CHAPTER 4 URBAN TRANSPORTATION PLAN

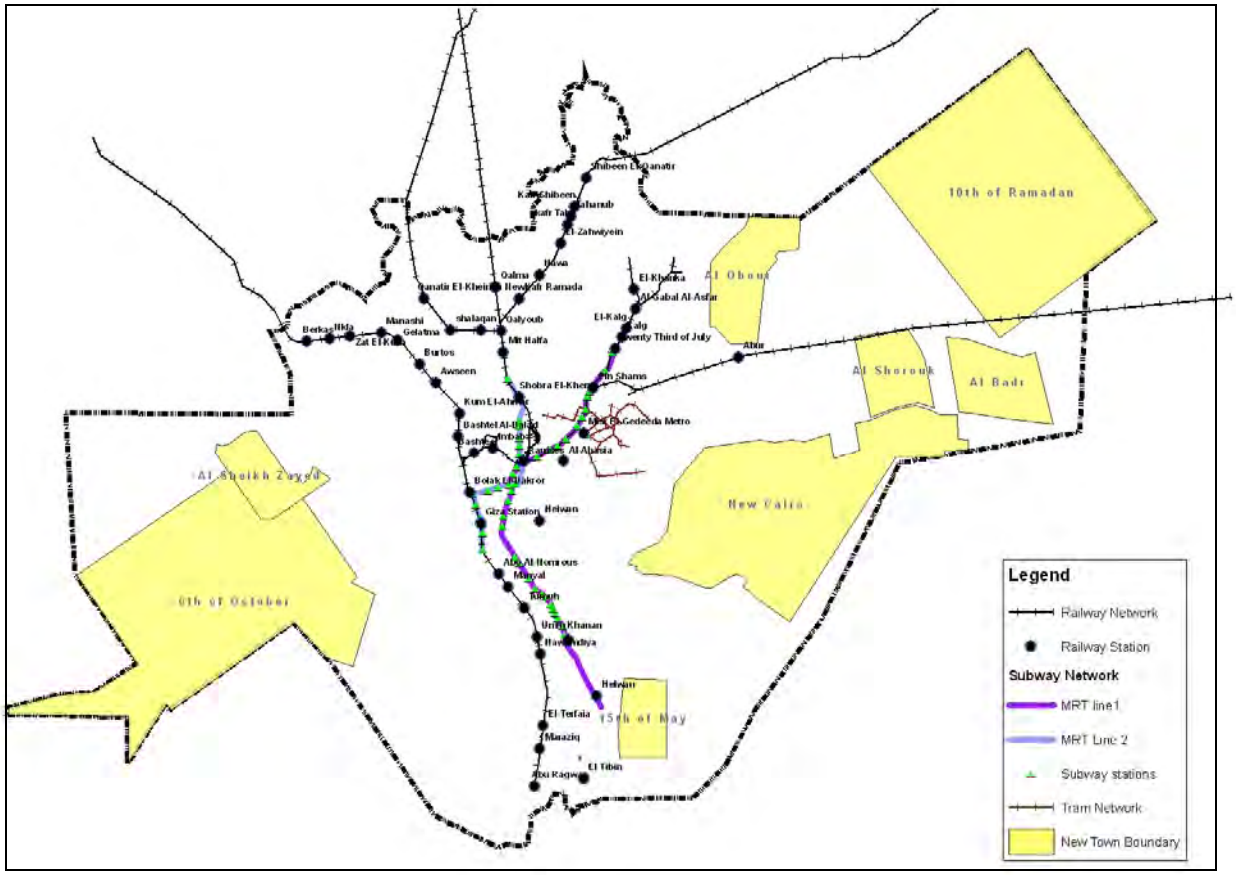
4.1 General Conditions of Urban Transportation

4.1.1 Existing Transportation Facilities

(1) Railway

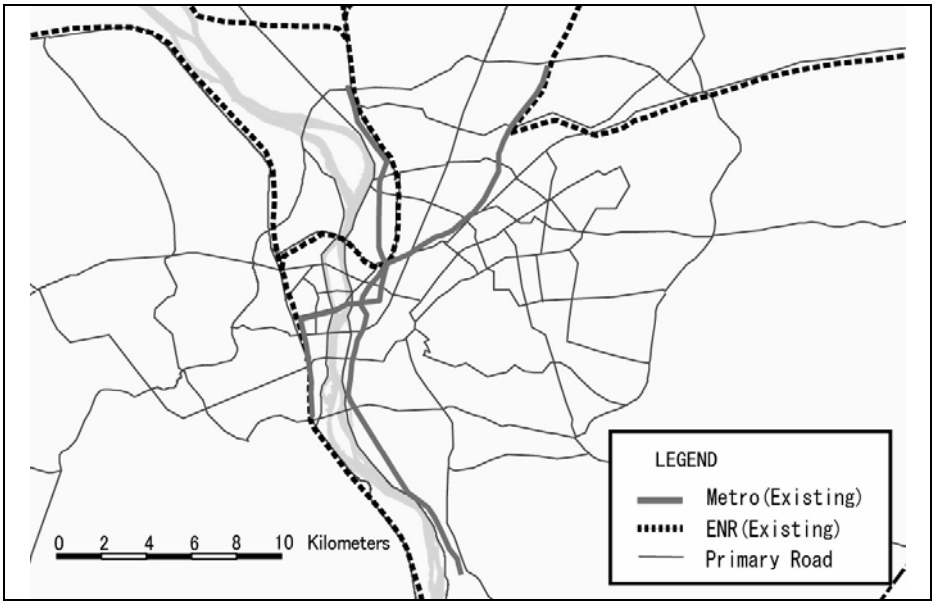
1) Metro

The present urban railway network and urban railway transport services in the Greater Cairo area is shown in Figure 4.1.1 and Figure 4.1.2, respectively. The routes of Metro Line 1 and Metro Line 2 are also shown in Figure 4.1.1 and Figure 4.1.2. The location of the Metro Line 1 and Metro Line 2 stations is shown in Figure 4.1.1.



Source: Edited based on Egyptian National Railways (hereafter ENR in this Chapter) data

Figure 4.1.1 Urban Railway Network



Source: JICA Study Team, based on ENR data. Landsat image courtesy of USGS.

Figure 4.1.2 Urban Railway Transport Service

According to the recent data submitted by the Cairo Metro Organization (CMO) (hereafter referred to as CMO in this Chapter), as shown in Table 4.1.1, the average number of passengers per day between 05:15-24:15 amounted to 1.217 million on Metro Line 1 and 0.73 million on Metro Line 2 in 2005/2006.

As for the Metro Line 2, the number of passengers has increased by an average of 2.7 % per year between 2000 and 2006. On the other hand, passenger numbers on Metro Line 1 decreased by an average of 2.8 % per year between 1999 until 2003. However, from 2003 until the present (2007), passenger numbers have been increasing by an average of 2.5 % per year. It is noted that the number of passengers transferring from Line 1 to Line 2 and visa versa represents approximately 40 % of the total entry of passengers on Line 2 (Table 4.1.5 and Table 4.1.6).

Table 4.1.1 Metro Line Operating Data for CMO

Line 1 (43km)		00/99	01/00	02/01	03/02	04/03	05/04	06/05
No. of Passenger	Mil/day	1.24	1.21	1.18	1.13	1.14	1.18	1.22
	Mil/year	451.2	442.2	429.5	413.3	418.8	429.5	441.1
No. of Unit	3Cars/U.	115	139	139	139	138	144	159
No. of Trips*	No/day	400	400	410	414	414	414	426
Revenue	Mil. LE	126.10	126.95	128.79	139.13	153.11	160.14	164.75
Line 2 (21km)								
No. of passenger	Mil/day	0.56	0.64	0.69	0.69	0.65	0.68	0.73
	Mil/year	204.3	234.7	251.8	252.2	239.3	247.9	266.6
No. of Unit	3Cars/U.	62	66	70	70	70	70	70
No. of Trips*	No/day	450	456	498	498	498	500	500
Revenue	Mil. LE	62.66	73.52	81.59	88.95	102.17	110.99	121.27
Total (64km)								
No. of Pass.	Mil/day	1.80	1.85	1.87	1.82	1.79	1.86	1.95
Revenue	Mil. LE	188.76	200.47	210.38	228.08	255.28	271.13	286.02
Costs	Mil. LE	443.02	509.16	541.63	567.65	751.42	701.85	713.08

Source: Summarized from CMO data.

Table 4.1.2 Share of Types of Tickets Sold

Year		99/00	00/01	01/02	02/03	03/04	04/05	05/06
Single Ticket	No.	271.97	289.62	296.25	295.46	274.02	292.12	316.49
	L.E	148.63	159.08	167.01	180	203.15	214.13	231.94
Season Ticket	No.	1.599	1.595	1.570	1.433	1.430	1.327	1.262
	L.E	37.84	39.01	40.5	44.3	45.8	47.51	43.24
Yearly Ticket	No.	-	-	-	1720	22270	30265	35960
	L.E	-	-	-	0.35	3.22	5.77	6.81
Penalty Million	No.	0.229	0.238	0.287	0.343	0.311	0.372	0.403
	L.E	2.29	2.38	2.87	3.43	3.11	3.72	4.03
Total Revenue		188.76	200.47	210.38	228.08	255.28	271.13	286.02

Source: CMO

Table 4.1.3 Annual O&M and Depreciation Cost and Total Expenditure

Unit: Mil. LE/Year	99/00	00/01	01/02	02/03	03/04	04/05	05/06
O&M Cost	119.64	125.37	158.91	154.08	145.41	190.73	191.49
Depreciation	323.38	383.79	382.72	413.57	606.01	511.12	521.59
Total	443.02	509.16	541.63	567.65	751.42	701.85	713.08

Source: CMO

Metro Line 1 has 35 stations, 5 of which are underground, and presently operates sets of 9-coach train with a headway spacing of 3.5 minutes in peak hour. Metro Line 1 carries approximately 1.2 million passengers per day.

As for traveling time, it takes 68 minutes in total from the start to the end of the route; 44 minutes from Helwan to Mubarak Station and 24 minutes from Mubarak to El Marg.

Metro Line 1 connects to the ENR line at Helwan, south of Cairo, and at El Marg in the north east. The total length of Metro Line 1 is 44 km. It was designed to carry 2 million passengers per day by operating with a 2.5 minute headway at a maximum speed of 100 km/h.

The construction work was divided into two phases. Phase I was the Helwan to Mubarak Station in Ramses Square, with a length of 28 km including the 4.5 km underground section. This section was opened to operations in September 1987, 5 years since the start of construction in 1982.

The Phase 2 construction extended from Ramses Square to El Marg, establishing three (3) new stations and the renewal of the maintenance workshop at Tura. Operational services for this section started in April 1989. Further extension of 1.3 km northwards to the Cairo Ring Road was brought into service in 2000.

Metro Line 2 has 18 stations, 12 of which are underground and presently operates 8-coach trains with a 2.45 minute headway. Metro Line 2 carries approximately 0.73

million passengers per day. The full journey from Shubra El Kheima to El Moneib Station takes 35 minutes when the trains operate at maximum speed (80 km/h).

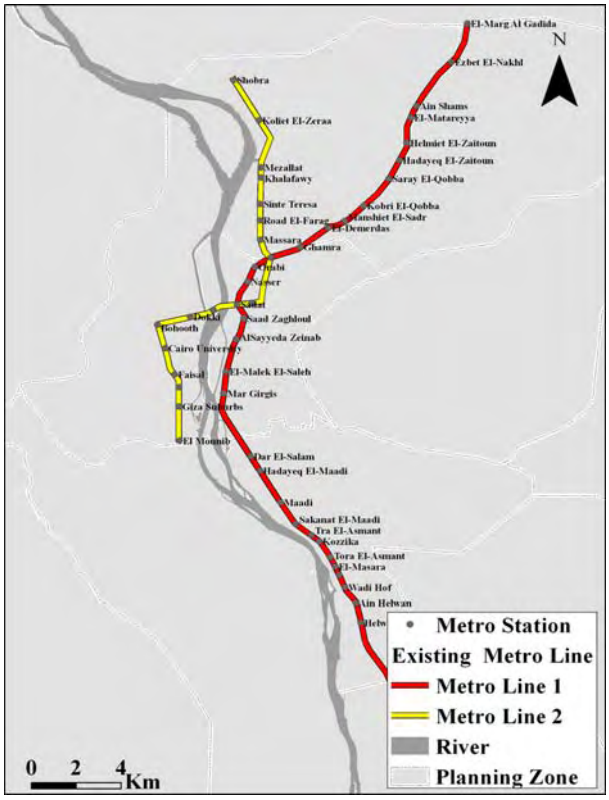
The construction of Metro Line 2 was commenced in 1993. Full operation started in January 2005, with total length of 22 km. Power is supplied through a third rail. Construction of the line was divided into 5 phases, as shown in Table 4.1.4.

The transfer stations between the Metro Line 1 and Metro Line 2 are Mubarak Station in Ramses Square and Sadat Station in Tahrir Square.

Table 4.1.4 Construction Phases of Metro Line 2

Phase	Section	Length	Start in operation
1	Soubra El Khiema – Mubark	8 km	October1996
2	Mubark – Sadat	3 km	September1997
3	Sadat – Cairo University	5.5 km	April.1999
4	Cairo Univ. - Elmassreen	2.7 km	October 2000
5	Elmassreen - El Monieb	2.6 km	January 2005

Source: Summarized based on CMO data



Source: Map of Cairo City Key

Figure 4.1.3 Route and Location of Stations on Metro Line 1 and Metro Line 2

Table 4.1.5 Passenger Volume/Day for Each Station on Metro Line 1

station code	Station	Entry	Exit	Total Traffic	Station rank according to traffic
1	Helwan	46 857	43 705	90 562	3
2	Ain Helwan	3 803	5 490	92 294	33
2	Helwan University	25 142	23 437	48 579	20
3	Zahraa Helwan	6 549	6 520	13 068	31
4	Hadaeq Helwan	13 573	13 394	26 966	26
5	Al-Maasarah	13 045	12 277	25 322	27
6	Tora Al-Asmant	1 645	1 597	3 242	35
7	Kotssica	11 086	10 706	21 793	28
8	Tora Al-Balad	4 580	4 470	9 050	34
9	Thakanat Al-Maadi	7 817	7 585	15 403	30
10	Maadi	35 454	37 065	72 519	11
11	Hadaeq Al-Maadi	31 712	31 861	63 573	15
12	Dar Al-Salam	30 409	30 234	60 644	16
13	Al-Zahraa	18 251	16 760	35 010	23
14	Mar Gergess	5 911	5 450	11 361	32
15	Al-Malek Al-Saleh	15 763	18 409	34 172	24
16	Al-Sayyeda Zeinab	37 119	38 379	75 497	9
17	Saad Zaghloul	28 680	28 087	56 767	18
18	Anwar Al-Sadat 1	32 503	31 640	64 143	14
19	Nasser	50 177	47 939	98 116	2
20	Ahmed Orabi	13 907	13 824	27 732	25
21	Hosni Mubarak 1	33 579	46 613	80 192	8
22	Ghamra	41 088	41 205	82 294	7
23	Al-Demerdash	42 599	40 806	83 405	6
24	Mansheyet Al-Sadr	31 534	35 883	67 417	13
25	Kobri Al-Qobba	45 939	40 088	86 027	5
26	Hamamat Al-Qobba	10 365	9 078	19 444	29
27	Saray Al-Qobba	21 085	20 032	41 117	22
28	Hadaaek Al-Zayton	27 699	28 797	56 496	19
29	Helmeyet Al-Zayton	45 797	40 279	86 076	4
30	Al-Matareya	23 216	22 202	45 418	21
31	Ain Shams	35 245	32 246	67 491	12
32	Ezbet Al-Nakhl	54 056	49 132	103 188	1
33	Al-Marg Al-Qademah	39 001	34 004	73 005	10
50	Al-Marg Al-Gadedah	26 766	33 105	59 871	17
	Total	911 953	902 300	1814 253	
21/18	Transferring between Hosni Mubarak and Sadat	276 960			
	Total	**1 188 913**			

Source: CMO

Table 4.1.6 Passenger Volume/Day for Each Station on Metro Line 2

station code	Station	Entry	Exit	Total Traffic	Station rank according to traffic
34	Shobra Al-Kheima	52 621	41 555	94 176	2
35	Koleyet Al-Zeraah	24 332	23 199	47 531	6
36	Al-Mezalat	16 120	17 817	33 937	13
37	Al-Khalafawy	10 396	10 922	21 318	18
38	Saint Tereza	10 867	11 330	22 197	17
39	Rod Al Farag	16 473	18 763	35 236	12
40	Messara	14 559	15 571	30 130	15
21	Hosni Mubarak 2	29 014	26 578	55 593	5
41	Al-Ataba	44 200	51 028	95 228	1
42	Mohammed Naguib	22 022	22 871	44 893	9
18	Anwar Al-Sadat 2	19 936	18 013	37 919	10
43	Al-Obera	5 887	6 327	12 213	20
44	Al-Doqi	22 741	23 722	46 463	7
45	Al-Bohouth	31 790	33 282	65 072	3
46	Cairo University	28 376	27 824	56 200	4
47	Faissal	19 379	18 506	37 885	11
48	Al-Geiza	23 238	22 692	45 930	8
49	Om Al-Masreyeen	13 840	14 321	28 161	16
51	Saqyet Mekki	8 947	8 818	17 766	19
52	Al-Moneib	19 291	13 631	32 922	14
	Total	434 030	426 770	860 800	
21/18	Transferring between Hosni Mubarak and Sadat	303 821			
	Total	**737 851**			

Source: CMO

2) ENR suburban railway

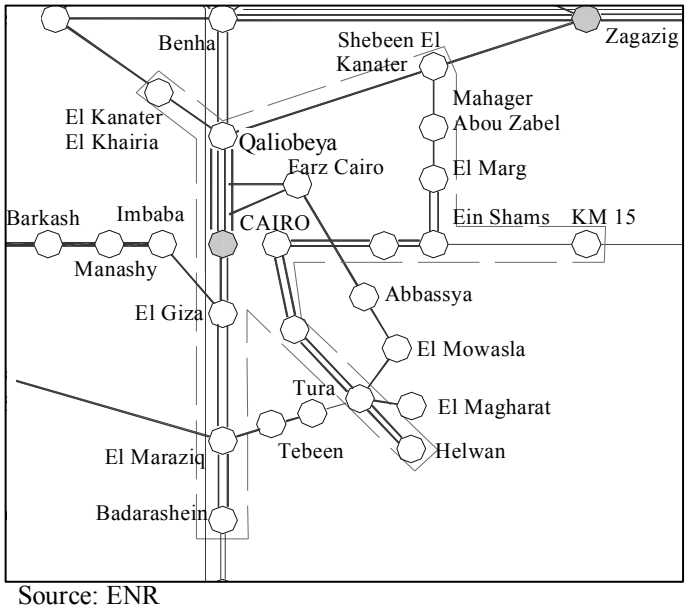
Egyptian National Railways (ENR) operates 7 suburban railway lines in the Greater Cairo Region as shown in Table 4.1.7 and Figure 4.1.4. The average number of passengers amounts to 142,000 per day. This represents approximately 12 % of the all ENR passengers (see Table 4.1.8). However, this figure represents only 7 % of Metro passengers (see Tables 4.1.5 and 4.1.6).

Of the seven ENR lines, the Cairo-Qaliobeya line is technically available for through-operation with Metro Line 1 at El Marg, and the El Marg-Shibin El Qanater line could provide through-operation with Metro Line 2 at Shubra.

Table 4.1.7 Number of Passenger and Suburban Trains in the Greater Cairo Area

Length (km)	Section	No. of Passenger/Day	No. of Trains (Cars)
14	Cairo-Qaliobeya (N)	11,250	25 (9)
32	Cairo-Shibin El-Qanater (NE)	26,600	38 (7)
20	El-Marg- Shibin El-Qanater (NE)	32,400	44 (6)
23	Cairo-El-Qanater Al-Khayreya (NW)	29,400	42 (7)
32	Cairo-Imbaba-Badarsin (S)	19,800	22 (9)
30	Ain Shams-Abur-Shuruq (E)	4,900	14 (7)
18	Cairo-Imbaba-Manashi (W)	17,000	34 (5)
	Total	141,350	

Source: Prepared based on ENR data



Source: ENR

Figure 4.1.4 The Existing Urban Railway Network in Greater Cairo

Table 4.1.8 Number of Passenger/Day on Each Line for 2005/2006

No	Lines	Passenger/Day
1	Cairo/Alexandria	321,969
2	Cairo/Ismailia/Port Said	47,474
3	Cairo/Luxor/Aswan	239,194
4	Ismailia/El Qantara/Ber El Abd	3
5	Ein shams/Suez	5,080
6	Ismailia/Suez	17,930
7	Tanta/El Mansoura/Domiatta	35,100
8	Cairo/Shebin El Qanater/El Mansoura	65,511
9	Abou Kebir/El Salhiya	21,828
10	Faqus/El Samana	1,402
11	El Mansoura/Sandob/El Materia	10,868
12	Cairo/El Qanater/Menuf/Tanta	46,101
13	Menuf/Kafr El Zayat	20,393
14	Benha/Menuf	16,428
15	Benha/Mit Bira/Zefta/Mit Ghamr	10,446
16	Tanta/El Santa/Zefta/Zagazig	37,734
17	Mahalet Rouh/Elsanta	7,167
18	Tanta/Qelein/Sherbin	38,095
19	Tanta/Qelein/Desouk/Damanhur	33,743
20	Desouk/Motobus/El Bouseli	5,640
21	El Bouseli/Motobus/El Qassabi	2,181
22	Alexandria/Rashid	9,042
23	Alexandria/Marsa Matruh	10,654
24	Matruh/Samala/El Saioum	22
25	Cairo/El Khatatba/Etay El Baroud	41,737
26	El Wasta/El Fayum	7,861
27	Beni Suef/ El Lahun	551
	Suburban Lines	139,250
	Main Lines	608,637
	Branch lines	445,519
	Total	1,193,405

Source: ENR

(2) Bus

The transport balance of various transport modes is roughly summarized in this section. In Table 4.1.9, the number of buses operated in the bus fleet was estimated by the JICA Study Team by applying ratio of operated/registered buses. This was done because of no information was available from the Cairo Transport Authority (CTA). The difference between "operated" and "registered" buses can be considered as buses operated by mainly public bodies (Government, local government, public company, public school and so on) which are used as shuttle buses. The Transportation Master Plan and Feasibility Study of Urban Transport Projects in Greater Cairo Region in the Arab Republic of Egypt (CREATS) estimated the operability ratio of the CTA fleet as 0.75. Following that, the operable CTA bus fleet was given as 4,130 buses in 2005.

Table 4.1.9 Estimated Number of Buses in the Fleet

Year	Public Bus Number operated	Public Bus Number registered	Ratio of Operated/Registered
2000	4500 reported by CREATS	5,652	0.796
2001	n.a.	N.A.	
2002	n.a.	N.A.	
2003	4905 estimated figure	6,121	
2004	5223 estimated figure	6,562	
2005	5506 estimated figure	6,917	

Source: CREATS and Statistical Year Book 2000, 2003, 2004, 2005. (N.A. = not available.)

Based on the report of CMO, the daily number of passengers transported is roughly 2 million and total public transport mode passengers are estimated to be 13.7 million. Applying the CREATS assumption that a bus transports 1,000 passengers/day, 4,130 units will transport 4.1 million passengers/day. The remaining 7.6 million passengers are considered to be the number carried by private bus transport. The registered private bus fleet in 2005 was 12,263 units. Applying the same assumptions, with 0.796 as the ratio of operated/registered and 0.75 being the operability ratio, a workable number of private buses is estimated to be 7,321 units. This calculation results in each private bus handling an average of 1,038 passengers a day. (see Table 4.1.10).

Table 4.1.10 Estimated Passenger Transport Share

Total Demand	13.7 million
Metro	2.0 million
CTA	4.1 million
Private Bus	7.6 million

Sources: CREATS final report Vol.2, 2003 and Statistical Year Book 2005.

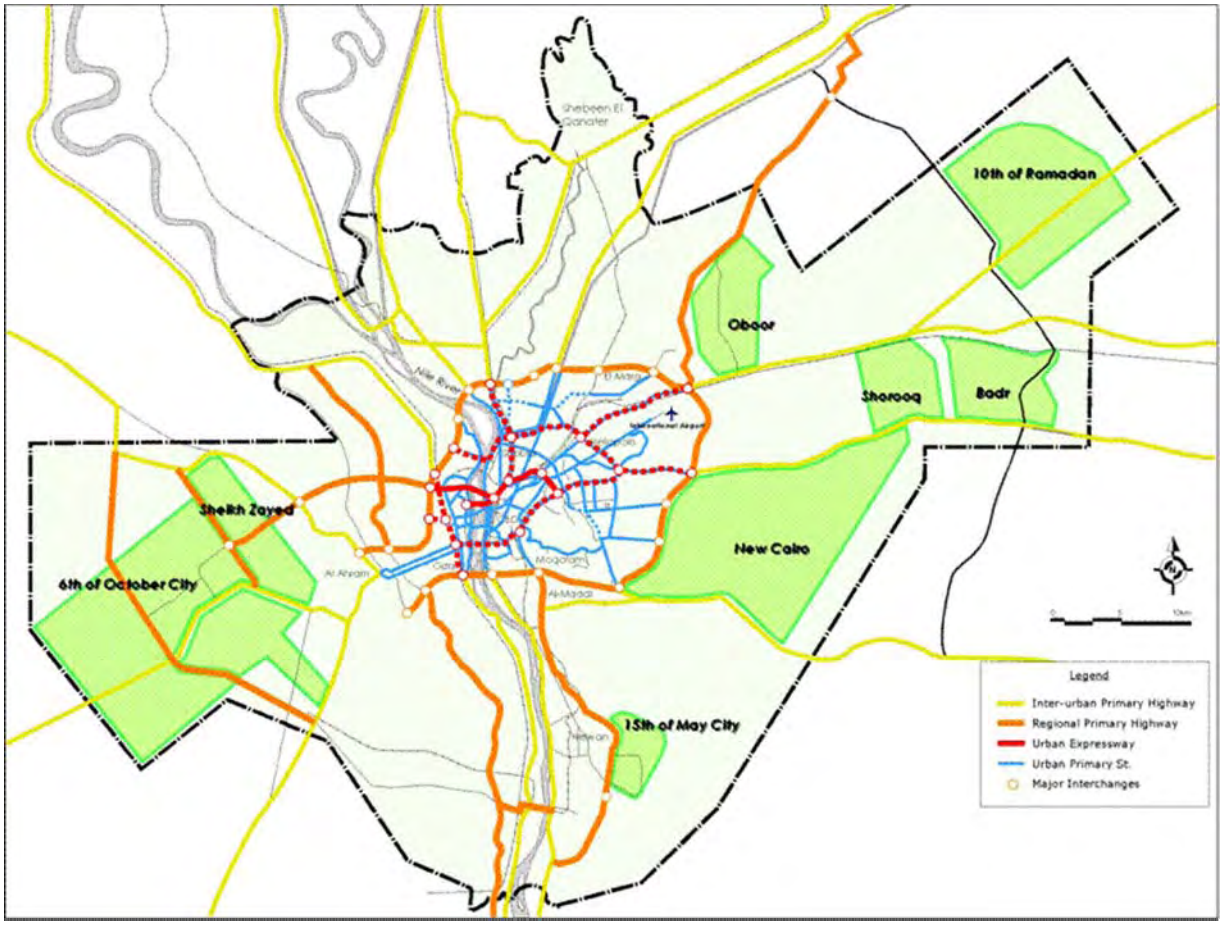
(3) Road

1) Identification of the road network

The road transport system in the Study Area is defined by CREATS Study, as shown in Figure 4.1.5, and is classified into two major categories:

(a) The Regional Corridor Network that is presented in Figure 4.1.6; and

(b) The Urban Corridor Network that is presented in Figure 4.1.9.



Source: CREATS final report Vol.2, 2003

Figure 4.1.5 CREATS Functional Classification of Existing Road Network for the Study Area

The Regional Corridor Network is characterized by higher design speeds to serve the regional traffic movements. The Urban Corridor Network distributes the traffic among the urban centers, mostly inside the Ring Road.

Table 4.1.11 shows the recommended policies for road structures, traffic management and environmental measures with functional classifications of the road network.

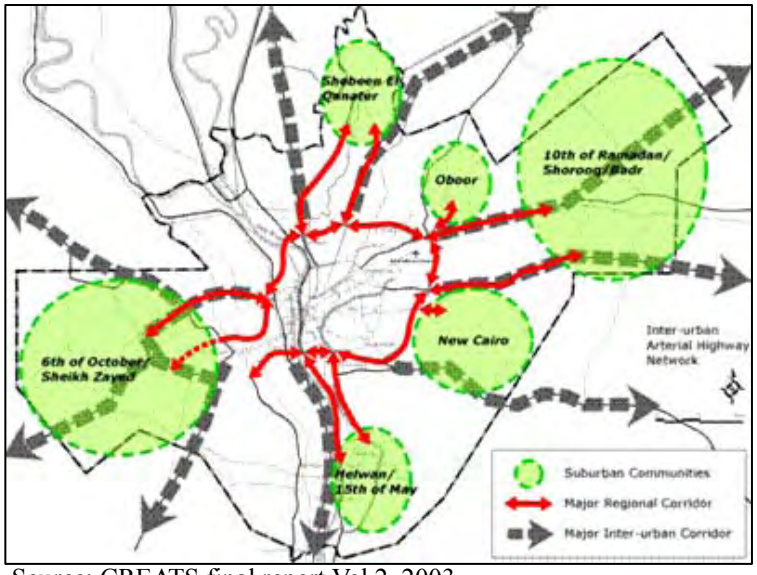
Table 4.1.11 Recommended CREATS Policies on Road Structure/Traffic Management/Environmental Measures with Functional Classification

Traffic Management		Traffic Management	Traffic Management	Traffic Management	Traffic Management
Road structure	Structure	Embankment/viaduct/cut/underground	Embankment/viaduct/cut/underground	Embankment/viaduct/cut/underground	At grade
	Crossing system	Interchange	Interchange	Interchange	Flyover/Signalized
	Number of Lanes	Multi-lane divided	Multi-lane Divided	Multi-lane Divided	Multi-lane Divided
	Pedestrian facility	N.A.	N.A.	N.A.	Dual Sidewalk
	Bus/HOV*Lanes	N A	(Possible)	(Possible)	(Possible)
	Typical Number of Lanes	4-8	4-8	4-6	4-8
Traffic Management	Speed Limit	120km/hr or less	120km/hr or less	100km/hr or less	80km/hr or les
	Parking Regulation	Parking/stopping prohibited	Parking/stopping prohibited	Parking/stopping prohibited	Parking Prohibited
	One-way operation				(stopping allowed)
	Vehicle Type Restriction	N.A.	N.A.	N.A.	Applicable
	Signal control	N.A.	N.A.	N.A.	Vehicle Type/Hour
	Pedestrian Accommodation	N.A.	N.A.	N.A.	Synchronized
	Speed Limit				Signalization
	Parking Regulation	Full Grade separation	Full Grade separation	Full Grade separation	Grade separation/ Crosswalk
Environmental Measures	Roadside Facility	Buffer Area	Buffer Area	Noise Barrier/wall	Roadside flora
	Traffic regulation	Speed Limit	Speed limit	Speed limit	Cargo Traffic Control
	Land use Regulation	Non-residential Area	Non-residential Area	Non-residential Area	Residential Area will be guided to Non-residential

Source: CREATS final report Vol.2, 2003 (N.A. = not available.)

2) Regional road network

The Regional Roads presented in Figure 4.1.6 are important trunk corridors for the GCR urbanization.



Source: CREATS final report Vol.2, 2003

Figure 4.1.6 Suburban Communities and Regional Road Network

The Cairo-Alexandria Desert Road is already widened to 4-lanes in each direction. This road is classified as a Toll Road, with maximum allowable speed 100 km/hr for passenger cars. The users have to pay fee of 2 LE for passenger cars to enter the road. The average daily traffic (ADT) for this road in 2006 was 27,551 vehicles/day. The second access between Cairo and Alexandria is the agriculture road. This corridor has also reached the maximum planned width. At present, this road looks like an urban road and it has a maximum allowable speed limit of 60 km/hr. The road has the highest ADT rate recorded for all regional roads in Egypt (104,835 vehicles/day were recorded in the Cairo-Banha section for 2006). Table 4.1.12 shows the ADT on the Main Road Network, based on recent data. Table 4.1.13 shows the ADT based on earlier CREATS Study data and updated with new data obtained from the General Authority for Roads, Bridges and Land Transport (GARBLT).

