Chapter 4   Qatana New City Planning

4.1   Concepts of Qatana IT City

4.1.1   Fundamental idea

The Qatana IT city development should be a bold initiative to be taken by the Government aiming to revolutionize the business operations in Syria, supported by the integration of ground-breaking cyber-laws and outstanding information infrastructure in an attractive physical environment.   The Qatana city will be shaped into the Middle East's technology center, where innovative IT developers and users can harness the Syria's unique competitive advantages that arise from its geopolitical position and the committed leadership.

4.1.2   Ideal IT environment to be created

The Qatana IT city is planned on a land of 2,950ha west of the Syria's capital and business center.   The land will be dedicated to creating an ideal environment for companies wishing to develop, distribute and employ IT products and services.   The Qatana IT city shall bring together the following three key elements:

(1)   A high capacity global telecommunications and logistics infrastructure with a digital optic fiber backbone of 2.5-10 gigabits,

(2)   New IT promotion policies and cyber-laws designed to enable and encourage electronic commerce, facilitate the development of IT applications, and position Syria as the leader in intellectual property protection, and

(3)   An attractive living environment where mega infrastructure projects are integrated with green reserves to create pleasant and creative environment for intellectual activities.

To expedite the Qatana IT city development, the Government should initiate several flagship applications by 2015.   They may be related to: (1) electronic government, (2) tele-medicine, (3) distant education, (4) electronic commerce, (5) electronic certification, and (6) intellectual transport system.   In order to attract excellent IT companies to the Qatana city, the Government should offer incentives such as tax exemption up to 10 years, and/or investment tax allowances.

4.1.3   Superior telecommunications and logistics

A high capacity fully digital telecommunications infrastructure should support the Qatana IT city to ensure the internationally highest standards for capacity and reliability at the competitive prices.   The telecommunication network will be part of integrated logistics system enabling rapid distribution of products along land, air and sea links.   It consists of the following:

(1) fiber-optic backbone of 2.5-10 gigabits per second capacity, sufficient to support virtual boardrooms, remote CAD/CAM operations, and interactive internet broadcasting,

(2) high capacity links to international centers, ensuring free and fast flow of information, products and services between companies at the Qatana IT city and their overseas partners and clients,

(3) open standards, high speed switching and multiple protocols including ATM to bring power and flexibility to the development of multi-media applications,

(4) best-in-class performance guarantees including installation of telephone services and opening of e-addresses by internet providers within 24 hours, and 99.9% service availability,

(5) competitive telecommunications pricing with flat rates, low pricing for basic network services compared with other regional centers, and open-entry policy for value-added network services, and

(6) integration into new transportation projects such as the Damascus-Quneitra highway and the proposed new outer ring road as well as the state-of-the-art new transport mode within the Qatana city.

4.1.4 E-commerce enabling policies and cyber-laws

Syria should transform its legal and regulatory system in its move into the information age. The first step includes drafting of the IT Act to establish an up-to-date communications framework. It may be enacted by 2013 along with the following five cyber-laws:

(1) Digital signature cyber-law enabling business and communities to use electronic signatures for legal and business transactions,

(2) IT intellectual property cyber-law giving IT developers full intellectual property protection through on-line registration of works, licencing and royalty collection,

(3) Computer crime cyber-law providing law enforcers with a framework that defines illegal access, interception and use of computers and information, standards for service providers, and potential penalties for infraction,

(4) Telemedicine development cyber-law empowering medical practitioners to provide medical services from remote locations using electronic medical data and knowledge so that their treatment will be covered under insurance schemes, and

(5) Electronic government cyber-law allowing politicians, public servants and the public to communicate electronically with each other using established and secure formats and standards.

4.1.5 Six flagship applications

Six IT industries shall be targeted for development by 2013 to catalyze the rapid

development of the Qatana IT city and accelerate the Syria's drive towards the information age. These flagship applications should be initially implemented by the Government in partnership with private companies.

(1)   Electronic government

The Government city proposed by the Master Plan would be the new seat for the Government, and municipal administrations would also adopt advanced IT technologies to perform their functions.   The Government should take the initiative to realize a paperless administration by 2015. Eventually, most inter-departmental communications amd interactions with the public will be conducted via electronic and multi-media channels, including registration of births and marriages, issuance/renewal of driving licenses, shared database, digital signature facilities and mobile offices.

The application will involve linking up to government offices a variety of IT services, and training government employees to the use of IT technologies effectively, as well as providing links for businesses and the general public.

(2)   Smart school and IT literacy enhancement

Syria should be committed to ensuring that all the schools have internet access within five years to expedite IT literacy drive. Model smart schools should be developed in the Qatana IT city. IT companies in the Qatana city should develop software applications, curricula, course materials teachers and training staff, and infrastructure.

(3)   Telemedicine

The telemedicine application would incorporate IT technologies into the Syria's health care system. Its key elements include distance consultation, diagnosis and treatment, paperless patients' records, and a national electronic medical network. R&D institutes in the Qatana city should focus on developing new applications to position Syria as a center of excellence in telemedicine.   The flagship hospital should start its operation in 2015, following pilot application of advanced IT system in other existing hospitals.

(4)   IT enterprise and academic zones

The Qatana IT city shall accommodate IT enterprise and academic zones at the heart of the city. The collaboration between private enterprises and universities would be essential to ensure competitive edge in the IT world. World class universities shall be invited with their IT departments to establish in the city together with new IT related departments to be established in Syria's excellent universities.

(5)   Office zone for Middle East headquarters

Many companies are expected to use the Qatana IT city to establish their regional center in the Middle East to control, monitor and deliver operational supports to their regional networks of design, manufacturing and distribution. Eventually, these IT links will enable such IT companies to have real time control of product development and customization, manufacturing, marketing and distributin operations worldwide from a central location of Qatana.

(6)   International marketing center

Supported by the cyber-laws, policies and infrastructure, IT companies in the Qatana city can serve their customers in the fast growing Middle East market. The Qatana city will serve as an excellent platform for companies' customer service operations such as telemarketing, "backroom" data processing, and local customization of marketing.

4.2   Existing Site Conditions

4.2.1   Land use and transportation

The site selected for the Qatana IT city is currently not used for any urban or rural purposes. There exist only a few villages nearby. The dominant land classification is "range land" (Figure 4.1). The site is expected to have good access by transport infrastructure. The proposed outer ring road will pass through the eastern side of the city, and the Damascus-Quneitra road under design will also pass by the city. At present, the access to the site is by the road from the existing Qatana city to the Artouz junction.
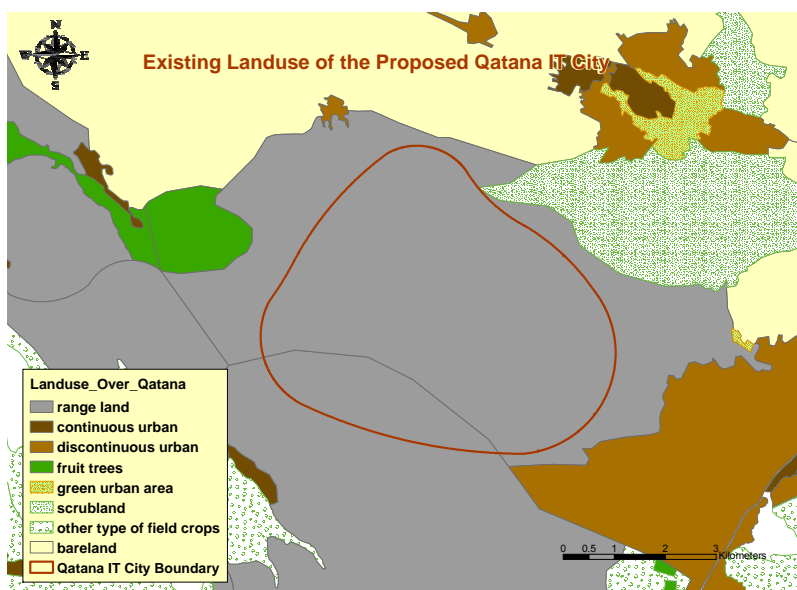
Source: Prepared by JICA Study Team

Figure 4.1 Existing Land Use of the Proposed Qatana IT City

4.2.2 Topography

The site is located at the altitude of 900-1,100m above the sea level, increasing generally from the east to the west. The slope is smaller than 10 degrees gradient, which is considered suitable for urban and industrial development (Figure 4.2 and Figure 4.3).
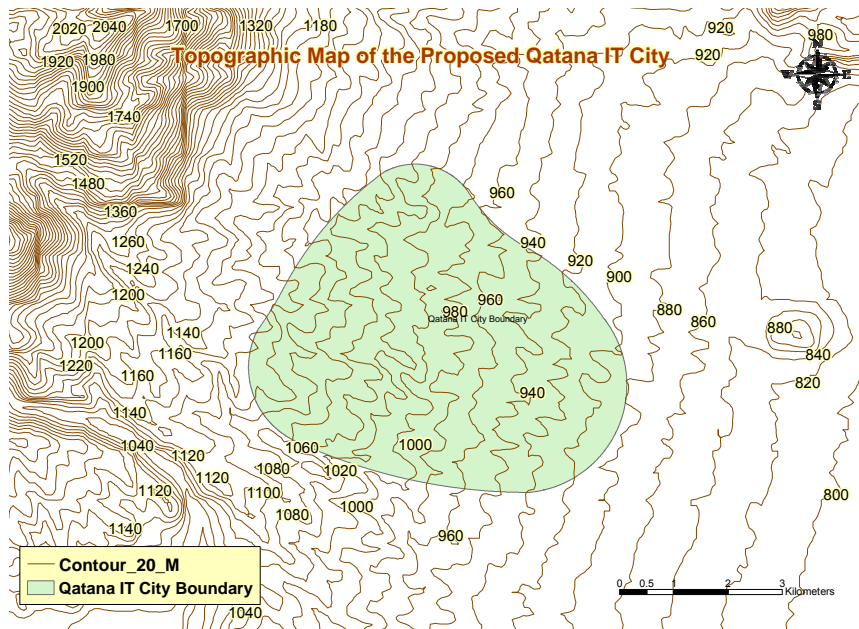
Source: Prepared by JICA Study Team

Figure 4.2 Topography of the Proposed Qatana IT City
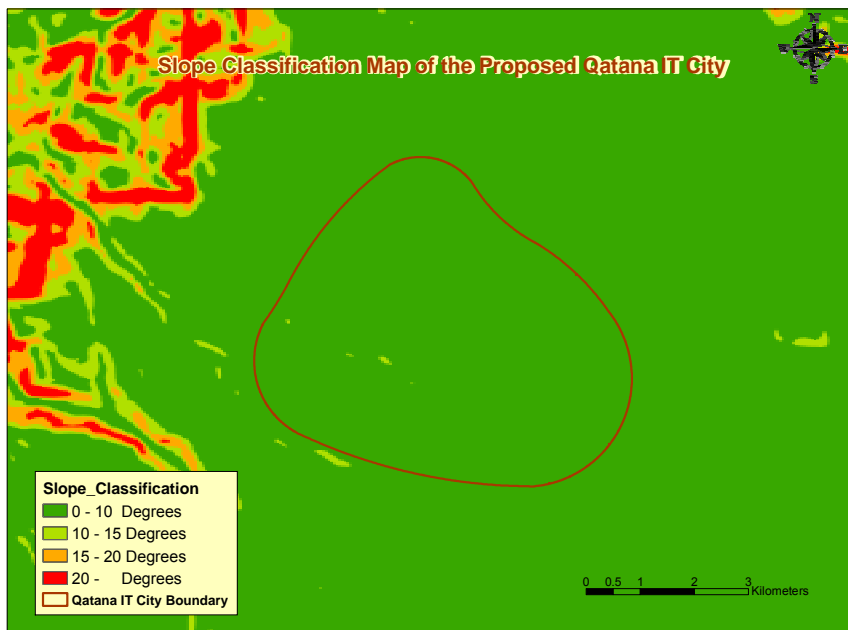
Source: Prepared by JICA Study Team

Figure 4.3 Slope Analysis of the Proposed Qatana IT City

4.2.3 Geology and soil conditions

(1) Geology

The Dead Sea fault line extends from the Dead Sea up to the collision zone in the southern Turkey, but it does not pass through the site. There exist no fault lines in and around the site.

(2) Soil conditions

The soil in the Qatana mantika belongs generally to aridisol, typical soil type susceptible to desertification. It includes in some parts soluble salts, gypsum, calcium and carbonate. The cross section of the soil shows the presence of clay, lime or gypsum layers that absorb with alkaline saturation (Figure 4.4). It is characterized by flint stones, which spread over the soil surface (Figure 4.5).

As a highly compacted coarse grained soil, the SNIP standard for basement and foundations recommends a soil bearing capacity of 4.5kg/cm^2. Rocks with diameters larger than 70cm could be encountered at the depth of 2.0m underground.

Source: Photo taken by JICA Study Team

Figure 4.4 Typical Soil Profile of the Project Site

Source: Photo taken by JICA study Team

Figure 4.5 Typical Soil Surface of the Project Area

4.2.4 Landscape

The site is almost flat, allowing a 360 degree panoramic view (Figure 4.6). The beautiful landscape can be enjoyed with the Sheikh mountains to the west and the Halamon mountains to the north (Figure 4.7). The snow-capped views of the mountains during the winter season give the original name of Qatana. Some forested spots scatter at the foot of the mountains, where springs are found derived from the Sheikh mountains.

