارتفاع المبنى على ٥ طوابق (خمسة طوابق) بحسب أقصى قدره ٢٠ متر (عشرون متر) ، وفي الأراضي التي تقل مساحتها عن ٢٠٠ متر مربع (مائتي متر مربع) يجب أن لا يزيد ارتفاع المبنى على ٣ طوابق (ثلاثة طوابق) بحسب أقصى ١٣ متراً (ثلاثة عشر متراً) .

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صفحة ٣٥

الباب الرابع

منطقة المعارض التجارية

مادة ٦٢-

الاستعمالات : يسمح فيها بالاستعمالات التجارية والإدارية فقط حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٦٣-

نسب البناء :

- ١- لا يزيد مجموع مساحات البناء لكافة الأبنية على ١٥٠٪ (مائة وخمسين في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٥٠٪ (خمس في المائة) من مساحة الأرض .
- ٣- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمس في المائة) من مساحة الدور الأرضي ولا تحسب ضمن نسب البناء المسموح بها .
- ٤- لا تحسب مواقف السيارات ضمن نسبة البناء .
- ٥- يسمح باستحداث سرداب يستخدم كمواقف للسيارات .
- ٦- يسمح ببناء مخازن تابعة للمعارض التجارية ونسبة لا تزيد على ٣٠٪ (ثلاثين في المائة) من النسبة المنصوص عليها لمجموع مساحات البناء .
- ٧- لا تقل مساحة المعرض الواحد عن ٢٥٠ متراً مربعاً (مائتين وخمسين متراً مربعاً) من المباني .
- ٨- يسمح ببناء المعارض بعق لا يزيد على ١٠٠ متر (مائة متر) مقياساً من خط التنظيم المعتمد أو بعق الملكية لهما أقل .

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صفحة ٢٦

مادة ٦٤-

الارتدادات :

١- ارتداد البناء للواجهات المطلة على شوارع :

- يسمح ببناء الدور الأرضي والميزانين على مسافة لا تقل عن ٦ أمتار (سنة أمتار) من حد الأرض للواجهة المطلة على شارع أو طريق أو أكثر وتخصص هذه المسافة كمواقف للسيارات غير المغطاة ، كما يسمح باستحداث فيون بعرض ٤ أمتار (أربعة أمتار) وبارتفاع لا يقل عن ٨٠٠ أمتار (خمسة أمتار وثمانين سنتيمتراً) ويسمح بعمل بروزات علوية كالأراج أو شرفات تعلق الدور الأرضي بحسب أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الخلفي :

- يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٤ أمتار (أربعة أمتار) من حد الأرض الخلفي وتخصص مساحات هذه الارتدادات كممر للسيارات ولا يسمح بعمل بروزات علوية بالأدوار التي تعلو الدور الأرضي .

٣- الارتداد الجانبي :

- يسمح بالبناء بالدور الأرضي والميزانين على مسافة لا تقل عن ٤ أمتار (أربعة أمتار) من حد الأرض الجانبي ولا يسمح بعمل بروزات علوية بالأدوار التي تعلو الدور الأرضي .

مادة ٦٥-

الارتفاعات :

- ١- لا يزيد ارتفاع البناء على ثلاثة أدوار وبعده أقصى قدره ٤ أمتار (أربعة عشر متراً) .
- ٢- في حالة عمل سرداب لا يزيد ارتفاع أرضية الدور الأرضي على ١,٤٠ متر (متر وأربعين سنتيمتراً) من منسوب الرصيف على أن لا تقل المساحة المخصصة لمواقف السيارات عن ٨٠٪ (ثمانين في المائة) من مساحة السرداب .

مادة ٦٦-

اشتراطات خاصة :

- ١- يلزم توفير مواقف إضافية للسيارات بنسبة لا تقل عن موقف واحد لكل ٥٠ متراً مربعاً (خمس مائة متراً مربعاً) من المساحة المخصصة للمعارض .
- ٢- يلزم توفير مساحات خاصة للشحن والتفريغ ضمن حدود الملكية لا تتعارض والعناصر الأخرى المكونة للمبنى وملحقاته .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعة ٤ فبراير ١٩٩٨م

صفحة ٢٧

الباب الخامس المناطق الصناعية

الفصل الأول

المشاريع الصناعية الإنتاجية (أ)

مادة ٦٧-

تعتبر المشروعات الصناعية في هذه المنطقة مشروعات ذات طبيعة خاصة تتطلب الحصول على شهادة تخطيطية الموافقة على صلاحية الموقع من الناحية للتخطيطية بالتنسيق مع الجهات المختصة .

الفصل الثاني

المشاريع الصناعية الإنتاجية (ب)

مادة ٦٨-

الاستعمالات : يسمح فيها بالاستعمالات الصناعية الإنتاجية والمكاتب الادارية والمعارض والمخازن لمنتجات تلك الصناعات حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٦٩-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٥٠٪ (مائة وخمسين في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٥٠٪ (خمسين في المائة) من مساحة الأرض .
- ٣- يسمح بنسب بناء إضافية لا تزيد على ١٠٪ (عشرة في المائة) من مساحة الأرض تخصص للخدمات والمرافق .

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- ٤- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمسين في المائة) من مساحة الدور الأرضي ولا تحسب ضمن نسب البناء المسموح بها .
- ٥- لا يزيد مجموع مساحة البناء المخصصة للاستعمال كمعارض على ٢٠٪ (عشرين في المائة) من مساحة الدور الأرضي ويحسب من نسب البناء المسموح بها مع ضرورة الحصول على رخصة خاصة من الجهة المختصة .
- ٦- يسمح ببناء سرداب حسب ما تتطلبه المواصفات الفنية للمشروع ولا يحسب من نسبة البناء المقررة .

مادة ٧٠-

الارتدادات :

١- الارتداد الأماسي :

- ١- يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٧,٥٠ أمتار (سبعة أمتار ونصف المتر) للواجهات المطلة على شارع أو طريق وتخصص مساحات هذه الارتدادات لمواقف للسيارات غير المغطاة ويسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) ويراعى تشجير هذه المنطقة .
- ب- يسمح بالبناء بالدور الأرضي والميزانين على مسافة لا تقل عن ٦ أمتار (ستة أمتار) للواجهات المطلة على أي شارع آخر ان وجد و يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الخلفي :

يجب الارتداد للواجهات الخلفية مسافة لا تقل عن ٦ أمتار (ستة أمتار) ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

٣- الارتداد الجانبي :

يجب الارتداد للواجهات الجانبية مسافة لا تقل عن ٦ أمتار (ستة أمتار) من حد الأرض الجانبي ولا يسمح ببرزات علوية بالدور التي تعلو الدور الأرضي .