Table 4.1.12 Average Daily Traffic (ADT) on the Main Road Network

Station	Year 2001	Year 2002	Year 2003	Year 2004	Year 2005	Year 2006
Cairo- Ismailiya	35,026	39,147	41,451	43,582	45,405	49,236
Tanta-Damanhour	30,327	31,600	32,486	32,105	32,105	34,320
Giza-Bani Suif	12,192	31,600	32,486	32,105	32,475	12,312
Cairo-Suez Desert Road	12,170	13,043	13,499	12,846	12,206	15,941
Abou Hamad-Ismailiya	9,194	9,763	10,209	10,000	10,406	11,376
Tanta-Quesna	34,716	39,959	38,286	39,570	42,413	46,507
Moustrad-Belbeis	14,204	15,453	14,938	14,470	14,548	14,292
Cairo-Banha	80,358	88,688	92,010	93,648	97,304	104,835
Meet Ghamar- Agah	21,909	23,607	25,260	25,370	26,264	27,850
Cairo-Alexandria Desert Road	23,736	24,588	25,237	25,483	26,726	27,551
Cairo-Fayoum Desert Road	9,187	10,830	10,575	11,958	12,737	13,831
Minya-Asuit	4,555	4,855	4,880	5,613	6,584	7,183
Damanhour-Alexandria	43,332	31,389	34,160	35,830	36,018	39,182

Source: GARBLT data issued for years 2005-2006.

Table 4.1.13 Average Daily Traffic (ADT) on Major Arterial Highways

No.	Corridor Name	2000 Volume (vehicles./day)	2006 Volume (vehicles/day)	Average Annual Growth
NH11	Alexandria Desert Road	17,886	27,551	7.5%
NH01	Alexandria Agriculture Road	55,163	51,438	-1.2%
NH04	Ismailia Desert Road	32,772	49,236	7.0%
NH41	Ismailia Agriculture Road	10,109	11,376	2.0%
NH03	Suez Desert Road	10,962	15,941	6.4%
NH21	Upper Egypt Desert Road	10,349	12,312	2.9%
NH22	Fayoom Desert Road	10,792	13,831	4.2%

Source: GARBLT and CREATS final report Vol.2, 2003

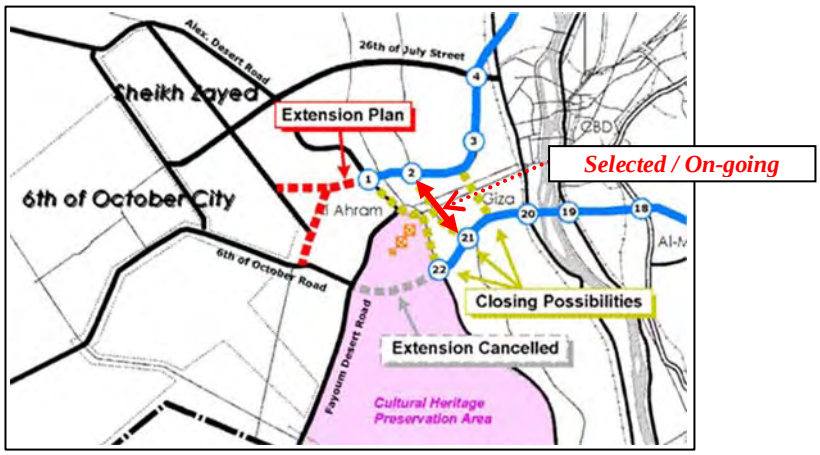
Generally, the major regional corridors are divided and have high design speeds (80 ~ 100 km/hr).

3) Ring Roads for the study area's spatial structure

A classical type of ribbon development has taken place in several radial corridors in the Study Area. However, the Ring Road, for which construction was started in 1985, has led to a new urbanization pattern that allows anticipation a more structural and

strategic development patterns, thereby extending wider urban planning options for locations of major urban economic activities such as industrial and cargo distribution facilities as well as new commercial facilities.

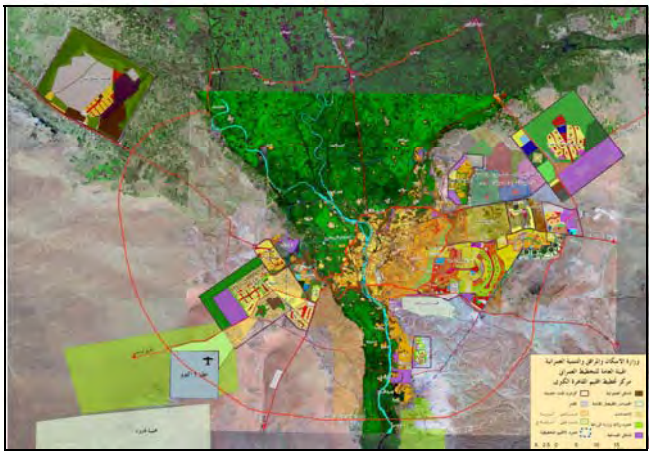
Currently, planning or three projects should be considered. The first project is concerned with the completion of the Greater Cairo Ring Road, closing the arc near to the pyramids area, and its connection with the Alexandria desert road for complete formation of a regional network. The completion of the Ring Road must be considered an urgent issue. The current plan is to close the Ring Road with Maryotia St. (IC02-IC21) as shown in Figure 4.1.7.



Source: Updated based on CREATS final report Vol.2, 2003

Figure 4.1.7 The Ring Road Extension Plans

The second project that should be considered is with the so-called Regional Ring Road, as presented in Figure 4.1.8, which is located at about 100 km radius encompassing the area outside the Study Area. Based on a review of previous studies, the GOPP has given priority to the southern part of the Regional Ring Road. This will integrate suburban economic agglomerations into a wider metropolitan region, and provide functional linkages between the Study Area and the other regional economies. Yet, the concept of the Regional Ring Road needs to be further scrutinized from the points of view of economic feasibility and transportation planning.



Source: CREATS final report Vol.2, 2003

Figure 4.1.8 General Concept of the Regional Ring Road

The third project to be considered is the construction of the International Costal Road in the Delta Region. This road will have a length of 285 km. Even though it is not located too close to the Study Area, it is expected to may have effects on future land use planning in the Study Area, and consequently on the road network plans.

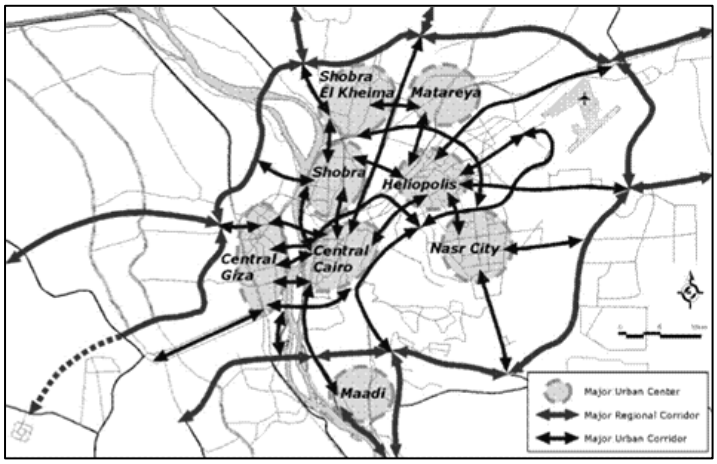
4) Urban corridor network

Based on the assessment of the findings of previous studies, the JICA Study Team has concluded that traffic conditions at major districts show that the major flow direction in the urban area is the traffic flowing from Central Giza, Central Cairo through Heliopolis/ Nasr City. In particular, the 6th of October corridor, Salah Salem Street and Nasr Road (Autostrad) are the heavy volume corridors. It is recognized the East-West and West-East traffic volumes are governed by the available capacities of bridges over the River Nile.

In the west of Giza, the parallel corridors of Al Haram Street (the Pyramid Road) and Malek Faysal Street are very high-volume corridors. Many other major arterial streets connecting suburban districts and urban centers also show very high volumes.

Previous studies including CREATS, as shown in Figure 4.1.9, identifies the most important missing transport links in the urban area as being Shobra El Kheima, Matareya, Nasr City, as well as new lateral (East-West) connections over River Nile and Ring Road access road improvements, among others.

The rapid increase of the number of vehicles and the growth of urban socio-economic activities have escalated the traffic volume all over the region. This keeps creating a lot of traffic problems in the area. Due to these problems, there is a need for many of the streets to have complex direction control designations at many of intersections (U-Turns), which create additional turning movements and detours.



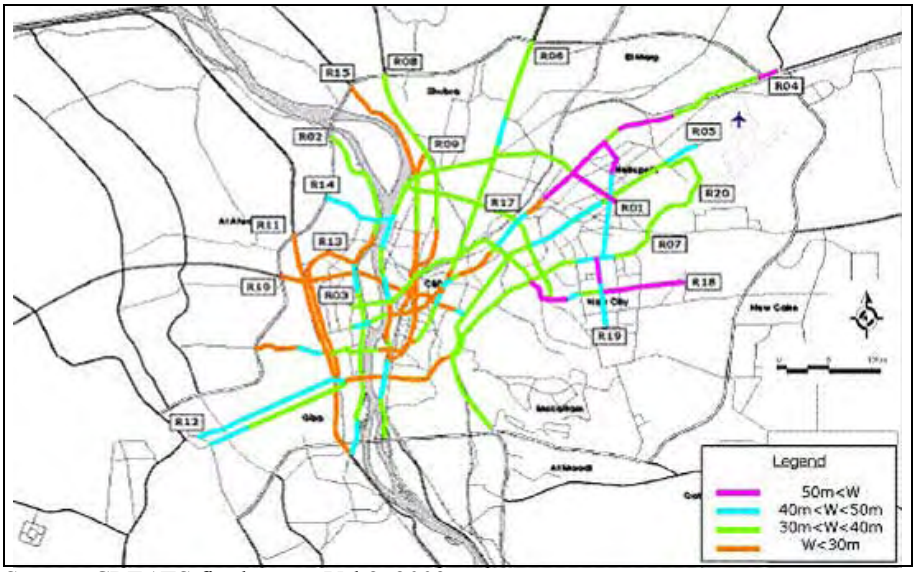
Source: CREATS final report Vol.2, 2003

Figure 4.1.9 Urban Corridor Network

The Autostrade (Al Nasr Road) is planned to accommodate predicted traffic volumes between Helwan and 15th of May, Maadi on one side of Cairo and Nasr City and Heliopolis on the other side. Certain lengths of this corridor are planned to be utilized as a part of the proposed Expressway number E-3.

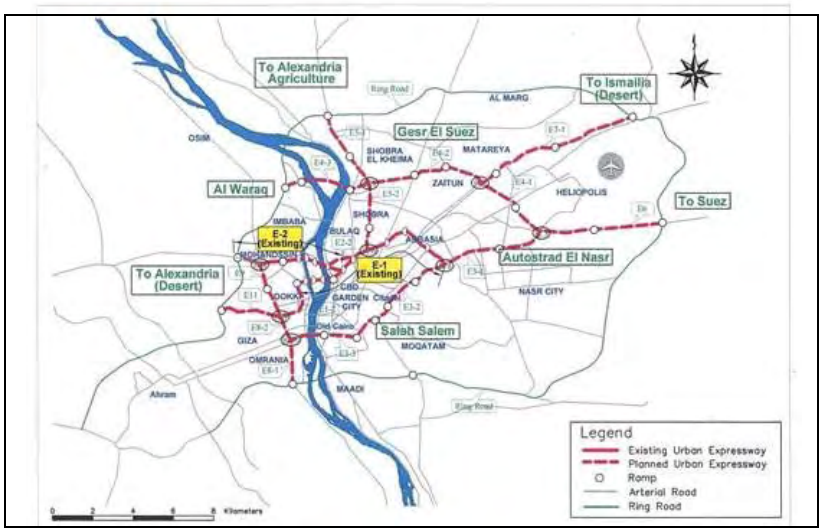
The 6th of October corridor is acting as an urban expressway by-passing the major Cairo CBD and connecting the East and West areas of the River Nile. It is the major connection between the two major Governorates of Cairo and Giza. The current length of this corridor is about 11.3 km and it is now connected to another major corridor to 26th of July. These two corridors are expected to be used for the proposed existing expressways E-1 and E-2 sections in the Public Private Partnership (PPP) Program for Cairo Urban Toll Expressway Network Development Study, hereafter referred to as the PPP in this Chapter.

Other urban corridors, as shown in Figure 4.1.10, generally have wide and divided multi-lane alignments, especially in the relatively new urban areas of Heliopolis and Nasr City. Here, several expressway corridors are planned to be used for part of the E-4, E-6 and E-7 sections as shown in Figure 4.1.11.



Source: CREATS final report Vol.2, 2003

Figure 4.1.10 Roadway Width of 20 Major Arterial Roads



Source: Public-Private Partnership program for Cairo urban toll expressway network development final report May 2006, JICA

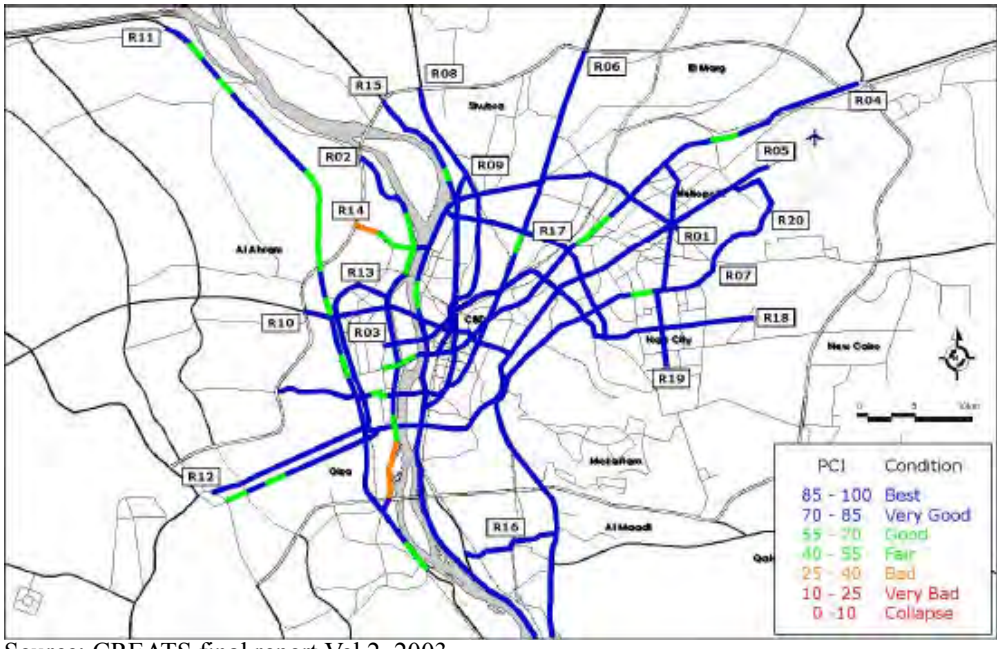
Figure 4.1.11 Expressway Network for Greater Cairo

Route	Location
E1-1	6th of October Elevated Road
E1-2	6th of October Extention
E2-1	15th of May Elevated Road
E2-2	15th of May Extention
E3-1	Autostrad El Nasr Street in Nasr City
E3-2	Autostrad from Nasr City to Citadel
E3-3	Salah Salem from Citadel to Giza Sq.
E4-1	Abu Bakr El-Sedeeq
E4-2	Ibn El Hakam – El Matariyah

Route	Location
E4-3	Tereat Ismailia – Al Warraq
E5-1	Cairo-Alexandria Agriculture Road
E5-2	Ahmad Helmi Street
E6	Cairo-Suez Road
E7-1	Gesr El Suez (Ismailia Desert)
E8-1	Tereat El-Zumur South of King Faisal
E8-2	Tereat El-Zumur North of King Faisal
E9	Tereat El-Zumur in Bolaq El Dakroor
E11	From Tereat El-Zumur to Ring Road

CREATS Road Condition Survey assessed the pavement condition of 20 major public transport routes inside the Ring Road. Figure 4.1.12 shows a summary of the Pavement Condition Index (PCI) values for those routes.

The survey results show that the overall pavement condition in Cairo is relatively good. More than 80 % of the 327 km network has a PCI value greater than 70, and most of the remaining sections are still in good/fair condition, having PCI values between 40 and 70. The deferred maintenance sections are only observed in a few road sections in Giza Governorate; however, their effect on road traffic is limited.



Source: CREATS final report Vol.2, 2003

Figure 4.1.12 A Summary of PCI Measurement Result on 20 Major Routes

5) Current road service along the East Wing corridor

The existing main road along the East Wing is the Ismailia Desert Road. This road connects all the new communities along the corridor, except for Al Badr which is linked by the Suez Desert Road. Al Shoruk is the only new community connected to the both the Ismailia and Suez Desert roads. The Suez Desert road is the second most important access in the East Wing where several new communities such as New Cairo, Al Shorouk, Al Badr, Heliopolis are located.

The Ismailia Desert Road serves two important new industrial areas located in 10th of Ramadan and Al Obour. Recently, the Ismailia Desert Road has been the only available access to Cairo from these two cities. On the other side, up until now, there have not been any recognizable industrial zones constructed along the Suez Desert Road.

6) Current road service along the West Wing corridor

6th of October and Al Sheikh Zayed are the major new communities located along the West Wing Corridor. The major corridor to these two cities is the 26th of July Corridor. Recently, this corridor has become very crowded and traffic jams can be recognized almost at all times of the day. Therefore MOHUUD and MOT announced to construct EL Farag, a new corridor between Imbaba and Cairo-Alexandria Desert Road. 6th of October includes a recognizably large industrial area, whereas Al Sheikh Zayed and Al Sadat along Cairo-Alexandria Desert Road are just residential communities.

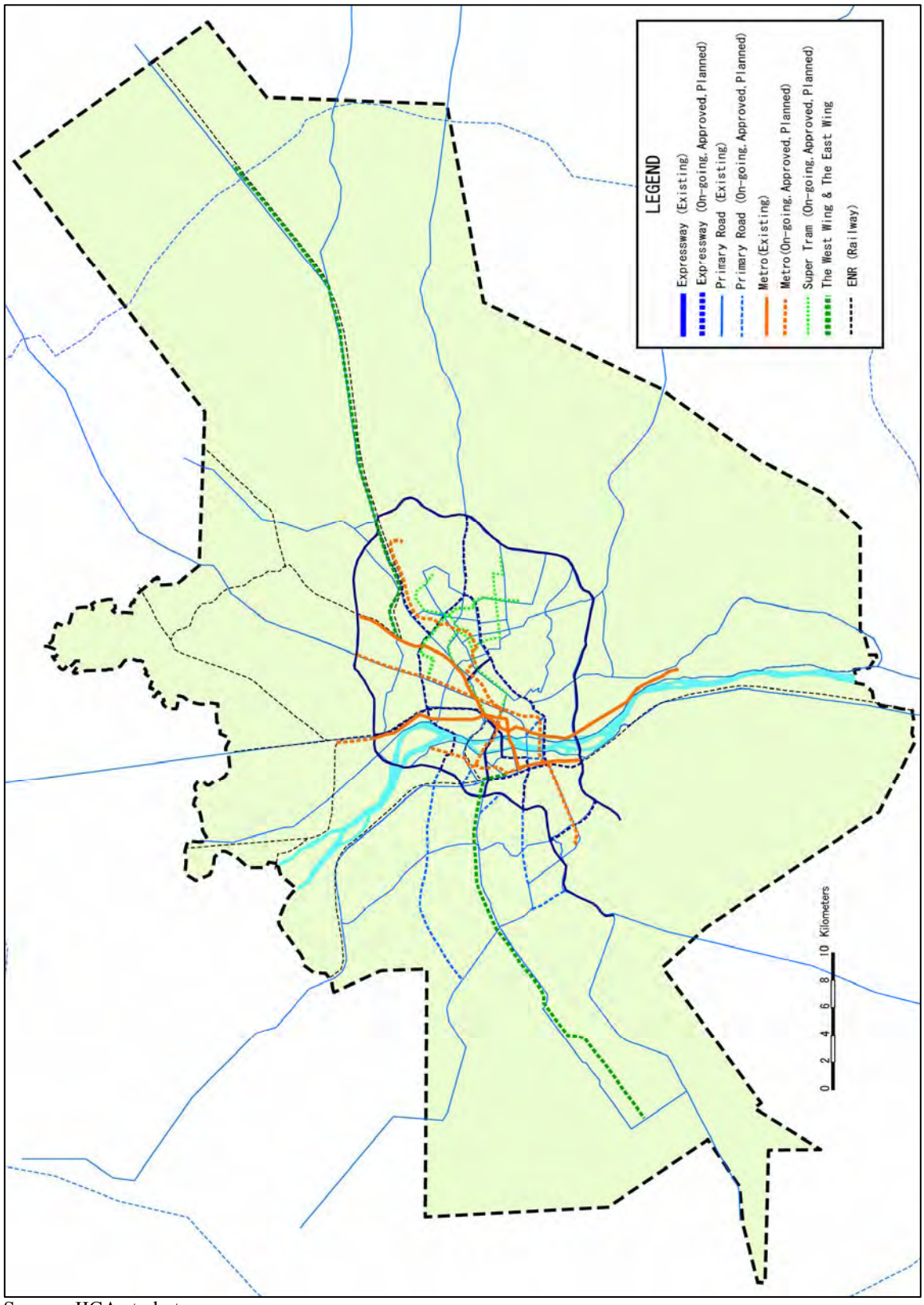
Recent plans agreed by Egyptian Authorities on this West zone include:

- Upgrading of the road along the River Nile in Giza North. The plan considers utilizing Aboud Street as a one way road parallel to the road along the River Nile.
- Utilization of the Imbaba Airport area to attract new investment and construction of attractive entertainment facilities.
- Implement new development plans for Warak Al Arab Island.
- Upgrading Al Ramayh Square.
- Construct new road network corridors, namely El Farag and Ahmed Orabi,

GOPP officials have stated that these plans are under final revision.

(4) Summary of transport corridor development projects

Based on the collected information of on-going, approved, planned projects from GOPP, MOT and the previous transportation studies, the transport corridor projects in GCR are summarized as shown Figure 4.1.13.



Source: JICA study team

Figure 4.1.13 Transport Corridor Projects

4.1.2 Details of Existing Plans and On-going/Planned Transit Projects

(1) Rail

1) Implemented projects from CREATS MP

The CREATS projects that have been or are being implemented are highlighted in Table 4.1.14.

Table 4.1.14 CREATS Programs

Projects		Implemented Period				Execution Agency
Metro Implementation/Improvement Projects MOT						
PTM1	Line 1 improvement (Fleet increase)	○	○	○	○	
PTM2	Line 2 extension to Moneeb	○				
PTM3	Line 2 extension to Qaliobeya			○		
PTM4	Line 3 (Giza – Airport)	○	○	○		*Note: Ongoing Phase is Abbasia/Ataba*
PTM5	Line 4 (Pyramid – Port Said St.)			○	○	

(Completed projects and those currently under construction are highlighted.)
Source: Prepared from GOPP Representative Presentation

GOPP officials in charge of transportation planning explained MOHUUD and MOT policies as follows:

- MOHUUD and MOT recommends extending the Metro Line 2 to Qaliobeya and this project is within CREATS MP Project.
- MOHUUD and MOT recommends constructing Phase 3 (Imbabah - Al Mohandisian) of the Metro Line 3 during the construction of Phase 2 and this is outside of CREATS. This is recommended to the fast connection between East and West NUCs.
- MOHUUD and MOT recommends constructing the Metro Line 4 from Fasil to Remayah.
- MOHUUD and MOT is supporting the quick implementation of railway line connecting Cairo University with Al Sheikh Zayed and 6th of October with length of about 41 km. This project is included in CREATS.
- MOHUUD and MOT is supporting the quick implementation of railway line connecting Ain Shams Station to 10th of Ramadan. This project is included in CREATS.
- MOHUUD and MOT recommends a new railway line to connect 6th October/Al Rimyah Square/El-Fayoum and Al Wahat with length of about 34 km. This project is not included in CREATS.

2) On-going projects: Metro Line 3

The construction of Metro Line 3 section between Abassia and Ataba has been started. As for financial backing, a new information indicated that 21 billion LE will be

invested in the next 5-year plan (2007/2012) and this amount may be increased up to 30 billion through MHUUC. In addition, it was reported that 7 billion LE had been allocated for the 2007/2008 budget. These major projects will focus on public transport to connect Cairo with the new communities, construction of the Al Gamah-Saft Al Laban Corridor, Road Al Farg Corridor, new sections of Ring Road and the Bridges of Cairo/Ismailia and Cairo/Suez.

The route of on going Metro Line 3 is from Cairo International Airport in the east to Imbaba in the west, passing through Heliopolis, Abbasiya, Attaba and Zamalek. In addition a branch line will connect the main line from Kit Kat Square to Mohandeseen. The total length of Line 3 will be about 33 km. It will have 29 stations, of which 27 will be underground. It is planned to construct this line in four phases, as shown in Table 4.1.15 and Figure 4.1.14. The operational and technical specifications for Metro Line 3 are described in Table 4.1.16 (b). These can be compared with the technical specifications of Metro Line 1 and Line 2, which are shown in Table 4.1.16 (a).

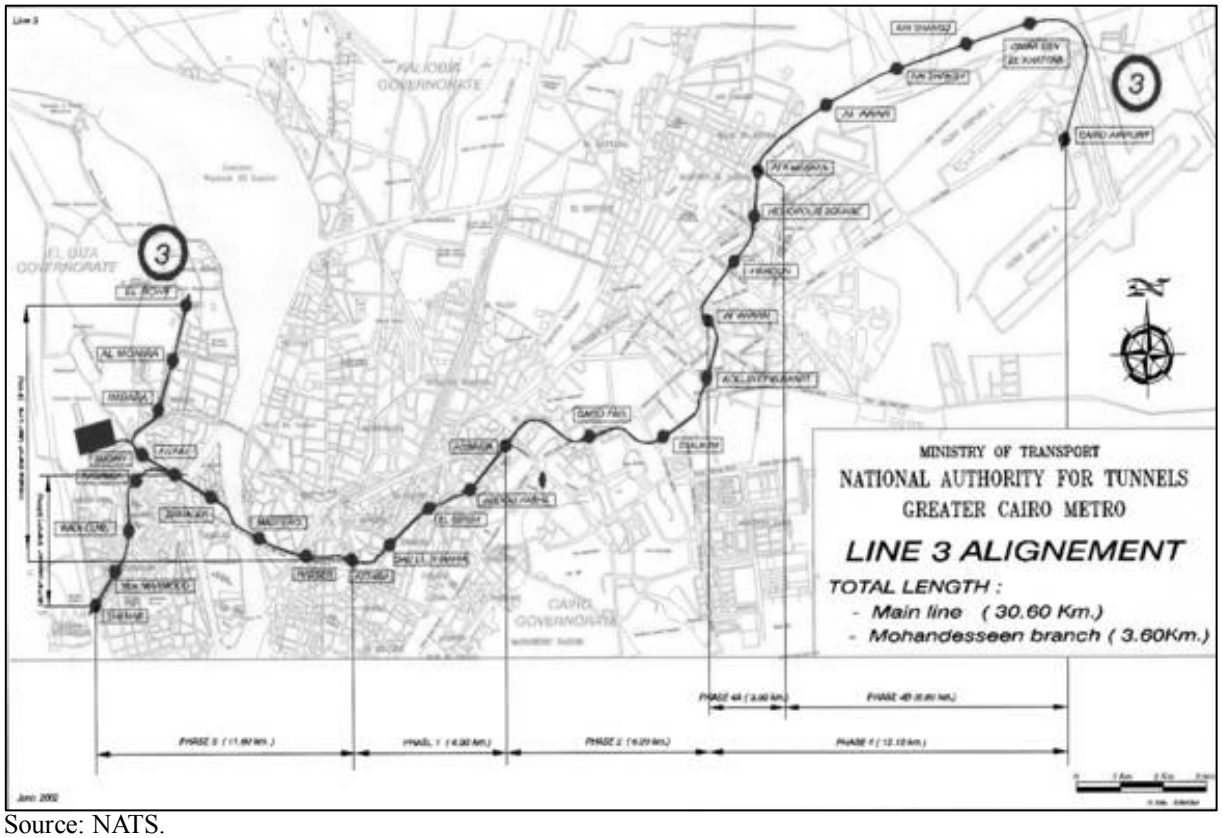
Phase I of construction is the central section of the route, having a total length of about 4.3 km underground between Abbasiya and Attaba, where there is an interchange with Line 2. There will be 5 underground stations and a Depot at Abbasiya. The expected duration of the Phase I construction is 4 years. The Phase II construction will continue the underground line eastwards from Abbasiya to Al Ahram (Heliopolis), and be about 6.2 km long with 4 underground stations. The construction of this phase is planned to take 2 years.

The Phase Ⅲ construction will be the western section of the underground line between Attaba and Imbaba / Mohandiseen. The distance from Attaba station to Imbaba is 7.5 km and it will include 8 underground stations and a Workshop in Imbaba. A 3 km long underground branch-line to Mohandiseen will have 4 underground stations and will connect with the Imbaba line to the west of Kit Kat Station. This section will pass under Line 2 at Attaba Station and under Line 1 at Nasser Station, where there will be an interchange with Line 1. This phase includes underground crossings of two branches of the River Nile at Zamalek. The proposed duration for the construction of this stage is 3 years. The Phase IV construction will be the eastern section of the line between Al Ahram and Cairo International Airport, a distance of 12 km. The section from Al Ahram to Alf Maskan, covering a length of 3.3 km, is underground and it will have 3 underground stations. Another section will extend from Alf Maskan to Cairo International Airport, covering a length of 8.7 km. This section will be partly underground, with a total of 5 stations (3 underground and 2 at ground level), with sidings in the section at ground level. The proposed duration of construction for this phase is 4 years. The whole line will have a designed capacity of 1.8 million passengers per day with a headway of 1.75 minutes.

Table 4.1.15 Phased Implementation Plans for Metro Line 3

Phase	Section	(planned)	Length	(Station)
I	ATTABA and ABBASIYA	(2011)	4.3km	(5)
II	ABBASIYA and AL AHRAM (Heliopolis)	(2013)	6.2km	(4)
III	ATTABA and IMBABA/ MOHANDISEEN	(2016)	10.5km	(12)
IV	AL AHARAM-Alf MASKAN Cairo Airport	(2020)	12km	(8)

Source: Summarized based on CMO data



Source: NATS.

Figure 4.1.14 Route and Location of Stations in Metro Line 3

Table 4.1.16 (a) Operational and Technical Specification of Metro Line 1 / Line 2

Technical Parameter	2006/2005
Type	Full metro
Crew(Driver and/or Conductor)	Driver only
The year first section opened	1987
Operating Length	65.0km
Number of lines in operation	2
Number of stations	55
Number of passengers(millions)/day	0.73/1.22(Line 2/Line1)
Number of employees	5600
Operating time period	05:15-24.15
Fare system	Flat excluding seasonal tickets
Track gauge	1435 mm
Electricity	750/1500V(Line2/Line1)
Power supply system	Third rail/OHC(Line2/Line1)
Train protection	ATP/ATC(Line2/Line1)
Headway	165/210 sec(Line2/Line1)
Number of cars owned	280/477(Line2/Line1)
Kind of tickets(millions)	Single trip(316.5)/Season(1.3)&Yearly(0.037)

Table 4.1.16 (b) Operational and Technical Specification of Metro Line 3

Technical Parameter	Metro Line3
Type	
Crew(Driver and/or Conductor)	
The year first section opened	2011
Operating Length	4.3km (Phase I) 30.6km
Number of lines in operation	
Number of stations	4 (Phase II) 29stations
Number of passengers(millions)/day	0.25 (Phase I)
Number of employees	
Operating time period	
Fare system	
Track gauge	
Electricity	Same as Line2
Power supply system	Same as Line2
Train protection	Same as Line2
Headway	150 sec
Number of cars owned	48 (Phase I)
Kind of tickets(millions)	

Source: Prepared based on NATS data

4.2 Planning Principles for Urban Transportation

There have been two studies completed recently that have been approved/agreed by Cabinet. One is CREATS, submitted in 2002 and classified as "Approved by the Cabinet". The other is the PPP Study, which was finished in 2006 and is classified as "Not Approved but Agreed in the Cabinet". The transport planning section of the current Strategic Urban Development Master Plan Study (SUDMP) prepared by the JICA Study Team is a follow-up study of both CREATS and PPP.

The SUDMP Study started with verification of CREATS, with replacement of the Expressway Network with the network proposed in the PPP. In the current SUDMP Study, field surveys undertaken by CREATS and the PPP are generally used without change.