Source: Photo taken by JICA Study Team

Figure 4.6 Typical View of the Project Site

Source: Photo taken by JICA Study Team

Figure 4.7 A View of Sheikh Mountains from the Project Site

4.2.5 Land ownership

The land of the future Qatana IT city is owned dominantly by the Ministry of Agriculture, while a very small portion is privately owned with 36.4ha or only 1.2% of the total land area (Figure 4.8). The land ownership shoul be examined in more detail in the subsequent stage.
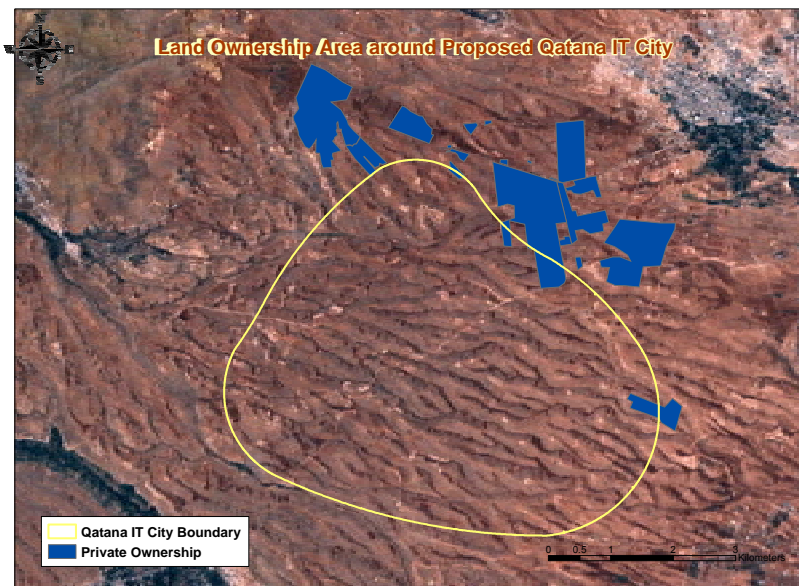
Source: Prepared by JICA Study Team

Figure 4.8 Landownership of the Proposed Qatana IT City

4.3 Land Development Planning

4.3.1 Development framework and phasing

(1) Assumptions and framework

It will take a few decades to develop the Qatana city in full scale with its 3,000ha land.

The construction period is divided into three phases: Phase 1 for 2008-15, Phase 2 for 2016-29, and Phase 3 for 2021-25. The overall land use framework is given in Table 4.1. The planned population is 200,000 and the employment is 140,000 in 2025.

The following are reflected in the phasing of development.

1) The proposed outer ring road and Damascus-Quneitra road will be completed after Phase 1.

2) The Phase 1 development should have good access to the existing road to connect to Artouz and Qatana City.

3) In the early stage, residential developments will be relatively more feasible than commercial development as shopping facilities need population around them in order to be feasible.   Residential developments can depend on the service facilities of the adjacent city of Qatana or Damascus at the early stage.

4) The mixed use development with dominant residential use will be more feasible earlier than the mixed use mainly for commercial use.

5) Since the commercial core complex needs a large hinterland, commercial core zones should better be completed in Phase 3.

6) Since universities will have to play a magnet function to attract IT enterprises, one academic block should be completed in Phas 1.   Although it seems to be a difficult task to attract a university, it should be done.

Table 4.1 Preliminary Plan for Qatana IT City

Land area	2,950ha		
Planned population	200,000		
Planned employment	140,000		
Land use		ha	%
IT enterprise zone	11 blocks	477	16
Commercial core	2 blocks	57	2
Commercial district	9 blocks	197	7
Academic zone	2 blocks	191	6
Urban green parks	5 parks	182	6
Low density residential area	4 blocks	477	16
Medium density residential area	14 blocks	589	20
High density residential area	10 blocks	271	10
Mixed use area (dominantly residential)	4 blocks	114	4
Mixed use area (mainly commercial)	2 blocks	92	3
Civic center zone	4 blocks	7	0.2
Trunk roads		283	10

(2)   Development phasing

Based on the considerations above, the development of the Qatana IT city is phased as summarized in Table 4.2. The Phase 1 development would cover the land area of some 800ha as the flagship development mentioned in Section 4.1 (Figure 4.9). The population will be

47,000 and the number of workers at workplaces about 45,000. Phase 1 represents 27% of the land, 23% of the planned population and 32% of the total employment generation.

The Phase 2 development will cover additional 1,100ha (Figure 4.10). The population will reach 139,000 or 70% of the planned total and the employment 102,000 or 73%. The Phase 3 development will complete the Qatana IT city with additional 1,050ha land, additional population of 60,518 and employment of 38,145 (Figure 4.11).

Details of the development by 2025 are given in Table 4.3. These estimates should be regarded as preliminary, and many in-depth studies should be conducted to refine and modify the phased development plan.

Table 4.2 Phasing of Qatana IT City Development

Name of zone	Area (ha)	1st phase	2nd phase	3rd phase
IT Enterprise Zone 1	37.88	●		
IT Enterprise Zone 2	40.05	●		
IT Enterprise Zone 3	57.73	●		
IT Enterprise Zone 4	48.47	●		
IT Enterprise Zone 5	42.33		●	
IT Enterprise Zone 6	41.92		●	
IT Enterprise Zone 7	44.61		●	
IT Enterprise Zone 8	39.19		●	
IT Enterprise Zone 9	40.14			●
IT Enterprise Zone 10	37.60		●	
IT Enterprise Zone 11	47.16			●
Commercial Core Zone 1&2	26.50			●
Commercial Core Zone 3&4	30.32			●
Commercial District 1	27.88			●
Commercial District 2	25.49		●	
Commercial District 3	31.95			●
Commercial District 4	24.85		●	
Commercial District 5	31.64		●	
Commercial District 6	12.94		●	
Commercial District 7	16.70	●		
Commercial District 8	10.27		●	
Commercial District 9	15.49	●		
Civic Center Zone 1,2,3,4	7.11		●	
Academic Zone 1	99.44	●		
Academic Zone 2	91.99		●	
Urban Green Park 1	118.52		●	
Urban Green Park 2	15.75			●
Urban Green Park 3	15.03		●	
Urban Green Park 4	16.66	●		
Urban Green Park 5	16.30			●
Low Density Residential Area 1	83.27			●
Low Density Residential Area 2	153.87			●
Low Density Residential Area 3	147.04			●
Low Density Residential Area 4	104.81		●	
Medium Density Residential Area 1	27.32	●		
Medium Density Residential Area 2	26.81	●		
Medium Density Residential Area 3	28.09	●		
Medium Density Residential Area 4	32.11	●		
Medium Density Residential Area 5	38.16			●

Name of zone	Area (ha)	1st phase	2nd phase	3rd phase
Medium Density Residential Area 6	53.75			●
Medium Density Residential Area 7	41.44			●
Medium Density Residential Area 8	45.95			●
Medium Density Residential Area 9	40.93			●
Medium Density Residential Area 10	44.84			●
Medium Density Residential Area 11	34.62			●
Medium Density Residential Area 12	40.37			●
Medium Density Residential Area 13	43.08		●	
Medium Density Residential Area 14	44.84			●
High Density Residential Area 1	30.75		●	
High Density Residential Area 2	25.57		●	
High Density Residential Area 3	26.34		●	
High Density Residential Area 4	24.56		●	
High Density Residential Area 5	25.50		●	
High Density Residential Area 6	28.88		●	
High Density Residential Area 7	24.91		●	
High Density Residential Area 8	27.25		●	
High Density Residential Area 9	28.47		●	
High Density Residential Area 10	28.47		●	
Mixed Use Zone (Mainly Residential)MR1	27.32	●		
Mixed Use Zone (Mainly Residential)MR2	26.81	●		
Mixed Use Zone (Mainly Residential)MR3	28.09	●		
Mixed Use Zone (Mainly Residential)MR4	32.11	●		
Mixed Use Zone (Mainly Commercial)MXD1	47.56	●		
Mixed Use Zone (Mainly Commercial)MXD2	44.83		●	
Trunk Roads	282.86	●	●	●

Source: Planned by JICA Study Team
Note: shows which phase will be the corresponding construction period for the land block concerned.

Development Zones

- Academic Zone
- Commercial District
- Commercial Core
- Civic center zone
- IT Enterprise zone
- Mixed use (Mainly residential
- Mixed use(commer+res)
- Residential High Density
- Residential Low Density
- Residential Middle Density
- Urban Green Park
- **Road Phase1**

MR2
26.81ha
phase=1

MR1
27.32ha
phase=1

MR4
32.11ha
phase=1

MR3
28.09ha
phase=1

RM2
45.09ha
phase=1

RM1
36.36ha
phase=1

C7
16.7ha
phase=1

C9
15.49ha
phase=1

RM4
37.41ha
phase=1

RM3
43.12ha
phase=1

AZ1
99.44ha
phase=1

IE2
40.05ha
phase=1

IE1
37.88ha
phase=1

IE3
57.73ha
phase=1

MXD1
47.56ha
phase=1

IE4
48.47ha
phase=1

UGP4
16.66ha
phase=1

0   0.5   1   2   3 Kilometers

Source: prepared by JICA study Team

Figure 4.9 Phase 1 Development for Flagship Applications

Development Zones

- Academic Zone
- Commercial District
- Commercial Core
- Civic center zone
- IT Enterprise zone
- Mixed use (Mainily residential)
- Mixed use(commer+res)
- Residential High Density
- Residential Low Density
- Residential Middle Density
- Urban Green Park
- Road Phase 1,2
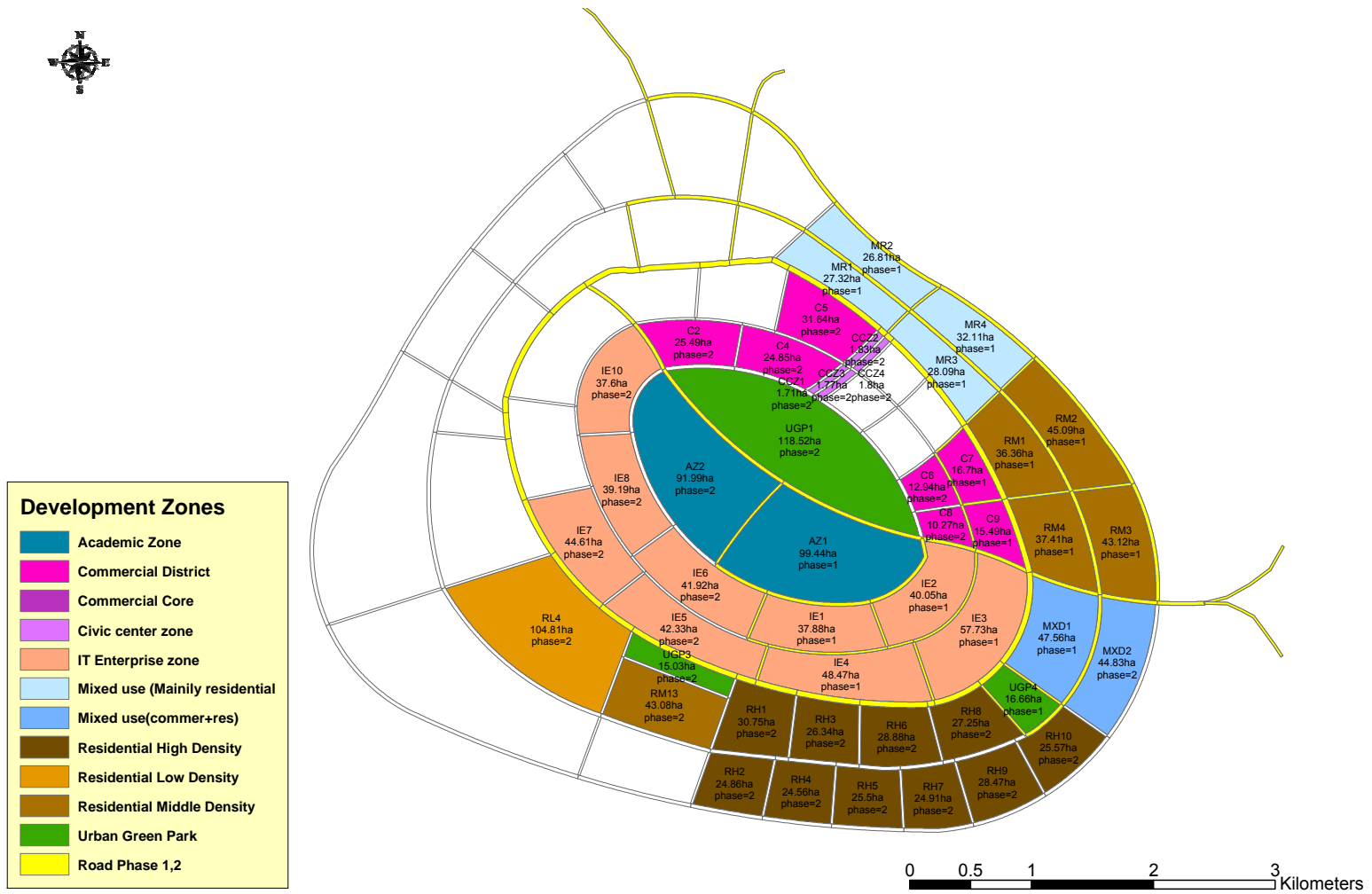
Source: Prepared by JICA Study Team