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مادة ٧١-

الارتفاعات :

- ١- لا يزيد ارتفاع البناء على ٣ طوابق (ثلاثة طوابق) بحيث يكون الحد الأقصى للارتفاع ١٥ متراً (خمس عشرة متراً) ويسمح بزيادة الارتفاع في الحالات التي تتطلبها التجهيزات الصناعية ذات المواصفات الخاصة .
- ٢- يجوز زيادة الارتفاع في المباني الادارية إلى ٥ طوابق (خمس طوابق) بحد أقصى قدره ٢٠ متراً (عشرون متراً) وتحسب من ضمن نسبة البناء .

مادة ٧٢-

اشتراطات خاصة :

- ١- يجوز للجهة المختصة الطلب من المالك تقديم خرائط تفصيلية حول وضعية مواقف السيارات وكذلك تحديد المداخل والمخارج للمشروع .
- ٢- يلزم توفير مواقف إضافية للسيارات بنسبة لا تقل عن موقف واحد لكل ١٠٠ مترمربع (مائة مترمربع) من إجمالي المسطحات البنائية المخصصة للاستعمالات الادارية والتجارية وموقف واحد لكل ٣٠٠ مترمربع (ثلاثمائة مترمربع) من إجمالي المسطحات البنائية المخصصة للإنتاج الصناعي والمخازن .

الفصل الثالث

المشاريع الصناعية الإنتاجية (ج)

مادة ٧٣-

الاستعمالات :

يسمح فيها بالاستعمالات الصناعية الخفيفة والمكاتب الادارية والمخازن والمعارض لمنتجات المصنع حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة ٧٤-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٨٠٪ (مائة وثمانين في المائة) من مساحة الأرض .

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- ٢- لا يزيد مسطح البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٣- يسمح بنسب بناء إضافية لا تزيد على ١٠٪ (عشرة في المائة) من مساحة الأرض تخصص للخدمات والمرافق وتكون في جهة واحدة من الأرض .
- ٤- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمسين في المائة) من مساحة الدور ولا تحسب ضمن نسب البناء المسموح بها .
- ٥- لا يزيد مجموع مساحة البناء المخصصة للاستعمال كمعارض على ٢٠٪ (عشرين في المائة) من مساحة الدور الأرضي بحيث وتحسب من نسب البناء المسموح بها ، مع ضرورة الحصول على ترخيص مسبق من الجهة المختصة بوزارة التخطط والصناعة .

مادة ٧٥-

الارتدادات :

١- الارتداد الأماسي :

- ١- يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (ستة أمتار) للواجهات المطلة على شارع أو طريق . وتخصص مساحات هذه الارتدادات لمواقف للسيارات غير المغطاة ويسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي والميزانين بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) ويراعى تشجير هذه المنطقة .

ب- يسمح بالبناء بالدور الأرضي والميزانين على مسافة لا تقل عن ٤ أمتار (أربعة أمتار) للواجهات المطلة على أي شارع أو طريق آخر ان وجد ويسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي بحد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الخلفي :

يجب الارتداد للواجهات الخلفية مسافة لا تقل عن ٤ أمتار (أربعة أمتار) ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

٣- الارتداد الجانبي :

يجب الارتداد للواجهات الجانبية مسافة لا تقل عن ٤ أمتار (أربعة أمتار) ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

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مادة -٧٦-

الارتفاعات :

لا يزيد ارتفاع البناء على ثلاثة طوابق بحيث يكون الحد الأقصى للارتفاع ١٥ متراً (خمس عشرة متراً) . ويسمح بزيادة الارتفاع في الحالات التي تتطلبها التجهيزات الصناعية ذات المواصفات الخاصة .

مادة -٧٧-

اشتراطات خاصة :

- ١- يجوز للجهة المختصة الطلب من المالك تقديم خرائط تفصيلية حول وضعية مواقف السيارات وكذلك تحديد المدخل والمخارج للمشروع .
- ٢- يلزم توفير موقف إضافية للسيارات نسبة لا تقل عن موقف واحد لكل ١٠٠ مترمربع (مائة مترمربع) من إجمالي المسطحات البنائية المخصصة للاستعمالات الادارية والتجارية وموقف واحد لكل ٣٠٠ مترمربع (ثلاثمائة مترمربع) من إجمالي المسطحات البنائية المخصصة للإنتاج الصناعي والمخازن .

الفصل الرابع

مناطق المستودعات والمخازن

مادة -٧٨-

الاستعمالات : يسمح فيها بالمستودعات والمخازن حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٧٩-

نسبة البناء :

- ١- لا يزيد مجموع مسطحات البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٢- يسمح بعمل ميزانين لا تزيد مساحته على ١٠٪ (عشرة في المائة) من مساحة الدور الأرضي ويستعمل كمكاتب إدارية فقط ولا تحتسب ضمن نسبة البناء المسموح بها .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨ م

صفحة ٤٢

مادة -٨٠-

الارتدادات :

١- الارتداد الأمامي : يجب أن تركد منشآت المستودعات والمخازن مسافة لا تقل عن ٦ أمتار (سنة أمتار) من الواجهة الأمامية للمنشأة تستخدم كمواقف للسيارات ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

٢- الارتدادات الجانبية والخلفية : يجب أن تركد منشآت المستودعات مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) من الواجهات الجانبية والخلفية ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

٣- يجب أن ترك مسافة لا تقل عن ٦ أمتار (سنة أمتار) بين منشآت المستودعات والمخازن في قطعة الأرض الواحدة .

مادة -٨١-

الارتفاعات :

لا يزيد ارتفاع مباني المستودعات على طابقين متضمناً ميزانين بحد أقصى قدره ١٥ متراً (خمس عشرة متراً) ويستثنى من ذلك المستودعات التي تتطلب للتجهيزات الفنية ذات المواصفات الخاصة .