The structure of the CREATS transportation demand forecast models are used without modification in principle. The socio-economic structure has been newly projected by the JICA Study Team, based on the New Urban Plan that was studied and developed by the Team. Traffic demands are forecast based on the corresponding socio-economic structure predictions.

CREATS ranked the Top 20 priority projects. It included nine (9) rail projects, two (2) bus projects, three (3) road projects (including two grade separation projects), four (4) institutional projects and two (2) freight transportation projects. In the Top 20, seven (7) projects are "soft" projects that are designed to improve management and 13 projects are "hard" projects that provide physical infrastructure.

The CRAEATS projects cover a full range of transportation issues. However, the two grade separation projects and the two freight transportation projects were excluded from verification because they are either out of the study scope or they are developing on schedule. The Study Team plans to update CREATS through doing the evaluation.

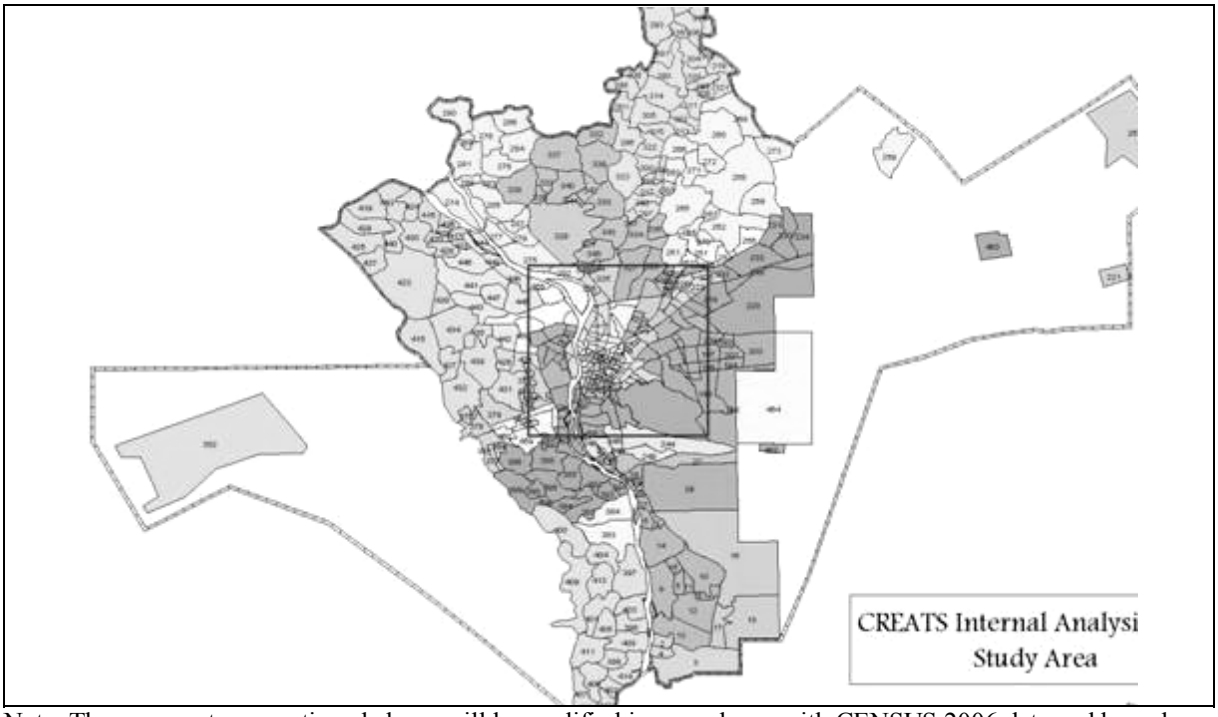
"Hard" projects prioritized by CREATS were re-evaluated by using the new traffic demands for the CREATS+PPP network. However, the planning policy is not affected by the changes in traffic volume. Software projects are basically inherited because there are no changes of the planning policy.

4.3 Demand Forecast

4.3.1 Methodology

(1) Zoning system

In this study, the traffic zoning system comprises part of the Governorates of Cairo, Giza, Qaliobeya and Sharqiyah. Three types of zoning system, large, medium and small zone were adopted. The medium zone corresponds to administrative border (Qism). The large zone is for demonstration, and the small zone is used for traffic simulation purposes. In essence, there are 503 traffic zones, 464 internal traffic zones, 9 special generators, 20 external stations and 10 zones reserved for future development. In future years (2022 and 2027), there will be 525 traffic zones because some of the reserved traffic zones will be deployed as special generators along the corridor linking the cities of 6th of October and 10th of Ramadan. The zoning system is presented in Figures 4.3.1.



Note: The zone system mentioned above will be modified in accordance with CENSUS 2006 data and boundary
Source: JICA Study Team

Figure 4.3.1 Traffic Zoning System (Study Area)

(2) Socio-economic indicators

Socio-economic conditions are discussed in the Chapter 1, Section 1.2 above. To avoid duplicating explanations, the major socio-economic indicators are summarized on a large zone basis, as shown in Tables 4.3.1 to 4.3.6.

Table 4.3.1 Projected Population of Greater Cairo (Over 6 Years of Age) for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	212,574	441,470	751,699	1,120,364	1,449,364
2	Imbaba Markaz	1,660,231	2,057,377	2,341,873	2,539,466	2,684,164
3	Dokki	1,345,855	1,375,369	1,392,886	1,409,739	1,429,463
4	Giza	1,532,983	1,641,374	1,733,653	1,844,470	1,974,991
5	South Giza	525,737	548,502	562,591	574,496	590,495
6	Helwan	806,093	855,146	896,085	937,043	995,041
7	Maadi	1,038,498	1,216,145	1,394,566	1,524,869	1,655,522
8	Khaleafa	850,018	889,611	927,466	937,678	951,550
9	CBD	407,156	402,299	399,583	389,553	384,529
10	Shobra	1,029,514	1,038,096	1,050,047	1,040,147	1,041,766
11	Masr El Gedeeda	879,293	891,072	911,527	947,948	976,786
12	Nasr City	1,019,609	1,245,899	1,517,150	1,944,114	2,355,577
13	Ain Sham	1,017,588	1,145,003	1,266,927	1,338,631	1,401,467
14	Sadam City	844,972	806,700	780,886	746,741	725,064
15	Shobra El Kheima	1,042,303	1,153,583	1,245,672	1,333,275	1,406,107
16	Qalyob	874,049	998,681	1,104,810	1,199,685	1,270,396
17	Qanater	1,241,229	1,493,999	1,778,883	2,064,134	2,313,704
18	10th of Ramadan	136,538	210,288	312,719	441,503	586,024
	Total	16,464,242	18,410,613	20,369,022	22,333,857	24,192,009

Source: JICA Study Team

Table 4.3.2 Projected Number of Employed Primary Industry Workers for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	2,318	2,581	2,876	3,208	3,424
2	Imbaba Markaz	62,742	69,846	77,826	86,811	92,682
3	Dokki	470	523	583	650	694
4	Giza	29,292	32,608	36,334	40,529	43,269
5	South Giza	27,170	30,246	33,702	37,593	40,135
6	Helwan	5,846	6,791	7,804	8,811	9,526
7	Maadi	12,882	14,967	17,198	19,418	20,992
8	Khaleafa	47	55	63	71	77
9	CBD	0	0	0	0	0
10	Shobra	3	3	3	4	4
11	Masr El Gedeeda	21,130	24,549	28,209	31,850	34,432
12	Nasr City	1,101	1,280	1,470	1,660	1,795
13	Ain Sham	2	3	3	3	4
14	Sadam City	956	1,110	1,276	1,440	1,557
15	Shobra El Kheima	10,916	12,916	15,060	17,211	18,985
16	Qalyob	36,585	43,286	50,472	57,681	63,628
17	Qanater	54,908	64,964	75,749	86,569	95,495
18	10th of Ramadan	91	105	120	135	146
	Total	266,457	305,831	348,746	393,643	426,845

Source: JICA Study Team

Table 4.3.3 Projected Number of Employed Secondary Industry Workers for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	99,374	123,309	161,980	216,238	253,079
2	Imbaba Markaz	76,133	94,828	108,013	115,496	118,213
3	Dokki	85,947	85,258	84,869	83,945	81,921
4	Giza	112,923	116,168	117,107	116,550	117,809
5	South Giza	34,862	36,378	36,468	35,361	35,437
6	Helwan	201,608	211,346	217,272	218,634	219,008
7	Maadi	109,655	134,539	159,984	182,488	202,035
8	Khaleafa	70,383	84,949	99,060	109,620	116,325
9	CBD	40,472	45,998	51,236	54,797	56,633
10	Shobra	82,365	96,833	110,574	120,742	127,244
11	Masr El Gedeeda	91,253	104,770	118,209	132,775	142,005
12	Nasr City	146,091	178,575	216,804	270,138	313,546
13	Ain Sham	66,541	90,177	114,943	135,422	149,705
14	Sadam City	59,264	66,273	72,490	76,524	78,603
15	Shobra El Kheima	98,684	111,009	122,362	133,241	137,063
16	Qalyob	65,921	79,821	93,261	106,188	112,184
17	Qanater	130,018	158,069	191,567	226,344	251,238
18	10th of Ramadan	169,617	195,889	234,745	281,154	312,416
	Total	1,741,114	2,014,189	2,310,943	2,615,658	2,824,464

Source: JICA Study Team

Table 4.3.4 Projected Number of Employed Tertiary Industry Workers for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	22,966	49,274	79,199	119,219	148,995
2	Imbaba Markaz	149,677	195,891	230,141	260,690	277,289
3	Dokki	259,433	256,473	261,978	268,097	270,822
4	Giza	207,846	214,020	227,989	245,471	258,674
5	South Giza	39,401	41,237	44,786	48,880	51,174
6	Helwan	92,751	119,090	144,859	167,624	185,382
7	Maadi	114,565	154,870	198,270	231,984	257,160
8	Khaleafa	141,339	164,549	186,483	199,303	208,012
9	CBD	314,017	314,065	314,139	299,293	291,417
10	Shobra	130,143	153,691	176,739	190,206	198,199
11	Masr El Gedeeda	236,522	262,000	288,031	328,446	351,503
12	Nasr City	225,160	284,465	362,749	493,023	599,532
13	Ain Sham	113,286	149,810	187,416	214,379	232,024
14	Sadam City	88,923	103,786	118,244	126,425	130,360
15	Shobra El Kheima	136,346	143,973	157,751	171,645	180,329
16	Qalyob	78,691	91,556	105,770	119,390	127,948
17	Qanater	107,596	146,272	181,760	217,955	248,348
18	10th of Ramadan	8,660	31,027	56,361	83,855	109,247
	Total	2,467,324	2,876,050	3,322,666	3,785,884	4,126,414

Source: JICA Study Team

Table 4.3.5 Projected Number of School Students (Secondary and Technical School) for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	4,273	13,006	31,346	57,814	90,664
2	Imbaba Markaz	29,185	56,299	94,297	129,419	167,907
3	Dokki	32,286	44,023	60,316	73,712	89,419
4	Giza	33,518	49,928	73,023	95,273	123,545
5	South Giza	13,535	18,642	25,354	30,635	36,938
6	Helwan	38,550	38,258	41,776	43,352	47,096
7	Maadi	37,845	43,843	56,281	65,773	78,357
8	Khaleafa	39,140	37,100	40,544	41,807	45,037
9	CBD	32,482	26,598	24,408	20,770	18,200
10	Shobra	38,504	38,647	43,443	45,426	49,307
11	Masr El Gedeeda	52,332	46,844	47,247	46,337	46,232
12	Nasr City	40,963	45,746	60,662	82,220	111,491
13	Ain Sham	47,677	51,250	60,171	63,220	66,332
14	Sadam City	26,779	27,163	30,588	31,884	34,318
15	Shobra El Kheima	50,325	55,442	66,445	74,560	83,615
16	Qalyob	39,108	44,936	56,334	65,651	75,545
17	Qanater	50,865	63,555	87,232	110,699	137,586
18	10th of Ramadan	5,054	8,212	14,280	22,115	32,722
	Total	612,422	709,490	913,748	1,100,667	1,334,313

Source: JICA Study Team

Table 4.3.6 Projected Number of University Students for 2007 - 2027

	Sector	2007	2012	2017	2022	2027
1	6th of October	19,785	27,367	27,750	55,420	101,384
2	Imbaba Markaz	0	1,945	8,596	12,324	12,673
3	Dokki	0	2,705	10,266	13,629	13,525
4	Giza	242,577	245,382	253,753	258,288	259,158
5	South Giza	0	50	181	231	222
6	Helwan	0	1,682	6,605	9,059	9,415
7	Maadi	0	2,392	10,279	14,742	15,664
8	Khaleafa	0	1,750	6,836	9,065	9,003
9	CBD	4,006	4,797	6,951	7,772	7,644
10	Shobra	4,389	6,431	12,129	14,445	14,246
11	Masr El Gedeeda	247,990	250,041	254,853	258,422	261,070
12	Nasr City	0	8,865	13,462	42,331	86,335
13	Ain Sham	0	2,252	9,338	12,941	13,260
14	Sadam City	0	1,586	5,756	7,219	6,860
15	Shobra El Kheima	0	2,269	9,181	12,889	13,304
16	Qalyob	0	375	1,647	2,441	2,597
17	Qanater	0	4,374	6,573	21,554	44,813
18	10th of Ramadan	0	414	2,305	4,268	5,545
	Total	518,746	564,676	646,460	757,040	876,720

Source: JICA Study Team

(3) Related surveys carried out in the CREATS and PPP studies

The CREATS study did a series of eleven transport surveys in 2001. The seven largest surveys are as follows:

- Household Interview Survey (HIS): This was the backbone survey of the CREATS transport demand models. The survey covered 57,000 households out of a total of 3.5

million households in the study area. The JICA Study Team used this Household Interview Survey information.

- Roadside Interview and Traffic Counting Surveys: A series of mutually supportive surveys were conducted.
  - A cordon survey for ascertaining trip patterns of external trip makers was conducted along all major roads crossing the study area boundary and at select public transport terminals/stations.
  - A screen line survey adopted the Nile River as a primary screen line bisecting the study area. Thus, 16 or 24 hour traffic counts were conducted on all bridges by direction and vehicle types.
  - A traffic count survey was done at 60 locations along the major arterial roads and at about 30 intersections and squares. The latter counts include directional turning movement counts during the peak period.
- Public Transport Passenger Survey: Modal patterns, preferences and trip relationships for public transport users were ascertained via interviews conducted at selected terminals/stations for CTA, Metro, ENR and shared taxis.
- Freight Vehicle Survey: Interviews were conducted which focused on truck owner characteristics in addition to analysis of available data.
- Vehicle Travel Speed Survey: A series of arterial roads were identified, and vehicle operating speeds determined.
- Road Condition Survey: The general characteristics of major roads (such as number of lanes, carriageway width, roadside friction, traffic signal control, etc.) were ascertained via a review of available records, plus focused field investigations.
- Transport Network Survey. The network survey focused on public transport systems. Following a compilation of records available from formal operators (CTA, CMO, ENR), such as route structure, service patterns, service frequency, etc., the network survey addressed gaps in available information with a focus on the shared taxis and cooperative mini-bus modes.

The PPP Study undertook traffic count surveys and willingness-to-pay surveys in 2005.

- Traffic Counts Survey:
  - A screen line survey adopted the Nile River as a screen line bisecting the study area. Thus, 16 hour traffic counts were conducted on all (10) bridges by direction and vehicle types. These counts were expanded to 24 hrs and used for model calibration.
  - A traffic count survey along arterial roads (7 points) and proposed expressway corridors (11 points) were conducted.
- Willingness-to-Pay Survey

Road User Interview Survey: A total sample of 2,049 persons, comprising 1,737 males and 312 females were interviewed.

Transport Company Interview Survey: Willingness-to-pay interview data from nine (9) passenger/freight transport companies (three passenger transport, two tourism and four freight operators) were collected.

(4) Data and assumptions applied to the Model

1) Passenger Car Units (PCU)

Vehicle demand/capacity is expressed in terms of passenger car units (PCU). In this study, the assumption of CREATS for PCU was applied without amendment.

Table 4.3.7 Passenger Car Units (PCU)

Vehicle Type	Motorcycle	Light Vehicle(1)	Small Truck(2)	Medium Truck(3)
PCU	0.33	1.00	2.00	2.50
Vehicle Type	Large Truck(4)	Micro Bus(5)	Mini Bus	Standard Bus
PCU	3.00	1.50	2.00	2.50

Note:
(1): Light Vehicle: Car, Pick-up, Taxi, Van
(2): Small Truck: Two Axles Truck
(3): Medium Truck: Three Axles
(4): Large Truck: More than Three Axles
(5): Micro Bus: Shared Taxi
Source: CREATS final report Vol.2, 2003

2) Road capacity

Mid-block road capacity experiencing interrupted flow conditions was adopted in traffic assignment simulations. Table 4.3.8 shows road the capacity used in this study, quoting from CREATS.

Table 4.3.8 Road Capacity Assumptions

Facility Type[1]	Road Condition[2]	Curb Parking	Capacity (PCU/hour/direction)[3]			
			Core	Urban	Suburban	Rural
Two-way, two-lanes	Wide	No	770	870	880	950
		Yes	540	650	700	*[4]
	Standard	No	600	680	690	740
		Yes	420	510	550	*
	Narrow	No	450	510	520	560
		Yes	320	380	410	*
One-way, two-lanes	Standard	No	1,690	2,090	2,310	*
		Yes	1,440	1,830	2,080	*
One-way, four-lanes	Standard	No	3,580	4,320	4,720	*
		Yes	3,220	3,970	4,430	*
Two-way, four-lanes	Undivided	No	1,580	1,970	2,190	2,280
		Yes	1,340	1,720	1,970	*
	Divided	No	1,780	2,200	2,430	2,540
		Yes	1,510	1,930	2,190	*
Two-way, six-lanes	Undivided	No	2,500	3,050	3,350	3,420
		Yes	2,250	2,800	3,150	*
	Divided	No	2,820	3,410	3,730	3,800
		Yes	2,540	3,140	3,500	*
Expressway	Four lanes	No	2,990	2,990	2,990	2,990
	Six lanes	No	4,490	4,490	4,490	4,490

Notes:
(1) For entire carriageway. Two-way traffic with six lanes represents, for example, two-way flow with three lanes per direction.
(2) Standard refers to typical lane width of 3.5-3.6 meters.
(3) Assignment capacity, PCU per hour in one direction for two-way roads and total flow for one-way roads. Capacity calculation reflects on average system-wide 25 percent heavy vehicle traffic stream content.
(4) There are no network links in this category.
Source: CREATS final report Vol.2, 2003

3) Free flow speed

Free-flow speeds of roads vary depending on facility type and urban environment, ranging from under 30 km/hour for two-lane CBD roads to some 80 km/hour for multi-lane roads situated in rural or outlying areas. Urban expressways, whose design criteria remain consistent, are shown as possessing free flow speed profiles of up to 100 km/hour. Flee flow speeds assumed in this study are summarized in Table 4.3.9.

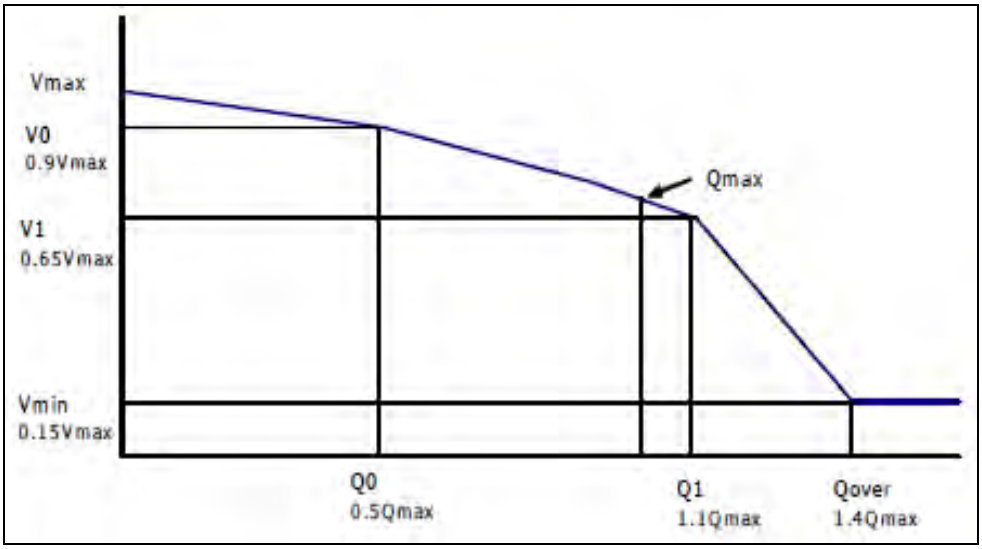
Table 4.3.9 Link Free Flow Speed

Road Operation[1]	Free Flow Speed by Environment (km/hr)[2]			
	Core	Urban	Suburban	Rural
Two-way, two-lanes	25-30	30-40	40-50	50-60
Two-way, four lanes	35-45	45-60	60-70	70-80
Two-way, more than four lanes	45-55	55-65	65-75	75-85
Expressway	80-90	80-90	90-100	90-100

Notes:
(1) For entire carriageway. For example, two way and six lanes represents two-way flow with three lanes in each direction.
(2) Range in speed based on reasonable variation in lane width.
Source: CREATS final report Vol.2, 2003

4) Speed – flow relationship

The speed – flow relationship used in the traffic assignment procedure is shown in Figure 4.3.2. This approximate relationship is based on the CREATS data and used in Expressway PPP Study.



Source: JICA Study Team

Figure 4.3.2 Speed-Flow Relationship

5) Public transport fares

CTA/GCBC bus fares vary from LE0.25 up to LE2.0, not by distance but by type of bus. A representative fare for CTA/GCBC is a flat rate of LE1.0.

The Metro fare is a flat rate of LE1.0 and tram fares are also a flat rate of LE0.25. The micro bus fares vary from LE0.5 for short distances to LE2.0 for journeys longer than 35km, but a representative fare is a flat rate of LE1.0.

In this study, all public transport fares, excluding LE0.25 for tram journeys, are considered to be LE1.0 for one ride.

6) Vehicle occupancy factors

In converting the person trips to vehicle trips, vehicle occupancy factors were applied. These factors are applicable only for private transport modes (see Table 4.3.10). The vehicle assignment for road-based public transport is pre-loaded for the road network.

Table 4.3.10 Vehicle Occupancy Factors (Passengers/Vehicle)

Trip Purpose	Car Occupancy	Taxi Occupancy
HBW	1.5	2.0
HBE	2.4	3.0
HBO	2.1	2.5
NHB	1.7	2.0

Source: CREATS final report Vol.2, 2003

7) Peak hour factors

Peak hour traffic volumes are shown in Table 4.3.11. The peak hour (08:00 – 09:00) rate was 17%.

Table 4.3.11 Peak Hour Traffic Volumes and Times of the Peak Hour for Different Counting Stations

Site	No.	Site Name	Direction		Peak Hour Traffic Volume		Peak Hour	
			Dir 1:To	Dir 2: To:	Dir 1	Dir 2	Dir 1	Dir 2
Bridges	1	Warraq Br.	Qaliobeya	Giza	2,192	2,125	18	08
	2	Rodh El-Farag Br.	Cairo	Giza	3,604	4,572	08	20
	3	Imbaba Br.	Cairo	Giza	817	1,420	08	20
	4	15th of May Br.	Cairo	Giza	4,300	6,862	12	12
	5	6th of October. Br.	Cairo	Giza	13,400	9,747	08	11
	6	Galaa Br.	Cairo	Giza	2,962	2,803	09	13
	7	Gamah Br.	Cairo	Giza	3,357	3,800	08	09
	8	Giza Br.	Cairo	Giza	3,259	3,433	15	17
	9	Moneeb Br.	Cairo	Giza	4,516	6,222	12	09
	10	Marazeeq Br.	Cairo	Giza	704	502	07	16
Arterials	11	26th of July Cdr	Lebanon Sq.	6th of Oct.	3,176	4,204	10	16
	12	Suez Desert Rd	Suez	Cairo	1,692	1,851	08	15
	13	Alex. Agr. Rd	Alexandria	Cairo	3,975	3,780	16	07
	14	Ismailia Agr. Rd	Ismailia	Cairo	1,237	1,255	16	20
	15	Ismailia Desert Rd	Ismailia	Cairo	3,832	3,328	09	13
	16	Autostrade	Cairo Ap.	Helwan	1,443	2,018	08	18
	17	Nasr Rd	Cairo Ap.	Helwan	8,050	6,529	08	12

Source: CREATS final report Vol.2, 2003

8) Vehicle ownership

Vehicle ownership by household income is tabulated from the Household Interview Survey (HIS) database (see Table 4.3.12). Household (HH) income obtained from the HIS is obviously smaller than actual. So, hereafter the HIS household income is considered only as an income indicator. The high rise of car ownership for households above the LE400 household income indicator shows that LE400 is the threshold for private car ownership. In order to avoid large steps of car ownership in the model, a smoothing operation was applied to the step function.

Table 4.3.12 Monthly Income Indicator and Car Ownership

Monthly Income indicator	Car Ownership		
	Own	Not Own	Ownership
<200	683	10,826	0.06
201-300	1,630	9,268	0.15
301-400	2,115	4,274	0.33
401-500	1,340	868	0.61
501-1000	492	154	0.76

However, the figures in Table 4.3.12 represent the ownership in 2000. Changes of the ownership to 2007 were done in the following manners (see Table 4.3.13).

- The increase in the number of cars was from 843,820 in 2000 to 1,011,293 in 2005. It means the increase in 19.8%. This increase comes from increases of

population, increase of HH income indicator and increases due to "other reasons".

- Because of no data available for 2007, estimation of increases of the three causes was done for the year 2005 and then extends to the year 2007.
- Population growth from 14,254,126 in 2000 to 14,961,971 in 2005 impacted on the net growth of car ownership by 3.7 percentage points.
- HH income indicator growth from LE185 in 2000 to LE241 in 2005 was estimated by assuming HH income indicator corresponds to the growth of GRDP of the three Governorates. Increase of HH income indicator was converted to the number of cars and the net growth ratio due to HH income indicator growth of 1.091 was determined.
- Increases due to HH income indicator growth and population growth are built-in to the trip generation function. Only the increases due to "other reasons" must be considered as the parameter adjusting car ownership.
- Because the each cause for growth of car ownership is independent, net car ownership growth due to "other reasons" can be obtained by the calculation of nominal growth minus growth due to HH income indicator increase minus growth of population increase.
- The calculated net growth rate caused by "other reasons" from 2000 till 2005 was linearly extended to 2007. In this manner the net growth rate caused by "other reasons" between 2000 and 2007 is obtained as 9.1%.
- Because the changes due to new "other reasons" can not be foreseen, a 9.1% increase was added to the car ownership rate in 2000 as a fixed value, and estimated the car ownership in 2007.

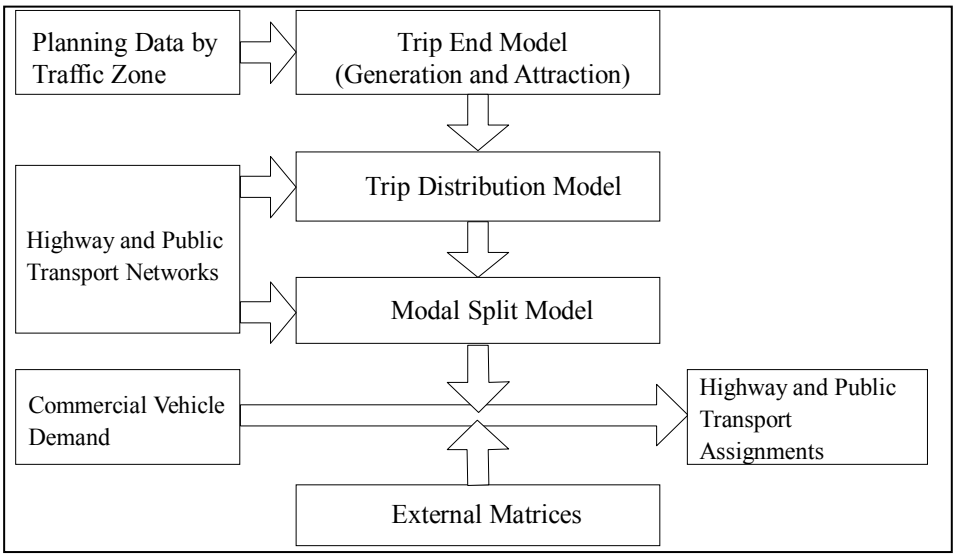
Table 4.3.13 Yearly Change of Car Ownership

Items	2000	2005	Note
Registered Car Number	843,820	1,011,293	Three Governorates
Growth Rate (Nominal)		1.198	2005/2000
Population	14,254,126	14,961,971	Three Governorates
Car/Person unit	0.0592		Unit/person
Car Numbers corresponding to population	843,844	885,749	
Net Growth Rate of Population Growth		1.037	2005/2000
HH Income Indicator (HHII)	185	241	Estimated assuming in corresponding to GRDP
No. of Cars corresponding to HHII	6,294	6,866	Estimate in HIS sample
Net Growth Rate of HHII		1.091	2005/2000
Net Growth Rate of "Other Reasons"		1.054	2005/2000
Growth Rate of "Other Reasons" between 2000 and 2007		1.076	2007/2000

4.3.2 Model

(1) Model structure

CREATS forecasted the traffic demand based on the Transport Model framework shown in Figure 4.3.3 using a predicted future socio-economic framework. The Transport Model framework uses a conventional 4 steps approach which has been well-tried and found to be effective in many cities around the world. The current study also follows the same procedure as CREATS, and estimate the future traffic demand using the same models as CREATS.



Source: Prepared based on CREATS final report Vol.2, 2003

Figure 4.3.3 Transport Model Framework

The four stage approach consists of a series of nested and cascading sub-modals:

- Trip End Models (Trip Generation and Attraction Model): Estimating the "amount" of travel and where it begins and finishes;
- Trip Distribution Model: Linking the trip ends together to form trips between the origins and destinations;
- Modal Split Model: Accessing the modal shares of the available travel modes; and,
- Assignment Model: Usage of each segment of the highway and public transport networks.

The main thrust of the model is targeted at representing the travel demand of the residents of the Greater Cairo Region, and their usage of private and public transports. Goods vehicles and the travel crossing the boundary of the study area (external travel) are "added-in" prior to the traffic assignment.

External travel is derived in the base year from the cordon roadside interview stations which were located adjacent to the Study Area boundary. In the current study, cordon survey data obtained from CREATS were adjusted for economic growth until 2007 and used as input data.

Estimates of goods vehicle travel were derived from the CREATS survey data, adjusted to reflect the observed travel patterns obtained from the traffic counts undertaken at many locations throughout the city. Forecasts of future goods vehicle traffic have been based on general growth and the assumed employment distribution.

(2) Network and contents

The PPP study road network is utilized for this study with some amendment after field investigation. The total network contains nearly 4,900 links, extending over roughly 4,500 link kilometers. Link capacity can be expressed in terms of assignment capacity. Assignment capacity, free flow speed and traffic loading are integrated via speed-decay relationships which dynamically decrease link speed as the volume to capacity ratio (V/C) increases. Link free flow speed is the safe speed at which a vehicle would travel along a road segment in the absence of other traffic and within the physical conditions unique to that particular segment. Free-flow speeds of roads vary depending on facility type and urban environment, ranging from under 30 km/hour for two-lane CBD roads to some 80 km/hour for multi-lane roads situated in rural or outlying areas. Urban expressways, whose design criteria remain consistent, are shown as possessing free flow speed profiles of up to 100 km/hour.

The public transport network file is the same link file as for the road network with the addition of public transport operating on dedicated rights of way, such as trams, Metro, and train. Bus routes and shared taxi routes were not limited due to the easily changeable nature of the routes of these transport modes.

(3) Generation models

The Trip Generation Models were developed based on households as a unit. Trips are a function of household characteristics. For both the trip generation and trip attraction models, the models are disaggregated into four trip-purpose categories. These purposes are:

- Home Based Work (HBW)
- Home Based Education (HBE)
- Home Based Other (HBO)
- Non Home Based (NHB)

It is noteworthy that the definition of a Home Based Trip is that the generation is always at the Home end. Thus, a trip from home to work and the reverse trip from work to home create two generation events in the home traffic zone and two attraction events in the work traffic zones. In contrast, a Non Home Based Trip, for example from work to a school and then back to work, has one generation and one attraction in each of the work and school traffic zones.

The trip rates derived from the CREATS Home Interview Survey data are shown in Table 4.3.14. It is also necessary to say that the trip generation models estimate motorized trips only.