Figure 4.10 Phase 2 Development

Development Zones

- Academic Zone
- Commercial District
- Commercial Core
- Civic center zone
- IT Enterprise zone
- Mixed use (Mainily residential
- Mixed use(commer+res)
- Residential High Density
- Residential Low Density
- Residential Middle Density
- Urban Green Park
- Road Phase 1,2,3
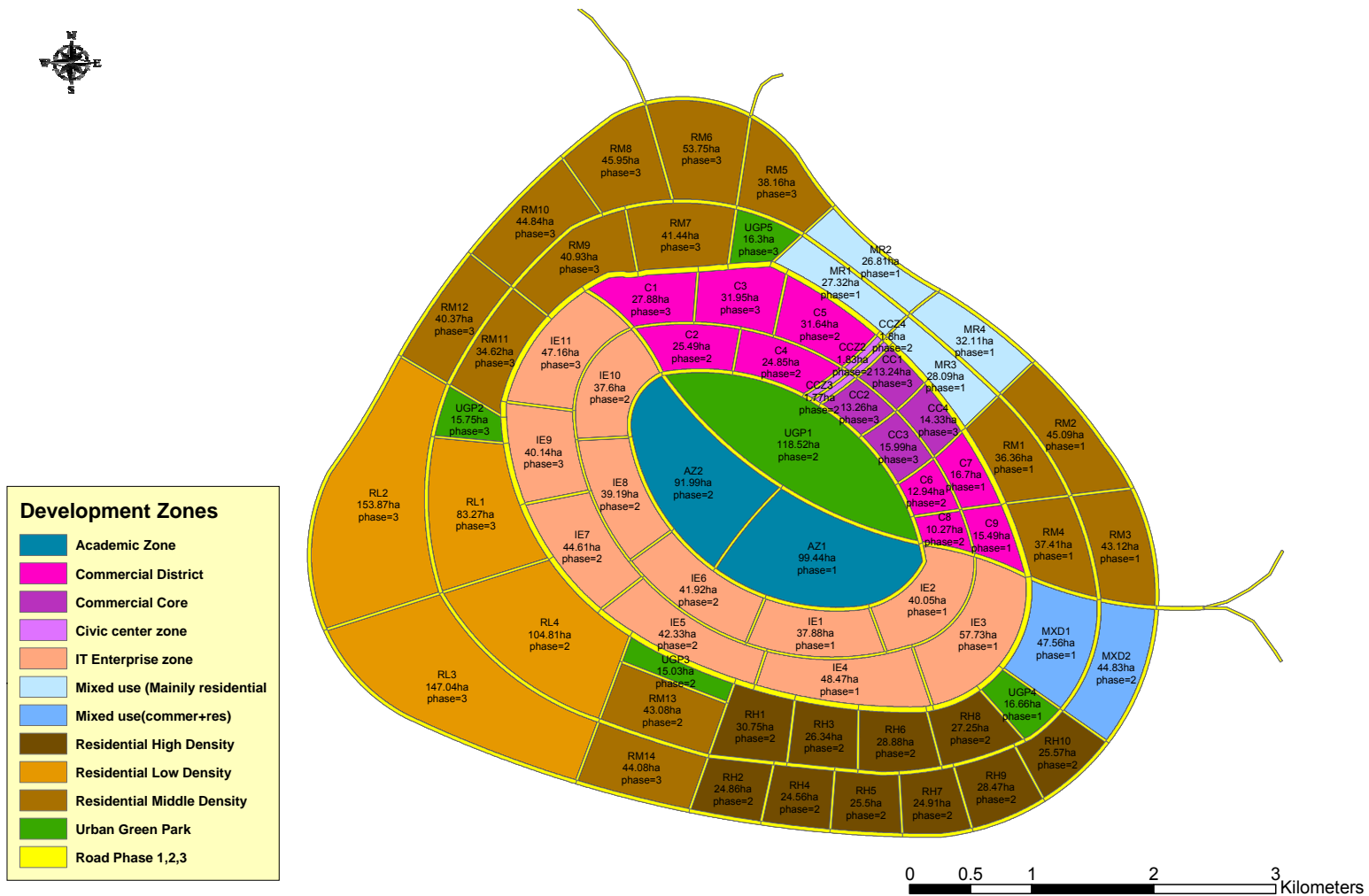
Source: Prepared by JICA Study Team

Figure 4.11 Phase 3 Development

Table 4.3 Development by Zone of Qatana IT City

Zone No.	Land use category	Land Area (ha) Gross	Net	%	Population	Gross population density	Net population density	Number of workers at work place	Density of workers at workplace	Floor area of residential floor(ha)	Floor area of non-residential floor(ha)	Office (ha)	Shopping (ha)	Test/labo (ha)	Factrory/warehouse (ha)	University (ha)	Others (ha)	Total floor area (ha)	Floor area ratio. Realized	Capacity of floor area	Primary industry	Secondary industry	Tertiary industry	Total
		Gross	Net	%	Persons	Persons/ha	Persons/ha	Persons	Persons/ha															
Residential-Low Density		488.99	293.39	16.57%	16,000			0		48.00	0	0	0	0	0	0	0	48.00	16%	40%	0	0	0	0
RL1	Re-Low 1	83.27	49.96	2.82%	2,748	33	55	0	0	8.24	0	0	0	0	0	0	0	8.24	17%	40%	0	0	0	0
RL2	Re-Low 2	153.87	92.32	5.22%	5,235	34	57	0	0	15.71	0	0	0	0	0	0	0	15.71	17%	40%	0	0	0	0
RL3	Re-Low 3	147.04	88.22	4.98%	4,558	31	52	0	0	13.67	0	0	0	0	0	0	0	13.67	15%	40%	0	0	0	0
RL4	Re-Low 4	104.81	62.89	3.55%	3,459	33	55	0	0	10.38	0	0	0	0	0	0	0	10.38	17%	40%	0	0	0	0
Residential-Middle Density		589.19	353.51	19.97%	64,680			5,600		194.04	11.20	2.24	8.96	0	0	0	0	205.24	58%	80%	0	0	5,600	5,600
RM1	Re-Middle 1	36.36	21.81	1.23%	3,999	110	183	327	9	12.00	0.65	0.13	0.52	0	0	0	0	12.65	58%	80%	0	0	327	327
RM2	Re-Middle 2	45.09	27.06	1.53%	5,005	111	185	406	9	15.02	0.81	0.16	0.65	0	0	0	0	15.83	58%	80%	0	0	406	406
RM3	Re-Middle 3	43.12	25.87	1.46%	4,743	110	183	388	9	14.23	0.78	0.16	0.62	0	0	0	0	15.01	58%	80%	0	0	388	388
RM4	Re-Middle 4	37.41	22.45	1.27%	4,078	109	182	337	9	12.23	0.67	0.13	0.54	0	0	0	0	12.91	58%	80%	0	0	337	337
RM5	Re-Middle 5	38.16	22.89	1.29%	4,159	109	182	343	9	12.48	0.69	0.14	0.55	0	0	0	0	13.16	57%	80%	0	0	343	343
RM6	Re-Middle 6	53.75	32.25	1.82%	5,803	111	185	521	10	17.41	1.04	0.21	0.83	0	0	0	0	18.45	57%	80%	0	0	521	521
RM7	Re-Middle 7	41.44	24.86	1.40%	4,558	110	183	373	9	13.67	0.75	0.15	0.60	0	0	0	0	14.42	58%	80%	0	0	373	373
RM8	Re-Middle 8	45.95	27.57	1.56%	5,055	110	183	460	10	15.17	0.92	0.18	0.74	0	0	0	0	16.09	58%	80%	0	0	460	460
RM9	Re-Middle 9	40.93	24.56	1.39%	4,502	110	183	409	10	13.51	0.82	0.16	0.65	0	0	0	0	14.32	58%	80%	0	0	409	409
RM10	Re-Middle 10	44.84	26.90	1.52%	4,977	111	185	448	10	14.93	0.90	0.18	0.72	0	0	0	0	15.83	59%	80%	0	0	448	448
RM11	Re-Middle 11	34.62	20.77	1.17%	3,773	109	182	312	9	11.32	0.62	0.12	0.50	0	0	0	0	11.94	58%	80%	0	0	312	312
RM12	Re-Middle 12	40.37	24.22	1.37%	4,440	110	183	404	10	13.32	0.81	0.16	0.65	0	0	0	0	14.13	58%	80%	0	0	404	404
RM13	Re-Middle 13	43.08	25.85	1.46%	4,739	110	183	431	10	14.22	0.86	0.17	0.69	0	0	0	0	15.08	58%	80%	0	0	431	431
RM14	Re-Middle 14	44.08	26.45	1.49%	4,849	110	183	441	10	14.55	0.88	0.18	0.71	0	0	0	0	15.43	58%	80%	0	0	441	441
Residential-High Density		270.70	162.42	9.18%	72,000			6,000		216.00	12	2.4	9.6	0	0	0	0	228.00	140%	200%	0	0	6,000	6,000
RH1	Re-High 1	30.75	18.45	1.04%	8,180	266	443	681	22	24.54	1.36	0.27	1.09	0	0	0	0	25.90	140%	200%	0	0	681	681
RH2	Re-High 2	25.57	15.34	0.87%	6,802	266	443	563	22	20.41	1.13	0.23	0.90	0	0	0	0	21.53	140%	200%	0	0	563	563
RH3	Re-High 3	26.34	15.80	0.89%	7,006	266	443	579	22	21.02	1.16	0.23	0.93	0	0	0	0	22.18	140%	200%	0	0	579	579
RH4	Re-High 4	24.56	14.73	0.83%	6,532	266	443	540	22	19.60	1.08	0.22	0.86	0	0	0	0	20.68	140%	200%	0	0	540	540
RH5	Re-High 5	25.50	15.30	0.86%	6,783	266	443	561	22	20.35	1.12	0.22	0.90	0	0	0	0	21.47	140%	200%	0	0	561	561
RH6	Re-High 6	28.88	17.33	0.98%	7,681	266	443	639	22	23.04	1.28	0.26	1.02	0	0	0	0	24.32	140%	200%	0	0	639	639
RH7	Re-High 7	24.91	14.95	0.84%	6,627	266	443	548	22	19.88	1.10	0.22	0.88	0	0	0	0	20.98	140%	200%	0	0	548	548
RH8	Re-High 8	27.25	16.35	0.92%	7,249	266	443	600	22	21.75	1.20	0.24	0.96	0	0	0	0	22.95	140%	200%	0	0	600	600
RH9	Re-High 9	28.47	17.08	0.96%	7,567	266	443	630	22	22.70	1.26	0.25	1.01	0	0	0	0	23.96	140%	200%	0	0	630	630
RH10	Re-High 10	28.47	17.08	0.96%	7,573	266	443	659	23	22.72	1.32	0.26	1.05	0	0	0	0	24.04	141%	200%	0	0	659	659
Mixed Use (Manily residential)		114.33	68.60	3.87%	18,000			6,000		54.00	12.00	2.4	4.80	0	4.80	0	0	66.00	96%	120%	0	3,000	3,000	6,000
MR1	Resi-Mixed use 1	27.32	16.39	0.93%	4,317	158	263	1,421	52	12.95	2.84	0.5684	1.14	0	1.14	0	0	15.79	96%	120%	0	711	711	1,421
MR2	Resi-Mixed use 2	26.81	16.08	0.91%	4,232	158	263	1,394	52	12.70	2.79	0.5576	1.12	0	1.12	0	0	15.48	96%	120%	0	697	697	1,394
MR3	Resi-Mixed use 3	28.09	16.85	0.95%	4,410	157	262	1,515	54	13.23	3.03	0.606	1.21	0	1.21	0	0	16.26	96%	120%	0	758	758	1,515
MR4	Resi-Mixed use 4	32.11	19.27	1.09%	5,041	157	262	1,670	52	15.12	3.34	0.668	1.34	0	1.34	0	0	18.46	96%	120%	0	835	835	1,670
Commercial Core		56.82	34.09	1.93%	3,000			14,400		9.00	28.80	0	28.80	0	0	0	0	37.80	111%	150%	0	0	14,400	14,400
CC1&CC2	Commercial core	26.50	15.90	0.90%	1,399	53	88	6,730	254	4.20	13.46	0	13.46	0	0	0	0	17.66	111%	150%	0	0	6,730	6,730
CC3&CC4	Commercial core	30.32	18.19	1.03%	1,601	53	88	7,670	253	4.80	15.34	0	15.34	0	0	0	0	20.14	111%	150%	0	0	7,670	7,670