الفصل الخامس

مناطق الصناعات الخفيفة

مادة -٨٢-

الاستعمالات : يسمح فيها بالاستعمالات الصناعية الخفيفة والورش والمكاتب الادارية والمخازن والمعارض لمنتجات المصنع ويسمح بعمل سكن لعمال تلك الصناعات ما لم تقع الأرض ضمن المناطق الخاضعة لأشراف وزارة النفط والصناعة .

مادة -٨٣-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٢٠٪ (مائة وعشرين في المائة) من مساحة الأرض .

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صفحة ٤٣

الفصل السادس

مناطق الورش

مادة -٨٦-

الاستعمالات : يسمح فيها بالورش الصناعية الخفيفة والخدمية وسكن العمال حسب ما يبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٨٧-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٢٠٪ (مائة وعشرين في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٦٠٪ (ستين في المائة) من مساحة الأرض .
- ٣- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمس في المائة) من مساحة الدور الأرضي ولا تحتسب ضمن نسب المسموح بها .
- ٤- يجب أن لا تقل مساحة الورشة الواحدة عن ١٠٠ مترمربع (مائة مترمربع) .

مادة -٨٨-

الارتدادات :

١- الارتداد الأمامي : يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (سنة أمتار) للواجهات المطلة على شارع أو أكثر . وتخصص مساحات الردود كمواقف للسيارات ويسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي بحد أقصى قدره ١٠,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الجانبي والخلفي :

يجب الارتداد للواجهات الجانبية والخلفية مسافة لا تقل عن ٢ متراً (مترين) ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

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صفحة ٤٥

مادة -٨٤-

الارتدادات :

١- الارتداد الأمامي : يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (سنة أمتار) للواجهات المطلة على شارع أو أكثر . وتخصص هذه المساحات كمواقف للسيارات . ويسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي بحد أقصى قدره ١٠,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الجانبي والخلفي : يجب الارتداد للواجهات الجانبية والخلفية مسافة لا تقل عن ٤ أمتار (أربعة أمتار) ولا يسمح بعمل بروزات علوية بالدور التي تعلو الدور الأرضي .

مادة -٨٥-

الارتفاعات :

لا يزيد ارتفاع البناء عن طابقين وميزانين بحيث يكون الحد الأقصى للارتفاع ٤ أمتراً (أربعة عشر متراً) ويسمح بزيادة الارتفاع في الحالات التي تتطلب للتجهيزات الصناعية ذات المواصفات الخاصة .

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صفحة ٤٤

مادة -٨٩-

الارتفاعات :

لا يزيد ارتفاع البناء على طابقين وميزانين بحيث يكون الحد الأقصى للارتفاع ٤ امتراً (أربعة عشر متراً) .

الفصل السابع

المناطق الخدمية

أولاً : المنطقة الخدمية "أ"

مادة -٩٠-

الاستعمالات : يسمح فيها بإقامة ورش خدمات الصيانة والتصليح وتبديل الزيوت وإصلاح الاطارات وما شابه ذلك بالإضافة إلى الاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٩١-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٠٠٪ (مائة في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٥٠٪ (خمسين في المائة) من مساحة الأرض .
- ٣- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمسين في المائة) من مساحة الدور الأرضي ولا تحسب ضمن نسب المسموح بها .
- ٤- يجب أن لا تقل مساحة الورشة الواحدة عن ٧٥ مترمربعاً (خمسة وسبعين متراً مربعاً) .

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مادة -٩٢-

الارتدادات :

١- الارتداد الأمامي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (سنة أمتار) للواجهات المظلة على شارع أو أكثر . وتخصص مساحات الردود كمواقف للسيارات ويسمح بعمل بروزات طولية بالادوار التي تعلو الدور الأرضي بحدد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الجانبي والخلفي :

يجب الارتداد للواجهات الجانبية والخلفية مسافة لا تقل عن ٢ متراً (مترين) ولا يسمح بعمل بروزات طولية بالادوار التي تعلو الدور الأرضي .

مادة -٩٣-

الارتفاعات :

لا يزيد ارتفاع البناء على طابقين وميزانين بحيث يكون الحد الأقصى للارتفاع ٤ امتراً (أربعة عشر متراً) .

ثانياً : المنطقة الخدمية "ب"

مادة -٩٤-

الاستعمالات : يسمح فيها بإقامة ورش خدمات الصيانة والتصليح وتبديل الزيوت وإصلاح الاطارات وما شابه ذلك بالإضافة إلى الاستعمالات السكنية حسب ما تبينه خرائط تحديد مناطق التعمير في الدولة .

مادة -٩٥-

نسب البناء :

- ١- لا تزيد نسبة البناء لكافة الأبنية على ١٠٠٪ (مائة في المائة) من مساحة الأرض .
- ٢- لا يزيد مسطح البناء لأي دور على ٥٠٪ (خمسين في المائة) من مساحة الأرض .
- ٣- يسمح بعمل ميزانين لا تزيد مساحته على ٥٠٪ (خمسين في المائة) من مساحة الدور الأرضي ولا تحسب ضمن نسب المسموح بها .
- ٤- يجب أن لا تقل مساحة الورشة الواحدة عن ٥٠ مترمربعاً (خمسين متراً مربعاً) .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م صفحة ٤٧

مادة -٩٦-

الارتدادات :

١- الارتداد الأمامي :

يسمح بالبناء بالدور الأرضي على مسافة لا تقل عن ٦ أمتار (سنة أمتار) للواجهات المظلة على شارع أو أكثر . وتخصص مساحات الردود كمواقف للسيارات ويسمح بعمل بروزات طولية بالادوار التي تعلو الدور الأرضي بحدد أقصى قدره ١,٢٠ متراً (متر وعشرون سنتيمتراً) .

٢- الارتداد الجانبي :

يسمح بالبناء على حدود الأرض الجانبية وفي حالة عمل فتحات مظله على الجار يتم عمل مناور حسب ما تنص عليه اللائحة التنفيذية لقانون تنظيم المباني .

٣- الارتداد الخلفي :

يجب الارتداد للواجه الخلفية مسافة لا تقل عن ٢ متراً (مترين) ولا يسمح بعمل بروزات طولية بالادوار التي تعلو الدور الأرضي .