The models were found to over predict and under predict at various population densities. It was therefore decided to apply an adjustment factor to the zonal trip production based on four population density categories. These factors are listed in Table 4.3.15.

Table 4.3.14 Daily Motorized Trip Generation Rates by Household Category

Trip Purpose and Household Size	Economic Activity Class				
	1	2	3	4	5
HBW					
1	0.442	0.417	1.102	1.239	1.247
2	0.961	1.376	1.880	2.188	2.158
3	1.471	1.742	2.275	3.002	3.416
4	1.428	2.014	2.634	3.066	3.759
5	1.484	1.964	2.527	3.217	3.493
6	1.408	1.903	2.344	2.789	3.673
7+	1.437	1.894	2.298	2.701	3.445
HBE					
1	0.038	0.076	0.102	0.000	0.146
2	0.171	0.183	0.087	0.186	0.278
3	0.535	0.797	0.911	0.944	1.135
4	1.030	1.508	2.066	2.168	2.913
5	1.724	2.266	2.797	3.011	3.528
6	2.093	2.512	2.893	2.994	4.215
7+	2.344	2.967	3.101	3.738	3.910
HBO					
1	0.276	0.333	0.546	0.611	0.336
2	0.189	0.287	0.432	0.532	0.619
3	0.262	0.270	0.477	0.531	0.507
4	0.209	0.202	0.312	0.352	0.428
5	0.144	0.238	0.303	0.312	0.500
6	0.153	0.174	0.261	0.248	0.366
7+	0.157	0.219	0.293	0.331	0.543
NHB					
1	0.028	0.043	1.125	0.127	0.130
2	0.014	0.072	0.093	0.036	0.277
3	0.033	0.053	0.118	0.361	0.348
4	0.041	0.110	0.141	0.253	0.250
5	0.046	0.051	0.119	0.155	0.160
6	0.040	0.073	0.148	0.143	0.489
7+	0.019	0.034	0.048	0.150	0.489

Source: CREATS final report Vol.2, 2003

Table 4.3.15 Motorized Trip Generation Adjustment for Population Density

Density Group	Density (pop./ km^2)	HBW	HBE	HBO	NHB
1	0 to 10,000	0.88	0.82	0.72	1.21
2	10,000 to 20,000	1.18	1.23	1.14	1.66
3	20,000 to 30,000	1.19	1.27	1.35	1.13
4	30,000 and above	0.98	1.00	1.02	0.50

Source: CREATS final report Vol.2, 2003

It is noteworthy that the household economic activity model uses five levels of economic activity. These classes of economic activity correspond to monthly household income levels of less than LE300 per month, LE300-500 per month, LE500-1,000 per month, LE1,000-3,000 per month and greater than LE3,000 per month. Also household size is divided into seven categories, namely from single family to seven or more families.

(4) Special generators

A special generator is a location where trip characteristics are not truly reflected by demographic characteristics alone. Intercity rail and bus terminals come under this classification in the CREATS model. An estimate of external trips generated at these locations is presented in Table 4.3.16. The same number of trips generated is expected for trips of attraction.

Table 4.3.16 Special Generators of Motorized Trips

Zone Code	Locality	Person Trips				
		2007	2012	2017	2022	2027
475	Al Moneeb	1,919	3,324	6,931	16,675	45,698
476	Al Torgoman	2,137	3,702	7,718	18,569	50,887
477	Almaza	3,121	5,406	11,272	27,120	74,322
478	New Al Marg	661	1,145	2,386	5,742	15,735
479	Aboud	7,957	13,784	28,739	69,144	189,488
480	Ramsis Square	132,857	230,136	479,830	1,154,431	3,163,717
481	Cairo Airport	5,491	9,512	19,833	47,716	130,767
482	Giza Station	9,474	16,412	34,218	82,325	225,612
484	Ain Shames	12,895	22,337	46,571	112,047	307,065

Source: Projected based on CREATS final report Vol.2, 2003

(5) Attraction models

The trip attraction models were expressed by the equations below.

HBW attraction:

$Aj = b1x1 + b2x2 + b3x3$

Where, Aj = Trip Attractions in zone j

$x1,x2,x3$ = Primary, Secondary and Tertiary Employment.

$b1, b2, b3$ = Coefficients (see Table 4.3.17).

HBE attraction:

$Aj = a + b1x1 + b2x2 + b3x3$

Where, Aj = Trip Attractions in zone j

$x1,x2,x3$ = Students, University Students, Households and Tertiary Employment

$a,b1,b2,b3$ = Constants and coefficients (see Table 4.3.18)

Table 4.3.17 Attraction Model Coefficients for HBW

Economic Activity Class	Employment Category		
	Primary	Secondary	Tertiary
1	1.205	0.215	0.465
2	-	0.690	0.627
3	-	0.187	0.564
4	-	0.008	0.733
5	-	-	0.281

Source: CREATS final report Vol.2, 2003

Table 4.3.18 Attraction Model Coefficients for Non-HBW

Variable	HBE	HBO	NHB
Constant	-	292.8	-
Students	2.129	-	-
University Students	2.236	-	-
Households	-	-	0.00918
Tertiary Employment	-	0.406	0.175

Source: CREATS final report Vol.2, 2003

(6) Distribution model

The Gravity Model applied linking the trip production and attractions to form the trip matrices. This is carried out separately for four trip purposes and five economic activity classes, thus there are 20 trip distribution models for a particular year. The gravity model function takes the following formula from CREATS Study:

$T_{ij} \alpha G_i A_j F(c_{ij})$

Where, T_{ij} is the trips from zone i to zone j;

G_i is the number of trips produced in zone i;

A_j is the number of trips attracted to zone j;

$F(c_{ij})$ is the function presenting impedance to travel from zone i to zone j,

c_{ij} = composite cost of travel from zone i to zone j

In the CREATS model, the variable F takes the form of a Gamma function which is given by the following formula:

$F(c_{ij}) = c_{ij} X_1 exp(X_2 c_{ij})$

where X_1 and X_2 are calibration constants.

The calibration parameter values are presented in Table 4.3.19.

Table 4.3.19 Gravity Model Parameters

Economic Activity Class	Trip Purpose	X_1	X_2	Economic Activity Class	Trip Purpose	X_1	X_2
1	HBW	0.85	-0.02	3	HBO	-0.24	-0.02
1	HBE	0.65	-0.02	3	NHB	1.15	-0.03
1	HBO	-0.36	-0.02	4	HBW	0.06	-0.02
1	NHB	-0.99	-0.02	4	HBE	1.06	-0.03
2	HBW	-0.06	-0.01	4	HBO	-0.30	-0.02
2	HBE	0.47	-0.02	4	NHB	0.64	-0.02
2	HBO	-0.29	-0.02	5	HBW	-0.15	-0.01
2	NHB	-0.88	-0.02	5	HBE	1.56	-0.03
3	HBW	0.15	-0.02	5	HBO	0.34	-0.02
3	HBE	0.56	-0.02	5	NHB	-1.07	-0.01

Source: CREATS final report Vol.2, 2003

(7) Modal choice model

The CREATS model at first divides each whole trip into private and public trips.

$PT\ \% = 1/(1+exp(\lambda(C_{PT}-C_{PR}+\varsigma))$

Where :

CPT: Generalized Cost of Public Transport in Equivalent Minutes

CPR: Generalized Cost of Private Transport in Equivalent Minutes

λ: Cost Co-efficient

ς: Bias Term

Modal split calibration parameters are summarized up in Table 4.3.20. Public trips were divided to railway and bus trips using the transit assignment model.

Table 4.3.20 Modal Split Calibration Parameters

Economic Activity Class	Trip Purpose	Potential Public Transport Captive	λ	ς	Economic Activity Class	Trip Purpose	Potential Public Transport Captive	λ	ς
1	HBW	0.60	0.0063	-98.00	3	HBO	0.13	0.0056	76.00
1	HBE	0.90	0.0023	100.00	3	NHB	0.24	0.0056	76.00
1	HBO	0.40	0.0123	30.00	4	HBW	0.08	0.1320	27.00
1	NHB	0.41	0.0123	50.00	4	HBE	0.48	0.0039	41.00
2	HBW	0.55	0.0086	-70.00	4	HBO	0.00	0.0056	160.00
2	HBE	0.80	0.0135	-42.00	4	NHB	0.00	0.0090	200.00
2	HBO	0.37	0.0123	4.00	5	HBW	0.00	0.0180	30.00
2	NHB	0.41	0.0123	4.00	5	HBE	0.15	0.0039	41.00
3	HBW	0.44	0.0128	19.00	5	HBO	0.00	0.0080	200.00
3	HBE	0.68	0.0127	-11.00	5	NHB	0.00	0.0090	200.00

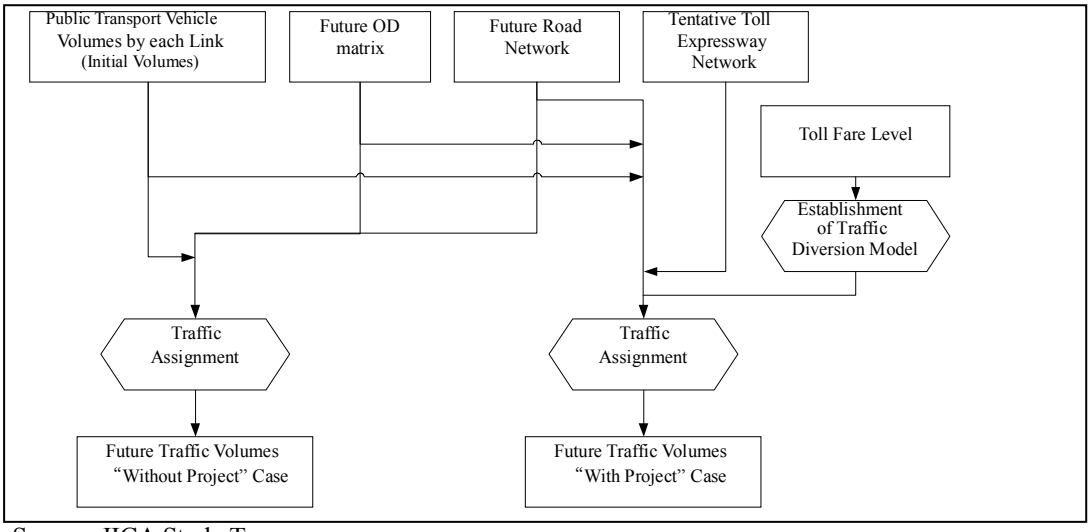
Source: CREATS final report Vol.2, 2003

(8) Traffic assignment model

The assignments combine the impact of all the previous steps in the model and are therefore the final and major checks on the model output.

1) Highway assignment procedure

A daily assignment by vehicle is carried using capacity restraints and incremental steps. The overall flow diagram of the methodology used in forecasting the traffic volumes on the toll expressway network, and the present and future road networks for the "Without Project" and "With Project " case, is shown in Figure 4.3.4. In the "With Project" case, a diversion model is applied to assign traffic volumes on the future road network and the tentative toll expressway networks. To carry out the assignment of traffic volumes on road networks, several items have to be firstly be defined as estimates. Figure 4.3.4 shows the assignment technique that was used, as well as the other items required for application of the procedure.



Source: JICA Study Team

Figure 4.3.4 Mode for Forecasting Traffic Volumes on Road Network sand Toll Expressway Networks

2) Public transport (transit) assignment procedure

The transit assignment program loads the OD passenger trips using public transportation by searching feasible paths of low generalized costs in the transit line network. The program uses the generalized cost as impedance for the path searches. The generalized cost is expressed as the sum of seven cost components, as follows:

$$Cost^m = T^1 * M^{m,1} + T^2 * M^{m,2} + T^3 * M^{m,3} + T^4 * M^{m,4}$$

Where, $Cost^m$: Generalized cost for the mode m

T^i: Time value of the cost component i

$M^{m,j}$: Mode-weighting coefficient of the cost component j of mode m

The seven cost components are walk time, wait time, boarding/alighting time, fare, travel time, transfer time, and congestion factor.

These coefficients are presented in Table 4.3.21 for the major modes in the base year. All coefficients were estimated in the calibration of the public transport assignment with the exception of the Value of Time, which was derived from the Home Interview Survey. The Value of Time is adjusted according to economic changes from the year 2000.

Table 4.3.21 Mode Specific Coefficients

Mode	Bus	Tram	Metro	Shared Taxi
Walk time*	1.0	1.0	1.0	1.0
Wait time	1.4	2.0	0.3	1.0
Boarding/alighting time*	1.4	2.0	0.3	1.0
Fare*	1.0	1.0	1.0	1.0
Travel time	0.7	0.6	0.8	0.9
Transfer time (equiv. to min)	10	10	5	15
Congestion factor*	1.0	1.3	0.7	0.2
Value of time (LE/HR)*	1.34	1.22	1.76	1.54

Source: Adjusted figures earmarked by * based on CREATS final report Vol.2, 2003

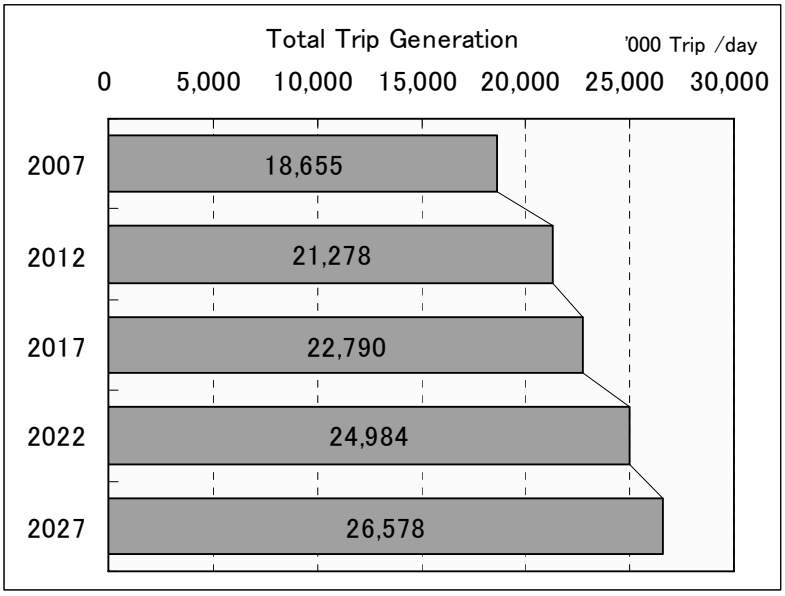
4.4 Future Traffic Demand

4.4.1 Total Trip Generation by Private and Public Mode

(1) Person based trips

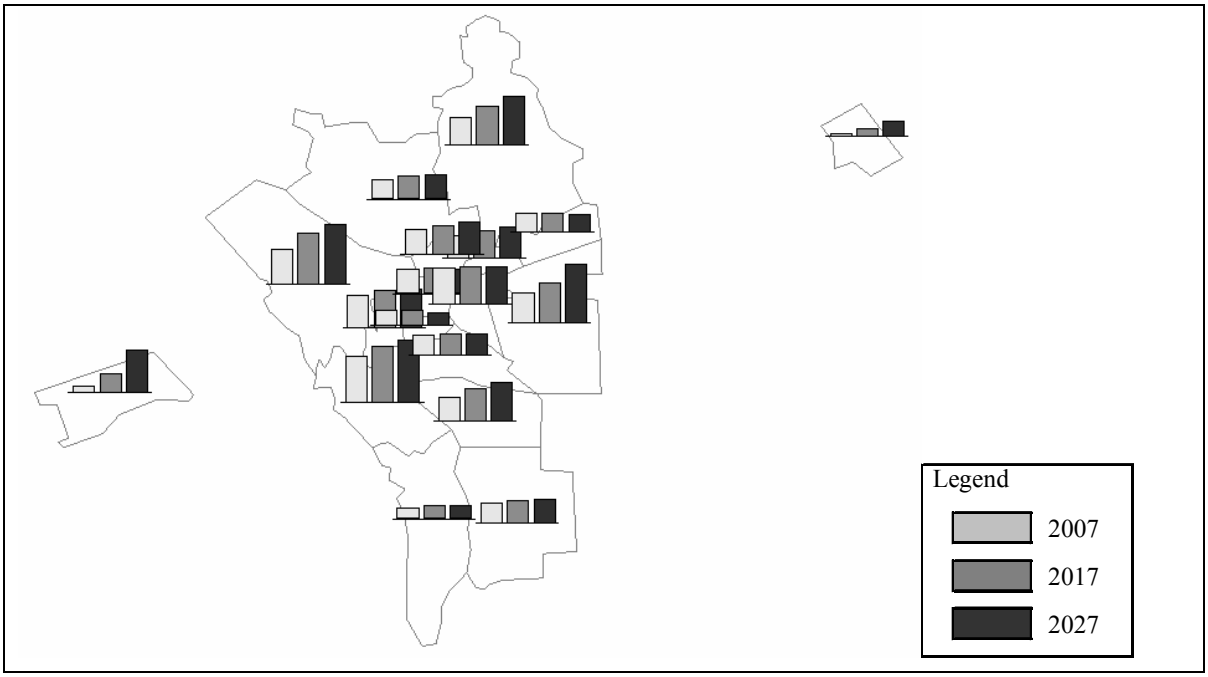
The purpose of estimating public transport usage trips is to fix the requirements for public transport capacity. The requirement of capacity is defined by the volume of passengers in the maximum demand cross section. Due to this reason, public transport demand is discussed in terms of person base generated trips (i.e. the number of people making trips).

As the JICA Study Team's traffic generation model is the same as the CREATS model and there is only a small difference in the total population projection, similar generated trips are expected. In fact, in 2022 the Study Team estimate is 24,984 thousand trips against CREATS 25,100 thousand trips (see Table 4.4.1). However, needless to say, the generated trips by zone are different because different urban plans are used.



Source: JICA Study Team

Figure 4.4.1 Trips Generated by Public Mode (Person Data)



Source: JICA Study Team

Figure 4.4.2 Predicted Trip Generation for 2007, 2017 and 2027

Table 4.4.1 Trips Generated by Public and Private Mode (Person Trip Base)

Year	Private Mode '000 Trip (share %)	Public Mode '000 Trip (share %)	Total '000 Trip (share %)	Growth Rate
2007	4,280 (22.9%)	14,375 (77.1%)	18,655 (100.0%)	1.00
2012	5,190 (24.4%)	16,088 (75.6%)	21,278 (100.0%)	1.14
2017	6,387 (28.0%)	16,403 (72.0%)	22,790 (100.0%)	1.22
2022	8,115 (32.5%)	16,869 (67.5%)	24,984 (100.0%)	1.34
2027	9,627 (36.2%)	16,951 (63.8%)	26,578 (100.0%)	1.42
CREATS DATA				
2001	2,900 (20.1%)	11,500 (79.9%)	14,400 (100.0%)	
2022	8,100 (32.3%)	17,000 (67.7%)	25,100 (100.0%)	

Source: JICA Study Team

Figure 4.4.2 shows trip generation by sector zones. Though Giza, Masr El Gedeeda and Doqi are large by volume, 10th of Ramadan, 6th of October, and Nasr City and New Cairo are remarkable because of their growth rate (see Table 4.4.2).

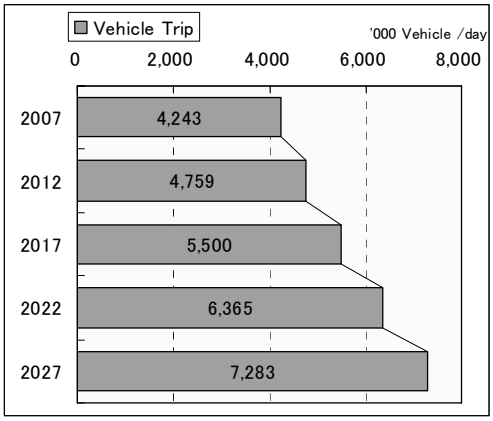
Table 4.4.2 Person Trip Generation by Sector Zone

No	Name	Gi 2007	Gi 2012	Gi 2017	Gi 2022	Gi 2027	2027/2007
1	6th of October	282,700	526,060	816,261	1,400,721	1,848,917	6.54
2	Imbaba Markaz	1,494,373	1,921,663	2,192,367	2,432,691	2,585,240	1.73
3	Doqi	1,443,108	1,582,220	1,631,456	1,662,821	1,692,592	1.17
4	Giza	2,072,260	2,333,624	2,452,400	2,578,428	2,712,494	1.31
5	South Giza	500,396	565,050	594,464	608,979	627,245	1.25
6	Helwan	882,643	987,921	1,006,348	1,029,842	1,064,195	1.21
7	Maadi	1,058,795	1,256,629	1,409,374	1,574,758	1,712,212	1.62
8	Khaleefa	910,256	965,612	976,124	972,250	968,136	1.06
9	CBD	719,276	719,244	683,513	631,956	592,786	0.82
10	Shobra	1,081,780	1,143,774	1,148,827	1,132,762	1,118,922	1.03
11	Masr El Gedeeda	1,620,676	1,680,994	1,646,457	1,662,974	1,646,431	1.02
12	Nasr City and New Cairo	1,330,429	1,559,429	1,761,281	2,243,999	2,553,532	1.92
13	Ain Shams	1,035,954	1,169,635	1,257,830	1,335,849	1,385,659	1.34
14	Salam City	833,287	875,686	850,761	808,186	773,462	0.93
15	Shobra El Kheima	1,112,974	1,237,776	1,296,783	1,368,334	1,404,373	1.26
16	Qalyob	863,100	961,130	1,009,303	1,071,968	1,103,356	1.28
17	Qanater	1,244,451	1,513,104	1,680,837	1,934,721	2,102,747	1.69
18	10th of Ramadan	169,469	280,630	378,052	535,423	687,876	4.06
Total		18,655,927	21,280,181	22,792,438	24,986,662	26,580,175	1.42

Source: JICA Study Team

(2) Vehicle trip base

For the evaluation of road capacity, the number of vehicles is used (i.e. the number of vehicles making trips). Generated numbers of vehicle trips are shown in Figure 4.4.3 in PCU (Private Car Unit) base. Comparing with CREATS in 2022, the JICA Study Team's estimate is 6,396 thousand trips against CREATS 6,328 thousand trips (see Table 4.4.3).



Source: JICA Study Team

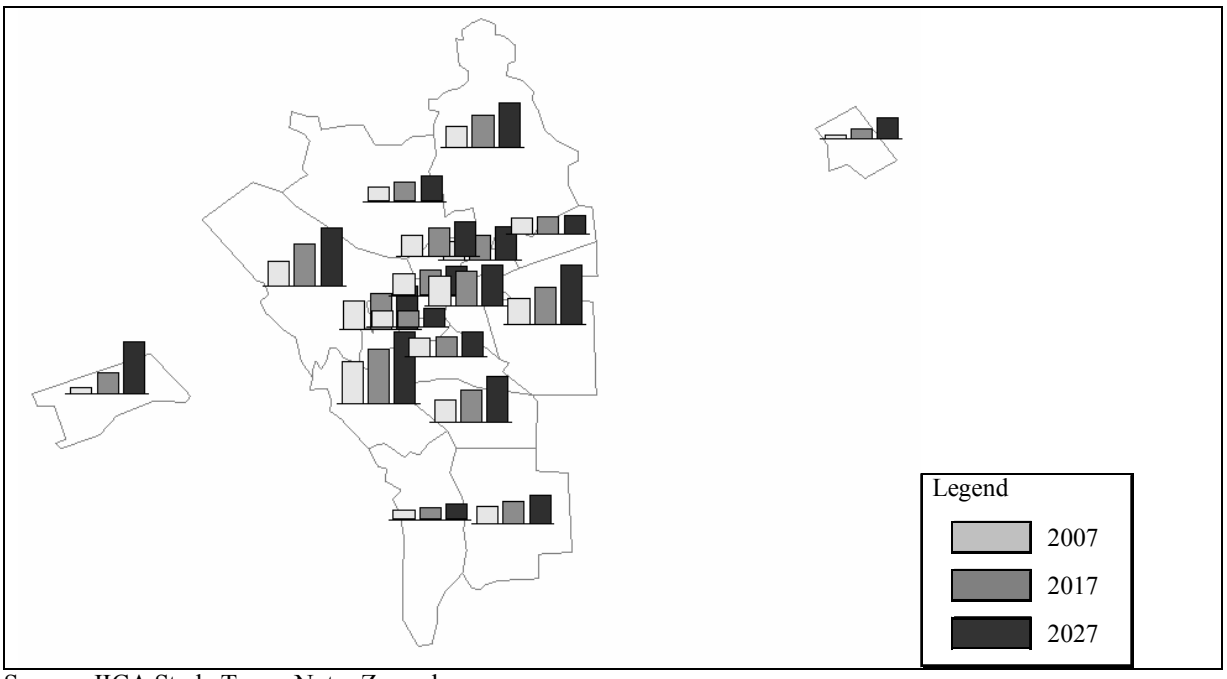
Figure 4.4.3 Vehicle Generated Trips (PCU Base)

Table 4.4.3 Comparison of JICA Study Team and CREATS Generation (PCU Base)

Year	JICA Study Team		CREATS
	'000 Trip	Growth Rate	'000 Trip
2005	-	-	3,237
2007	4,243	(1.00)	-
2012	4,759	(1.12)	4,165
2017	5,500	(1.30)	-
2022	6,365	(1.50)	6,328
2027	7,283	(1.72)	-

Source: JICA Study Team

Figure 4.4.4 shows trip generation by sector zone and Table 4.4.4 shows its break down. Giza, Doqi and Masr El Gedeeda are large by volume, and again 10th of Ramadan, 6th of October, and Nasr City and New Cairo are remarkable because of their growth rate. However, Masr El Gedeeda exceeds Doqi by volume and Nasr City and New Cairo draw close to 6th of October in growth rate.



Source: JICA Study Team, Note: Zone shows

Figure 4.4.4 Trip Generation by Sector Zone Based on Vehicle Trip in PCU

Table 4.4.4 Vehicle Trips Generated by Sector Zone

No	Name	Gi 2007	Gi 2012	Gi 2017	Gi 2022	Gi 2027	2027/2007
1	6th of October	76,042	141,735	229,893	412,466	573,188	7.54
2	Imbaba Markaz	281,597	370,571	456,770	554,566	632,146	2.24
3	Doqi	308,593	349,155	389,724	434,638	476,427	1.54
4	Giza	464,444	534,950	607,626	697,743	786,705	1.69
5	South Giza	111,035	127,647	145,290	162,910	180,362	1.62
6	Helwan	197,349	223,608	246,905	276,122	306,983	1.56
7	Maadi	250,055	300,960	358,521	431,676	501,810	2.01
8	Khaleefa	204,802	215,983	234,719	254,237	272,850	1.33
9	CBD	185,536	175,606	186,794	196,715	208,277	1.12
10	Shobra	243,676	262,880	284,694	306,484	326,385	1.34
11	Masr El Gedeeda	338,238	361,447	385,673	427,708	458,666	1.36
12	Nasr City and New Cairo	298,785	351,738	416,727	548,872	650,578	2.18
13	Ain Shams	216,242	250,761	290,026	335,684	374,335	1.73
14	Salam City	183,587	198,395	201,371	202,805	207,803	1.13
15	Shobra El Kheima	229,565	270,003	306,849	354,961	392,634	1.71
16	Qalyob	164,292	194,436	220,735	256,106	284,240	1.73
17	Qanater	239,400	301,009	355,569	433,497	494,133	2.06
18	10th of Ramadan	53,622	88,675	122,989	178,719	238,389	4.45
Total		4,046,860	4,719,559	5,440,875	6,465,909	7,365,911	1.82

Source: JICA Study Team

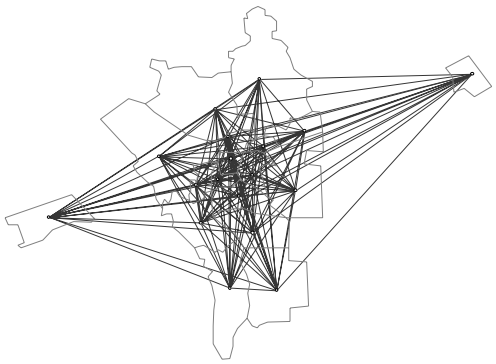
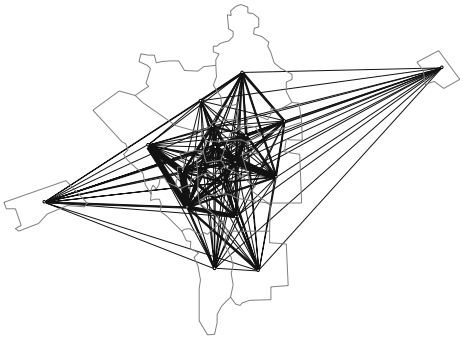
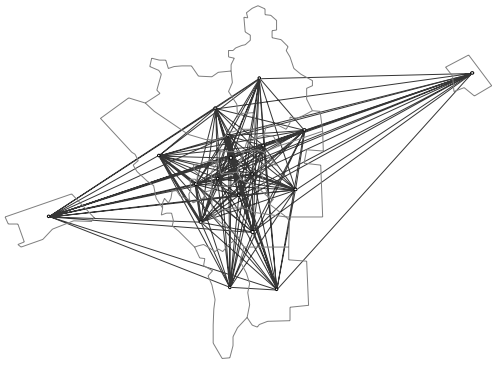
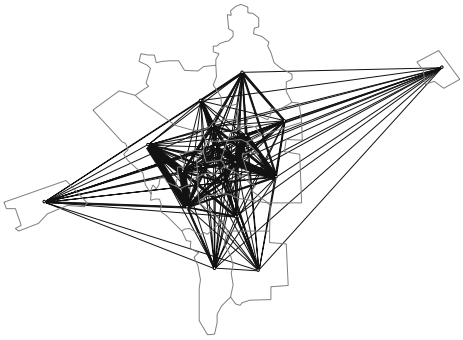
4.4.2 Trip Distribution

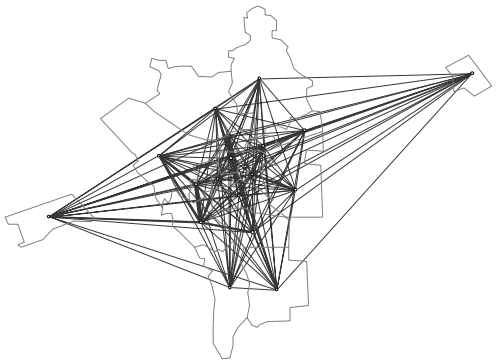
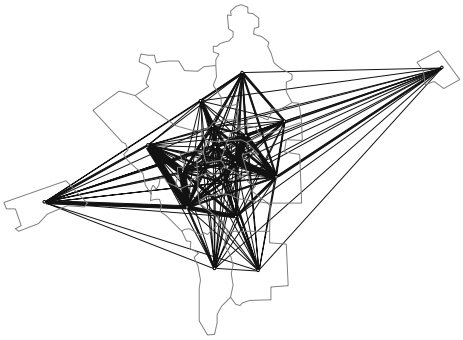
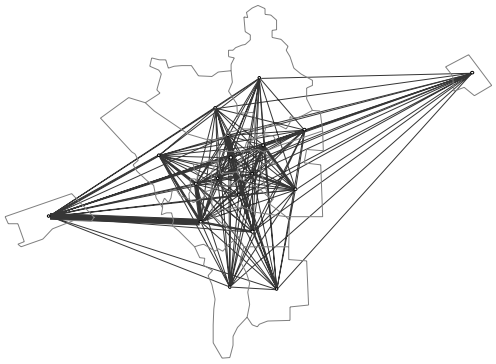
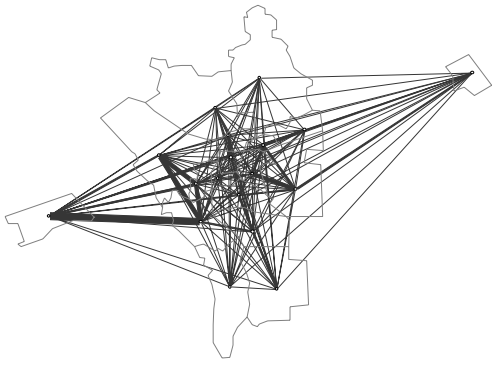
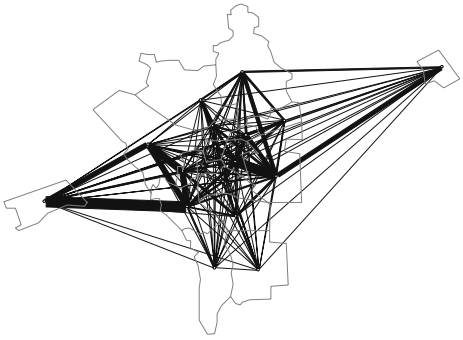
The trip distribution patterns of person trips by private and public modes are shown in Figure 4.4.5. For taking general trend public transportation trip distribution patterns of 2007 and 2027 are compared.