Zone No.	Land use category	Land Area (ha) Gross	Net	%	Population Persons	Gross population density Persons/ha	Net population density Persons/ha	Number of workers at work place Persons	Density of workers at workplace Persons/ha	Floor area of residential floor(ha)	Floor area of non-residential floor(ha)	Office (ha)	Shopping (ha)	Test/labo (ha)	Factrory/warehouse (ha)	University (ha)	Others (ha)	Total floor area (ha)	Floor area ratio. Realized	Capacity of floor area	Primary industry	Secondary industry	Tertiary industry	Total
Commercial District		197.20	118.32	6.68%	4,020			26,000		12.06	52.00	26.00	26.00	0	0	0	0	64.06	54%	80%	0	7,800	18,200	26,000
C1	Commercial district 1	27.88	16.73	0.94%	558	20	33	3,680	132	1.67	7.36	3.68	3.68	0	0	0	0	9.03	54%	80%	0	1,104	2,576	3,680
C2	Commercial district 2	25.49	15.29	0.86%	510	20	33	3,364	132	1.53	6.73	3.36	3.36	0	0	0	0	8.26	54%	80%	0	1,009	2,355	3,364
C3	Commercial district 3	31.95	19.17	1.08%	642	20	33	4,219	132	1.93	8.44	4.22	4.22	0	0	0	0	10.36	54%	80%	0	1,266	2,953	4,219
C4	Commercial district 4	24.85	14.91	0.84%	497	20	33	3,280	132	1.49	6.56	3.28	3.28	0	0	0	0	8.05	54%	80%	0	984	2,296	3,280
C5	Commercial district 5	31.64	18.98	1.07%	664	21	35	4,145	131	1.99	8.29	4.15	4.15	0	0	0	0	10.28	54%	80%	0	1,244	2,902	4,145
C6	Commercial district 6	12.94	7.76	0.44%	272	21	35	1,708	132	0.82	3.42	1.71	1.71	0	0	0	0	4.23	55%	80%	0	512	1,196	1,708
C7	Commercial district 7	16.70	10.02	0.57%	351	21	35	2,204	132	1.05	4.41	2.20	2.20	0	0	0	0	5.46	55%	80%	0	661	1,543	2,204
C8	Commercial district 8	10.27	6.16	0.35%	216	21	35	1,356	132	0.65	2.71	1.36	1.36	0	0	0	0	3.36	55%	80%	0	407	949	1,356
C9	Commercial district 9	15.49	9.29	0.52%	310	20	33	2,044	132	0.93	4.09	2.04	2.04	0	0	0	0	5.02	54%	80%	0	613	1,431	2,044
IT Enterprise Zone		477.07	286.24	16.17%	8,800			66,000		26.4	132.00	66.00	6.60	59.40	0	0	0	158.40	55%	80%	0	13,200	52,800	66,000
IE1	IT enterprise zone 1	37.88	22.73	1.28%	682	18	30	5,227	138	2.05	10.45	7.32	1.05	2.09	0	0	0	12.50	55%	80%	0	1,045	4,182	5,227
IE2	IT enterprise zone 2	40.05	24.03	1.36%	721	18	30	5,527	138	2.16	11.05	7.74	1.11	2.21	0	0	0	13.22	55%	80%	0	1,105	4,422	5,527
IE3	IT enterprise zone 3	57.73	34.64	1.96%	1,039	18	30	7,966	138	3.12	15.93	11.15	1.59	3.19	0	0	0	19.05	55%	80%	0	1,593	6,373	7,966
IE4	IT enterprise zone 4	48.47	29.08	1.64%	872	18	30	6,688	138	2.62	13.38	9.36	1.34	2.68	0	0	0	15.99	55%	80%	0	1,338	5,350	6,688
IE5	IT enterprise zone 5	42.33	25.40	1.43%	762	18	30	5,841	138	2.29	11.68	8.18	1.17	2.34	0	0	0	13.97	55%	80%	0	1,168	4,673	5,841
IE6	IT enterprise zone 6	41.92	25.15	1.42%	796	19	32	5,784	138	2.39	11.57	8.10	1.16	2.31	0	0	0	13.96	55%	80%	0	1,157	4,627	5,784
IE7	IT enterprise zone 7	44.61	26.77	1.51%	848	19	32	6,156	138	2.54	12.31	8.62	1.23	2.46	0	0	0	14.86	56%	80%	0	1,231	4,925	6,156
IE8	IT enterprise zone 8	39.19	23.51	1.33%	705	18	30	5,450	139	2.12	10.90	7.63	1.09	2.18	0	0	0	13.02	55%	80%	0	1,090	4,360	5,450
IE9	IT enterprise zone 9	40.14	24.08	1.36%	763	19	32	5,579	139	2.29	11.16	7.81	1.12	2.23	0	0	0	13.45	56%	80%	0	1,116	4,463	5,579
IE10	IT enterprise zone 10	37.60	22.56	1.27%	714	19	32	5,226	139	2.14	10.45	7.32	1.05	2.09	0	0	0	12.59	56%	80%	0	1,045	4,181	5,226
IE11	IT enterprise zone 11	47.16	28.30	1.60%	898	19	32	6,556	139	2.69	13.11	9.18	1.31	2.62	0	0	0	15.81	56%	80%	0	1,311	5,245	6,556
Mixed Use Zone (Commer+Resi)		92.39	55.44	3.13%	13,500			9,000		40.50	18.00	9.00	0	9.00	0	0	0	58.50	106%	150%	0	7,200	1,800	9,000
MXD1	MXD zone 1	47.56	28.54	1.61%	6,807	149	248	4,613	97	20.42	9.23	4.61	0	4.61	0	0	0	29.65	104%	150%	0	3,690	923	4,613
MXD2	MXD zone 2	44.83	26.90	1.52%	6,693	149	248	4,387	98	20.08	8.77	4.39	0	4.39	0	0	0	28.85	107%	150%	0	3,510	877	4,387
Civic Center Zone		7.11	4.27	0.24%				1,000		0.00	2.00	0	0	0	0	0	2	2.00	47%	80%	0	0	1,000	1,000
CCZ 1234	Public institutions	7.11	4.27	0.24%		0	0	1,000	141	0.00	2.00			0	0	0	2	2.00	47%	80%	0	0	1,000	1,000
Academic zone		191.43	114.86	6.49%		0	0	6,000	31	0	25.32	0	0	0	0	25.32	0	25.32	22%	80%	0	0	6,000	6,000
AZ1	University A	99.44	59.67	3.37%		0	0	3,165	32	0	25.32	0	0	0	0	25.32	0	25.32	42%	80%	0	0	3,165	3,165
AZ2	Multi world university	91.99	55.19	3.12%		0	0	2,835	31	0	22.68	0	0	0	0	22.68	0	22.68	41%	80%	0	0	2,835	2,835
Urban Green Park		182.26		6.18%				0		0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
UGP1	Urban green park 1	118.52		4.02%		0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
UGP2	Urban green park 2	15.75		0.53%		0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
UGP3	Urban green park 3	15.03		0.51%		0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
UGP4	Urban green park 4	16.66		0.56%		0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
UGP5	Urban green park 5	16.30		0.55%		0	0	0	0	0	0	0	0	0	0	0	0	0	0%	0%	0	0	0	0
Trunk Road		282.86		9.59%																				
TR																								
Total		2,950.34	1,491	100%	200,000.00	68		140,000		600.00	293.32	108.04	84.76	68.40	4.80	25.32	2.00	893.32			0	31,200	108,800	140,000
																					0	22.3%	77.7%	100%

Source: Planned by JICA Study Team

4.3.2   Development by zone

The following principles should apply to the Qatana IT city development:

1) To embody the concept of IT City in a physical development;

2) To realize eco-friendly living environment as a model for new city development; and

3) To exemplify an attractive urban environment as a model of urban development in the 21st century.

The design approach emphasizes the preservation and conservation of the environment, particularly, natural topography and rehabilitation of range land by converting the scattered pasture islands into a green area. The existence and proximity of urban green parks consisting of various passive and active recreational facilities will amplify and portray the concept of eco-friendly city.

The proximity of IT enterprise zones to academic zones will facilitate synergy effects and collaboration between both parties. A well-designed, technologically equipped and world-class commercial area will cater for demand by the nearby residents and the whole of Qatana IT city. The information-oriented university or departments in the heart of Qatana IT city will provide excellent R&D environment for the advancement of IT oriented society. Research supporting facilities such as an incubation center, training center, and service apartments will further encourage and enhance research activities.

(1)   IT enterprise zones (477ha)

World-class IT companies from Europe and Asia as well as Syrian companies are expected to make inroads in this area, including prominent IT companies and new venture companies for incubators. The Qatana IT city will promote joint-venture between Syrian and multi-national companies. The land area of 477 ha comprises 11 zones. Approximately 66,000 employment opportunities will be created in these zones to be developed in steps: four zones in Phase 1, five zones in Phase 2 and two zones in Phase 3.

(2)   Academic zones (191ha)

Academic zones are composed of two campuses.

AZ 1 (university)

An excellent university is expected to be established in Academic Zone (AZ) 1 in Phase 1. The university will function as the magnet to attract IT companies to set up their offices in the Qatana IT city. The university is anticipated to provide human resources with IT skills and knowledge as well as conducting joint R&D activities with private companies. Several prestigious Syrian universities will be candidates to relocate their IT related faculties in AZ 1.

Alternatively, those universities may form a university consortium and make a collaborative effort to establish a new IT university.

AZ 2 (branch-campuses of world class universities)

It is expected that several branch campuses of world class universities will be attracted as successfully done in Singapore. It is deemed essential to obtain foreign assistance in developing information technologies in a short period. One way to fulfill the aim is to utilize an official development aid. Singapore has achieved the aim without using ODA.

(3)   Mixed use zones (206ha)

There are two kinds of mixed use zones: mainly residential and mainly commercial.

MR 1~4 (mainly residential) (114 ha)

Mixed use zones (MZ) 1~4 are characterized as mainly residential. These mixed use zones will be suitable for development during the early stage as it is presumed that there would not be any service functions within the city, although the existing city of Qatana is adjacent to the location. In total, the zones of MR1~4 shall accommodate the population of 18,000. These MR 1~4 are scheduled to be completed in Phase 1.

MXD 1 and MXD 2 (mainly commercial) (92 ha)

These are mixed use zones which are mainly commercial. In total, the two zones are planned to provide employment opportunities of 9,000 as well as to accommodate the population of 13,500. MXD 1 will be completed in Phase 1 and MXD 2 in Phase 2.

(4)   Commercial zones (254ha)

Commercial districts (197ha)

Nine commercial districts will be constructed to serve the needs of residents in the Qatana IT city. They will account for around 197ha, and provide 26,000 work opportunities. The commercial districts will include shopping facilities, various service facilities and offices. In view of commercial feasibility, those facilities will need population. As the population grows, more commercial districts will become feasible. The commercial districts should be constructed in accordance with the population growth. In Phase 1, two districts will be constructed (32ha and 4,200 work opportunities). In Phase 2, five districts will be constructed. (105ha and 13,900 work opportunities). In Phase 3, two districts will be constructed. (60ha and 7,900 work opportunities).

Commercial core (57ha)

The commercial core will be created to function as the center of commercial activities in the Qatana IT city. It should attract not only the residents of the Qatana city but also the residents of the whole area in the western DMA. The commercial core shall include high-end

shopping centers, entertainment zones and office zones. The commercial core will be able to have feasibility as the Qatana IT city has grown and become matured. Therefore, the two commercial core districts will be constructed in Phase 3. The land area will account for 57ha, and around 14,400 people will get work opportunities in commercial core districts.

(5)   High density residential zones (271ha)

The high density residential development area shall be composed of 10 zones, which shall accommodate approximately 72,000 residents. These zones are planned to be located in the southern part in view of landscape so that the mountain view of the Shiekh and the Kalamon mountains can be enjoyed from all the areas. The 10 zones shall be provided to accommodate some 72,000 residents. The provision of high density residential zones is focused in Phase 2.

(6)   Medium density residential zones (589ha)

The 14 medium density residential zones shall be provided in the three phases as follows:

> Phase 1: four zones, 162ha, 18,000 residents
> Phase 2: one zone, 43ha, 5,000 residents
> Phase 3: nine zones, 384ha, 42,000 residents

(7)   Low density residential zones (489ha)

The low density residential zones correspond to upper-class market segment. Since the location should be in quiet environment, the low density residential zones shall be planned close to the foot of the western mountain area. They will be developed only in Phase 2 and Phase 3 as the service facilities are not sufficient in Phase 1:

> Phase 2: one zone, 105ha, 3,500 residents
> Phase 3: three zones, 384ha, 12,500 residents

(8)   Urban green parks (182ha)

Urban green parks (UGP) are large-scale parks to serve for city-wide areas. Above all, UGP 1 is planned to serve not only the Qatana IT city but also the whole western part of the DMA. On the other hand, district parks and neighborhood parks are designed to serve smaller areas within districts and neighborhood units.

> Phase 1: one urban green park (land area: 17ha)
> Phase 2: two urban green parks (land area: 134ha)
> Phase 3: two urban green parks (land area: 32ha)

UGP 1 which will be constructed in Phase 2, shall be designed as a large regional-scale park, such as Central Park in New York, Yoyogi Park in Tokyo, and Hyde Park in London . The

UGP 1 is to provide passive and active relaxation to residents. It can be used as a venue for large scale events. UGP 1 will be composed of various functions such as sports parks, agricultural parks, and natural parks. In agricultural parks, the farmers who have been working on experimental agriculture, will have an opportunities to take part in farming activities of tourist farm garden projects or in maintenance works of natural parks etc expected in UGP 1.

4.4   Infrastructure Planning

4.4.1   Water supply and sewerage

To accommodate the planned population in 2025, the water supply at 35,000m^3/day (200,000 x 175LCD) is necessary on the average. Taking the peak factor at 1.8, the maximum flow at 0.73 m^3/sec is required.

Assuming the capacity of one new well at 15L/sec, 49 wells may be necessary as water sources for the Qatana IT city. Necessary aquifer may be exploited near the city. In case that the water sources are located at 5km distance, a pipeline of 600mm in diameter may be required for water transmission to the city.