مادة -٩٧-

الارتفاعات :

لا يزيد ارتفاع البناء على طابقين وميزانين بحيث يكون الحد الأقصى للارتفاع ٤ امتراً (أربعة عشر متراً) .

الباب السادس
المناطق الزراعية

الفصل الأول
المنطقة الزراعية الانتاجية

مادة -٩٨-

الاستعمالات :

- ١- يسمح في هذه المنطقة بمزاولة جميع الأنشطة الزراعية الانتاجية وإقامة البيوت المحمية والمشائل .
- ٢- يسمح بإنشاء مبنى سكني خاص وسكن للمزارعين .
- ٣- يسمح بمزاولة جميع أنشطة الانتاج الحيواني واتشاء مزارع الدواجن واسطبلات الحيوانات بعد الحصول على ترخيص مسبق من وزارة الأشغال والزراعة .

مادة -٩٩-

نسب البناء :

- ١- لا يزيد مجموع مساحة بناء السكن الخاص على ٥٪ (خمسة في المائة) من مساحة الأرض .
- ٢- لا يزيد مجموع مساحة سكن المزارعين على ٥٪ (خمسة في المائة) من مساحة الأرض .
- ٣- لا يزيد مجموع مساحة الحظائر والأسطبلات على ١٠٪ (عشرة في المائة) من مساحة الأرض .

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م صفحة ٤٩

ملحق الجريدة الرسمية - العدد ٢٣٠٦ - الأربعاء ٤ فبراير ١٩٩٨م صفحة ٤٨

١- الارتداد الأمامي :

- أ- تترك منشآت البيوت المحمية والمشائل من حد الأرض على الواجهات المغطاة على شارع أو طريق مسافة لا تقل عن ٣ أمتار (ثلاثة أمتار) .
- ب- يترك مبنى السكن الخاص من حد الملكية مسافة لا تقل عن ٦ أمتار (سنة أمتار).
- ج- يجوز بناء المكتب أو غرفة الحارس والمضخات والمخازن ملاصقة للسور عند المدخل وفي جهة واحدة فقط من الأرض .
- د- لا تقل المسافة المتروكة بين الحظائر وأقرب بيت سكني عن ٥٠ متراً (خمسين متراً) .
- هـ- لا تقل مسافة الارتداد لمسكن المزارعين عن ٦ أمتار (سنة أمتار) من حد الأرض الأمامي .
- و- لا يقل الارتداد الأمامي للحظائر أو الاسطبلات عن ١٥ متراً (خمس عشرة متراً) من حد الأرض الأمامي .

٢- الارتداد الخلفي والجانبى :

- أ- تترك منشآت البيوت المحمية والمشائل من حد الأرض على الواجهات الأخرى المغطاة على جدار أو ممر مشاة أو أي منطقة سكنية أو تجارية أخرى مسافة لا تقل عن ٦ أمتار (سنة أمتار) .
- ب- يترك مبنى السكن الخاص ومسكن المزارعين من حد الملكية على الواجهات الأخرى مسافة لا تقل عن ٦ أمتار (سنة أمتار) .
- ج- لا يقل الارتداد الجانبى أو الخلفى لمنشآت الحظائر والأسطبلات عن ١٥ متراً (خمس عشرة متراً) من حد الأرض الجانبى أو الخلفى .

الارتفاعات :

- ١- لا يزيد ارتفاع المسكن الخاص على طابقين ويحد أقصى قدره ١٠ أمتار (عشرة أمتار).
- ٢- لا يزيد ارتفاع المكتب أو غرف الحارس ومسكن المزارعين والمضخات والمخازن على طابق واحد ويحد أقصى قدره ٤ أمتار (أربعة أمتار) .

اشتراطات خاصة :

يجب أن تتبع الاشتراطات والمواصفات العامة التي تصدرها وزارة الإسكان والبلديات والبيئة (شئون البلديات) ووزارة الأشغال والزراعة لإنشاء حظائر الأبقار واسطبلات الخيول ومزارع الدواجن وغيرها من أنشطة الإنتاج الحيوانى والزراعى وكذلك الاشتراطات المتعلقة بردم قنوات الري والصرف وإزالة النخيل .

الفصل الثانى

المنطقة الزراعية التجارية

١- تعتبر المشروعات الزراعية ذات الطابع التجارى والاستثمارى مشاريع ذات طبيعة خاصة ويسمح فيها بالاستعمالات التالية :

- أ- الأنشطة الترفيهية .
- ب- إقامة البيوت البلاستيكية والمشائل وأنشطة الإنتاج النباتى .
- ج- تربية الحيوانات الصغيرة والطيور للأغراض الشخصية .
- د- إقامة مزارع للدواجن وحظائر الأبقار والأسطبلات .
- هـ- مزاولة الأنشطة الاستثمارية الزراعية المتعلقة بالمجالات الزراعية والحيوانية .

٢- يتطلب الترخيص لهذه المشروعات الحصول على موافقة وزارة الأشغال والزراعة حسب المواصفات المعتمدة لديها وذلك بعد الحصول على صلاحية الموقع من الناحية التخطيطية من قبل وزارة الإسكان والبلديات والبيئة والتنسيق مع الجهات المختصة .

الباب السابع
الشروط العامة

بالإضافة إلى الاشتراطات التنظيمية التي نص عليها في اللائحة التنفيذية للمرسوم بقانون رقم (٣) لسنة ١٩٩٤ بشأن تقسيم الأراضي المعدة للتعمير والتطوير والخاص بتحديد مساحات قطع الأراضي وعروض الطرق والشوارع لكل منطقة تعمرية على حدة الاشتراطات التالية :

- ١- لا يسمح بالتعمير في مناطق الحزام الأخضر .
- ٢- لا يسمح بتعمير الأراضي والملكيكات التي تقل مساحتها عن ٦٠ متر مربعاً (ستين متراً مربعاً) .
- ٣- لا يسمح بالتعمير في المناطق المفتوحة إلا بعد الحصول على موافقة تخطيطية على صلاحية الموقع للتعمير المقترح للمشروعات ذات الطبيعة الخاصة ، وذلك بعد التنسيق مع الجهات المعنية بالتعمير وتشتمل هذه المناطق على :
 - أ) الأراضي التي تحتوي على ثروات طبيعية أو مصادر للحياة البحرية .
 - ب) المحاجر .
 - ج) الممرات المائية أو الهضاب أو الوديان .
 - د) المعالم الأثرية التاريخية .
 - هـ) المدائن .
 - و) الأراضي المخصصة للاستعمالات الخاصة .
 - ز) الأراضي المخصصة للاستعدادات العمرانية المستقبلية .
 - ح) الأراضي البرية التي لم يتم تعميمها .
 - ط) الأراضي المعمورة بالمياه .
 - ي) الأراضي ذات المناسيب المرتفعة .
 - ك) الأراضي المحيطة بمزارع الدواجن حسب المواصفات المعتمدة لدى وزارة الأشغال والزراعة .