Trip distribution pattern in 2007 shows main movement of traffic is south-north direction. Traffics form Giza block (line structured by Imbaba, Doqi and Giza Zones) and West block (line structured by Shobra, Masr El Gedeeda and Nasr City-New Cairo Zones). Both lines meets at CBD and Shobra, and flows to Shobra El Kheima and Qalyob.

In twenty (20) years from 2007 to 2027 main movement of traffic shifts to west-east direction. Giza block grows to the triangle including 6th of October. The West block also grows by merging the 2007 West block and Qanater and 10th of Ramadan.

When overlooking the traffic distribution the new concept of trunk rail connecting 10th of Ramadan and 6th of October through CBD and Giza may be studied.

(Private Mode)	(Public Mode)
	
Trip Distribution, Year 2007	
(Private Mode)	(Public Mode)
	
Trip Distribution, Year 2012	

(Private Mode)	(Public Mode)
	
Trip Distribution, Year 2017	
(Private Mode)	(Public Mode)
	
Trip Distribution, Year 2022	
(Private Mode)	(Public Mode)
	
Trip Distribution, Year 2027	

Source: JICA Study Team
Note: The shapes of zone indicate traffic sector zones which are deferent from CENSUS Sector Zone

Figure 4.4.5 Person Trip Demand Line by Sector Zone

4.5 Assessment of the CREATS Study

4.5.1 Summary of the CREATS Study

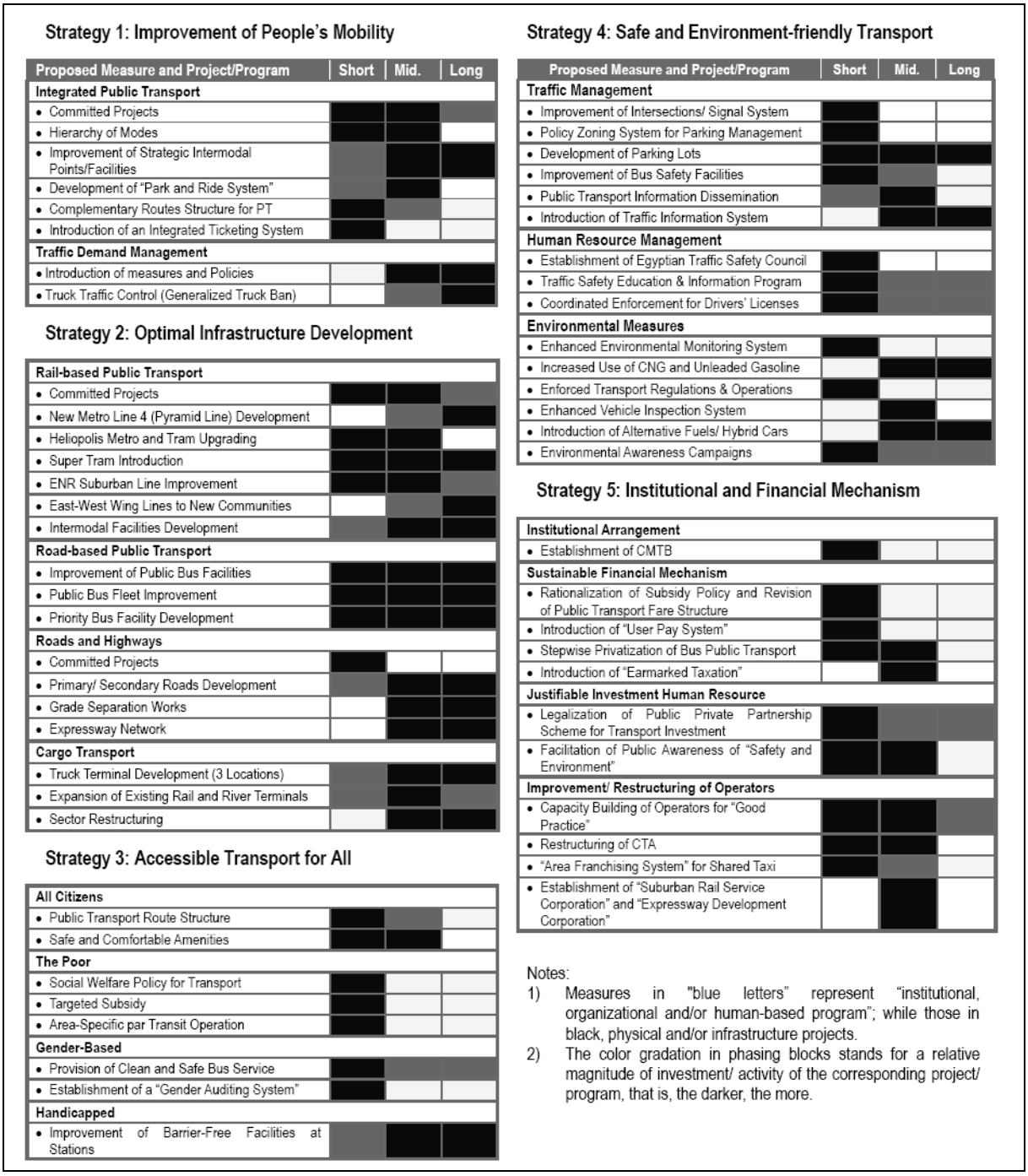
(1) CREATS projects overview

The CREATS Study covers wide range of GCR transportation issues. The study firstly establishes five (5) key strategies as follows:

1) Improvement of People's Mobility
2) Optimal Infrastructure Development
3) Accessible Transport for All
4) Safe and Environment-Friendly Transport
5) Institutional and Financial Mechanism

The above strategies are implemented with programmed projects. In line with the objectives of each strategy, the CREATS Master Plan proposed a total of 56 projects to be undertaken in a phased manner, with a time horizon of 20 years.

CREATS projects are ordered in a time frame that is based on a general phasing concept, namely short term (2003-07), medium term (2008-12) and long term (2013-22). Each of these 56 projects is tabulated in Figure 4.5.1, grouped within the five (5) key strategies.



Source: CREATS final report Vol.2, 2003

Figure 4.5.1 Key CREATS Strategies and Projects

(2) CREATS top 20 projects

CREATS selected the Top 20 projects mainly from the point if view of moving people in an efficient way and offering affordable transport for all (see Table 4.5.1). The CREATS report advises that: "MRT projects, which have a high capacity for moving people, score high as do the super tram projects which move less people but are still high contributors to efficient public transport. Social mobility and linking the satellite cities also highly contribute to the

transport needs of the Study Area. But offering affordable transport in an efficient manner requires expertise and structured organizations. "Soft Projects" that improve management systems and decision procedures or increase knowledge and expertise can also be found in the Top 20 list of projects".

In fact, the JICA Study Team's assessment of the CREATS Plan targets 16 projects out of the Top 20, excluding grade separation of intersection projects and cargo terminal/cargo transport sector restructuring projects. The reason for excluding these projects is that the grade separation projects are showing good progress in adjusting the current traffic conditions (see section 4.1.2) and freight related projects indirectly affect transportation issues. However, the freight-related projects may improve freight transport efficiencies and contribute to lessen the number of trucks. The JICA Study Team's assessment starts from "hard" projects (see sections 4.5.2, and 4.5.3) and then looks at the "soft" projects (see section 4.5.4).

Table 4.5.1 Prioritized Top Twenty CREATS Projects

Project and Program	Rank	Points	Phase
• MRT Line 1 Improvements	1	18	S
• MRT Line 4	2	20	L
• MRT Line 3	3	21	S
• Improvement/restructuring of Operators	4	39	S
• Public Bus Fleet Modernization	5	48	S/M
• MRT Line 2 Extensions	6	51	S
• Institutional Strengthening	7	52	S
• Supertram Line 1	8	57	S
• Supertram Line 3	9	74	M/L
• 6th of October Trunk Busway	10	75	S
• Accessible Public Transport For All	11	78	S
• Central Cairo GS Plan Package	12	82	S
• Rail Wing East (Phase 1)	13	86	S/M
• Cargo Transport Sector Restructuring	14	90	M
• Tram / Heliopolis Metro Rehabilitation	15	93	S/M
• Rail Wing East (Phase 2)	15	93	L
• Human Resources Development	16	97	S
• River and Rail Container Terminals	17	98	M
• Investment Decision Procedures	17	98	S
• Shobra El Kheima GS Plan Package	18	100	S

Notes: "**Ranking**" contains top twenty projects/programs only based on accumulated "**Points**" achieved via testing and sensitivity analyses. "**Phase**" refers to initiation of project during short (to 2007), medium (to 2012) or long (after 2012) terms. Refer Volume III for more precise sector scheduling.

Source: CREATS final report Vol.2, 2003

4.5.2 Assessment Procedure for Demand Capacity Balance by Cross Section

In the years 2007, 2012, 2017, 2022 and 2027, OD trips are assigned to the 2007, 2012, 2017, 2022 and 2027 CREATS+PPP network, respectively. These assignments result in a so-called "Do-Nothing Case" assignment, because the study principle is to assess the CREATS+PPP plan. Needless to say, traffic assignments on public mode transportation uses person trips as a measure and the result is used for the assessment of the public transportation plan, while, the traffic assignment of vehicle trips on road networks is used for the assessment of road developments.

CREATS projects are assessed from the point of view of Demand Capacity Balance. The maximum supply capacity of public transport is quoted from CREATS and adjusted with the data presented in Table 4.5.3. The adjustment data were obtained by using assumptions of a congestion rate of 150% for Heavy Rail and 120% for Light Rail. Due to such definition of capacity, setting D/C = 1.0 is considered as being "saturated" in the case of public transport.

On the other hand, a free running condition is secured when the Demand/Road Capacity = 1.0 and "saturated" condition is assumed to occur at D/C = 1.5. To provide a quantitative view of D/C, the congestion rate (D/C) for the 15th of May Bridge, 6th of October Bridge and 26th of July Corridor, at the Ring Road cross section, have been calculated, as shown in Table 4.5.2.

Table 4.5.2 Congestion Rates of 26th of July and 15th of May

Item	15th of May Bridge	26th of July Corridor	6th of October Bridge
Traffic counts in 2005 (PCU)	159,359	103,891	345,332
Capacity (PCU)	106,700	85,400	171,200
Congestion rate	1.5	1.2	2.0

Source: JICA Study Team

The assessment of the CREATS Proposals, based on the above understandings, has been done at the cross sections that are illustrated in Figure 4.5.2. For the convenience of reference, the CREATS Plan for 2022 is shown in Figure 4.5.3.

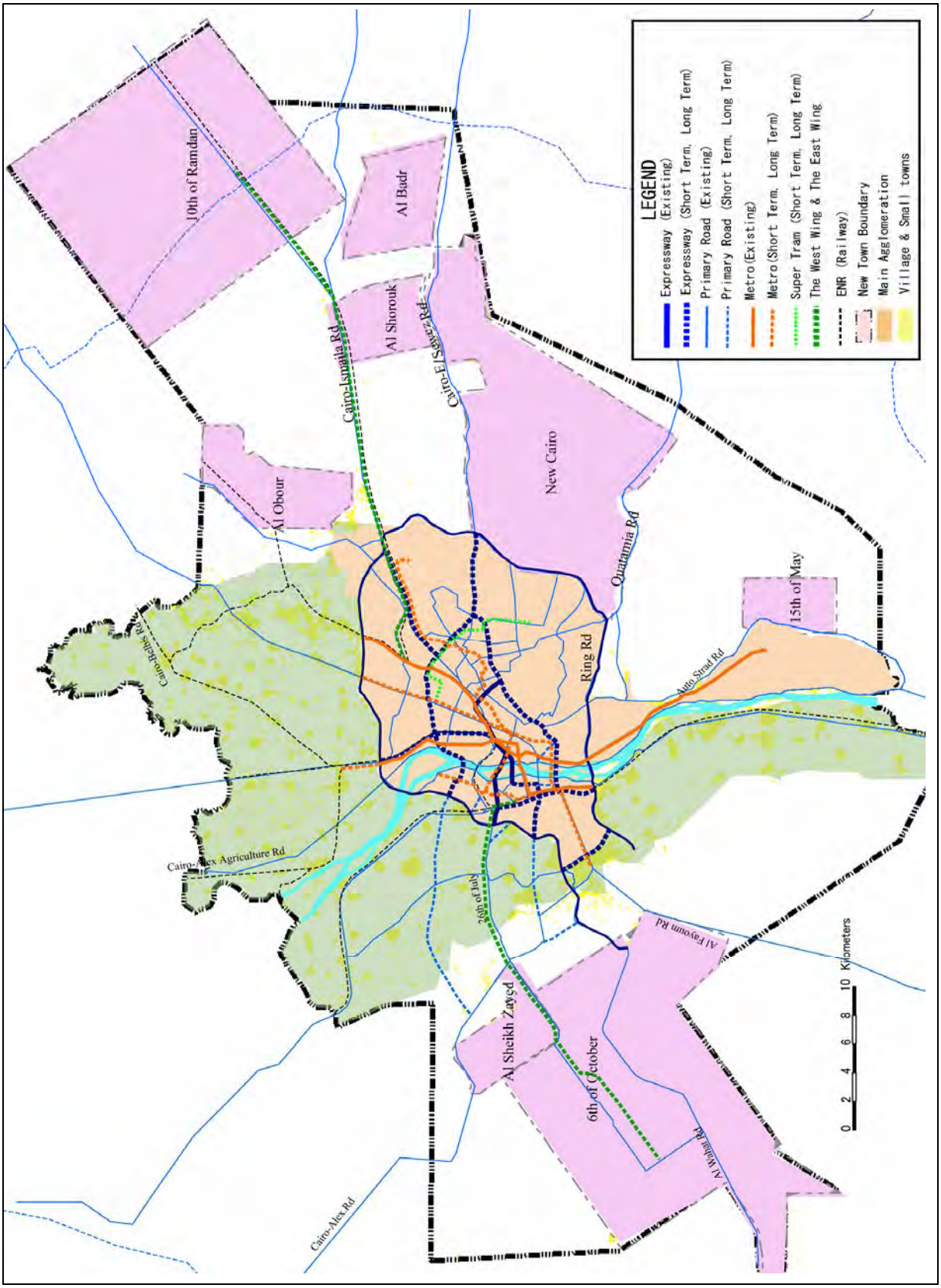
Table 4.5.3 Maximum Capacity of the Metro, LRT and Buses

Transport Mode	Per hour per direction max.	Per hour both direction max.
Metro	68,000	136,000
LRT	21,500	43,000
Exclusive Bus Way	6,000	12,000
Freeway Bus Operation	3,000	6,000

Source: JICA Study Team

Source: JICA Study Team. Landsat image courtesy of USGS.

Figure 4.5.2 Cross Sections Applied for Demand/Capacity Assessment



Source: CREATS final report Vol.2, 2003

Figure 4.5.3 Transportation Plan 2022 (CREATS + Toll Exp. way + Transportation Projects Constructed and Approved after CREATS)

A brief discussion of each cross section follows:

- E1 Cross Section: Cross Sections from E1 till E3 cut the movement from CBD to New Cairo through Nasr City and Vice Versa. The E1 C.S. cuts the movement at El Nasr Road.
- E2 Cross Section: The E2 C.S. cuts the movement at Hassan El Shref.
- E3 Cross Section: The E3 C.S. cuts the movement at Ring Road.
- E4 Cross Section: The E4 C.S. cuts the movement Cairo urban area to 10th of Ramadan City and Vice Versa collecting transport demands of Al Obour and Al Shorouk.
- W1 Cross Section: Cross Sections W1 and W3 cut the movement from the CBD to Al Sheikh Zayed and 6th of October City, and Vice Versa. W1 C.S. cuts that movement at the Ring Road.
- W2 Cross Section: Cross Sections W2 and W4 cut the movement from the CBD to Alexandria Desert Road direction through Giza along Faisal Street and El Abram Street, and Vice Versa. W2 C.S. cuts that movement at El Sudman Street.
- W3 Cross Section: Cross Section W2 cuts the proposed West Wing.
- W4 Cross Section: Cross Section W4 cuts the movement from the CBD to Alexandria Desert Road direction through Giza along Faisal Street and El Abram Street, and Vice Versa before the Pyramid area.
- W5 Cross Section: Cross Section W5 cuts the west-east movement at the screen line in the 6th of October City.
- S1 Cross Section: Cross Sections S1 and S2 cut the movement from the CBD to Al Maadi and Helwan direction and Vice Versa. S1 C.S. cuts that movement at Salah Salim Road.
- S2 Cross Section: Cross Section S2 cuts the movement from the CBD to Al Maadi and Helwan direction and Vice Versa at the Ring Road.
- N1 Cross Section: Cross Sections N1 and N4 cut the movement mainly along Alexandria Agriculture Road. The N1 C.S. cuts the movement at the E4 section of the urban expressway.
- N2 Cross Section: Cross Sections N2 and N5 cut the movement mainly along Port Said Road. The N2 C.S. cuts the movement at the E4 section of the urban expressway.
- N3 Cross Section: Cross Sections N3 cuts the movement mainly along Ismailia Desert Road at the E4 section of the urban expressway.
- N4 Cross Section: Cross Section N4 cuts the movement mainly along Alexandria Agriculture Road at the Ring Road.
- N5 Cross Section: Cross Section N5 cuts the movement along Port Said Road at the Ring Road.

4.5.3 Hard Projects

(1) Demand capacity balance results

Demand Capacity Balance is calculated and illustrated in Figures 4.5.4 and 4.5.5, and assessments of the CREATS projects, as summarized in Table 4.5.4, are based on these data. The poor Demand Capacity Balance has been foreseen at the following four cross sections in the planning period.

E3 Cross Section

The cross section E3 needs mass transit implementation because of high growth in the New Cairo Area. The easiest way to do this is to extend the LRT Line 1 to E3. However, considering the extension of LRT No.1 to New Cairo Area, the Study Team doubts whether LRT is appropriate transport mode. Concerning this subject, a qualitative comparison study is done in section 4.6.

High growth in New Cairo also requires increasing the road capacity at the E3 cross section. The Study Team recommends the extension of the Urban Expressway to the Ring Road.

W1 Cross Section

Around 150,000 passengers are passed through W1 Cross section in a peak hour. It suggests the necessity of additional mass transit to the CREATS proposed bus way.

W2 Cross Section

D/C reaches at 1.0 in 2012. Early start of the Metro Line 4, westward section of El Malek el Saleh is necessary.

W5 Cross Section

D/C reaches at 1.0 in 2022. An additional mass transit stated in W1 section is required to extend till the 6th of October City.

Rapid growth of the 6th of October City requires another arterial road connected to CBD. El Farag Road studying in GOPP and its extension to the 6th of October City is necessary.

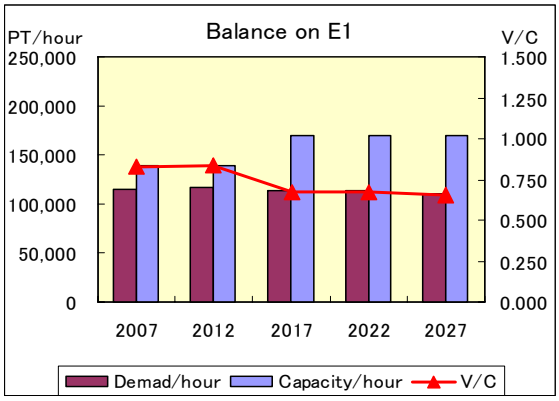
S2 Cross Section

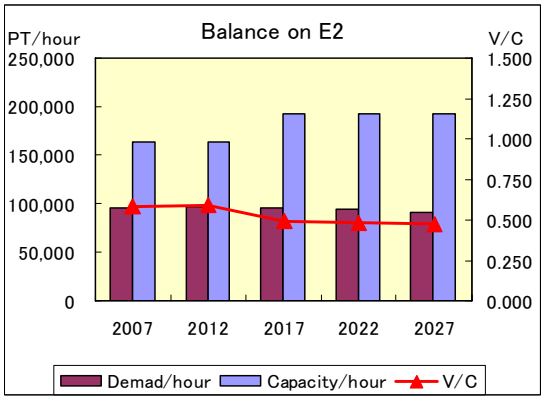
D/C will be oversaturated from 2022. Increase of capacity of Autostrade Road is required.

Table 4.5.4 Summary of Demand Capacity Balance Results

Cross Section	Public Transport	Vehicle Transport
E1	Improvement: LRT Line 1 in 2017	Improvement: No program
	D/C: 1.0 in 2012	D/C: No problem
	New Proposal: Metro Line 3 Branch instead of LRT Line 1	New Proposal: Extension of Urban Express Way to Ring Road in 2017
E2	Improvement: LRT Line 1 in 2017.	Improvement: No program
	D/C: No problem	D/C: No problem
	New Proposal: Metro Line 3 Branch instead of LRT Line 1	New Proposal: Extension of Urban Express Way to Ring Road in 2017
E3	Improvement: No program	Improvement: No program
	D/C: Mostly saturated in 2022	D/C: 1.5 in 2027.
	New Proposal: Metro Line 3 Branch instead of LRT Line 1	New Proposal: Extension of Urban Express Way to Ring Road in 2017
E4	Improvement: East Wing in 2022.	Improvement: No program
	D/C: 1.0 in 2027	D/C: No problem
	New Proposal: No program	New Proposal: No program
W1	Improvement: West Wing in 2012.	Improvement: Expressway opens in 2012.
	D/C: Mostly saturated after 2017	D/C: Reaches at 1.5 in 2027
	New Proposal: Strengthening of West Wing	New Proposal: No program
W2	Improvement: Metro Line 4 in 2012.	Improvement: Expressway opens in 2012.
	D/C: Saturated in 2012	D/C: 1.5 in 2022 and 1.8 in 2027
	New Proposal: Early start of Line 4, westward section of El Malek el Saleh Station	New Proposal: No program
W3	Improvement: West Wing in 2012.	Improvement: No program
	D/C: No problem	D/C: Mostly saturated (1.4) in 2027
	New Proposal: Early start of Line 4, westward section of El Malek el Saleh Station	New Proposal: No program
W4	Improvement: Metro Line 4 in 2012.	Improvement: No program
	D/C: 1.0 in 2027	D/C: Saturated (1.5) in 2027
	New Proposal: No program	New Proposal: No program
W5	Improvement: Metro Line 4 in 2022.	Improvement: No program
	D/C: Saturated after 2022	D/C: Saturated (1.5) in 2017 and oversaturated after
	New Proposal: Extension of Metro Line 4 between 2017 and 2022	New Proposal: No program
S1	Improvement: No program	Improvement: No program
	D/C: Mostly saturated between 2007 and 2017	D/C: Saturated (1.5) in 2027
	New Proposal: No program	New Proposal: Increase of capacity of Autostrade Rd.
S2	Improvement: No program	Improvement: No program
	D/C: No problem	D/C: Over saturated from 2012
	New Proposal: No program	New Proposal: Increase of capacity of Autostrade Rd.
N1	Improvement: No program	Improvement: Urban Expressway in 2022.
	D/C: Mostly saturated (0.8-0.9) until 2017	D/C: 1.5 in 2022 and after
	New Proposal: No program	New Proposal: No program
N2	Improvement: MRT Line 4 in 2022.	Improvement: No program
	D/C: Mostly saturated (0.9) until MRT Line 4 opens	D/C: No problem
	New Proposal: No program	New Proposal: No program
N3	Improvement: LRT Line 3 in 2022.	Improvement: The Urban Expressway opens in 2022.
	D/C: No problem	D/C: No problem
	New Proposal: No program	New Proposal: No program
N4	Improvement: No program	Improvement: No program
	D/C: 1.0 between 2007 and 2017	D/C: 1.6 in 2022
	New Proposal: No program	New Proposal: No program
N5	Improvement: No program	Improvement: No program
	D/C: Mostly saturated (0.9) in all of planning period	D/C: No problem
	New Proposal: No program	New Proposal: No program

Source: JICA Study Team


Balance on E1
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C


Balance on E2
PT/hour
V/C
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200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
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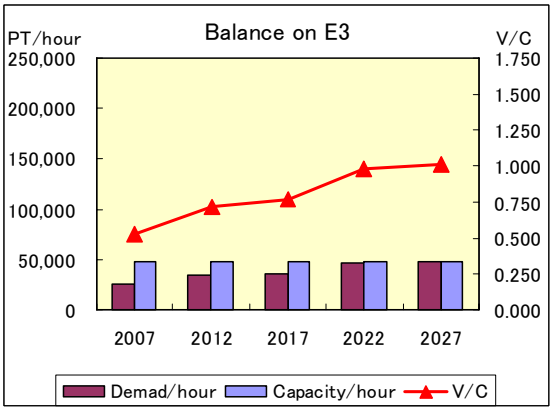
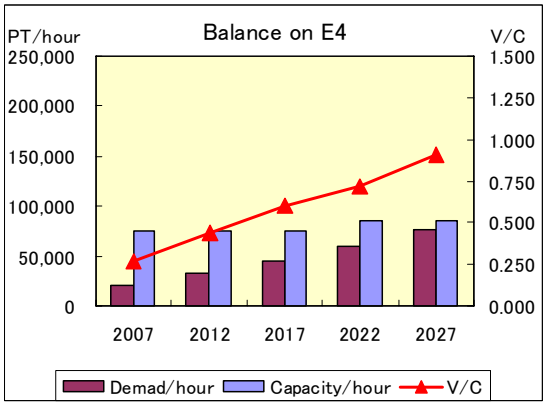
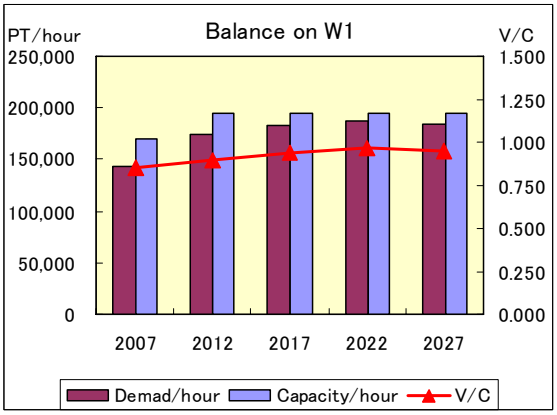
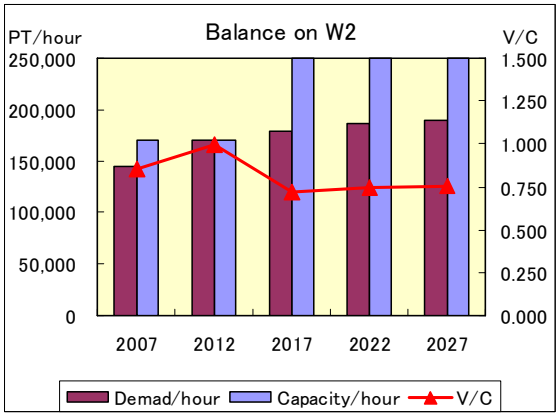
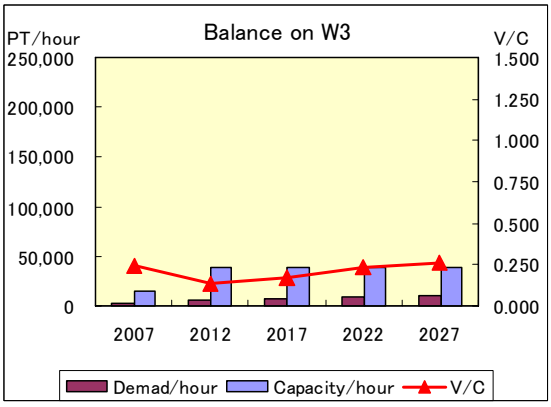
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C

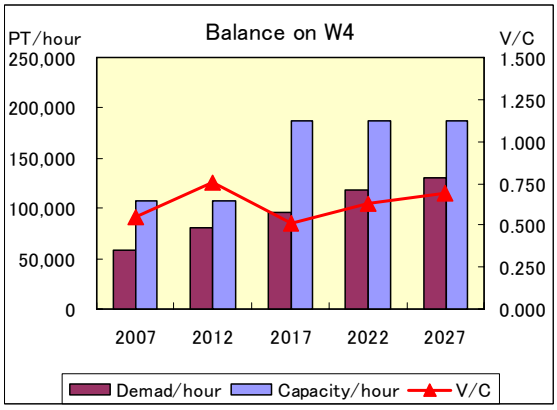

Balance on E3
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C

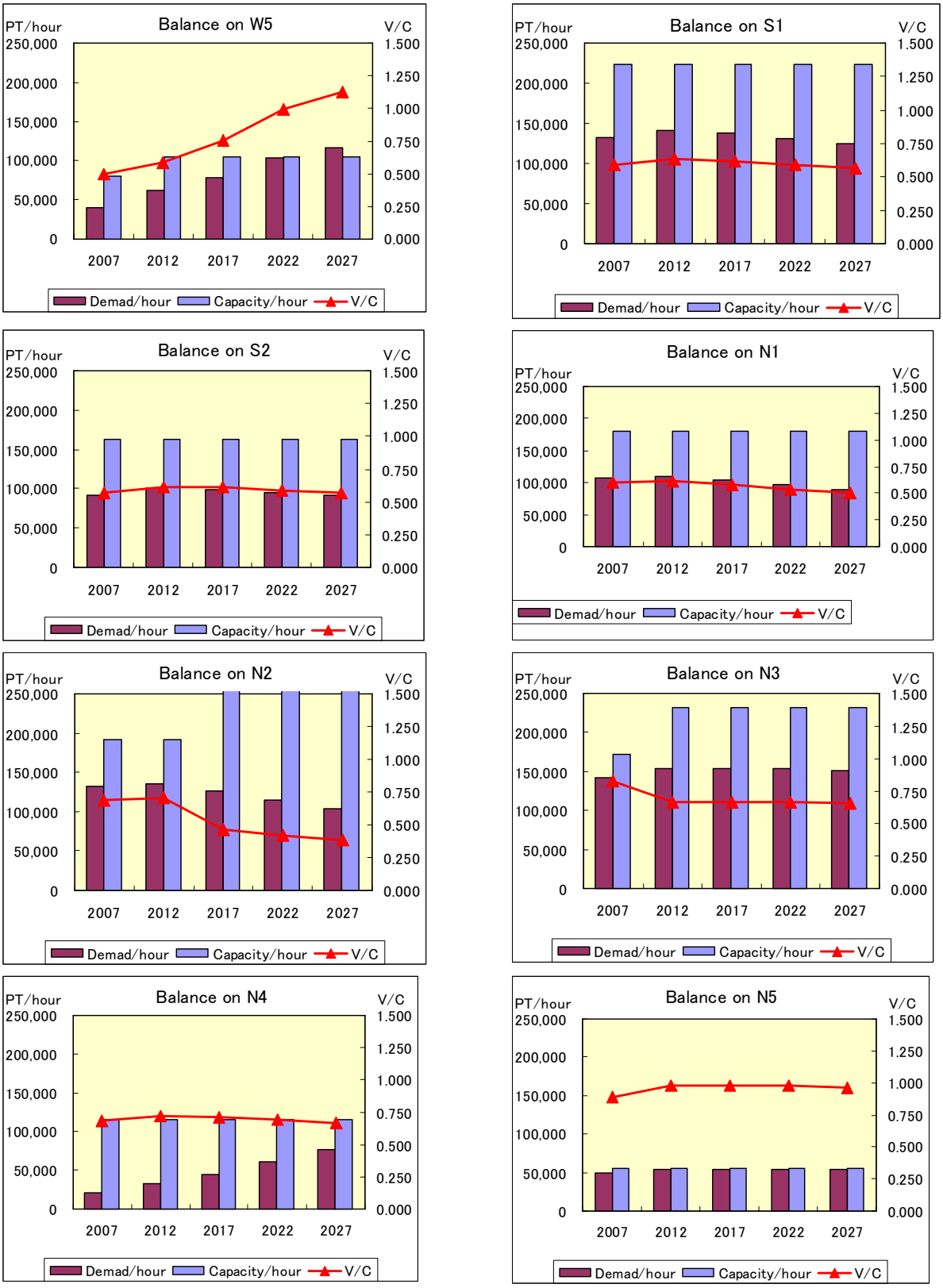

Balance on E4
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C


Balance on W1
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C


Balance on W2
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C

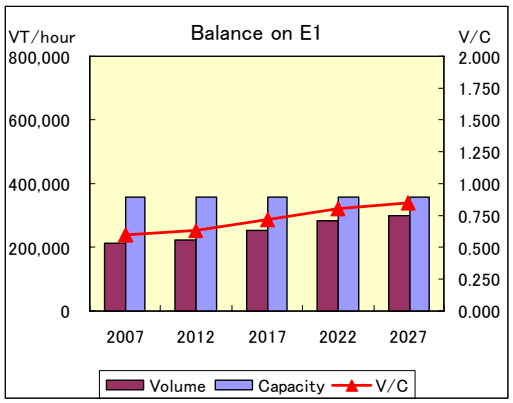

Balance on W3
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C

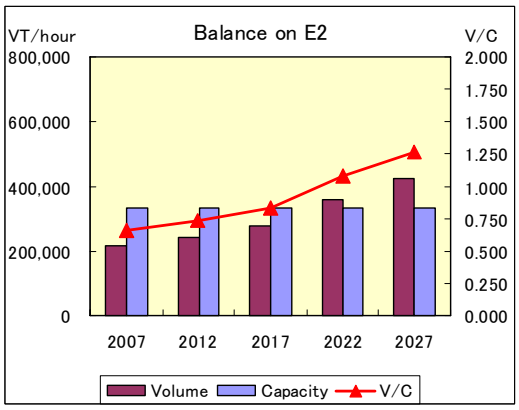

Balance on W4
PT/hour
V/C
250,000
200,000
150,000
100,000
50,000
0
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Demad/hour
Capacity/hour
V/C