In respect of water reservoir, storage for 8 hours' demand is required to keep the water supply stable. One water reservoir of 1,500m^3, which is for one hour demand, may be necessary at the water source area to collect the pumped up water. The reservoir may be equipped with transmission pump facility. Moreover, 15 of 500m^3 elevated reservoirs, which can store the water for 7 hours, may be required as service reservoirs to the city.

The sewerage should be designed in accordance with the water volume to be supplied. The collecting pipeline networks should be constructed in the city. The collected sewage should be treated at the nearest treatment plant to be developed in accordance with the sewerage master plan to be proposed by another JICA study.

A phasing plan of the major facilities construction is shown in Table 4.4.

Table 4.4 Phasing Plan for Major Water Facilities for Qatana IT City

Item	Unit	1st Stage	2nd Stage	3rd Stage	Total
Planning Indicator					
Required water (ave.unit)	LCD	175	175	175	
Required water (ave.)	m^3/day	8,156	16,253	10,591	35,000
Required water (max.)	m^3/sec.	0.170	0.339	0.221	0.730
Required Facility					
Required No. of well	well	11	23	15	49
Ground tank at source (1500m^3 tank)	unit	1			1
Elevated tank at developed area (500m^3 tank)	unit	3	8	4	15
Water transmission line of 600mm pipeline x 5km	Line	1	0	0	1
Water distribution network construction	ha	800.5	1,097.0	1,052.8	2,950.3
Sewerage colleting network construction	ha	800.5	1,097.0	1,052.8	2,590.3

Source: Planned by JICA Study Team

4.4.2 Transportation

(1) Planning concepts

The concepts for transport planning applicable to the Qatana IT city shall be as follows:

1) The inter-city traffic and the within-the-city traffic should be separated as much as possible, while good connections with existing roads are ensured;

2) In principle, public transport modes shall be used for the within-the-city traffic;

3) An entirely different approach is taken to the provision of car parking from that of the Damascus city, not allowing on-street parking; and

4) For the within-the-city car traffic, the administration concerned shall strongly promote the use of electric cars in view of achieving eco-friendly city. Provided that visitors to the Qatana IT city should come by ordinary gasoline-fuel cars, they shall park their cars at large-scale car parking terminals located around the border area of the city, and use public transport modes for the within-the-city traffic

(2) Artery road network

In order to achieve the first transport planning concept, the city border circle road shall be of four lanes. The four linkage roads shall be constructed to connect the city border circle road and the existing road of Qatana-Aisam, and the outer ring road (Figure 4.12). Alternatively, visitors shall change transport modes from ordinary gasoline cars to electric cars.

For public transport within the city, one inner circle road shall be constructed and used for trunk bus system (segregate bus lanes) in addition to the ordinary four-lane roads. The inner circle road is a 6-lane road (45 m width). The two central lanes shall be used only for trunk bus services segregated from the ordinary car traffic which passes through the outer four lanes of the circle road.
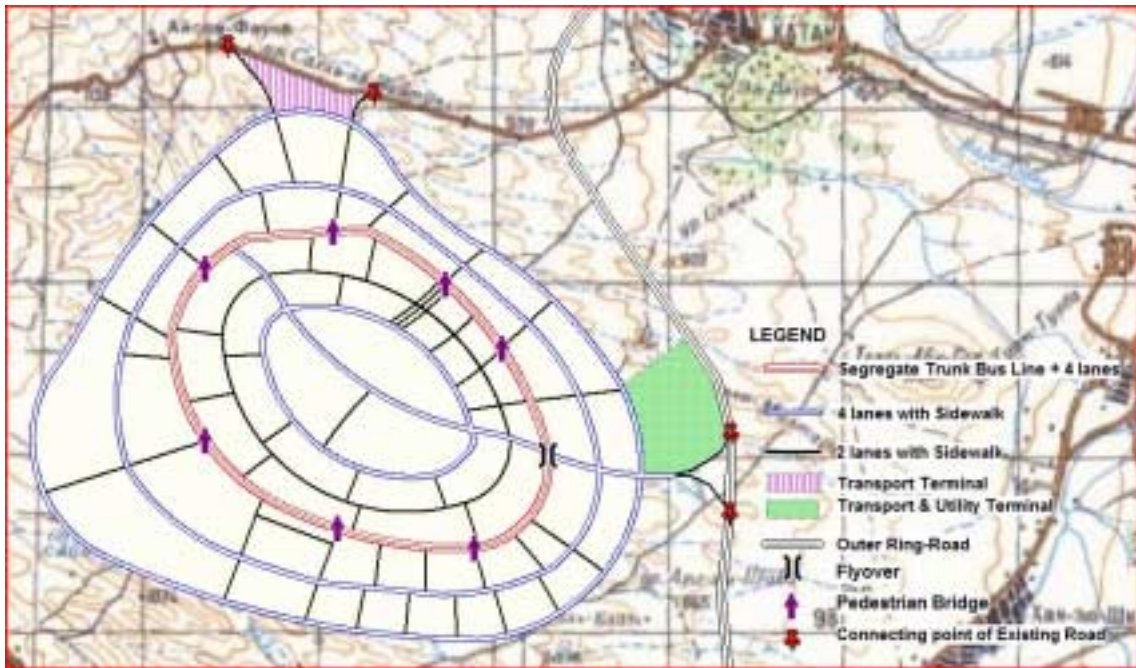
Source: Planned by JICA Study Team

Figure 4.12 Planned Arterial Road Network for Qatana IT City

In view of pedestrian safety and amenity, pedestrian decks, side-walk space and trunk bus stops shall be constructed along/across the inner circle road. The trunk bus system in the Qatana IT city intends to spearhead new initiative and targets at strongly promoting public transport modes. In this context, the government and municipal bodies are expected to set up a new funding mechanism under which a part of development profit may be used to cover the cost of public transport construction and operation. It should be pursued under the joint effort between the developer concerned and public sectors. The success in public transport in the Qatana IT city is expected to increase usage of public transport for other new city development projects in Syria as well as existing big cities' solutions for inner city transport issues.

The construction of transport network for the city shall be done in harmony with land development by phase as shown in Figure 4.13. Generally speaking, transport infrastructure should be constructed in advance of building completion on land blocks concerned. In order to pursue efficiency of construction and to fulfill consistent transport service, sections of some trunk roads shall be constructed in advance of the corresponding phase of the adjacent land blocks.
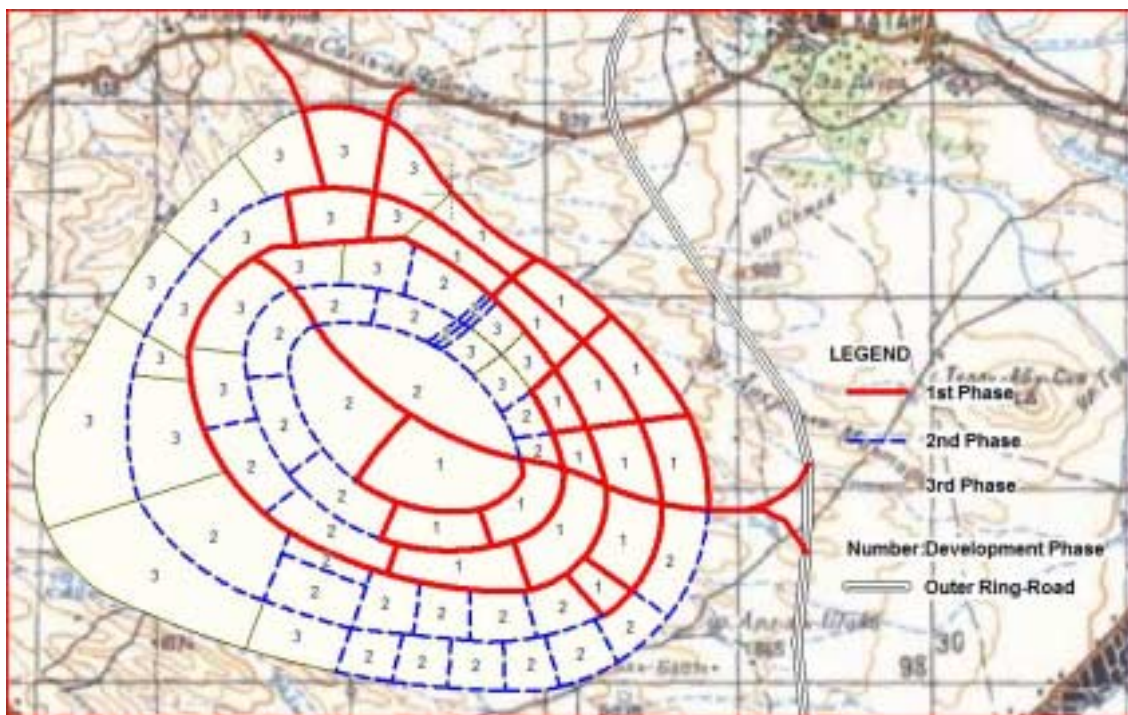
Source: Planned by JICA Study Team

Figure 4.13 Phased Development of Transport Network of Qatana IT City

The land area of trunk roads to be constructed by phase is summarized in Table 4.5.

Table 4.5 Land Area of Trunk Roads to be Constructed by Phase

(Unit: m2)

Class	Total Road Area	Phase1	Phase2	Phase3
A	560,801.2	560,801.2		
B	1,462,730.2	636,597.5	561,767.7	264,365.0
C	866,722.3	316,606.5	373,483.9	176,631.9

Note: Class A is 45m width inc. segregated Trunk Bus lane with 4 lanes carriage way and sid
  Class B is 30m width with 4 lanes carriage way and pedestrian sidewalk
  Class C is 20m width with 2 lanes carriage way and pedestrian sidewalk

Source: Planned by JICA Study Team

Since the roads of Class A shall constitute essentially main backbones for the Qatana IT city, all of their constructions are planned for Phase 1. In terms of Class B, around 82% shall be constructed by Phase 2. A particular case is the northern part of the circle road of the city border, although its demand is projected to be very low (170 PCU/day). Since the traffic of the road includes passing traffic, the road shall be constructed in Phase 1.

To prohibit illegal on-street parking and achieve efficient urban transport, the Qatana IT city shall provide an ample volume of parking places. For residential zones, the principle of one car for one residential unit shall be kept and monitored during construction as well as planning. The regulation shall be incorporated into the special building code for the Qatana IT city. As shown in Table 4.6, the car ownership rate in Syria is on the upward trend. Although there

exists no regular yearly statistics of vehicle registration to correspond to the DMA, there exist such data for the whole Syria. The annual growth rate from 2001-2005 is calculated as 5.3%. On the other hand, the rate in Damascus reached 87.7 vehicles / 1,000 persons in 2004. Through simple calculation with these figures, it can be estimated to reach 258.0 vehicles / 1,000 persons in 2025. Although this figure is presumed to be a high level, it will be plausible in consideration that the city intends to be an "IT city".

Table 4.6 Vehicle Registration Projection for DMA and Syria

Year	Population of Syria	Vehicle Registration	Vehicle /1000 p	Increase Ratio (Veh./1000 p)	Population of DMA	Private Car Registration	Vehicle /1000 p
2001	18,866,020	779,562	41.3	-	-	-	-
2002	19,396,186	853,399	44.0	6.5%	-	-	-
2003	19,937,573	878,096	44.0	0.1%	-	-	-
2004	20,479,142	956,099	46.7	6.0%	3,608,025	316,258	87.7
2005	21,061,512	1,067,057	50.7	8.5%	-	378,535	-
	Average Increase Ratio			5.3%	Vehicle/1000p of DMA in 2025		258.0

Note: Value of Syria are sourced by Traffic Police.
Population of DMA is by Study Team.
Private Car Registration are sourced by Traffic Police.