مشروعات الخدمات الاجتماعية والمرافق العامة :

يسمح في المناطق المخصصة للخدمات والمرافق العامة بالمخططات المعتمدة أو بخرائط تحديد مناطق التعمير في الدولة بمشروعات الخدمات التعليمية والصحية والرياضية والاجتماعية والدينية والمرافق العامة وغيرها وذلك بشرط الحصول على موافقة تخطيطية على صلاحية الموقع للتعمير المقترح من وزارة الإسكان والبلديات والبيئة .

مناطق المشروعات ذات طبيعة خاصة :

تحدد خرائط التعمير في الدولة مناطق المشروعات ذات الطبيعة الخاصة على أن يتم الحصول على موافقة تخطيطية بالاشتراطات التنظيمية للتعمير حسب ما تتطلبه طبيعة كل مشروع .

مشروعات ذات طبيعة خاصة :

يسمح بالمشروعات التعميرية ذات الطبيعة الخاصة بعد الحصول على موافقة تخطيطية على صلاحية الموقع للتعمير من وزارة الإسكان والبلديات والبيئة على أن يتم التنسيق مع الجهات المختصة . ويجوز للجهات المختصة الطلب من المسالك دراسة مبدئية لتأثيرات الاستعمالات المقترحة على الاستعمالات المعتمدة بالمنطقة وشبكة الحركة والمرافق والخدمات .

اللجان ذات العلاقة :

١- لجنة الواجهات : يصدر وزير الإسكان والبلديات والبيئة القرارات الوزارية الخاصة بتشكيل لجنة الواجهات تضم ممثلين من الجهات المختصة بالتعمير والتي يمكن لها أن تضع الأسس التي تساهم في تطوير الواجهات القائمة والتنسيق بين وجهات المباني الجديدة وبينها والإبقاء بالطابع المعماري والعمراني للمناطق التعميرية المختلفة .

٢- لجنة دراسة طلبات المشروعات ذات الطبيعة الخاصة : يصدر وزير الإسكان والبلديات والبيئة قراراً وزارياً بتشكيل لجنة لدراسة طلبات المشروعات ذات الطبيعة الخاصة .

مادة -١٠٩-

التعمير على حدود الطرق الرئيسية :

يسمح بالتعمير على حدود الطرق الرئيسية وفقاً للمخططات العمرانية والقرارات المعتمدة من وزير الاسكان والبلديات والبيئة والتي تحدد المنطقة التعميرية المخصصة لكل منها على أن يرتد البناء إلى خط البناء الموضح بهذه المخططات أو القرارات . كما توضح هذه المخططات والقرارات عمق البناء المسموح به مقاساً من محور الطريق ومع تحديد الاشتراطات التنظيمية للتعمير على تلك الطرق .

مادة -١١٠-

على وزير الاسكان والبلديات والبيئة عرض جميع الحالات التي لم ترد نصوص بشأنها في هذه الاشتراطات على اللجنة الوزارية للمرافق العامة لاصدار ما يتناسب بشأنها من توصيات .

Subsequently based on these regulations zoning maps after discussion in above mentioned committee for major urban areas were approved and published. Following zoning map of Manama was signed by H.E. the Minister on 20.12.1998 as Ministerial Decree No. 9/1998 and was published in official Gazette on 23.12.1998.



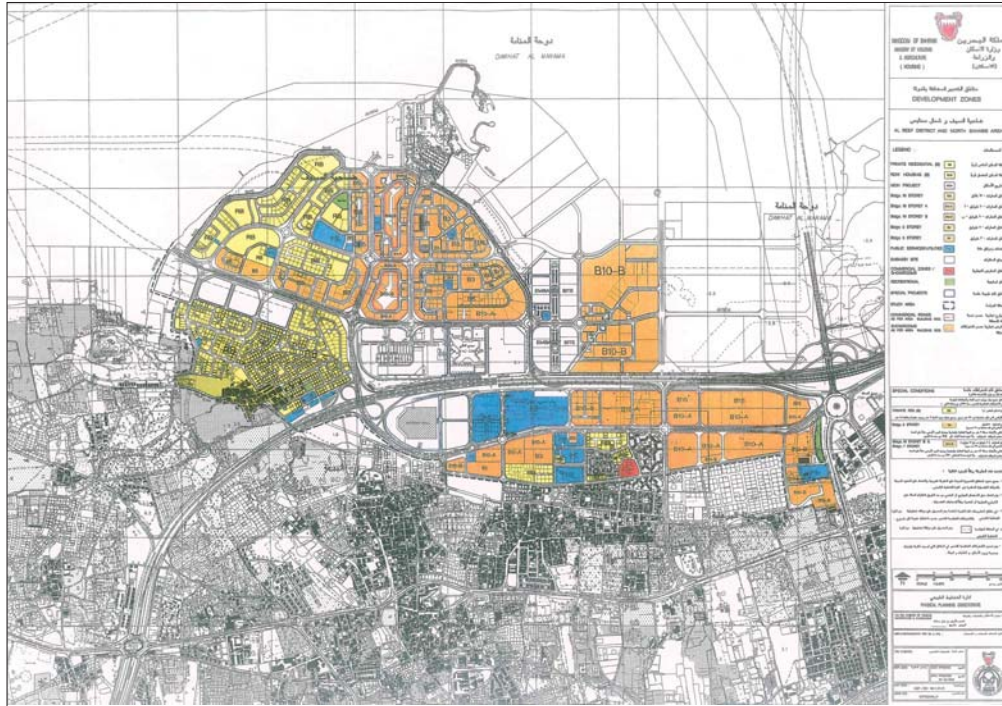
Manama Zoning Map of 1998

Under above mentioned Ministerial Decree following zoning map of Muharraq island was also approved and published in official gazette on 23 December 1998.