Source: JICA study team

Figure 4.5.4 D/C Balance (Public Transport, Peak Hour)


Balance on E1
VT/hour
V/C
800,000
600,000
400,000
200,000
0
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on E2
VT/hour
V/C
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400,000
200,000
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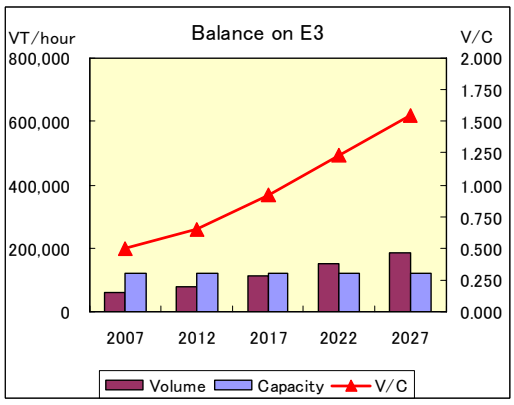
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on E3
VT/hour
V/C
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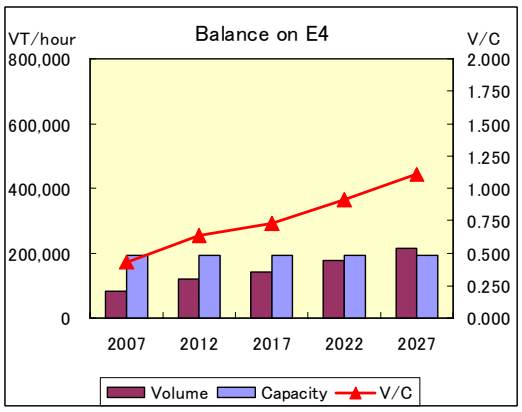
600,000
400,000
200,000
0
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on E4
VT/hour
V/C
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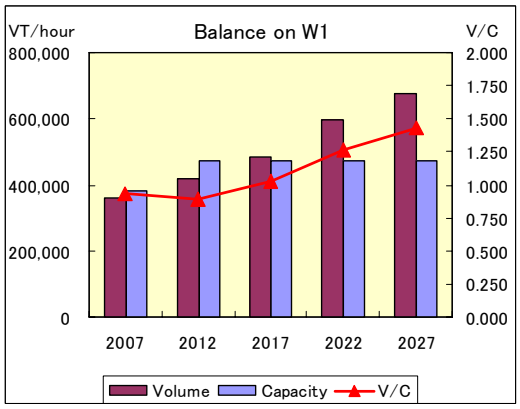
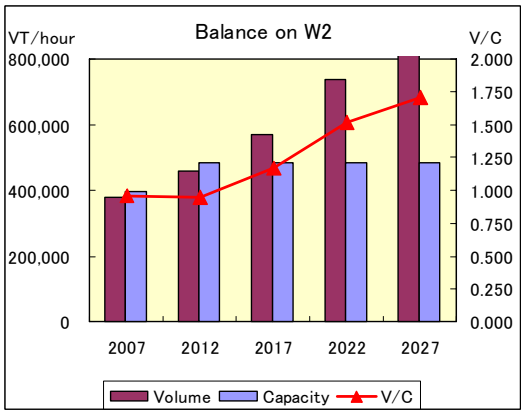
600,000
400,000
200,000
0
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on W1
VT/hour
V/C
800,000
600,000
400,000
200,000
0
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on W2
VT/hour
V/C
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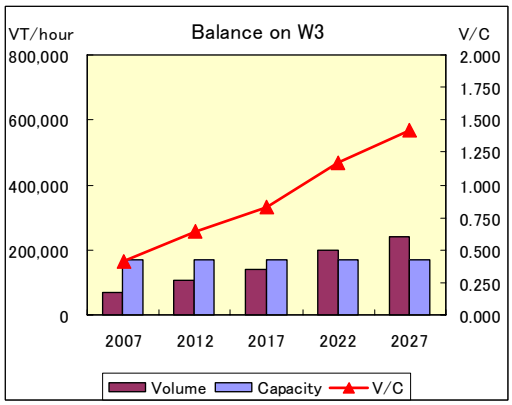
600,000
400,000
200,000
0
2.000
1.750
1.500
1.250
1.000
0.750
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on W3
VT/hour
V/C
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600,000
400,000
200,000
0
2.000
1.750
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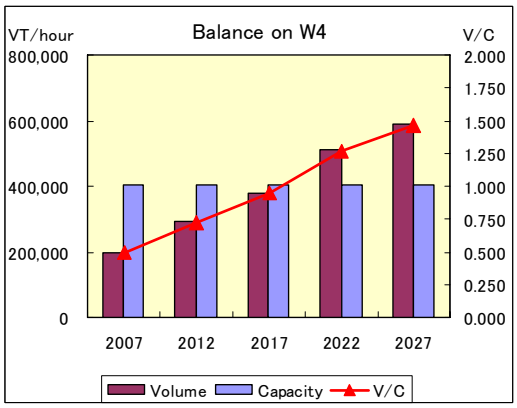
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C


Balance on W4
VT/hour
V/C
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200,000
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2.000
1.750
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1.250
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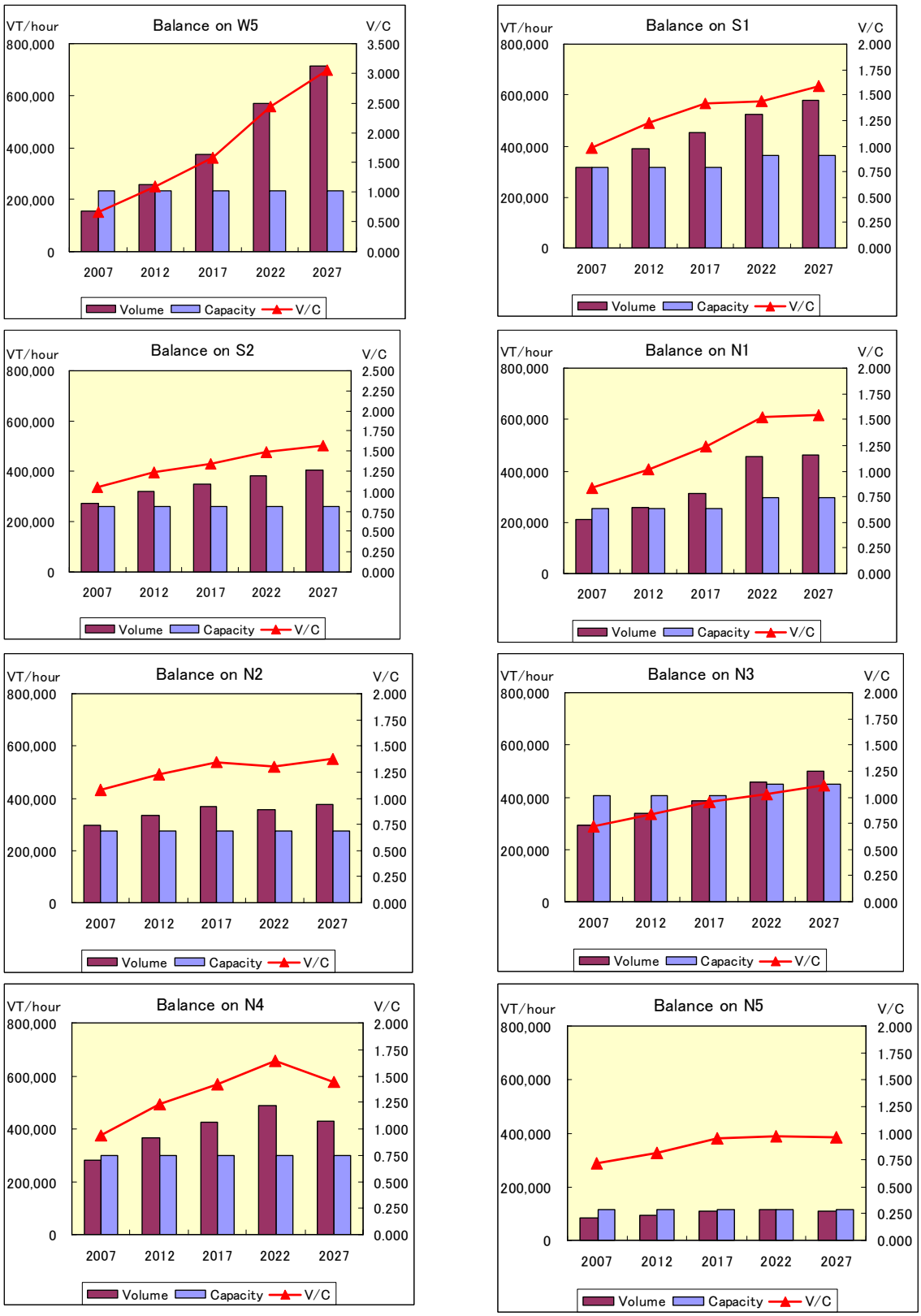
0.500
0.250
0.000
2007
2012
2017
2022
2027
Volume
Capacity
V/C



Source: JICA study team

Figure 4.5.5 D/C Balance (Vehicle Movement, Peak Hour)

(2) West corridor

1) Background of the corridor concept

As cleared in section 4.4.2 strong demand flow connecting 6th of October – Cairo CBD are expected in corresponding to the expected growth of 6th of October City and vicinities. To cope with that demand, CREATS proposed bus service through exclusive bus way connecting Cairo CBD and 6th of October. And NATS has a plan to connect Giza and 6th of October as extension of Metro 4. McKinsey proposed also another route from Cairo University to 6th of October City through Abd El Salem Aref Street and its extension.

2) Reinforcement of West Wing (busway) project

Owing to the rapid increase of 6th of October City population, traffic demand between 6th of October City and CBD is expected to be increased rapidly.

The exclusive bus way plan of CREATS can not accommodate well the public transport demand until 2027. The Study Team proposes a railway plan together with CREATS bus way plan. In the new proposal the bus way works as trunk line until the railway starts operation, but the railway takes over trunk line role after its completion. From the tentative nature of trunk transport role of bus way, lessening of investment cost shall be considered. In the line of this understanding open-end bus way was examined and adopted.

The railway plan shall be studied in coordinate to the revised bus way plan (See section 4.6.4).

3) El Farag road and its extension to the 6th of October City

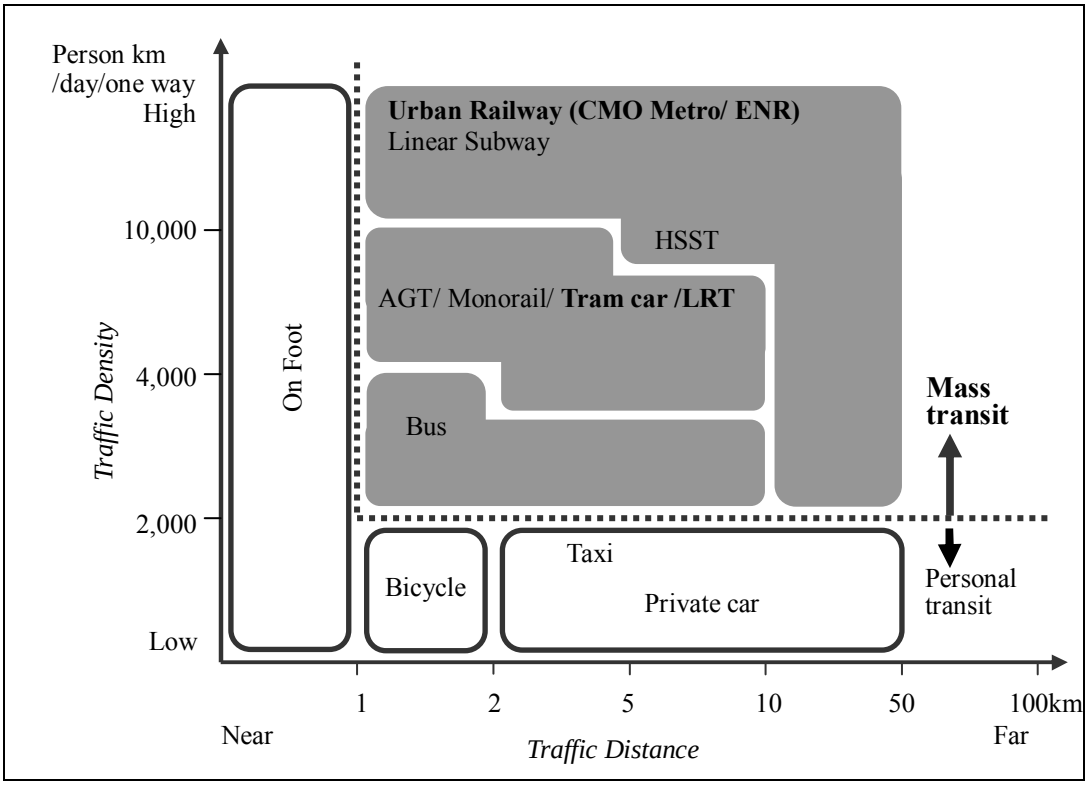
All of cross sections of westward of the Nile River will be reached at D/C ration 1.0 or above. Necessity of new arterial connecting the 6th of October City and CBD is clear. Realization of Al Farag Road studying in GOPP is highly required and also its extension from the intersected with Alexandria Desert Road shall be studied.

(3) Transport service between CBD-Nasr City-New Cairo

1) Public transport

Demand and Capacity Balance gap of the section is already discussed. Considering the big growth of New Cairo Area some railway service seems to be necessary. Hereafter some of discussion on this issue is presented.

Transport system selection from transport distance and traffic density: Based on Figure 4.6.1, 10 km of transport distance and 10,000 person-km / day / direction is the boarder line of whether Metro is chosen or not. Also in Table 4.6.1 system characteristics are summarized



Source: JICA Study Team

Figure 4.5.6 Transport Mode based on Relationship between Traffic-density & Distance

Table 4.5.5 Transport System Characteristics

System	Application Field	Hardware Overview
Heavy Rail (Surface)	Key system for the large city. Transportation between center of the city and suburbs.	Steel-wheel large volume transport system with long operation experience. Very stable system. High speed operation possible.
Heavy Rail (Subway)	Key system for the large city. Key system for the medium sized city.	Steel-wheel large volume transport system. Rubber tires are used for some systems. Installable in existing urban areas.
Monorail	Less densely populated areas in the large city. Transportation between center of the city and their surrounding areas. Key system for medium-sized cities with a widely distributed population	Two types of system, suspended and straddled, are available. Reduce land purchase costs because space above roads can be used. Track alignment has flexibly.
LRT	Feeder from large volume transport systems. Sub system for key transport system in medium sized city. Key system or Subsystem for small city.	Easy construction work helps reducing construction costs. Easy introduction as a public transport system Meeting to demand flexibly

Source: JICA Study Team

Transportation capacity: The primary requirement of an urban railway system is able to provide the service that can meet the estimated demand during the peak hours. As for station intervals and operating speed, there exists no remarkable benefit in setting maximum speed excessively high. Operation patterns can be simplified by utilizing isochronous timetables. That is why urban railway systems constitute high traffic-density systems in safety operation.

Suppose on the condition based on the maximum transport capacity of the Line 1 (2 millions passengers/day) and the Line2 (1.8 millions passengers/day), the transport capacity/direction-hour of New Cairo branch line is roughly calculated. As for transport capacities of Monorail and LRT are estimated based on the consultant experience. Results are summarized in Figure 4.6.3.

Table 4.5.6 Supposed Transportation Capacity on New Cairo Line according to the demand forecast value in 2027/2017

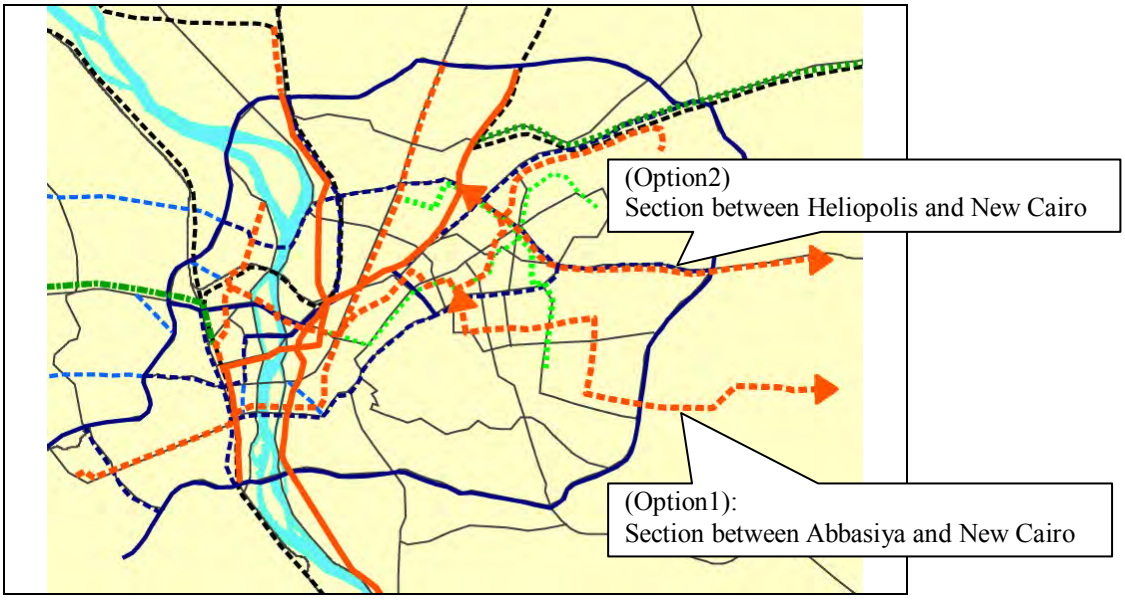
System	Capacity per Car	Car per Set	Transportation Capacity (no/way/hour)				
			Headway in minute				
			2	3	6	8	10
Bus	45	1	1,350	900	450	338	270
LRT	75	4	9,000*[1]	6,000	3,000	2,250	1,800
Monorail	105	6	18,900	12,600	6,300	4,725	3,780
Subway	140	8	33,600	22,400	11,200	8,400	6,720
	350	8	84,000	56,000*[2]	28,000*[3]	21,000	16,800
	140	9	37,800	25,200	12,600	9,450	7,560
	350	9	94,500	63,000*[4]	31,500	23,625	18,900

Urban Transportation Systems in Japan, Japan Overseas Rolling Stock Association
(passenger/direction/hour)
Note: New Cairo Line: 2027(*3), 2017(*1)
Note: Line 1: 2007(*4) & Line 2: 2007(*2)
Source: JICA Study Team

The Metro Line 3 Branch Operation: Considering demand projected in future, mentioned in section 4.5.3, introduction of Heavy Rail (Metro) is recommended in stead of LRT in this area.

To economize construction costs, extension from the Metro Line 3 shall be studied. Need less to say it is necessary that in-depth studies of ridership of the Metro 3, planned capacity of the Line 3, branch station structure and operation.

The branch extension operation should be introduced into the section between Abbasia and New Cairo Area or between Al Ahram (Heliopolis) and New Cairo Area (see Figure 4.6.3). The alternatives above should be reviewed in the succeeding study.

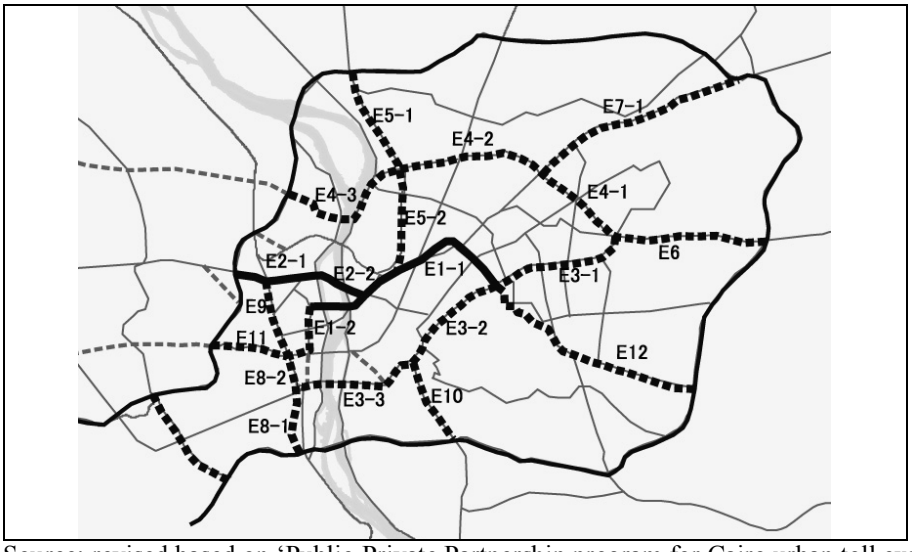


Source: JICA Study team
Section between Abbasiya and New Cairo (Option1)
Section between Heliopolis and New Cairo (Option2)

Figure 4.5.7 Further Extension Plan on Line3 (Route Alternatives to New Cairo)

2) Vehicle Transport

Only widening or betterment of the ordinal road can not meet the leap of vehicle transport through CBD-Nasr City-New Cairo axis. The team proposes extension of Urban Expressway from IC8 till the Ring Road.



Source: revised based on 'Public-Private Partnership program for Cairo urban toll expressway network development final report May 2006, JICA'

Figure 4.5.8 Proposed Extension of Urban Expressway (Section E-12)

4.5.4 Soft Projects

(1) Overview

The CREATS Top 20 Projects list includes six (6) so-called "soft" projects. "Hard" projects such as road construction generally started on schedule. However, on the contrary, "soft" projects had hardly started in the first 5 years. Due to the nature of "soft" projects, they are related each other, so that independent implementation is not easy. This was foreseen in the CREATS planning stage and CREATS proposed the establishment of a permanent Higher Committee on Transportation in GCR for handling related issues. Unfortunately, the request from MOT made to the Cabinet was denied.

Based on these facts, the Study Team proposes a "one at a time" approach, instead of the consolidated approach proposed in CREATS. Before starting the description of the Study Team's approach, the Study Team provides a quotation of the CREATS explanation of "soft" prioritized projects. This makes clear what CREATS considers the "soft" issues.

"Given that buses and shared taxis have an important role in feeding the main super tram and metro lines, their managerial efficiency and operational effectiveness become an important success factor. Therefore, the improvement and restructuring of public transport operators becomes a highly critical project.

At the same time, the final objective is to develop over time an integrated public transport system. This means that the coordination and operations of many presently fragmented operators needs to be streamlined and structured in an integrated manner. Via an institutional strengthening program, the creation of an integrated organization of public transport operators could be established over time, therewith validating the infrastructure efforts. At the same time, investment decision procedures can be adjusted and based upon methodologies that evaluate investments from that integrated perspective.

The above proposed measures all come down to an important final element, namely the development of expertise and awareness. A comprehensive human resources Development plan is the final urgent measure. This program relates to structures, methods and organizations that are responsible for training and education in all fields of transport and for the creating of awareness among the professionals and the public at large on traffic safety and traffic behavior."

(2) Bus transport concerns

All of the prioritized "soft" projects (Improvement/restructuring of Operators, Public Bus Fleet Modernization, Institutional Strengthening, Accessible Public Transport for All, Human Resource Development, and Investment Decision Procedures) are not exclusive, but are closely interlinked with the bus system improvement plan.

For the implementation of "soft" systems, a distinct driving force is necessary. In fact, over the last 5 years, the stagnated development of "soft" improvements shows the necessity for such a driving force.

The key question is: "What is the driving force for bus transportation improvement?" Experience in many countries points to the driving force for bus system improvement being

privatization and deregulation. Symbolic in privatization of the GCR bus service must be the dismantling of the CTA.

CREATS discussed CTA privatization in section 4.5 in their report, where a rather gradual privatization step was proposed. The JICA Study Team basically agrees with the CREATS privatization proposal, but recommends a rather speedy process.

As described in 4.1.2, the private bus fleet increases 2,923 units in the last 5 years but public bus fleet 1,265. As for the increased number private bus fleet shows more than double of public bus fleet. Even it is no progress of institutional set-up point of views reported; leading in quantity may give changes in quality.

To accelerate this privatization pace it is highly recommended to implement the following policy;

- Integrate private bus/shared taxi owners in Cooperatives
- Establish the control mechanism over Cooperatives or reorganize Cooperatives to Companies when controlling of Cooperatives is hard.
- Divide CTA operation department to several units and sell those units to Private Companies
- Let CTA concentrate into administrative and operation control function.

Personal or family size bus operation is the most economical operation system because of the minimum overhead cost nature. Standing on the evacuation from structural deficit point of views this system must be recommended. In fact due to this reason in many countries including Egypt, personal taxi system is providing convenient but cheaper service. However, comparing to taxi services, bus services have much more public nature. Public transport service is based on public promises; such as operation hours, frequency, route and so on. Operator must provide the service programmed even if no passenger is expected.

Monitoring, controlling and supervising capability is necessary to keep bus services in order. The Team proposes to reform CTA to controlling organization. But CTA surely can not control all of bus operation by herself. A hierarchical system as CTA controls bus companies and each company controls actual operation belonging to her is needed. That is why integration of personal service into company becomes necessary.

In practical point of views integration of personal operators into companies is hard to achieve, so that in many countries establishment of cooperatives composed of personal operators are tried and get fruitful results.

Some countries control cooperative system well but some not. In case CTA feels hard to control cooperatives well, reorganization from Cooperatives to companies shall be considered as next step.

As CREATS emphasized any control body in the developed countries does not have operation function. Reforming CTA to the control body is highly recommended before selling CTA operation function.

As for dismantling of CTA, the lesson in China may be meaningful. Hereunder is the adaptation of privatization in China.

- Decrease the number of buses in the CTA bus fleet and induce investment to provide private bus services (minimize negative impacts to total public transport services due to CTA privatization).
- Divide CTA transport service by territory and type of bus.
- Sell these operating units to private companies one by one. Existing employees will principally be transferred to the new company.
- Reorganize CTA administration section's expertise and engage it to undertake bus operation monitoring.
- Investment decision procedures must be established before the implementation of privatization.

Table 4.5.7 Number of Private Buses and Public Buses

Year	No. of Private Bus (a)	No. of Public Bus (b)	Private Bus Share (a)/((a)+(b))
2000	9,340	5,652	0.62
2001			
2002			
2003	9,710	6,121	0.61
2004	12,591	6,562	0.66
2005	12,263	6,917	0.64
Increase Rate p.a.	5.6%	4.1%	
Increased No. of Bus in 5 years	2,923	1,265	0.70

Source: Prepared from Statistics Year book 2001-2006

(3) Collection of on-street parking charge

On-street parking issue is not the new issue and seemingly unsolvable. Final solution is enough supply of off-road parking places and up-graded public transportation services. But in Cairo Governorate Area, only two off-road parking areas out of 19 plans partly opened. Cars park in disorder and sidewalk is not well maintained for pedestrian use.

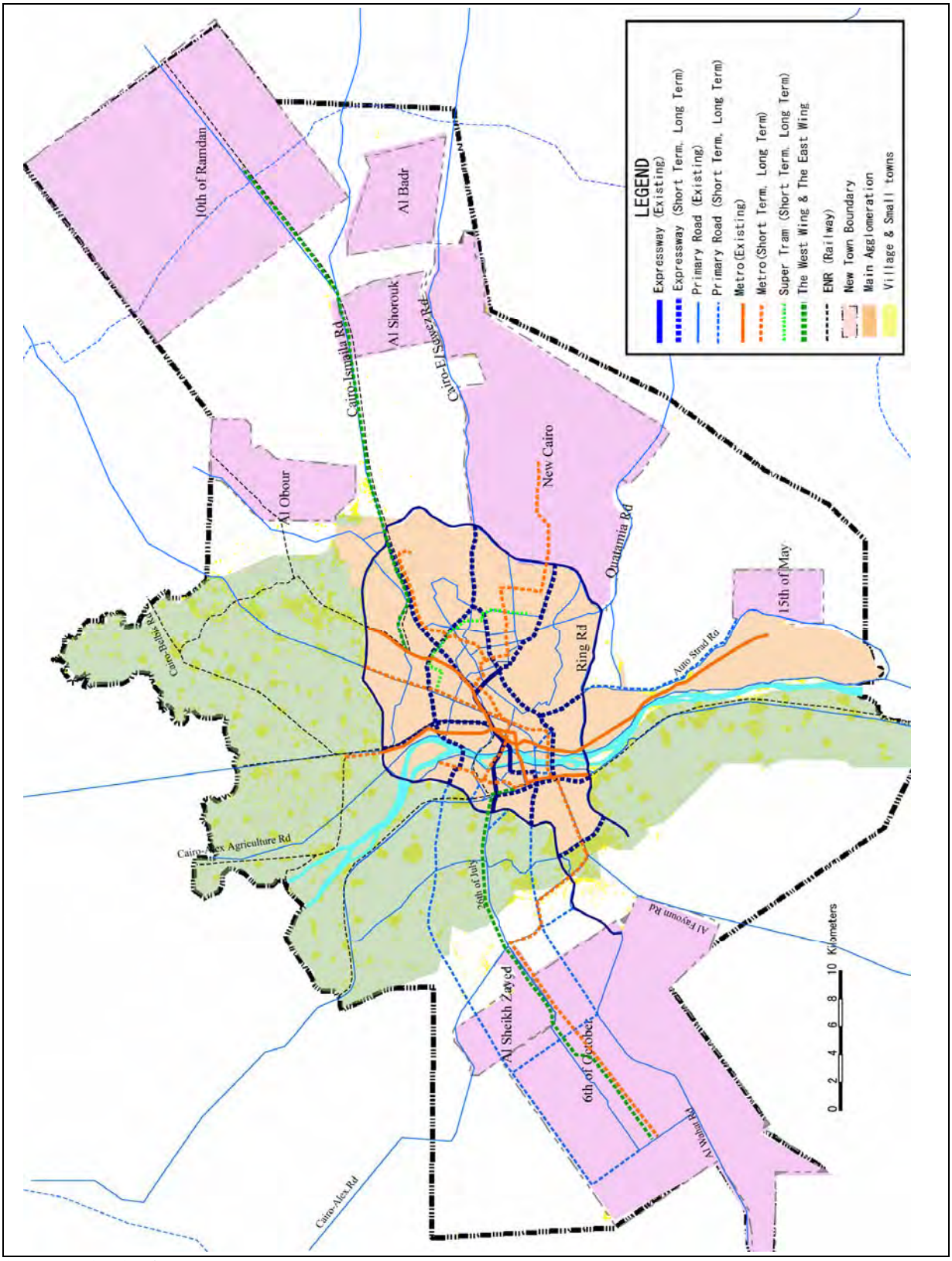
We may not argue whether egg is first or hen is first. The Team's policy is once a time. First collect on-street parking charge and continue it in five years. Park and Pay concept becomes common and then construction of toll off-road parking places will follow.

Collection of parking charge is easy start comparing to parking prohibition, and no cost is increased but instead some revenue is expected if we concede collection right to private group. That revenue can be usable for subsidizing off-road parking space construction for example.

4.6 Proposed Plan and Its Verification

4.6.1 Proposed Plan

Major hardware improvements discussed above with the remained on-going, approved, planned Projects are shown in Figure 4.6.5.



Source: JICA Study Team

Figure 4.6.1 Proposed Transport Projects (Major Hardware Projects Only)

4.6.2 Verification

Traffic assignments on the recommended network are done for verification. Congestion along CBD-Nasr City-New Cairo is resolved after installation of Metro. Also Congestion at E4, W1, S1 and W2 are resolved when the proposed plans are put into practice (see Figure 4.6.6 to 9).