Source: Planned by JICA Study Team

Based on the projection, the necessary parking capacity is calculated for each land block. In total, it accommodates approximately 51,630 vehicles. The distribution is shown in Figure 4.14.
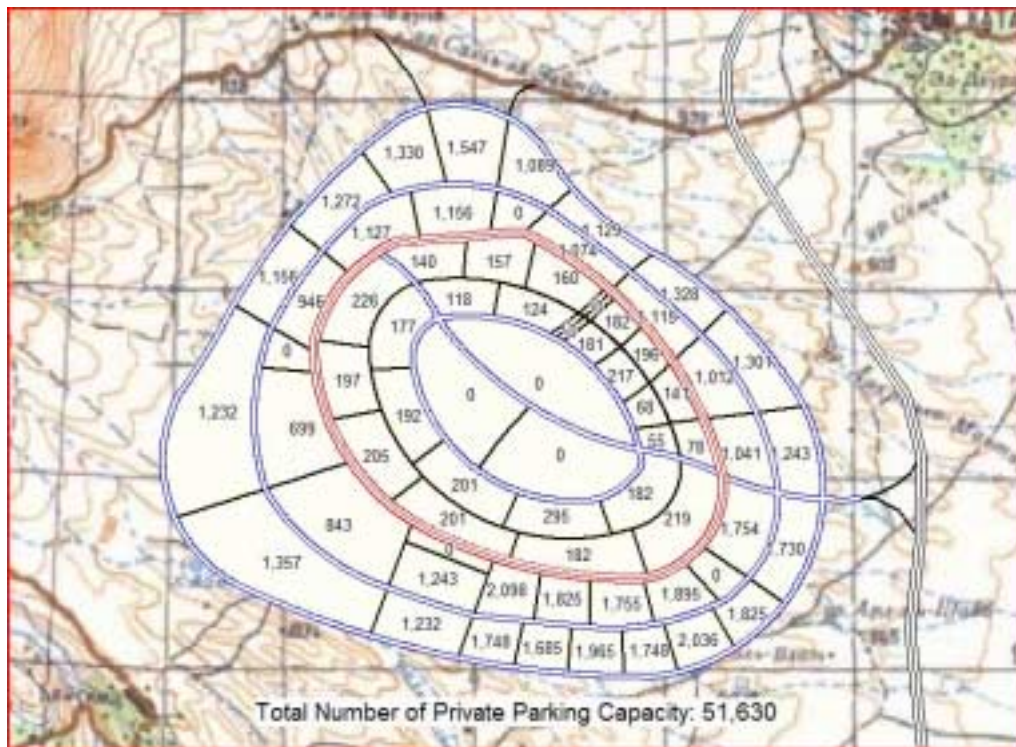
Source: Planned by JICA Study Team

Figure 4.14 Projection of Necessary Parking Capacity for Residence for 2025, Qatana IT City

As regards necessary parking capacity for non-residential urban functions, a projection for 2025 is made with the underlying assumption that the Qatana IT city will be almost comparable with the central business district of the Damascus city in terms of trip production rate. Accordingly, the projection is based on the unit figure of one car for 2.27 workers. The projection result for necessary parking capacities for non-residential functions is shown in Figure 4.15.
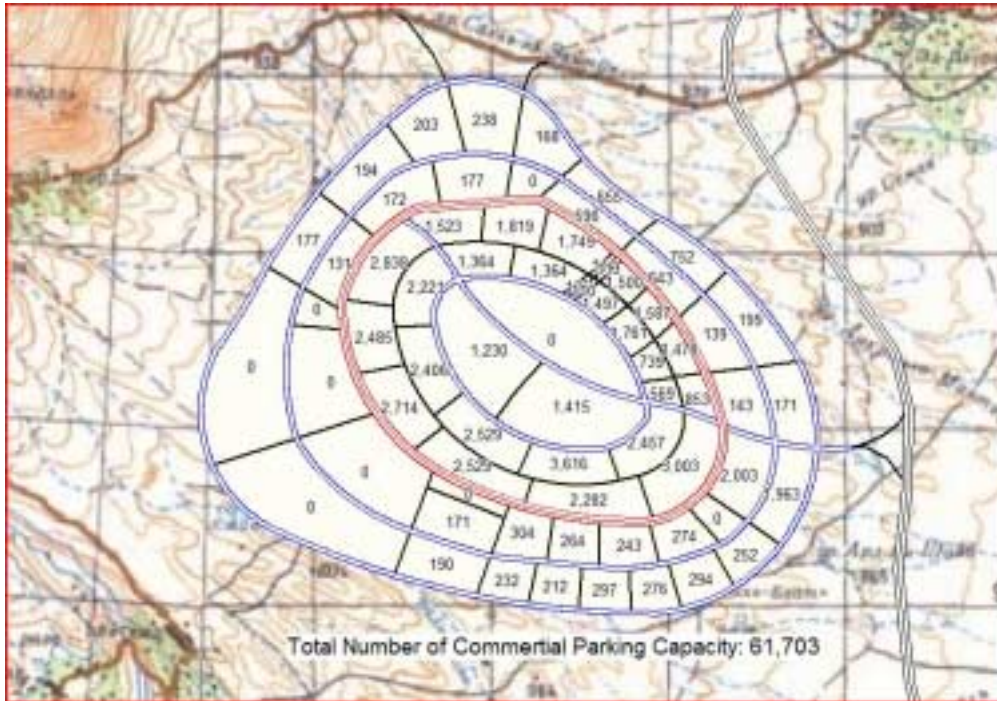
(Source): Planned by JICA Study Team

Figure 4.15 Number of Parking Capacity in Non-Residential Function for 2025, Qatana IT City

4.4.3 Public Facilities

(1) Education facilities

The Qatana IT city will require a total of 178 schools of different educational levels to serve the population of planned 200,000. The schools, including playgrounds will be constructed over an area of 38ha in the residential and mixed blocks. Some schools are also allocated to the commercial district where there is no adjacent residential block. Table 4.7 shows these schools distributed along the residential and mixed residential blocks. In principle the school distribution has taken into consideration the following points:

1) Walking to schools are promoted as much as possible;

2) Each residential and mixed residential block will be served by two KG schools and as possible two Basic-1 schools, in order to minimize walking distances;

3) For basic-2 and secondary levels 1 school each is allocated in each block;

4) Maximum number of floors for KG level is two and 4 for other levels. When possible floor number for Basic-1 is maintained at 3 floors; and

5) Area allocated to each student is $10m^2$ in the KG and Basic-1 levels and $12m^2$ in the Basic-2 and Secondary levels.

Table 4.7 Educational Facility Planning of Qatana IT City

Item	Unit	Education Level				Total
		KG	Basic 1	Basic 2	Secondary	
FLAGSHIP DEVELOPMENT 1st PHASE						
(A) Residential-Middle Density (RM1 – RM4)						
1) Share of population	%	8%	11%	12%	7%	38%
2) Enrollment level	%	50%	100%	100%	100%	---
3) Student number	Student	739	2,034	2,218	1,294	6,285
4) Total Classes required[1	Class	21	57	62	36	176
5) New Schools required	School	4	3	3	2	12
6) Total Area requirements						
(1) Total Building[2	m²	5,292	14,364	17,856	10,368	47,880
(2) Total Playground[3	m²	2,268	6,156	8,928	5,184	22,536
(3) Number of floors/school	Floor	2	4	4	4	---
(4) Total Site requirement[4	m²	4,914	9,747	13,392	7,776	35,829
7) Area requirement per school						
(1) Building area each school	m²	1,323	4,788	5,952	5,184	---
(2) One floor area	m²	662	1,197	1,488	1,296	---
(3) Playground area each school	m²	567	2,052	2,976	2,592	---
(4) Area required per school (playground + one floor)	m²	1,229	3,249	4,464	3,888	---
(B) Mixed use (Commercial + Residential) (MR1-MR4)						
3) Student number	Student	720	1,980	2,160	1,260	6,285
4) Total Classes required[1	Class	20	55	60	36	176
5) New Schools required	School	4	3	3	2	12
6) Total Area requirements						
(1) Total Building[2	m²	5,040	13,860	17,280	10,080	47,880
(2) Total Playground[3	m²	2,160	5,940	8,640	5,040	22,536
(3) Number of floors/school	Floor	2	4	4	4	---
(4) Total Site requirement[4	m²	4,680	9,405	12,960	7,560	34,605
7) Area requirement per school						
(1) Building area each school	m²	1,260	4,620	5,760	5,040	---
(2) One floor area	m²	630	1,155	1,440	1,260	---
(3) Playground area each school	m²	540	1,980	2,880	2,520	---
(4) Area required per school (playground + one floor)	m²	1,170	3,135	4,320	3,780	---
(C) Mixed Use Zone (Commercial + Residential) (MXD1)						
3) Student number	Student	272	749	817	476	2,314
4) Total Classes required[1	Class	8	21	23	13	65
5) New Schools required	School	2	2	1	1	6
6) Total Area requirements						
(1) Total Building[2	m²	2,016	5,292	6,624	3,744	17,676
(2) Total Playground[3	m²	864	2,268	3,312	1,872	8,316
(3) Number of floors/school	Floor	2	3	4	4	---
(4) Total Site requirement[4	m²	1,872	4,032	4,968	2,808	13,680
7) Area requirement per school						
(1) Building area each school	m²	1,008	2,646	6,624	3,744	---
(2) One floor area	m²	504	882	1,656	936	---
(3) Playground area each school	m²	432	1,134	3,312	1,872	---
(4) Area required per school (playground + one floor)	m²	936	2,016	4,968	2,808	---
2nd PHASE DEVELOPMENT						
(A) Residential Low-Density (RL4)						
3) Student number	Student	138	380	415	242	1,175
4) Total Classes required[1	Class	4	11	12	7	34

Item	Unit	Education Level				Total
		KG	Basic 1	Basic 2	Secondary	
5) New Schools required	School	2	1	1	1	5
6) Total Area requirements						
(1) Total Building[2	m²	1,008	2,772	3,456	2,016	9,252
(2) Total Playground[3	m²	432	1,188	1,728	1,008	4,356
(3) Number of floors/school	Floor	1	4	4	3	---
(4) Total Site requirement[4	m²	1,440	1,881	2,592	1,680	7,593
7) Area requirement per school						
(1) Building area each school	m²	504	2,772	3,456	2,016	---
(2) One floor area	m²	504	693	864	672	---
(3) Playground area each school	m²	216	1,188	1,728	1,008	---
(4) Area required per school (playground + one floor)	m²	720	1,881	2,592	1,680	---
(B) Residential Middle Density (RM13)						
3) Student number	Student	190	521	569	332	1,612
4) Total Classes required[1	Class	6	15	16	10	47
5) New Schools required	School	1	1	1	1	4
6) Total Area requirements						
(1) Total Building[2	m²	1,512	3,780	4,608	2,880	12,780
(2) Total Playground[3	m²	648	1,620	2,304	1,440	6,012
(3) Number of floors/school	Floor	2	4	4	4	---
(4) Total Site requirement[4	m²	1,404	2,565	3,456	2,160	9,585
7) Area requirement per school						
(1) Building area each school	m²	1,512	3,780	4,608	2,880	---
(2) One floor area	m²	756	945	1,152	720	---
(3) Playground area each school	m²	648	1,620	2,304	1,440	---
(4) Area required per school (playground + one floor)	m²	1,404	2,565	3,456	2,160	---
(C) Residential High Density (RH1 – RH10)						
3) Student number	Student	2,880	7,920	8,640	5,040	24,480
4) Total Classes required[1	Class	80	220	240	140	680
5) New Schools required	School	20	20	10	10	60
6) Total Area requirements						
(1) Total Building[2	m²	20,160	55,440	69,120	40,320	185,040
(2) Total Playground[3	m²	8,640	23,760	34,560	20,160	87,120
(3) Number of floors/school	Floor	2	4	4	4	---
(4) Total Site requirement[4	m²	18,720	37,620	51,840	30,240	138,420
7) Area requirement per school						
(1) Building area each school	m²	1,008	2,772	6,912	4,032	---
(2) One floor area	m²	504	693	1,728	1,008	---
(3) Playground area each school	m²	432	1,188	3,456	2,016	---
(4) Area required per school (playground + one floor)	m²	936	1,881	5,184	3,024	---
(D) Commercial District (C2, C4, C5, C6, C8)						
3) Student number	Student	134	369	403	235	1,141
4) Total Classes required[1	Class	4	11	12	7	34
5) New Schools required	School	2	2	2	1	7
6) Total Area requirements						
(1) Total Building[2	m²	1,008	2,772	3,456	2.016	9,252
(2) Total Playground[3	m²	432	1,188	1,728	1,008	4,356
(3) Number of floors/school	Floor	1	2	3	3	---
(4) Total Site requirement[4	m²	1,440	2,574	2,880	1,680	8,574
7) Area requirement per school						
(1) Building area each school	m²	504	1,386	1,728	2,016	---
(2) One floor area	m²	504	693	576	672	---
(3) Playground area each school	m²	216	594	864	1,008	---
(4) Area required per school (playground + one floor)	m²	720	1,287	1,440	1,680	---
(E) Mixed Use (Commercial + Residential) (MXD2)						
3) Student number	Student	268	736	803	469	2,276
4) Total Classes required[1	Class	8	21	23	13	65
5) New Schools required	School	2	2	1	1	6
6) Total Area requirements						
(1) Total Building[2	m²	2,016	5,292	6,624	3,744	17,676
(2) Total Playground[3	m²	864	2,268	3,312	1,872	8,316