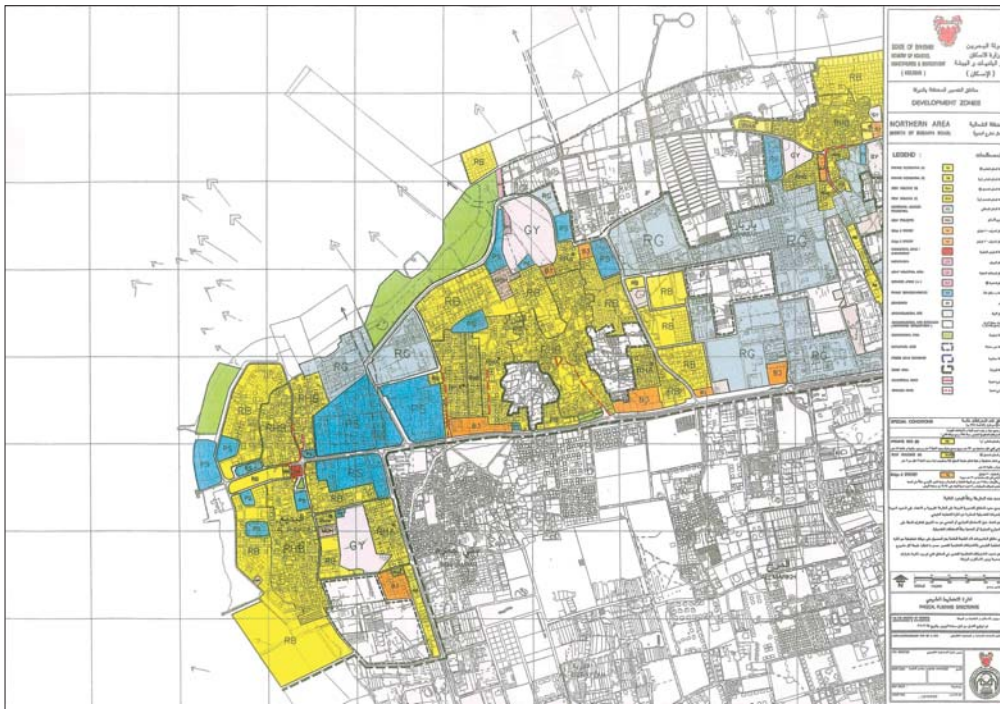
Zoning Map of Muharraq Island, 1998

Under above mentioned Ministerial Decree following zoning map of Al Seef District and North Sanabis Area was also approved and published in official gazette on 23 December 1998.



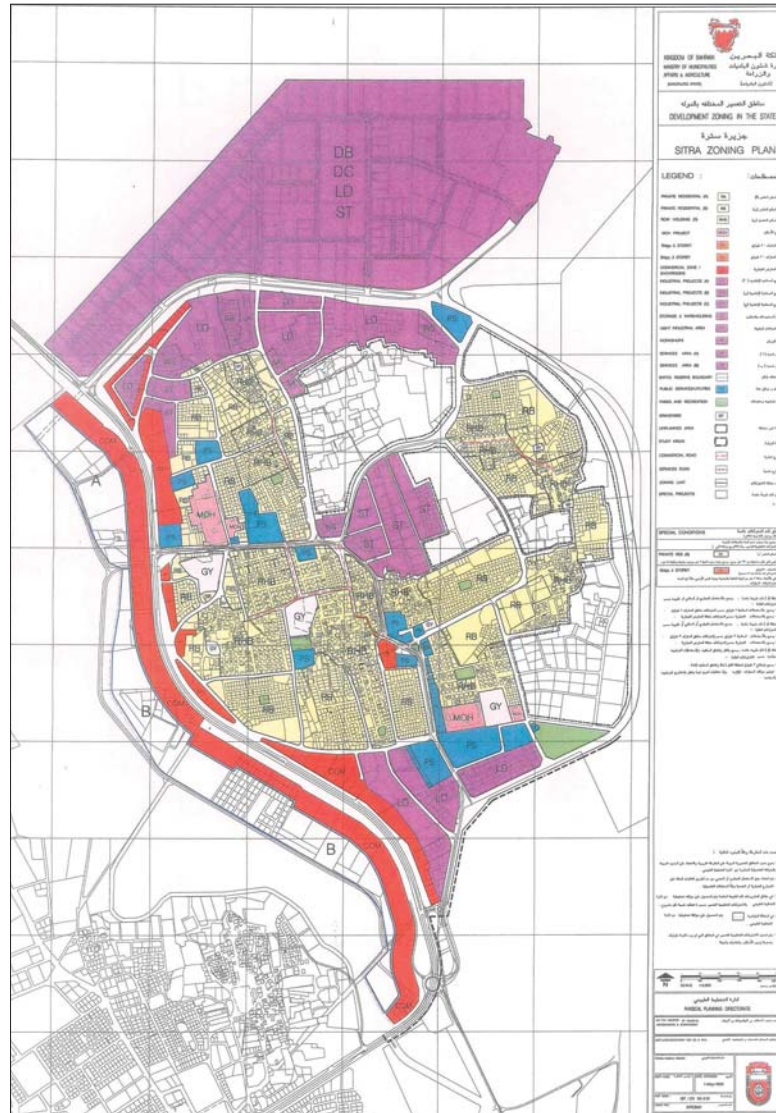
Zoning Map of Al Seef District and North Sanabis Area, 1998.

Zoning map for the area at north of Budaiya road from the junction of Sk Khalifa Bin Salman highway with Budaiya road up to Budaiya village including Budaiya village was prepared, finalized after discussion in the Committee and got approval of H.E. The Minister and under Ministerial Decree No.4 of 2001 on 14.4.2001 was published in official gazette on 25.4.2001.