Vehicle traffic assignment results are attached as Figures 4.6.10 and 4.6.11.

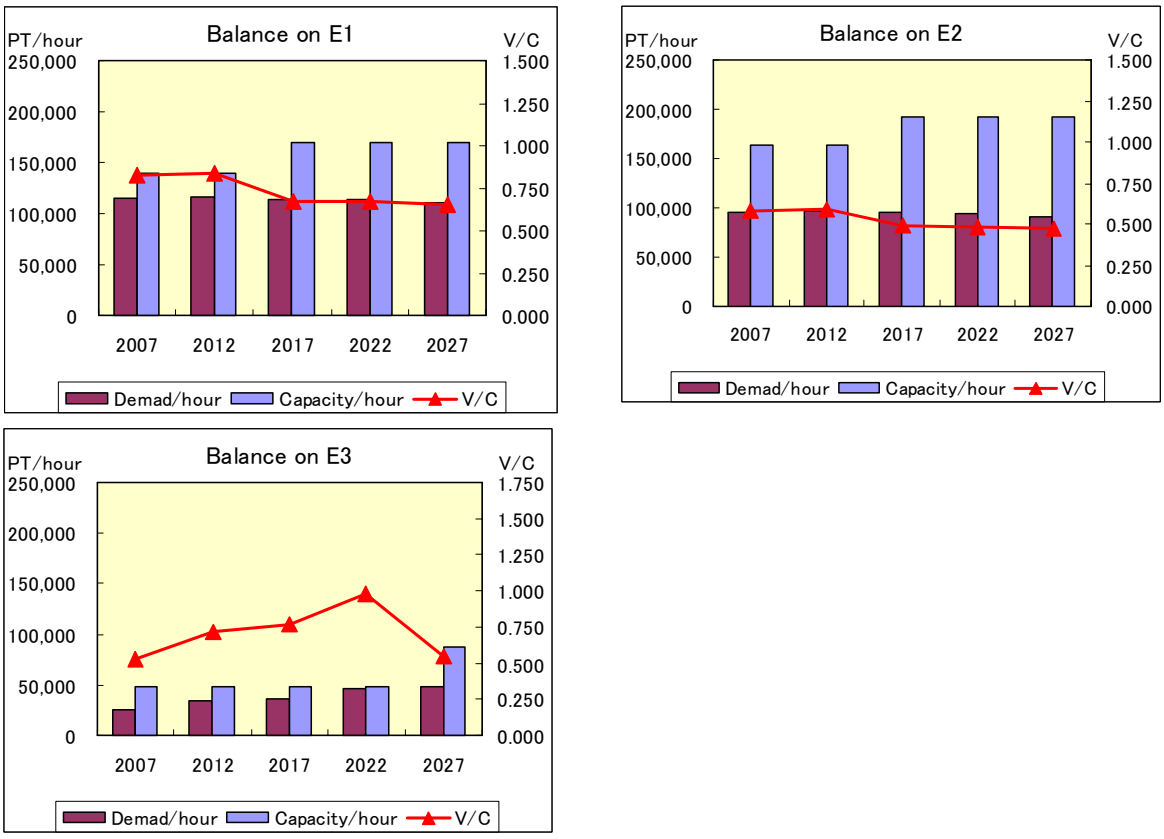
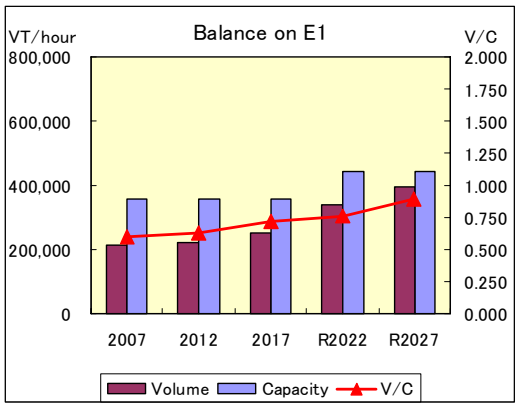
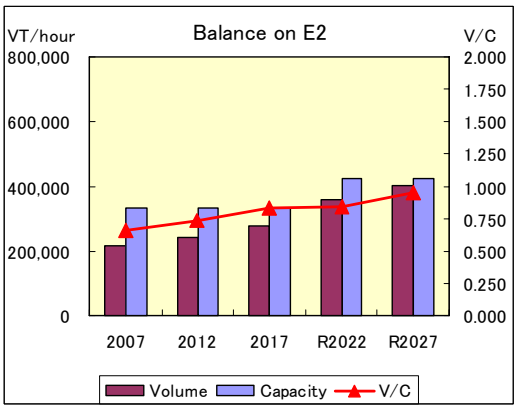
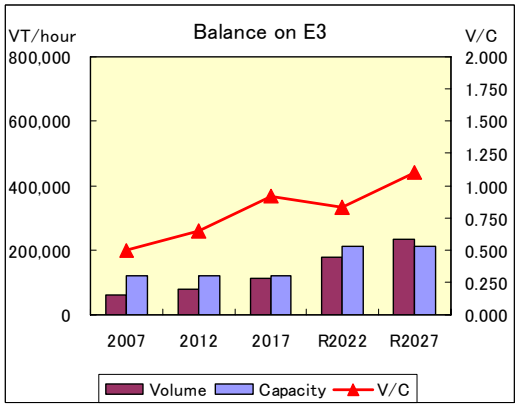


Figure 4.6.2 D/C Balance on the Proposed Network at CBD-Nasr City-New Cairo Corridor for Public Transport, Peak Hour

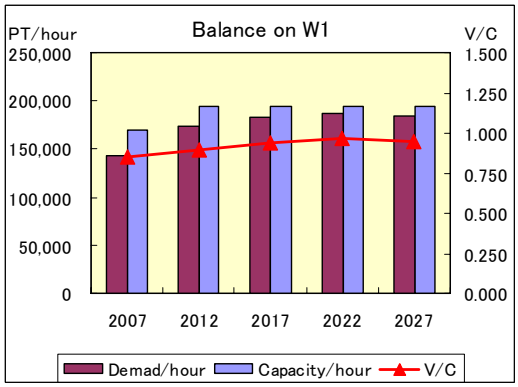


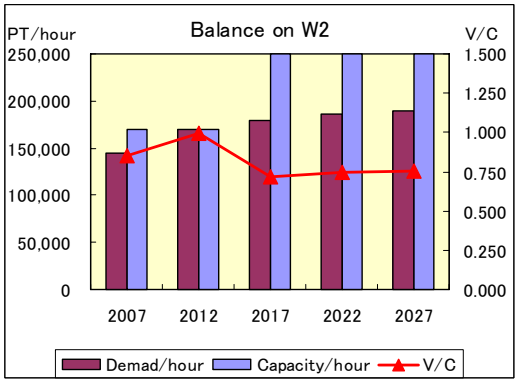


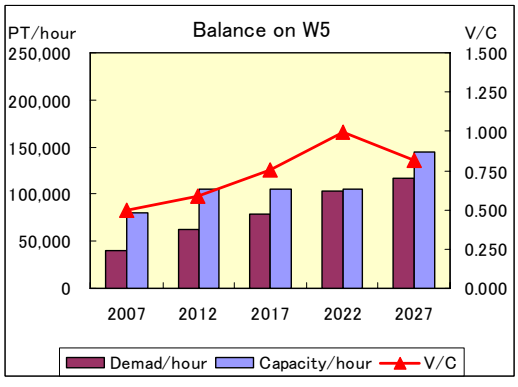


Source: JICA Study Team

Figure 4.6.3 D/C Balance on the Proposed Network at CBD-Nasr City-New Cairo Corridor of Road Transport

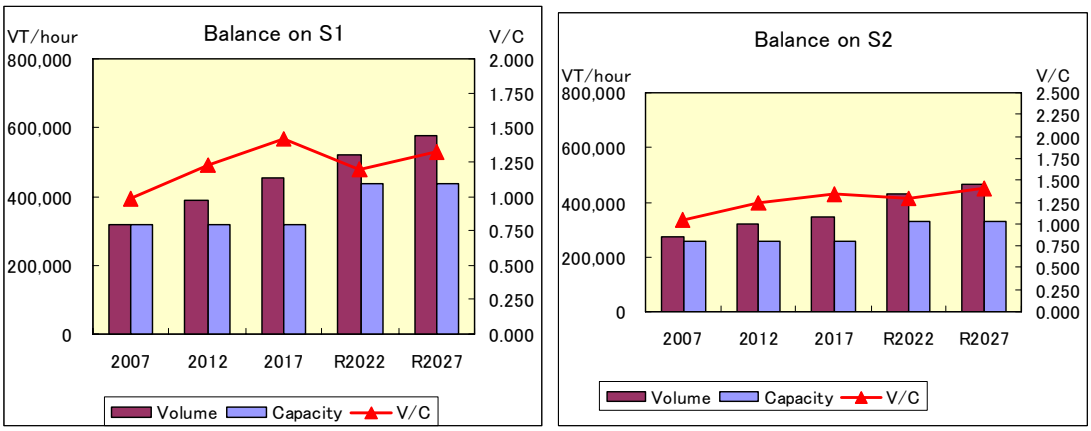






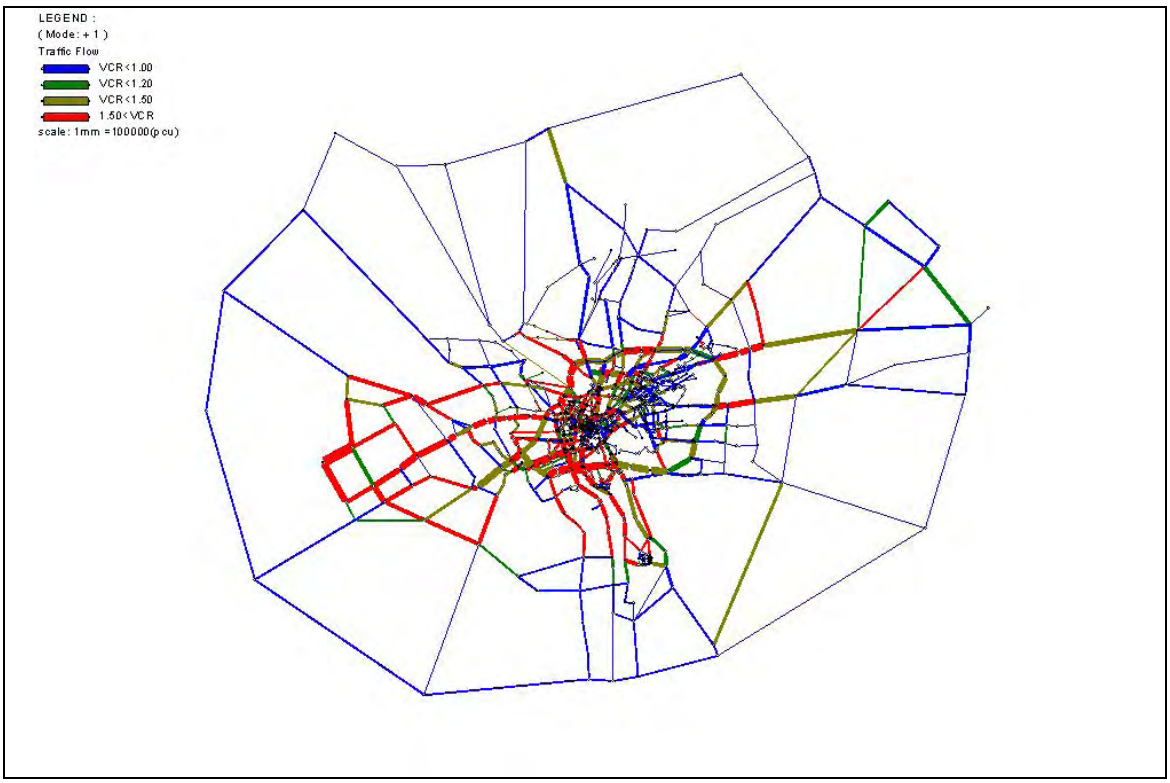
Source: JICA Study Team

Figure 4.6.4 D/C Balance on the Proposed Network at West Corridor of public transport, Peak Hour



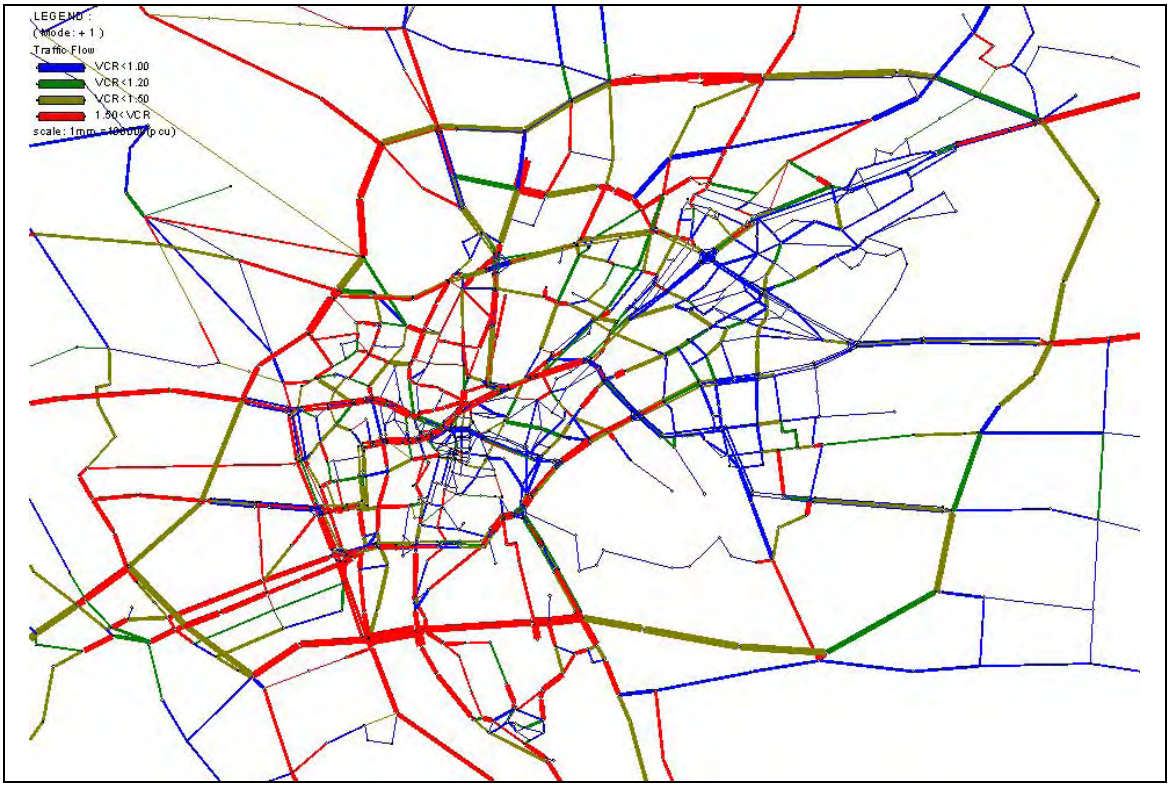
Source: JICA Study Team

Figure 4.6.5 D/C Balance on the Proposed Network at South of road transport, Peak Hour



Source: JICA Study Team

Figure 4.6.6 Vehicle Traffic Assignment (2027, GCR)



Source: JICA Study Team

Figure 4.6.7 Vehicle Traffic Assignment (2027, Inside Ring Road)

4.6.3 Conclusion

The JICA Study Team assessed the CREATS Plan targets 16 projects out of the Top 20, excluding grade separation of intersection projects, cargo terminal/cargo transport sector restructuring projects, and advises the following revision of the CREATS Plan (Table 4.6.1).

Table 4.6.1 Advised Revision of CREATS Plan

Project	CREATS Phase	SDMP Phase	Notes
MRT Line 4	L		
of which, westward from El Malik el Saleh to Pyramid Area		S	
of which, Extension from Pyramid Area to 6th of October		M	New Project
of which, eastward from El Malik el Saleh		L	No Change in this section
Super Tram Line 1	S		
Metro Line 3 Branch (same route of Super Tram Line 1)		S	
Extension to New Cairo Area		M	New Project
El Farag Road (Extension of Toll Expressway E4-3 till 6th of October NUC)		S	New Project
Extension of Toll Expressway to the Ring Road bordered on New Cairo (E-12 section)		M/L	New Project

Source: JICA Study Team

CHAPTER 5 KEY RECOMMENDATIONS AND THE WAY FORWARD

5.1 Proposal of Development Corridors

5.1.1 Structure of Sub-Sector Strategies and Development Corridor

As discussed Chapter 3, the enforcement of the Master Plan should be carried out through the sub-sector strategies, which are a collection of structured actions for the improvement of urban areas in the study area.

The present study focuses on the rearranging the urban structure from the present mono-centric to a poly-centric (or a multi-polar structure), and promoting integrated urban and transport development for a prioritized development corridor. The contribution of the development corridor as to each element in the sub-sector strategies is shown in Table 5.1.1.

Table 5.1.1 Direct and Indirect Contribution of Development Corridor to Sub-Sector Strategies

Sub-sector Strategy		Direct	Indirect	Remarks
Living in Cairo	*Providing housing supply for various household group*		Yes	Promoting population shift to NUCs
	Improving living environment especially for informal areas		Yes	Promoting population shift to NUCs
Working in Cairo	*Promoting new business and commercial area*	Yes		Promoting the urban development at the central station area
	Promoting industrial and R&D area	Yes		Promoting the development of industrial areas and R&D park
	Promoting tourism area	Yes		Connecting to the Grand Egyptian Museum and Pyramids in Giza
Connecting in Cairo	*Vitalizing the new urban communities*	Yes		Promoting population shift to 6th of October and Al-Sheikh Zayed NUCs
	Promoting transport-oriented urban development area	Yes		Combination of transport and urban development at terminal and along the route
Managing Natural Environment	*Conserving agricultural lands and natural resources*		Yes	Discouraging the population increase in the agricultural lands
	Promoting open and green area network	Yes		Providing large park for recreation and sport activities
Designing Sustainable City	*Strengthening management of urban growth boundary*		Yes	Discouraging the encroachment on agricultural lands
	Improving implementation system of the master plan		Yes	Experiencing a good sample for the coordination between the related authorities

The major direct contributions of the Development Corridor to the sub-sector strategies are as follows:

(1) Promoting new business and commercial areas: The new business and commercial areas are generally located in and around the transportation hub functions, such as the central station, and/or terminal stations. The development corridor will include development of new business and commercial areas along the transport axis.

(2) Promoting industrial and R&D areas: In Egypt, industrial and R&D areas are often accommodated within NUCs, with physical separation provided by a buffer zone. For example, the industrial and R&D areas in 6th of October and 10th of Ramadan NUCs. Vitalization of the existing facilities and/or development of new facilities could be accommodated in development along the transport axis.

(3) Promoting tourism areas: Development of a public transport route should relate to the network for the tourism, particularly for individual international travelers and the bulk of domestic travelers.

(4) Vitalizing the new urban communities: The opinion poll survey conducted for this study indicated that a good transport network is a prerequisite for people to consider shifting to NUCs. Providing a public transport route will help to shift the existing population to NUCs in the future.

(5) Promoting transport-oriented urban development areas: This objective is the basic concept of the development corridor itself. Each element, i.e. the urban development and the transport development, is mutually complementary, and thus an integrated approach will be more effective than individual approaches.

(6) Promoting open and green area networks: The lack of park scale areas that are open to all citizens is one of the major issues for urban planning in the study area. Large parks, particularly for recreation and sporting activities, should be considered in conjunction with urban development and the public transport development corridor.

A conceptual image of a development corridor is shown in Fig. 5.1.1.

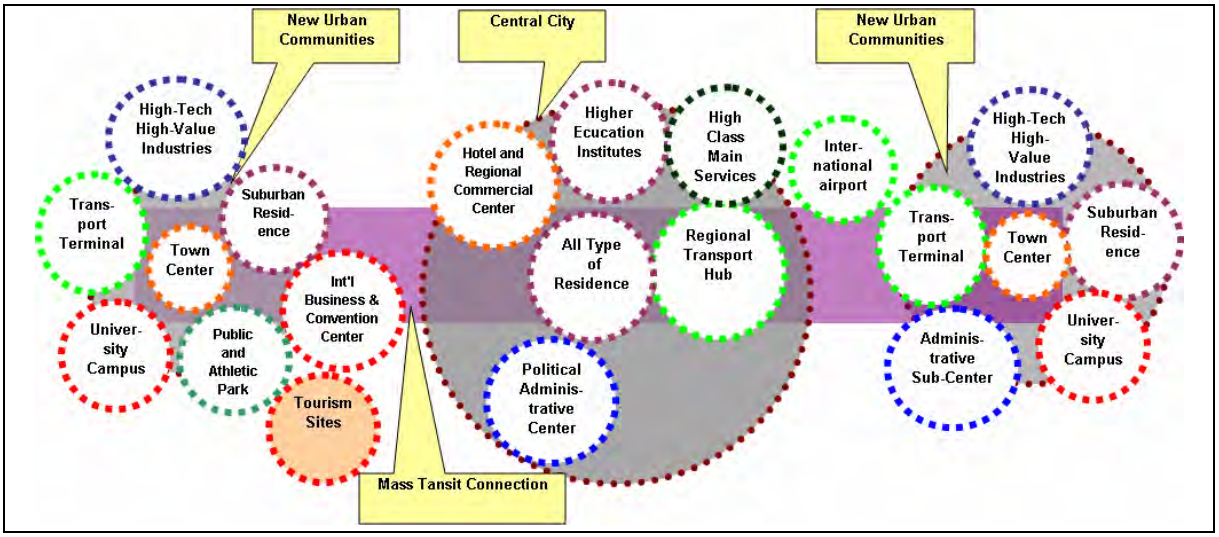


Figure 5.1.1 Conceptual Image of a Development Corridor

5.1.2 Planning for the Western Development Corridor

Three development corridors are proposed in this study as prioritized development corridors for the sustainable development of the study area:

- Central Development Corridor: Cairo - New Cairo;
- Western Development Corridor: Northern Giza – 6th of October; and
- Eastern Development Corridor: Cairo – 10th of Ramadan.

The present study will focus on Western Development Corridor. In the second half of the study period, the study team will conduct pre-feasibility studies on urban and transportation developments for the Western Development Corridor.

The pre-feasibility study will incorporate on-going and committed projects, including the planned extension of the metro lines, past proposals for public transport including the bus way proposed in the CREATS study by JICA, and proposals made by private companies for facilities such as monorails, etc.

Considering the urban planning aspects, the pre-feasibility investigate sites for terminal areas along the transport system route and adjust some of the existing land use plans for the affected NUCs. In the case of the Western Development Corridor, the NUCs that will be affected are 6th of October NUC and Sheikh Zayed NUC. The redevelopment plan for the Imbaba project may also be relevant, as the eastern starting point of the corridor.

The pre-feasibility study will include the following components:

(1) Design Standards for Infrastructure: Design standards which are necessary for infrastructure design will be prepared.

(2) Alternative plans: Alternative plans for the route and types of engineering solutions will be analyzed on a comparative basis.

(3) Schematic Design: Schematic designs will be prepared for the preferred route selected in the analysis of alternative plans (2, above).

(4) Economic and Financial Analysis: Economic and financial analyses for the development of transportation infrastructure will be conducted.

(5) Pre-EIA: Pre-EIA studies will be carried out for the preferred route selected in the analysis of alternative plans (2, above).

(6) Implementation Plan: An implementation plan for public transportation facilities will be prepared regarding the implementation schedule, method of implementation, and execution scheme.

(7) Proposal of Applicable PPP Method: The applicability of PPP methods for each project will be analyzed by considering various factors, including financial, institutional and technical constrains, as well as risks, the role of the private and public sectors, and potential investors.

5.2 Proposal of Master Plan Implementation Structure

5.2.1 Capacity Development for Master Plan Formulation and Update

The urban master plan will need to be updated and adjusted, based on the latest conditions of the urban agglomeration, relevant policy frameworks and committed resources and projects. The urban master plan for GCR has been in the process of updating since it was first defined at the beginning of 1980's with the French assistance. Updating has continued since that time, until the start of the present study that is being undertaken with Japanese assistance through JICA.

The capacity of GOPP to formulate and update the urban master plan will be increased in order for GOPP to carry out this task by itself. Attention is being given to enhancing the capacity of GOPP to undertake these tasks. Use of GIS tools in formulating the plan is being incorporated to assist with enhancing GOPP skills.

5.2.2 Enhancement of Coordination of GOPP for Master Plan Implementation

While the planning of GCR is basically centered in GOPP, implementation of the plan in the urban development and management sphere will encompass the three Governorates of Cairo, Giza and Qaliobeya, as well as NUCA. The transportation sphere will encompass Ministry of Transport and its subordinate organizations.

In relation to the proposed development corridor, the implementation will obviously overlap both the urban development and transportation spheres. In order to allow smooth integration, of the development corridor implementation, a joint coordinating body will be established in which the relevant organizations from MOHUUD and MOT will participate. The nodal function will be carried by GOPP, as the initiator of the project.

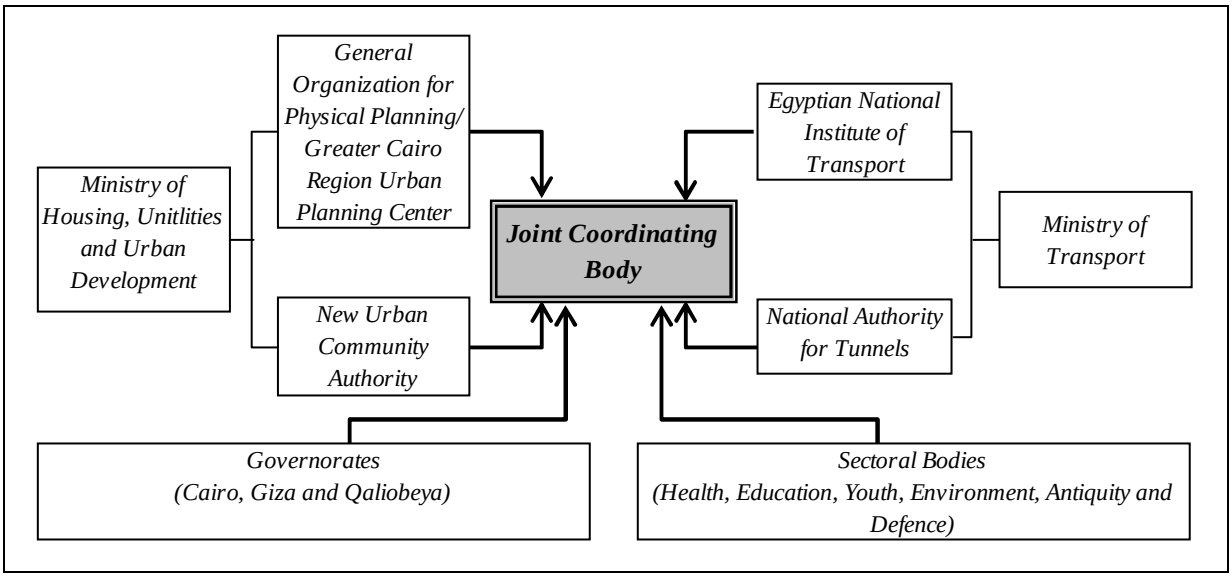


Figure 5.2.1 Joint Coordination Body for Development Corridor

5.3 Other Proposals for Major Projects

5.3.1 Study on Informal Areas with Inventory Surveys

The informal areas represent an important and far reaching problem in the study area. Sustainable development in the study area cannot be managed without effectively managing the growth of informal communities and by controlling environmental deterioration that may otherwise accelerate.

In order to tackle the problem of informal areas, the following steps will be necessary:

(1) Data collection on informal areas: Updated data and information on the existing informal areas needs to be gathered. The required data include the area, population and its growth rate, social data on residents such as income, work place, etc, availability of public services and infrastructure, and a summary of public opinion regarding options for the informal areas. A similar type of opinion survey was used to determine people's perceptions of their current living environment (Chapter 2, Section 2.6).

(2) Updating GIS: The present study has built a GIS database for the study area. This GIS database includes some data for the informal areas, based on information obtained from GOPP. The GIS database will be transferred to GOPP for future updating and use for various urban planning projects. Data layers for the informal area will need to be enhanced and updated accordingly.

(3) Prioritization of informal areas: Based on the data and information mentioned above, a scheme to prioritize resolution of problems in the informal areas needs to be developed. This will allow necessary action to be focused on the high priority areas, while taking into consideration other GOPP and GCRUPC projects for the informal areas.

(4) Preparation for funding: Improvement of the informal areas will be a time consuming and long lasting process. The improvement of informal areas could incorporate self-help income generation projects for the local residents. In order to provide small project financing for local improvement activities, a two-step loan scheme for community empowerment schemes could be developed in collaboration with international or bilateral donors.

5.3.2 Planning for Preservation and Vitalization of Historic Area of Cairo

As discussed in Chapter 3, Section 3.4.3, the planning targets for the historic area of Cairo will focus on designating Islamic Cairo as a special planning district, so that the heritage area will be preserved and protected from random development that may find a way into the historic area.

There is also a concern in UNESCO that the historic area, which is now in their heritage list, is entitled "Islamic Cairo", thus excluding the so-called Old Cairo which is basically Coptic in nature. The Old Cairo with Coptic traditional architecture and heritages, may either be put under a separate heritage listing, or the name of the entitlement be changed to "Historic Cairo" so that the border line for the district can be re-delineated to include the Coptic area.

Planning for preservation and vitalization of the historic area of Cairo may best be achieved if planning is combined with an income generating mechanism that would benefit local residents who will take an active part in the plan.

The planning for the historical area of Cairo should include the following:

(1) Utilizing GIS Database: The existing GIS inventory of historical buildings needs to be made accessible and utilized by various concerned authorities, including governorates and planning authorities, for the purpose of the planning and assessing requests for building permission.

(2) Delineation of a Special Planning Zone and Buffer Zone: Based on the above, a special planning zone and an adjacent buffer zone could be delineated to protect and preserve the historical heritage. The special protection zone will need to be defined within the regulatory framework and based on admissible restrictions for protection of the heritage areas.

(3) Identification of immediate and short-term actions: In order to enhance the attractiveness of the historic area, particularly for tourists to Cairo, actions that could be carried out immediately or in the short term should be identified.

5.3.3 Planning for Relocation of Unfavorable Large Scale Facilities

As discussed in Chapter 3, Section 3.4.3, there are still a number of factories that are creating a heavy load to the city's environment. A total of 21 such factories are now planned for relocation to a more appropriate location, with subsequent improvement in the city's environment. After the factories have relocated, the original sites, often a large site located within the urban fabric, could be used for redevelopment.

It is important to continuously update the list of factories and industries that are nominated for relocation/improvement within the main agglomeration because they are unfavorable in terms of pollution. Plans need to be formulated and implement one after another to allow relocation and redevelopment to occur in a controlled manner.

Another type of large scale facility within the main agglomeration that needs to be considered is cemeteries. New cemeteries should be planned so that they are located in culturally suitable areas that will not hinder development or planning for the region.