Item	Unit	Education Level				Total
		KG	Basic 1	Basic 2	Secondary	
(3) Number of floors/school	Floor	2	3	4	4	---
(4) Total Site requirement[4	m²	1,872	4,032	4,968	2,808	13,680
7) Area requirement per school						
(1) Building area each school	m²	1,008	2,646	6,624	3,744	---
(2) One floor area	m²	504	882	1,656	936	---
(3) Playground area each school	m²	432	1,134	3,312	1,872	---
(4) Area required per school (playground + one floor)	m²	936	2,016	4,968	2,808	---
3rd[t] PHASE DEVELOPMENT						
(A) Residential Low-Density (RL1, 2, 3)						
3) Student number	Student	502	1,380	1,505	878	4,265
4) Total Classes required[1	Class	14	39	42	25	120
5) New Schools required	School	7	5	4	3	19
6) Total Area requirements						
(1) Total Building[2	m²	3,528	9,828	12,096	7,200	32,652
(2) Total Playground[3	m²	1,512	4,212	6,048	3,600	15,372
(3) Number of floors/school	Floor	1	3	4	3	---
(4) Total Site requirement[4	m²	5,040	7,488	9,072	6,000	27,600
7) Area requirement per school						
(1) Building area each school	m²	504	1,966	3,024	2,400	---
(2) One floor area	m²	504	655	756	800	---
(3) Playground area each school	m²	216	842	1,512	1,200	---
(4) Area required per school (playground + one floor)	m²	720	1,498	2,268	2,000	---
(B) Residential Middle Density (RM5 – RM12, RM14) (NOTE: RM14 values in ( ))						
3) Student number	Student	1,685	4,633	5,054	2,948	14,320
4) Total Classes required[1	Class	47	129	141	82	399
5) New Schools required	School	14(2)	8(1)	8(1)	8(1)	43
6) Total Area requirements						
(1) Total Building[2	m²	11,844	32,508	40,608	23,616	108,576
(2) Total Playground[3	m²	5,076	13,932	20,304	11,808	51,120
(3) Number of floors/school	Floor	1	4	4	4	---
(4) Total Site requirement[4	m²	16,920	22,059	30,456	17,712	87,174
7) Area requirement per school						
(1) Building area each school	m²	740	3,612	4,512	2,624	---
(2) One floor area	m²	740	903	1,128	656	---
(3) Playground area each school	m²	317	1,548	2,256	1,312	---
(4) Area required per school (playground + one floor)	m²	1,058	2,451	3,384	1,968	---
(C) Commercial Core (CC1 – CC4)						
3) Student number	Student	120	330	306	210	14,320
4) Total Classes required[1	Class	4	10	10	6	399
5) New Schools required	School	1	1	1	1	43
6) Total Area requirements						
(1) Total Building[2	m²	1,008	2,520	2,880	1,728	108,576
(2) Total Playground[3	m²	432	1,080	1,440	864	51,120
(3) Number of floors/school	Floor	2	4	4	4	---
(4) Total Site requirement[4	m²	936	1,710	2,160	1,296	87,174
7) Area requirement per school						
(1) Building area each school	m²	1,008	2,520	2,880	1,728	---
(2) One floor area	m²	504	630	720	432	---
(3) Playground area each school	m²	432	1,080	1,440	864	---
(4) Area required per school (playground + one floor)	m²	936	1,710	2,160	1,296	---
SUMMATION						
(1) Number of Students	Student	7,722	21,237	23,167	13,514	65,640
(2) Number of Classes	Class	219	596	648	379	1,842
(3) Number of Schools	School	61	49	36	32	178
(4) Total Site Requirements	m²	59,238	103,113	138,744	81,720	382,815

<u>Notes</u>: 1) 36 students per class, 2) 7m² per KG and B-1 student and 8m² per B-2 and Secondary student, 3) 3m² per KG and B-1 student and 4m² per B-2 and Secondary student, 4) [(1)/(3) + (2)]

Source: Planned by JICA Study Team in reference to Syrian planning standard
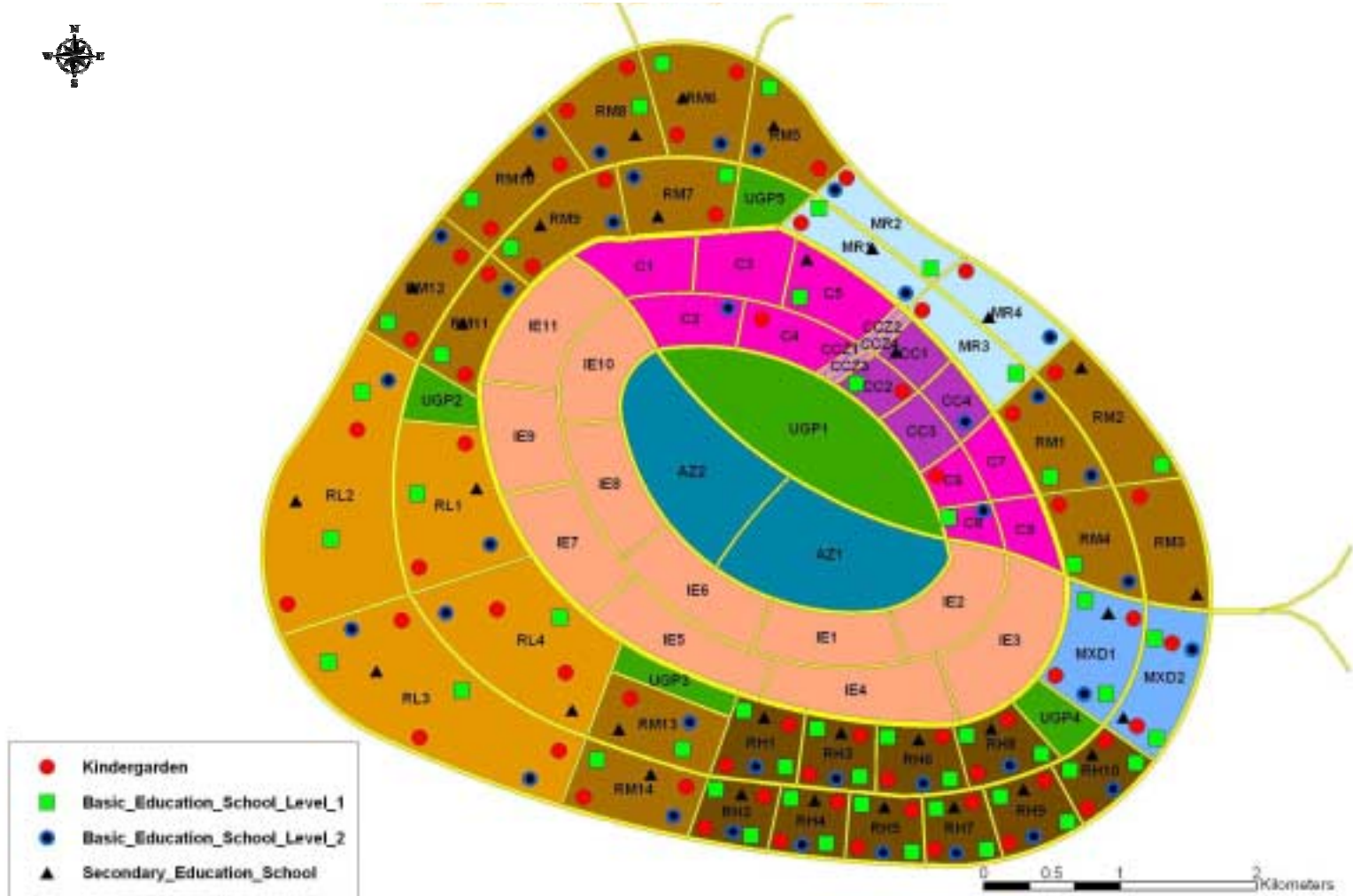
Source: Planned by JICA Study Team

Figure 4.16 Planned Education Facilities on the Qatana IT city

(2) Health care facilities

Two types of health care facilities are planned for the project area; primary health care facilities (PHCF) and hospitals. Considering the service levels adopted in the Master Plan, the required facilities are shown in Table 4.8.

Table 4.8 Health Care Facilities for Qatana IT City

Item	Unit	1st Phase	2nd Phase	3rd Phase	Total	Standard
1) Population		46,607	92,875	60,518	200,000	
2) Hospitals						
a. Hospital Beds	bed	186	372	242	800	4 bed/1,000 capita
b. New Hospitals	no.	1	2	1	4	200 bed/hospital
c. Total site area	m^2	8,100	16,200	8,100	32,400	8,100 m^2 total floor area/ hospital
d. Total floor area	m^2	3,600	7,200	3,600	14,400	3,600 m^2 total floor area/ hospital
3) PHCF						
a. New PHCF	no.	4	8	5	17	12,000 capita/PHCF
b. Total site area	m^2	1,600	3,200	2,000	6,800	400 m^2 total floor area/ PHCF
c. Total floor area	m^2	2,400	4,800	3,000	10,200	600 m^2 total floor area/ PHCF

Source: Planned by JICA Study Team in reference to Syrian planning standard

These facilities will serve the residential areas. The IT industries and academic facilities to be established in the project area will be encouraged to set up clinics within their premises for workers and students for first aid purposes.

(3) Cultural centers

Presently, a culture center serves a population of around 180,000. Therefore, it is proposed to construct a culture center in the Qatana IT city during Phase 2. It is also proposed to establish a cyber science museum highlighting the state-of-the-art information technology, electronics industry and virtual world. The museum may be constructed in Phase 1. Specifics of these facilities are summarized in Table 4.9.

Table 4.9 Specifications of Cultural Facilities to be Provided in Qatana IT City

No.	Item	Total Site area (m^2)	Total floor area (m^2)
1st PHASE			
1	Cyber Science Museum (3 floors with total floor area of 3,600m^2, for exhibitions related to IT, multi-media, virtual world, advanced electronics etc.)	2,000	3,600
2nd PHASE			
2	Culture Center (includes hall with 350 seats, library, 2-3 rooms for Peoples' Cultural Institute, internet hall and administration rooms	1,350	1,800

Source: Planned by JICA Study Team in reference to Syrian planning standard

(4)   Green parks

Since the Qatana IT city will be constructed to exemplify an attractive urban environment as a future model of urban development, it is proposed to allocate $20m^2$ of green space per capita. The standard of 20 m^2 will exceed far over the Syrian ordinary standard. The figure looks very abundant, in comparison with the smaller figure of $4m^2$ per capita proposed in the Master Plan.

The categorization of planned parks shall be as follows: (1) Urban green parks, (2) District parks, and (3) Neighborhood parks. Urban green parks are large-scale parks to serve for city-wide or regional-wide area. UGP 1 is for region-wide scale park, and UGP2~5 for city-wide scale park. Urban green parks are planned and shall be constructed for the Qatana IT city to achieve $10m^2$ per capita. Their location and shape can be independently shown in the planned land use map.

District parks and neighborhood parks are constructed to serve within residential zones to achieve another 10 m^2 per capita. They cannot be shown on the land use map. They are included in each residential land blocks, but they are certainly planned in terms of figures. In this section, the planning of district parks and neighborhood parks is explained as follows, since the explanation on urban green parks is already mentioned in sub-section 4.3.2.

Neighborhood parks will function to provide green spaces at walking distances within each residential areas, and their size will be limited to around $1,000m^2$ per park. District parks will be accessible both by motor transport or walking and will be larger in size, at around $10,000m^2$ per park. District parks will serve as weekend and holidays gathering areas and in addition to the usual park facilities and landscaping, may contain children's corner, sports grounds and athletic facilities.

The number and distribution of both park types is shown in Table 4.10. It is estimated that a total of around 920 parks will be constructed in the new city, over an area of 200 ha.

Table 4.10 Small and Medium Scale Park Planning within the Residential Zones

Item	Unit	1st Phase	2nd Phase	3rd Phase	Total	Standard
1) Population		46,607	92,875	60,518	200,000	
2) Total green area	m^2	466,070	928,750	605,180	2,000,000	10 m^2/capita
3) Neighborhood Park						
a. Total area	m^2	186,428	371,500	242,072	800,000	40% of total green area
b. Park number	no.	186	372	242	1,000	1,000 m^2/park
4) District Park						
a. Total area	m^2	279,642	557,250	363,108	1,200,000	60% of total green area
b. Park number	no.	28	56	36	120	10,000 m^2/park

Source: Planned by JICA Study Team, in reference to, but beyond Syrian planning standard, in view of
     creating abundant open/green space

(5)   Other public facilities

Both places of worship and cemeteries are important social facilities. The standards applied in previous plans in Syria have been adopted to estimate the required areas for both facilities. However the numbers are not included at this stage as the locating of both facility types are subject to many social and civic factors which should be carefully studied during later stages of the planning. Table 4.11 shows the area requirements for both facilities.

Table 4.11 Religion and Cemetery Facilities Planning of Qatana IT City

Item	Unit	1st Phase	2nd Phase	3rd Phase	Total	Standard
1) Population		46,607	92,875	60,518	200,000	
2) Places of Worship	m^2	31,693	63,155	41,152	136,000	0.68 m^2/capita
3) Cemeteries	m^2	46,607	92,875	60,518	200,000	1.0 m^2/capita

Source: Planned by JICA Study Team in reference to Syrian planning standard

It is further recommended to construct a <u>Materials Recovery Facility (MRF)</u> for recycling of waste electrical and electronic equipment (WEEE). The facility will accept discarded IT and telecommunication equipment, as well as large and small household appliances. Such a facility will be the first of its kind in Syria and will contribute to the increasingly serious problem of management of WEEE. The scale of this facility should be set after careful consideration of the types of industries that will be established in the Qatana IT city, their production capacities and production systems, etc.

It is also recommendable to utilize <u>renewable energy resources</u> as much as possible in the city. Facilities for harnessing solar and wind energies should be studied.

4.4.4   Common Utility Ducts

Development of network infrastructure is the important factor to support the growth of the IT industry in the Qatana IT city. In order to assure the safety and stability of lifelines especially for the large volume of electronic information and electricity, common utility ducts are proposed for the Qatana IT city. Provision of common utility ducts will also have a merit of easy maintenance without disturbing the busy traffic, landscape, disaster prevention, etc. The following lifelines are recommended to be installed in the common utility ducts:

1)   electrical cables for power supply,

2)   telecommunication cables including optical fiber cables for telephones, digital communications, internet, digital administration services, emergency information, etc., and

3)   water mains for water supply.