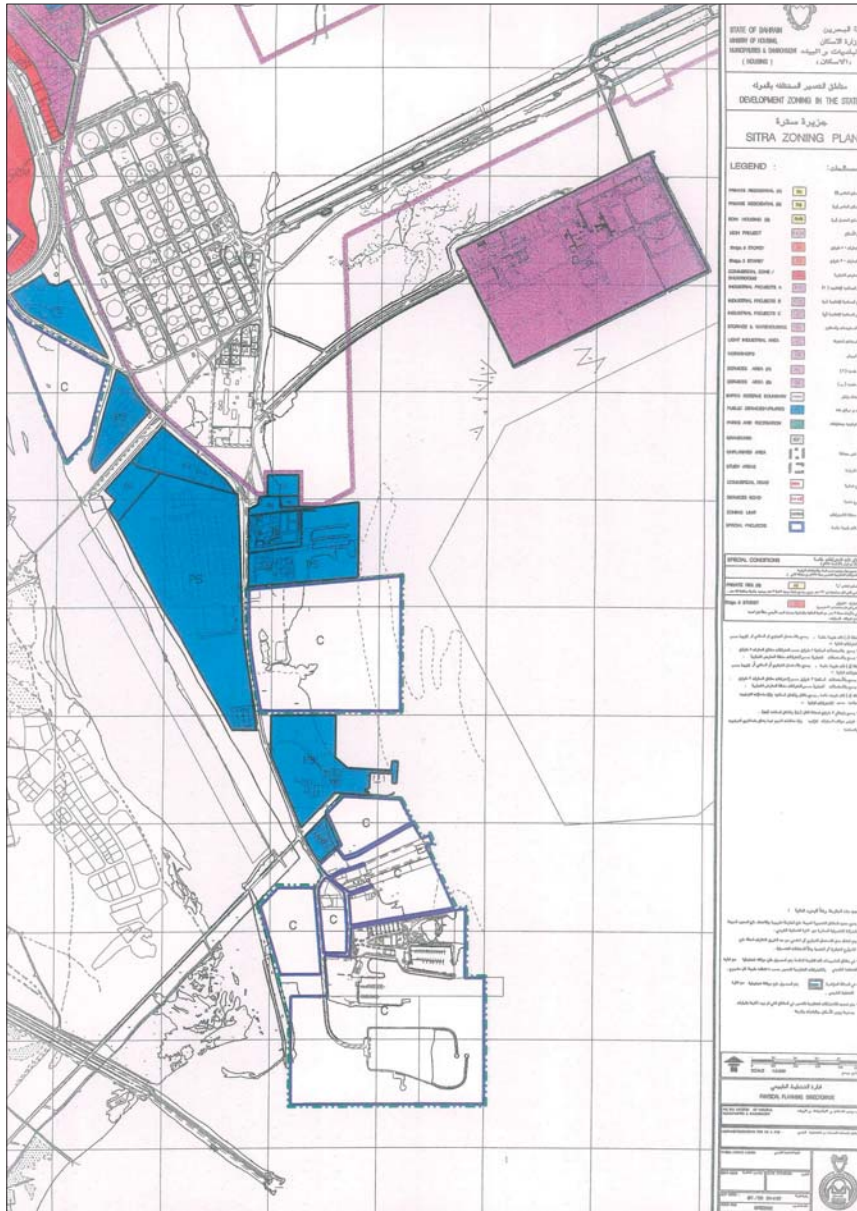


Zoning Map of Northern area (North of Budaiya Road) – 2001

Zoning map of Sitra was approved under Ministerial Decree No. 6 of 1999 and was published in official gazettee on 19 May, 1999.