Drainage and sewers which shall be flowed by gravity is excluded. A gas pipeline is excluded since propane gas is mostly used in Syria. It is recommended to provide two systems

for each lifeline so that backup at the time of emergency can be secured. The image of the common utility duct is shown in Figure 4.17.
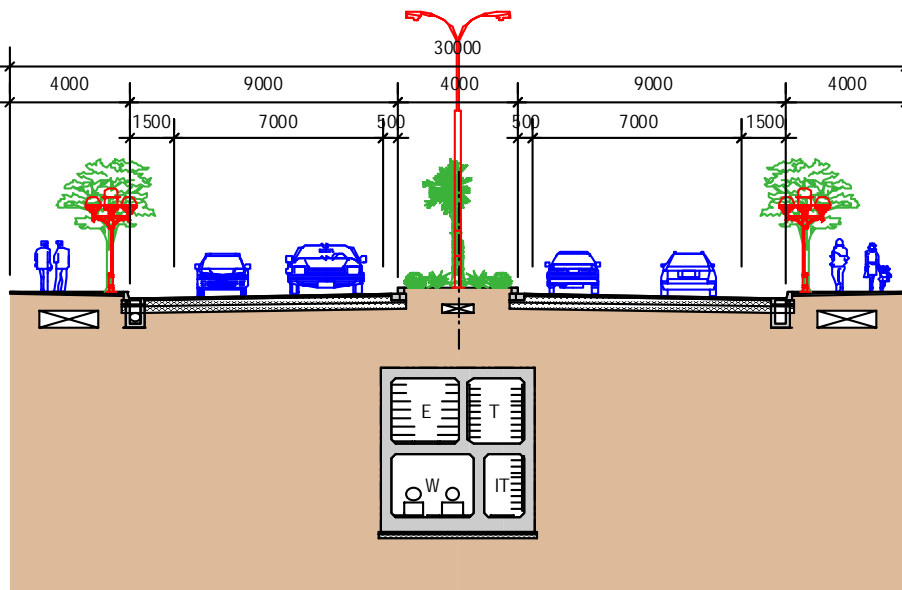

Figure 4.17 Typical Section or Road with Common Utility Duct

For designing the common utility ducts, the followings shall be considered.

1) Minimum requirement for the rooms:

    Minimum height shall be 2.1m (average height of a man 1.8m + space for lights on ceiling 0.2m + secondary concrete on floor 0.1m), and

    Minimum width for Walkway shall be 0.75m.

2) Earth covers:

    Minimum earth covers shall be 2.5m (earth cover for underground utilities 1.2m + space for underground utilities 1.0m + clearance 0.3m).

3) Alignment:

    Horizontal alignment of the common duct, in principle, shall match with the center line of the road, and

    vertical alignment of the common duct shall be designed to match with the road gradient but shall have not less than 0.2% longitudinal slope for drain.

4.5   Cost Estimate

The project costs area comprised of construction cost, engineering service cost, land acquisition cost, compensation cost, and contingencies. The construction cost is estimated in accordance with the guidelines of Syria for materials, labor, equipment and overhead. The overhead is taken as 25% of the sum of material, labor and equipment costs as specified in the guidelines. The costs of some elements were adjusted reflecting specific information obtained

related to the escalation of market prices.

The engineering service cist covering detailed design, assistance for tendering, construction supervision and others is taken as 15% of the total construction cost. The land acquisition cost in the vicinity of Qatana and the compensation cost are estimated based on the results of the initial environmental examination as cited below.

Land prices depend on several factors such as the vicinity of a town and the availability of services and infrastructure. In general, the land prices fluctuate between 600 Syrian Pounds/m^2 and 1,500 Syrian Pounds/m^2 in the non-urbanized area whereas the land prices in urban area reaches 8,000 Syrian Pounds/m^2 for residential house and 30,000 SP/m^2 for commercial shops.

With the reference to the existing urban area of the Qatana City, the rent for housing rises and falls between 5-Syrian Pounds/m^2 and 70 Syrian Pounds/m^2, whereas the rent for shops or offices varies between 80 Syrian Pounds/m^2 and 100 Syrian Pounds/m^2.

Based on the above, the unit prices are taken to be SL.600/m^2 for rangeland which is dominant in the site and SL.1,500/m^2 for the remaining private land currently used as agricultural or village land. The compensation cost is not involved in the site. Building construction costs by the private sector including detailed design and contingencies are also estimated separately. The estimated costs are summarized in Table 4.12.

Table 4.12 Estimated Cost Summary for Qatana IT City

Item	Phase 1	Phase 2	Phase 3	Total	Remarks
Project Cost Total	108,656.51	120,866.80	107,655.41	337,178.81	
Private Sector Building Construction (Qatana IT City)	62,407.60	103,137.11	72,069.98	242,614.68	
Grand Total	171,064.10	229,004.00	179,725.38	579,793.49	
12 Miscellaneous	619.17	394.35	243.15	1,256.67	2.0%
Construction Cost Total	31,577.36	20,111.60	12,400.78	64,090.26	
Engineering Service Cost	3,157.79	2,011.16	1,240.08	6,409.02	10.0%
Land Acquisition	64,042.99	37,756.23	84,227.70	236,028.92	
Contingency	9,877.38	10,987.90	9,786.86	30,652.62	10.0%
7 Culture Centers	79.00	0.00	0.00	79.00	
8 Religious	658.31	1,313.81	356.08	2,329.20	
9 Parking Facilities	856.53	1,280.29	352.84	2,939.67	
10 Terminals	2,903.11	0.00	0.00	2,903.11	
11 Infrastructures	15,006.96	2,709.40	2,553.86	20,270.12	
2 Rehabilitation	0.00	0.00	0.00	0.00	
3 Roads	1,900.86	982.01	3,034.77	5,917.64	
4 Green Area	800.12	2,758.47	1,778.92	5,337.52	
5 Education	8,138.70	9,643.40	2,334.60	20,117.70	
6 Health Facilities	312.00	624.00	357.00	1,293.00	

Unit : Million SP

Source: Estimated by JICA Study Team

The total cost of the project is estimated at SL.580billion, consisting of SL.171billion in Phase 1, 229billion in Phase 2, and SL.180billion in Phase 3. Of the total cost, the private sector building costs would account for SL.243billion or 42% of the total, and the remaining SL.337billion will be incerred to the public implementing agency.

4.6   Implementing Strategy

4.6.1   Institutional arrangement at preparation stage

(1)   Strong leadership by the Government

In order to implement such a large scale development as the Qatana IT city successfully, strong leadership and initiative by the public sector seems essential. Many cases in developed countries attest to this point. Such cases include the Tokyo waterfront sub-center development by the Tokyo Metropolitan government, the Makuhari new city by the Chiba prefecture government, the Cyberjaya by the Malaysian government, the Marne La valley development by the public corporation established by the French government initiative, and the Dockland development by the corporation established by the British government. In the case of the Yokohama Minato Mirai 21, a joint venture company was created by the Yokohama city government, the Japan national railway, and the Japan Housing and Urban Development public corporation.

All the cases above have been implemented by either the governments themselves or strong public corporations. It is recommended, therefore, that the Qatana IT city should be implemented by the cooperation of the Syrian government, Damascus and Rural Damascus governorates, and the Qatana IT city corporation to be established with the private sector.

(2)   Steering committee to determine core entity

In order to discuss and resolve issues involved in the Qatana IT city development, a steering committee should be established with memberships by related government organizations. To establish strong ownership necessary for the successful promotion and realization of the initiative, a key entity should be identified.

4.6.2   Alternative implementing agencies

Two alternatives are conceived as the implementing agency for the Qatana IT city: an existing public organization and a new entity to be established. They are described below.

Alternative 1: existing public organization

The General Company of Housing (GCH), a public enterprise 100% owned by the Ministry of Housing, may be a most plausible entity to be selected for the Qatana IT city development. Its functions include not only planning but also construction of infrastructure and buildings, monitoring and management of construction works, and fund procurement necessary for housing development. Its functions and staff capacity may be expanded to undertake the project.

Alternative 2: new entity

A new entity may be established by the joint efforts of related ministries such as the Ministries of Housing, Local Administration and Environment, Economy and Trade, Public Works, and Transport and Communications as well as the governorates of Damascus and Rural Damascus, and the Qatana city. As the Qatana IT city encompasses various aspects including challenging tasks, multi-ministry cooperation is of great importance. It is essential at the same time that the strong ownership should be established with one-stop-shop type functions to ensure effective promotion and management of the project.

4.6.3 Tasks of the Government and implementing agency

(1) Establishment of implementing agency

The government sector shall establish a public corporation to implement the project or appoint one of the suitable public corporations as the implementing agency. The public sector shall retain power to authorize the works of the implementing agency, monitor the development activities, and sometimes instruct the direction for the development. The implementing agency shall be a "one-stop-shop" entity to the residents, tenant companies, and real estate developers. The government sector shall play a positive role in the aspect of promotion and management through the implementing agency.

(2) Planning and legislative actions

The related municipalities of the Rural Damascus governorate and the Qatana city and MLAE shall entrust the planning activities to the implementing agency. On behalf of the authority concerned, the implementing agency shall prepare a land use plan and a business plan and related detail plans.

(3) Land acquisition and fund procurement

One of the critical issues at the initial stage is how to acquire the land promptly as well as how to procure necessary fund. In general, infrastructure developments are done by the public sector and real estate developments are done by the private sector. In view of speedy land acquisition, sufficient communication with residents is very essential. The use of participatory approach will be recommendable for land acquisition as well. Due attention shall be given so that urban sprawl and informal housing may not take place in the site concerned. Fortunately, the Ministry of Agriculture owns an overwhelmingly large share of the land.

Necessary fund procurement shall be done by joint efforts of the public sector and the private sector. In order to attract private investments, however, the public sector should initially spearhead an initiative of fund procurement.

(4)   Urban development promotion

In order to develop the Qatana IT city as a future IT core, it is deemed vital to relocate or newly set up prestigious universities as magnets and anchor tenants into the Qatana IT city. A renewed commitment by the Syrian Government is indispensable. Otherwise, neither local companies nor foreign multi-national companies will be inclined to make inroads into the Qatana IT city. To accomplish this task, the implementing agency must take a course of actions promptly and strategically as private entities: (1) identification of institutions and companies to be attracted, (2) formulation of attraction strategy, (3) preparation of promotion materials, and (4) top-sales arrangement. The implementing agency should be a performance-oriented, client-focused public corporation to process all the necessary implementation powers.

(5)   Constant check and review of development and management strategy

It is of great importance to check constantly and revise the development and promotion strategy formulated. If it is presumed that some modifications or addition of new strategies are necessary, the implementing agency should take flexible and prompt actions.

(6)   Public relations

The implementing agency should conduct public relation activities for the development of the Qatana IT city. The contents and presentation methods of public relations would have to be of fine quality.

(7)   Preparation of design guidelines and supervision

It is essential to accelerate the development of the Qatana IT city by promoting and stimulating the private sector's participation. On the other hand, it is important to guide and supervise individual large-scale land lot developments in accordance with the Qatana IT city concepts and land use plan. Design guidelines should be prepared and used as an effective tool to control individual developments by the private sector.

4.7   Project Promotion Measures

In view of stimulating urban development investment activities for the Qatana IT city, the government authorities concerned and the implementing agency should take effective development strategy and adopt project promotion measures. Some of the recommendable measures are suggested below.

(1)   To relocate government research organizations

Damascus is the national capital as well as the center of Syrian economy and society. Almost all he important functions are concentrated in Damascus. A broad decentralization

policy should be advocated by the Syrian Government in order to improve such mono-polarized structure of Damascus. Although it is very difficult to relocate economic headquarter functions from Damascus, it might be comparatively easier to relocate government research functions from Damascus. Provided that such governmental research institutes should be relocated to the Qatana IT city, private research and consulting firms will follow to set up offices there as well.

In Japan, a similar new city development project of "Tsukuba Science City" took the same measure to strengthen the growth of knowledge-based industries there. Many governmental research organizations were relocated from Tokyo and re-established in the Tsukuba Science City. Then, many private companies made the decisions to locate a part of their R&D functions in the Tsukuba Science City.

(2) To attract anchor tenants at the initial stage

It is a typical urban development promotion tactics for science parks, industrial parks, and software parks to attract anchor tenants for the purpose of establishing good recognition of the development project concerned. If successful, lots of private companies will come to have good recognition of the Qatana IT city. It is a psychological effect on human mind. Many people will feel self-convinced, considering that "If such a famous company A has determined to make an investment in the Qatana IT city, it will probably be a promising opportunity."

(3) To establish a high-powered implementation agency to act as "one-stop-shop"

In order to secure steady and prompt progress in sub-center development works, it is necessary that the implementing agency shall provide one-stop-shop services and monitor, manage and coordinate all the related infrastructure construction, maintenance and operation. Without such an committed agency to be highly responsive to inquiries from companies as well as inhabitants, development works will not make progress efficiently and rapidly.

(4) To hold major international events

In Japan, many international events have been planned to be held in the new development places. In order to hold such major events, construction of large-scale infrastructure (highways, railways, airports etc.) will be necessitated. For instance, the construction of Damascus-Quneitra road and the outer ring road will have to be accelerated, if such major international events are to be held in the Qatana IT city. On the other hand, those major events will bring about huge advertising effects. As a result, publicity and international recognition of the Qatana IT city will be strengthened.

As the venue for such a large-scale event in the Qatana IT city, UGP 1 will be suitable. In Phase 1, the place will be used as the event venue. After the event, it will be reformed into an

urban green park. Most of the arterial roads and the public transport modes will have to be provided on time for the event. Such a major event will necessitate various related investments, and the development of the Qatana IT city will be accelerated.