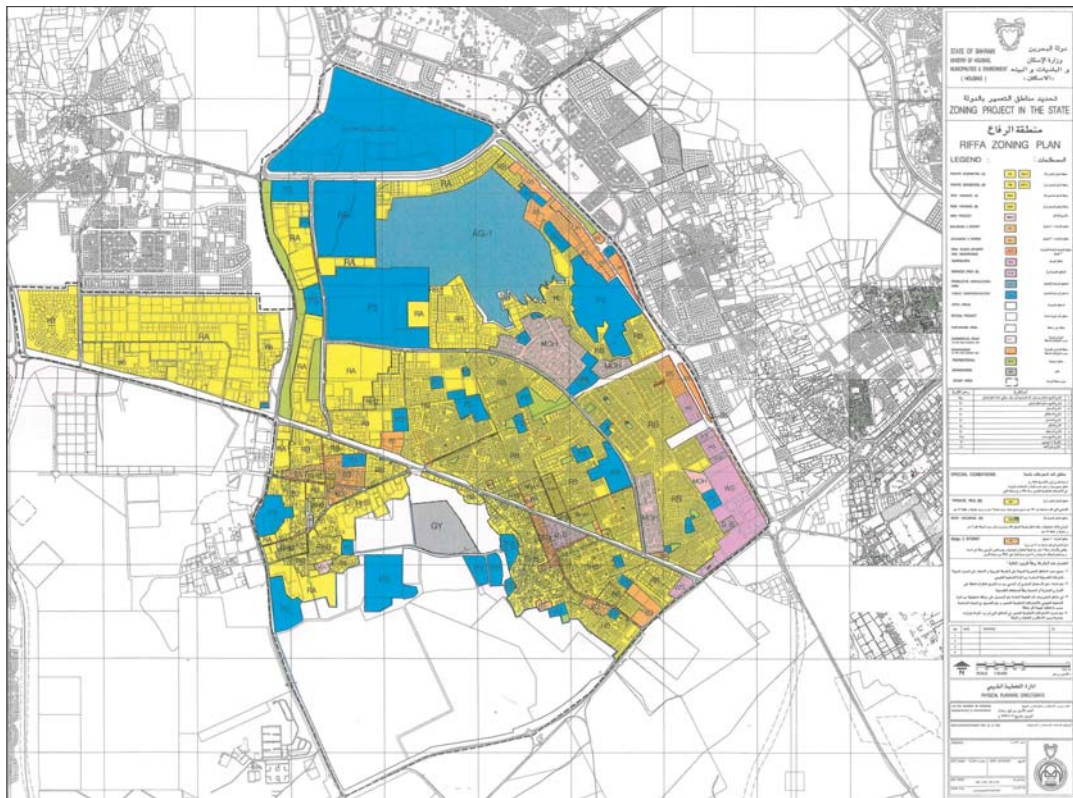


Sitra Zoning Map – 1999



South - Sitra Zoning Map - 1999

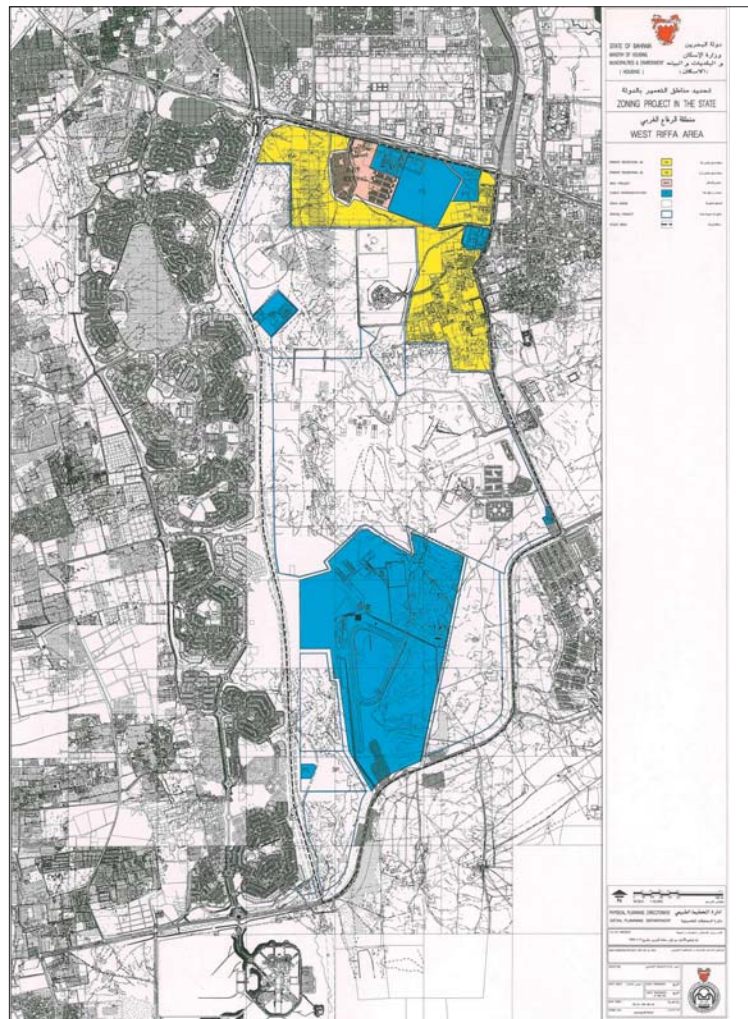
Zoning Plan for Riffa area was approved by H.E. The Minister on 2.10.1999 and was published in the official gazette.



Riffa Zoning Map – 1999

West Riffa Area Zoning Plan

Zoning Plan for this area was approved by H.E. The Minister on 2.10.1999 and was published in the official gazette.



West Riffa area zoning map 1999

Much of the country was zoned off under zoning regulations of 1998 as mentioned above. Densities in 1998 regulations generally are much higher than in regulations of 1979. I was not involved in framing zoning regulations of 1998 and in the preparation of zoning maps following these regulations. These adopted higher densities especially for Manama and Seef areas cannot be matched with capacities of roads, physical and social infrastructure available in these areas' master plans.

Whenever I had the chance and the opportunity, I managed to substantially contribute towards adopting and implementing basic planning principles in Bahrain from joining the Physical Planning Unit (later changed to Physical Planning Directorate and now named Urban Planning Affairs) in early 1971 till my retirement in 2009. I followed textbook principles in planning and gave priority to safeguarding the interest of the community and country over personal and vested interests. My focus was to recommend substantial planning issues for the higher authorities, to take decision on and advice based on fundamental planning principles to achieve conceivable best use of land for development.



Author receiving outstanding performance award from H.E. Sheikh Khaled Bin Abdulla Al Khalifa, Minister of Housing, 1994. Similar awards were given to him 9 times during his service career in Ministry of Housing from 1975 to 2002

About the Author

Mohammad Noor Al Nabi graduated in Civil Engineering from the University of Engineering and Technology, Dhaka in 1962 and got Master of Civic Design (M.C.D) degree from the world's first university school of town planning (Department of Civic Design) at the University of Liverpool (U.K) in 1965. He has qualified as Member in 1968 and as Fellow of British Royal Town Planning Institute (FRTPI) in 1983. He worked in Runcorn Development Corporation in UK in 1965 and in Dhaka Improvement Trust as Assistant Town Planner from 1966 to 1971. He worked in Bahrain in Physical Planning from 1971 to 1975 under H.E.SK Abdulla Bin Khalid Al Khalifa, the Minister of Municipalities and Agriculture. After that he worked under H.E. SK Khalid Bin Abdulla Al Khalifa the Minister of Housing from 1975 to 2002 as Chief Town Planner, Town Planning Advisor and from time to time as Acting Director of Physical Planning. He retired from Bahrain Government Service in October, 2009.



Author at the time of his retirement from Bahrain Govt. Service (Oct, 2009)

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Authors Acknowledgement

I had the intention to write a book about the contribution of Physical Planning (Town and Country Planning) towards the development of Bahrain since the mid 1980's. I got the inspiration to start this work from His Excellency Sheikh Khalid Bin Abdulla Al Khalifa, The Deputy Prime Minister of Kingdom of Bahrain when I visited him at his office in early 2009. In the course of my discussion H.E. mentioned the need for such a book that documents and highlights the work accomplished in Physical Planning & Urban Development of the Kingdom.

After completing the book I showed the book to H.E. Sheikh Khalid Bin Abdulla Al Khalifa who then kindly sent a letter to H.E. Sheikha Mai Bint Mohammed Al Khalifa, the then Minister of Culture and Information in February 2010 requesting for the book to be published.

Due to Ministerial changes in the Government, I finally got the approval to publish this book in January 2012. I am grateful to Dr. Hamad Hassan Shams who introduced me to Mr. Nawaf Mohammed Al Mouada the General Director of Press and Publications following the change of the Minister in the Information Authority. As per the suggestion of Mr. Nawaf I wrote a letter to H.E. Sheikh Fawaz Bin Mohammed Bin Khalifa Al Khalifa, President of Information Affairs Authority requesting His Excellency's approval for Information Affairs Authority to publish the book. After reviewing the recommendations and approvals from the related government departments, His Excellency kindly approved my request.

I am also grateful to Information Affairs Authority's Mr. Mohammed Saeed Mohammed, Mr. A. Majeed Ali Hajeeh Mohamed for their help and kind support.

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