ANNEX

(LIST OF ZONES IN THE STUDY AREA)

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
Cairo Governorate					
1	al-Tibbîn al-Bahariyya	shiakha	Tebbin	Al-Tebbin	7
2	al-Tibbîn al-Qibliyya	shiakha	Tebbin	Al-Tebbin	7
3	Hikr al-Tibbîn	shiakha	Tebbin	Al-Tebbin	7
4	Madînat al-Sulb	shiakha	Tebbin	Al-Tebbin	7
5	Masâkin al-Tibbîn al-Sha'biyya	shiakha	Tebbin	Al-Tebbin	7
6	al-Masâkin al-Iqtisâdiyya	shiakha	Helwan	Helwan	7
7	al-Ma'sara al-Balad	shiakha	Helwan	Helwan	6
8	al-Ma'sara al-Mahatta	shiakha	Helwan	Helwan	6
9	Hilwân al-Bahariyya	shiakha	Helwan	Helwan	7
10	Hilwân al-Balad	shiakha	Helwan	Helwan	7
11	Hilwân al-Sharqiyya	shiakha	Helwan	Helwan	7
12	Hilwân al-Gharbiyya	shiakha	Helwan	Helwan	7
13	Hilwân al-Qibliyya	shiakha	Helwan	Helwan	7
14	Kafr al-'Iluw	shiakha	Helwan	Helwan	7
15	Minshât Nâsir	shiakha	Helwan	Helwan	6
16	Ain Helwan	shiakha	Helwan	Helwan	7
17	Shiyâkha 1	shiakha	15th of May	15th of May	7
18	Shiyâkha 2 - districts from 7 to 21	shiakha	15th of May	15th of May	7
19	Shiyâkha 3 - districts from 22 to 52	shiakha	15th of May	15th of May	7
20	Ma'âdî al-Khabîrî al-Sharqiyya	shiakha	Maadi	Al-Maadi & Tora	6
21	Ma'âdî al-Khabîrî al-Gharbiyya	shiakha	Maadi	Al-Maadi & Tora	6
22	Ma'âdî al-Khabîrî al-Wustâ	shiakha	Maadi	Al-Maadi & Tora	6
23	Ma'âdî al-Sarâyât al-Sharqiyya	shiakha	Maadi	Al-Maadi & Tora	6
24	Ma'âdî al-Sarayât al-Gharbiyya	shiakha	Maadi	Al-Maadi & Tora	6
25	al-Haggâra	shiakha	Tora	Al-Maadi & Tora	6
26	Tura al-Balad	shiakha	Tora	Al-Maadi & Tora	6
27	Tura al-Hît	shiakha	Tora	Al-Maadi & Tora	6
28	Tura al-Asmant	shiakha	Tora	Al-Maadi & Tora	6
29	Manshiyat al-Masrî	shiakha	Tora	Al-Maadi & Tora	6
30	al-Zahrâ'	shiakha	Tora	Al-Maadi & Tora	6
31	Abû al-Su'ûd wa al-Madâbigh	shiakha	Misr al-qadima	Misr al-qadima	1
32	Athar al-Nabî	shiakha	Misr al-qadima	Misr al-qadima	1
33	al-Anwar wa 'Ishash al-Bârûd	shiakha	Misr al-qadima	Misr al-qadima	1
34	al-Khûkha wa al-Qanâya	shiakha	Misr al-qadima	Misr al-qadima	1
35	al-Diyûra	shiakha	Misr al-qadima	Misr al-qadima	1
36	al-Rûda wa al-Miqyâs	shiakha	Misr al-qadima	Misr al-qadima	1
37	al-Kufûr wa Sa'î al-Bahr	shiakha	Misr al-qadima	Misr al-qadima	1
38	al-Manyal al-Sharqî	shiakha	Misr al-qadima	Misr al-qadima	1
39	al-Manyal al-Gharbî	shiakha	Misr al-qadima	Misr al-qadima	1
40	'Ayn al-Sîra	shiakha	Misr al-qadima	Misr al-qadima	1
41	Fumm al-Khalîg wa Dîr al-Nahâs	shiakha	Misr al-qadima	Misr al-qadima	1
42	Kûm Ghurâb	shiakha	Misr al-qadima	Misr al-qadima	1
43	al-Insha wa al-Munîra	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
44	al-Baghâla	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
45	al-Hanafî	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
46	al-Darb al-Gadîd	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
47	al-Sibâ'în	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
48	al-Sayyida	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
49	al-'Atrîs	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
50	al-'Aynî	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
51	al-Kabsh	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
52	Hadâ'iq Zinhum	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
53	Khayrat	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
54	Darb al-Gamâmîz	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
55	Zinhum	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
56	Sunqur	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
57	Tûlûn	shiakha	Al-Sayyeda Zeinab	Al-Sayyeda Zeinab	1
58	al-Abâgiyya	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
59	al-Imâmîn	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
60	al-Baqlî	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
61	al-Tûnsî	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
62	al-Hattâba	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
63	al-Hilmiyya	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
64	al-khalifa	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
65	al-Sayida 'Aisha	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
66	al-Salîba	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
67	al-Qâdriyya	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
68	al-Mahgar	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
69	Darb al-Husr	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
70	Darb Ghaziyyâ	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
71	'Arab al-Yasâr	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	1
72	Sabaen Faddan	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
73	Al-Saeed	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
74	Sobhi Hussen	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
75	Atlas C	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
76	Al-Abd	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
77	Al-Giza	shiakha	Al-Khalifa	Al-Khalifa & Al-Moqatam	5
78	al-Balâqisa	shiakha	Abdin	Abdin	1
79	al-Gazîra al-Gadîda	shiakha	Abdin	Abdin	1
80	al-Dawâwîn	shiakha	Abdin	Abdin	1
81	al-Sâha	shiakha	Abdin	Abdin	1
82	al-Saqqâyîn	shiakha	Abdin	Abdin	1
83	al-Shaykh 'Abdallah	shiakha	Abdin	Abdin	1
84	al-Fawwâla	shiakha	Abdin	Abdin	1
85	Bâb al-Lûq	shiakha	Abdin	Abdin	1
86	Rahbat 'Abdîn	shiakha	Abdin	Abdin	1
87	Ghayt al-'Idda	shiakha	Abdin	Abdin	1
88	al-Ramlî	shiakha	Al-Moskey	Al-Moskey	1
89	al-Shaykh Nadâ	shiakha	Al-Moskey	Al-Moskey	1
90	al-Tamâr	shiakha	Al-Moskey	Al-Moskey	1
91	al-'Ashmâwî	shiakha	Al-Moskey	Al-Moskey	1
92	al-Liwâ' Amîn al-Sharîf	shiakha	Al-Moskey	Al-Moskey	1
93	al-Minâsra	shiakha	Al-Moskey	Al-Moskey	1
94	al-Nûbî	shiakha	Al-Moskey	Al-Moskey	1
95	Darb al-Ginîna	shiakha	Al-Moskey	Al-Moskey	1
96	Safiyy al-Dîn	shiakha	Al-Moskey	Al-Moskey	1
97	Kûm al-Shaykh Salâmâ	shiakha	Al-Moskey	Al-Moskey	1
98	al-Ismâ'îliyya	shiakha	Qasr Al-Nil	West of Cairo	1
99	Gardin Cîtî	shiakha	Qasr Al-Nil	West of Cairo	1
100	Qasr al-Dûbâra	shiakha	Qasr Al-Nil	West of Cairo	1
101	Ma'rûf	shiakha	Qasr Al-Nil	West of Cairo	1
102	Abû al-'Ilâ	shiakha	Boulaq	West of Cairo	1
103	al-Ahmadîn	shiakha	Boulaq	West of Cairo	1
104	al-Turgumân	shiakha	Boulaq	West of Cairo	1
105	al-Gallâdîn	shiakha	Boulaq	West of Cairo	1
106	al-Gawâbir	shiakha	Boulaq	West of Cairo	1
107	al-Khutîry	shiakha	Boulaq	West of Cairo	1
108	al-Sabtiyya	shiakha	Boulaq	West of Cairo	1
109	al-Sandabîsî	shiakha	Boulaq	West of Cairo	1
110	al-Shaykh 'Alî	shiakha	Boulaq	West of Cairo	1
111	al-Shaykh Farrâg	shiakha	Boulaq	West of Cairo	1
112	al-'Adawiyya	shiakha	Boulaq	West of Cairo	1
113	al-'Ilîmî	shiakha	Boulaq	West of Cairo	1
114	al-Qalâya	shiakha	Boulaq	West of Cairo	1
115	Hûd al-Zuhûr	shiakha	Boulaq	West of Cairo	1
116	Darb Nasr	shiakha	Boulaq	West of Cairo	1
117	Sanân Bâshâ	shiakha	Boulaq	West of Cairo	1
118	Sûq al-'Asr	shiakha	Boulaq	West of Cairo	1
119	Sharkas	shiakha	Boulaq	West of Cairo	1
120	'Ishash al-Nakhl	shiakha	Boulaq	West of Cairo	1
121	al-Gayyâra	shiakha	Al-Azbakeya	Abdin	1
122	al-Rihânî	shiakha	Al-Azbakeya	Abdin	1
123	al-Zahhâr	shiakha	Al-Azbakeya	Abdin	1
124	al-Faggâla	shiakha	Al-Azbakeya	Abdin	1
125	al-Qabîla	shiakha	Al-Azbakeya	Abdin	1
126	al-Qulaly	shiakha	Al-Azbakeya	Abdin	1
127	'Urâbî	shiakha	Al-Azbakeya	Abdin	1
128	Clût Bik	shiakha	Al-Azbakeya	Abdin	1

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
129	al-Bâtniyya	shiakha	Al Darb Al-Ahmar	Down Town	1
130	al-Dâwwûdiyya	shiakha	Al Darb Al-Ahmar	Down Town	1
131	al-Darb al-Ahmar	shiakha	Al Darb Al-Ahmar	Down Town	1
132	al-Surûgiyya	shiakha	Al Darb Al-Ahmar	Down Town	1
133	al-'Imarî	shiakha	Al Darb Al-Ahmar	Down Town	1
134	al-Ghûriyya	shiakha	Al Darb Al-Ahmar	Down Town	1
135	al-Qirabiyya	shiakha	Al Darb Al-Ahmar	Down Town	1
136	al-Mugharbilîn	shiakha	Al Darb Al-Ahmar	Down Town	1
137	Bâb al-Wazîr wa al-Gharîb	shiakha	Al Darb Al-Ahmar	Down Town	1
138	Taht al-Rab'	shiakha	Al Darb Al-Ahmar	Down Town	1
139	Hârat al-Rûm	shiakha	Al Darb Al-Ahmar	Down Town	1
140	Darb Sa'âda	shiakha	Al Darb Al-Ahmar	Down Town	1
141	Darb Shaghlân	shiakha	Al Darb Al-Ahmar	Down Town	1
142	Sûq al-Silâh	shiakha	Al Darb Al-Ahmar	Down Town	1
143	al-Azhar	shiakha	Al-Gamaleya	Down Town	1
144	al-Bîraqdar	shiakha	Al-Gamaleya	Down Town	1
145	al-Gamâliyya	shiakha	Al-Gamaleya	Down Town	1
146	al-Hamzâwî	shiakha	Al-Gamaleya	Down Town	1
147	al-Khurunfish	shiakha	Al-Gamaleya	Down Town	1
148	al-Khawâs	shiakha	Al-Gamaleya	Down Town	1
149	al-Darrâsa	shiakha	Al-Gamaleya	Down Town	1
150	al-Sha'rânî	shiakha	Al-Gamaleya	Down Town	1
151	al-'Utûf	shiakha	Al-Gamaleya	Down Town	1
152	al-Kurdî	shiakha	Al-Gamaleya	Down Town	1
153	al-Mashhad al-Husaynî	shiakha	Al-Gamaleya	Down Town	1
154	al-Mansûriyya	shiakha	Al-Gamaleya	Down Town	1
155	Bâb al-Futûh	shiakha	Al-Gamaleya	Down Town	1
156	Bîn al-Sûrîn	shiakha	Al-Gamaleya	Down Town	1
157	Gawhar al-Qâ'id	shiakha	Al-Gamaleya	Down Town	1
158	Khân al-Khalîlî	shiakha	Al-Gamaleya	Down Town	1
159	Qasr al-Shûq	shiakha	Al-Gamaleya	Down Town	1
160	al-Banhâwî	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
161	al-Shumbukî	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
162	al-Sawâby	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
163	al-'Adawî	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
164	al-Mansî	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
165	al-Nasr	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
166	Bâb al-Bahr	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
167	Bâb al-Sha'riyya	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
168	Birkat al-Ratly	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
169	Darb al-Iqmâ'iyya	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
170	Sîdî Madyan	shiakha	Bab Al-Shaareya	Bab Al-Shaareya	1
171	Abû Khûda	shiakha	Al-Thaher	Al-Wayly	1
172	al-Ganzûrî	shiakha	Al-Thaher	Al-Wayly	1
173	al-Sakâkînî	shiakha	Al-Thaher	Al-Wayly	1
174	al-Zâhir	shiakha	Al-Thaher	Al-Wayly	1
175	al-Qubîsî	shiakha	Al-Thaher	Al-Wayly	1
176	Ghamra	shiakha	Al-Thaher	Al-Wayly	1
177	Al-Sharabeya	shiakha	Al-Sharabeya	Al-Sharabeya	3
178	al-'Izab	shiakha	Al-Sharabeya	Al-Sharabeya	3
179	al-Zâwiya al-Hamrâ' al-Balad	shiakha	Al-Sharabeya	Al-Sharabeya	3
180	Mahmasha	shiakha	Al-Sharabeya	Al-Sharabeya	3
181	al-Tir'a al-Bûlâqiyya	shiakha	Shobra	Shobra	3
182	al-Shamâshirgî	shiakha	Shobra	Shobra	3
183	al-'Attâr	shiakha	Shobra	Shobra	3
184	Gisr Shubrâ	shiakha	Shobra	Shobra	3
185	Ibn al-Rashîd	shiakha	Rod Al-Farag	Rod Al-Farag	3
186	al-Mabyada	shiakha	Rod Al-Farag	Rod Al-Farag	3
187	Gazîrat Badrân	shiakha	Rod Al-Farag	Rod Al-Farag	3
188	Rûd al-Farag al-Balad	shiakha	Rod Al-Farag	Rod Al-Farag	3
189	Tûsûn	shiakha	Rod Al-Farag	Rod Al-Farag	3
190	Qusûrat al-Shawâm	shiakha	Rod Al-Farag	Rod Al-Farag	3
191	As'ad	shiakha	Al-Sahel	Al-Sahel	3
192	al-Barrâd	shiakha	Al-Sahel	Al-Sahel	3
193	al-Khâzindâra	shiakha	Al-Sahel	Al-Sahel	3

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
194	al-Sâhil	shiakha	Al-Sahel	Al-Sahel	3
195	Burhâm	shiakha	Al-Sahel	Al-Sahel	3
196	Sharîf	shiakha	Al-Sahel	Al-Sahel	3
197	Minya al-Sirg	shiakha	Al-Sahel	Al-Sahel	3
198	al-Dimirdâsh	shiakha	Al-Wayly	Al-Wayly	1
199	al-Za'farân	shiakha	Al-Wayly	Al-Wayly	4
200	al-Sarâyât	shiakha	Al-Wayly	Al-Wayly	1
201	al-'Abbâsiyya al-Bahariyya	shiakha	Al-Wayly	Al-Wayly	1
202	al-'Abbâsiyya al-Sharqiyya	shiakha	Al-Wayly	Al-Wayly	1
203	al-'Abbâsiyya al-Gharbiyya	shiakha	Al-Wayly	Al-Wayly	1
204	al-'Abbâsiyya al-Qibliyya	shiakha	Al-Wayly	Al-Wayly	1
205	al-Muhammadî	shiakha	Al-Wayly	Al-Wayly	4
206	Bîn al-Ganâyin	shiakha	Al-Wayly	Al-Wayly	1
207	Ganâyin al-Wayliyya	shiakha	Al-Wayly	Al-Wayly	1
208	Kûbrî al-Qubba	shiakha	Al-Wayly	Al-Wayly	4
209	al-Hadâ'iq	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
210	al-Khâssa	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
211	al-Qubba (al-Balad)	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
212	al-Wâylî al-Kabîr Sharq	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
213	al-Wâylî al-Kabîr Gharb	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
214	Hadâ'iq al-Qubba	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
215	Masâkin al-Amîriyya al-Ganûbiyya	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
216	Manshiyat al-Sadr	shiakha	Hadaeq Al-Qobba	Hadaeq Al-Qobba	3
217	al-Zaytûn al-Bahariyya	shiakha	Al-Zaytoon	Al-Zaytoon	4
218	al-Zaytûn al-Sharqiyya	shiakha	Al-Zaytoon	Al-Zaytoon	4
219	al-Zaytûn al-Gharbiyya	shiakha	Al-Zaytoon	Al-Zaytoon	3
220	al-Zaytûn al-Qibliyya	shiakha	Al-Zaytoon	Al-Zaytoon	4
221	al-Masâkin al-'Amîriyya al-Shamâliyya	shiakha	Al-Zaytoon	Al-Zaytoon	3
222	al-'Izab (wa Tal al-Husn)	shiakha	Al-matareya	Al-matareya	3
223	al-Matariyya al-Bahariyya	shiakha	Al-matareya	Al-matareya	3
224	al-Matariya al-Gharbiyya	shiakha	Al-matareya	Al-matareya	3
225	al-Matariyya al-Qibliyya	shiakha	Al-matareya	Al-matareya	3
226	Shagarat Maryam	shiakha	Al-matareya	Al-matareya	3
227	'Arab Abû Tawîla	shiakha	Al-matareya	Al-matareya	3
228	'Arab al-Hisn	shiakha	Al-matareya	Al-matareya	3
229	'Ain Shams al-Gharbiyya	shiakha	Al-matareya	Al-matareya	3
230	al-Tawfîq	shiakha	Nasr City-Qism 1	East Nasr City	4
231	al-Sharikât	shiakha	Nasr City-Qism 1	East Nasr City	4
232	al-Gûlf	shiakha	Nasr City-Qism 1	East Nasr City	4
233	al-Nâdî al-Ahlî	shiakha	Nasr City-Qism 1	East Nasr City	5
234	al-Mantiqa 9	shiakha	Nasr City-Qism 1	East Nasr City	5
235	al-Mantiqa 10	shiakha	Nasr City-Qism 1	East Nasr City	5
236	al-Hayy 10	shiakha	Nasr City-Qism 1	East Nasr City	5
237	al-Mantiqa 1	shiakha	Nasr City-Qism 1	East Nasr City	5
238	al-Mantiqa 6	shiakha	Nasr City-Qism 1	East Nasr City	5
239	al-Mantiqa 8	shiakha	Nasr City-Qism 1	East Nasr City	5
240	al-Wafâ' wa al-Amal	shiakha	Nasr City-Qism 1	East Nasr City	5
241	al-Hadîqa al-Dawliyya	shiakha	Nasr City-Qism 1	East Nasr City	5
242	al-Mantiqa 7	shiakha	Nasr City-Qism 1	East Nasr City	5
243	Râb'a al-'Adawiyya	shiakha	Nasr City-Qism 1	East Nasr City	5
244	Sharq al-Mantiqa 6	shiakha	Nasr City-Qism 1	East Nasr City	5
245	'Izbat al-Haggâna	shiakha	Nasr City-Qism 1	East Nasr City	5
246	Masâkin al-Muhandisîn	shiakha	Nasr City-Qism 1	East Nasr City	4
247	Mantiqat al-Sînimâ	shiakha	Nasr City-Qism 1	East Nasr City	5
248	Madinat al-amal	shiakha	Nasr City-Qism 1	East Nasr City	5
249	al-Hayy 7	shiakha	Nasr city - Qism 2	West Nasr City	5
250	al-Hayy 6	shiakha	Nasr city - Qism 2	West Nasr City	5
251	al-Istâd	shiakha	Nasr city - Qism 2	West Nasr City	4
252	al-Sarâyât al-Sharqiyya	shiakha	Nasr city - Qism 2	West Nasr City	1
253	Gâmi'at al-Azhar	shiakha	Nasr city - Qism 2	West Nasr City	5
254	'Izbat al-'Arab	shiakha	Nasr city - Qism 2	West Nasr City	5
255	Nâdî al-Sikka al-Hadîd	shiakha	Nasr city - Qism 2	West Nasr City	5
256	al-Bustân	shiakha	Misr Al-Gadida (Heliopolis)	Misr Al-Gadida	4
257	Almâza	shiakha	Misr Al-Gadida	Misr Al-Gadida	4

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
258	al-Muntaza	shiakha	Misr Al-Gadida	Misr Al-Gadida	4
259	Manshiyat al-Bakrî	shiakha	Misr Al-Gadida	Misr Al-Gadida	4
260	al-Nuzha	shiakha	Al-Nozha	Al-Nozha	4
261	al-Hâykstib	shiakha	Al-Nozha	Al-Nozha	4
262	al-Matâr (Aéroport)	shiakha	Al-Nozha	Al-Nozha	4
263	Shîrâtûn al-Matâr	shiakha	Al-Nozha	Al-Nozha	4
264	al-Zahrâ' wa Masâkin al-Hilmiyya	shiakha	Ain Shams	Ain Shams	4
265	Hilmiyyat al-Zaytûn	shiakha	Ain Shams	Ain Shams	4
266	Hilmiyyat al-Na'âm	shiakha	Ain Shams	Ain Shams	4
267	Tulumbât 'Ain Shams	shiakha	Ain Shams	Ain Shams	4
268	'Ain Shams al-Sharqiyya wa 'Ain Shams al-Gharbiyya	shiakha	Ain Shams	Ain Shams	4
269	Manshiyat al-Tahrîr	shiakha	Ain Shams	Ain Shams	4
270	al-Amîriyya	shiakha	Al-Zawya al-Hamra	Al-Zawya al-Hamra	3
271	Masâkin al-Zâwiya al-Hamrâ'	shiakha	Al-Zawya al-Hamra	Al-Zawya al-Hamra	3
272	al-Salâm al-Sharqiyya	shiakha	Al-Salam	Al-Salam	12
273	al-Salâm al-Gharbiyya	shiakha	Al-Salam	Al-Salam	12
274	Birkat al-Nasr	shiakha	Al-Salam	Al-Salam	4
275	Al-assara al-gadida	shiakha	Al-Salam	Al-Salam	12
276	El nahda	shiakha	Al-Salam	Al-Salam	13
277	Abû al-Fidâ	shiakha	Al-Zamalek	West of Cairo	1
278	al-Gabalâya	shiakha	Al-Zamalek	West of Cairo	1
279	Umar al-Khayyâm	shiakha	Al-Zamalek	West of Cairo	1
280	Muhammad Mazhar	shiakha	Al-Zamalek	West of Cairo	1
281	al-Khazzân	shiakha	Monshaet Nasser	Mansheyet nasser	5
282	al-Mi'adisa	shiakha	Monshaet Nasser	Mansheyet nasser	5
283	al-Mahâgir	shiakha	Monshaet Nasser	Mansheyet nasser	5
284	al-Sultân Barqûq	shiakha	Monshaet Nasser	Mansheyet nasser	1
285	al-Mugâwrîn	shiakha	Monshaet Nasser	Mansheyet nasser	1
286	Qâytbây	shiakha	Monshaet Nasser	Mansheyet nasser	1
287	Minshât Nâsir	shiakha	Monshaet Nasser	Mansheyet nasser	5
288	Suzan Mubarak new housing units	shiakha	Monshaet Nasser	Mansheyet nasser	5
289	al-Basâtîn al-Sharqiyya	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	6
290	al-Basâtîn al-Gharbiyya	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	6
291	al-'Isâwiyya	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	1
292	Dâr al-Salâm	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	1
293	'Izbat Gibrîl	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	6
294	'Izbat Fahmî	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	6
295	'Izbat Nâfi'	shiakha	Al-Bassatin	Al-Bassatin & Dar Al-Salam	6
296	al-Marg al-Bahariyya	shiakha	Al-Marg	Al-Marg	3
297	al-Marg al-Qibliyya	shiakha	Al-Marg	Al-Marg	3
298	Birkat al-Hâg	shiakha	Al-Marg	Al-Marg	4
299	'Izbat al-Nakhl	shiakha	Al-Marg	Al-Marg	3
300	Kafr al-Pacha	shiakha	Al-Marg	Al-Marg	4
301	Kafr al-Shurafâ	shiakha	Al-Marg	Al-Marg	4
302	Kafr abu sir	shiakha	Al-Marg	Al-Marg	4
303	Yasmin-Banafseg-al-mostathmren al-shamalia	shiakha	New Cairo - Qism 1	New Cairo City	15
304	al-narges-al-mostathmren al-ganoubia	shiakha	New Cairo - Qism 1	New Cairo City	15
305	al-gameaa al-americia w al-rowda	shiakha	New Cairo - Qism 1	New Cairo City	15
306	al-tagamoa al-khames	shiakha	New Cairo - Qism 1	New Cairo City	15
307	al-rehab - al-mostathmeron	shiakha	New Cairo - Qism 2	New Cairo City	15
308	al-fardos w al-kawthar	shiakha	New Cairo - Qism 2	New Cairo City	15
309	academiat al-shorta w al-mirag	shiakha	New Cairo - Qism 2	New Cairo City	15
310	al-ansheta	shiakha	New Cairo - Qism 3	New Cairo City	15
311	al-qatamia	shiakha	New Cairo - Qism 3	New Cairo City	15
312	al-andalus	shiakha	New Cairo - Qism 3	New Cairo City	15
313	al-manteqa al-senaeya	shiakha	New Cairo - Qism 3	New Cairo City	15
314	Iskan Mubarak	shiakha	New Cairo - Qism 3	New Cairo City	15
315	al-shorouq	shiakha	Al-Shorouq	Al-Shorouq City	14
316	al-shorouq	shiakha	Al-Shorouq	Al-Shorouq City	14
317	al-shorouq	shiakha	Al-Shorouq	Al-Shorouq City	14
318	Badr	Shiakha	Badr	Badr City	14
319	Badr	Shiakha	Badr	Badr City	14
320	Badr	Shiakha	Badr	Badr City	14

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
321	Badr	Shiakha	Badr	Badr City	14
322	Badr	Shiakha	Badr	Badr City	14
323	Badr	Shiakha	Badr	Badr City	14
324	Badr	Shiakha	Badr	Badr City	14
325	Badr	Shiakha	Badr	Badr City	14
Qaliobeya Governorate					
326	al-Khânka	madinah	Khanka - markaz	Khanka - markaz	12
327	Abû Za'bal	qurah	Khanka - markaz	Khanka - markaz	12
328	al-Qalag	qurah	Khanka - markaz	Khanka - markaz	12
329	al-Manâyil	qurah	Khanka - markaz	Khanka - markaz	12
330	al-Maniyya	qurah	Khanka - markaz	Khanka - markaz	12
331	Siryâqûs	qurah	Khanka - markaz	Khanka - markaz	12
332	Sinduwa	qurah	Khanka - markaz	Khanka - markaz	12
333	'Arab al-'Abâyda	qurah	Khanka - markaz	Khanka - markaz	12
334	'Arab al-'Ulayqât	qurah	Khanka - markaz	Khanka - markaz	12
335	al-Gabal al-Asfar	qurah	Khanka - markaz	Khanka - markaz	12
336	23 Yûlyû	qurah	Khanka - markaz	Khanka - markaz	12
337	Kafr Hamza	qurah	Khanka - markaz	Khanka - markaz	12
338	Kafr 'Ibyân	qurah	Khanka - markaz	Khanka - markaz	12
339	Mazra'at al-Gabal al-Asfar	qurah	Khanka - markaz	Khanka - markaz	12
340	al-Qanâtir al-Khayryya	madinah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
341	Abû al-Ghayt	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
342	Aghûr al-Sughrâ	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
343	al-Akhmiyîn	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
344	al-Barâd'â wa Khilwatha	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
345	al-Kharqâniyya	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
346	al-'Amriyâ	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
347	al-Munîra	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
348	Bâsûs	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
349	Bahâda	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
350	Sandabîs	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
351	Shubrâ Shihâb	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
352	Shalqân	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
353	Qarnafîl	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
354	Kafr al-Hârith	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
355	Kafr al-Shurafâ al-Gharbî	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
356	Kafr Silîm	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
357	Kafr 'Alîm	qurah	Al-Qanater al-Khayreya - markaz	Al-Qanater al-Khayreya - markaz	12
358	Shibîn al-Qanâtir	madinah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
359	al-Ahrâz	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
360	al-Ga'âfra	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
361	al-Hazâniyy	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
362	al-Hassâyna	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
363	al-Hasâfa	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
364	al-Zahwiyyîn	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
365	al-Salmâniyya	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
366	al-Shûbak	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
367	al-'Atâra	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
368	al-Qashshîsh	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
369	al-Qalzam	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
370	al-Kûm al-Ahmar	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
371	al-Marîg	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
372	al-Gharîrî	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
373	Tal Banî Tamîm	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
374	Tahânûb	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
375	Tuhûriyya	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
376	'Arab al-Sha'âra	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
377	'Arab al-Sawâlha	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
378	Kafr al-Dîr	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
379	Kafr al-Shurafâ al-Qiblî	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
380	Kafr al-Shûbak	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
381	Kafr al-Shîkha Sâlima	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
382	Kafr al-Sahbî	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
383	Kafr Sa'd Bihîrî	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
384	Kafr Sanduwa	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
385	Kafr Shibîn	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
386	Kafr Tahâ	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
387	Kafr Tuhûriyya	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
388	Kûm al-Samn	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
389	Kafr Sulaymân al-War	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
390	Minshât al-Kirâm	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
391	Minyat Shibîn	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
392	Nazlat 'Arab Guhayna	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
393	Nûb Tahâ	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
394	Nawâ	qurah	Shebin al-Qanater-Markaz	Shebin al-Qanater-Markaz	12
395	Shubrâ al-Khayma	madinah	Shobra al-kheima Qism 1	Shobra al-kheima Qism 1	3
396	Bîgâm	shiakha	Shobra al-kheima Qism 1	Shobra al-kheima Qism 1	3
397	Damanhûr Shubrâ	shiakha	Shobra al-kheima Qism 1	Shobra al-kheima Qism 1	3
398	Bahtîm	shiakha	Shobra al-kheima Qism 2	Shobra al-kheima Qism 2	3
399	Musturud	shiakha	Shobra al-kheima Qism 2	Shobra al-kheima Qism 2	3
400	Hasswa	qurah	Toukh	Toukh	12
401	Qalioub	madinah	Qalioub Qism	Qalioub Markaz	12
402	Nây	qurah	Qalioub Markaz	Qalioub Markaz	12
403	al-Islâh al-Zirâ'î	qurah	Qalioub Markaz	Qalioub Markaz	12
404	al-Sadd	qurah	Qalioub Markaz	Qalioub Markaz	12
405	al-Sabâh	qurah	Qalioub Markaz	Qalioub Markaz	12
406	Balqas	qurah	Qalioub Markaz	Qalioub Markaz	12
407	Halâba wa Kafr al-Sabîl	qurah	Qalioub Markaz	Qalioub Markaz	12
408	Zâwiyat al-Naggâr	qurah	Qalioub Markaz	Qalioub Markaz	12
409	Sandyûn	qurah	Qalioub Markaz	Qalioub Markaz	12
410	Sanâfîr	qurah	Qalioub Markaz	Qalioub Markaz	12
411	Tanân	qurah	Qalioub Markaz	Qalioub Markaz	12
412	Qulamâ	qurah	Qalioub Markaz	Qalioub Markaz	12
413	Kafr Abû Gum'a	qurah	Qalioub Markaz	Qalioub Markaz	12
414	Kafr Ramâda wa al-Turgum^n	qurah	Qalioub Markaz	Qalioub Markaz	12
415	Kûm Ashfîn	qurah	Qalioub Markaz	Qalioub Markaz	12
416	Mintâ	qurah	Qalioub Markaz	Qalioub Markaz	12
417	Mît Halfâ	qurah	Qalioub Markaz	Qalioub Markaz	12
418	Mît Namâ	qurah	Qalioub Markaz	Qalioub Markaz	12
419	al-Khusûs	qism	Khussoss - Qism	Khussoss	3
420	el obour	qism	Obour - Qism	Obour City	13
Sharkia Governorate					
421	10th of Ramadan-districts from 1 to 34	shiakha	10th of Ramadan-Qism 1	10th of Ramadan city	14
422	10th of Ramadan-districts from 35 to 67	shiakha	10th of Ramadan-Qism 2	10th of Ramadan city	14
Giza Governorate					
423	al-Munîra	shiakha	Imbaba	North of Giza	2
424	Tâg al-Duwal	shiakha	Imbaba	North of Giza	2

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
425	Gazîrat Imbâba	shiakha	Imbaba	North of Giza	2
426	Abd al-Na'îm	shiakha	Imbaba	North of Giza	2
427	Kafr al-Shawâm	shiakha	Imbaba	North of Giza	2
428	Kafr al-Shaykh Ismâ'îl	shiakha	Imbaba	North of Giza	2
429	Madînat al-Tahrîr	shiakha	Imbaba	North of Giza	2
430	Madînat al-'Ummâl	shiakha	Imbaba	North of Giza	2
431	Matâr Imbâba	shiakha	Imbaba	North of Giza	2
432	Mît Kardak	shiakha	Imbaba	North of Giza	2
433	al-Hûtiyya	shiakha	Al-Agouza	Al-Agouza	2
434	Gazîrat Mît 'Uqba	shiakha	Al-Agouza	Al-Agouza	2
435	'Izbat al-'Agûza	shiakha	Al-Agouza	Al-Agouza	2
436	Mît 'Uqba	shiakha	Al-Agouza	Al-Agouza	2
437	Madînat al-Awqâf (al-A'lâm)	shiakha	Al-Agouza	Al-Agouza	2
438	al-Duqqî	shiakha	Al-Doqqi	Al-Doqqi	2
439	al-Munîb	shiakha	Al-Giza	South of Giza	2
440	Gazîrat al-Dahab	shiakha	Al-Giza	South of Giza	2
441	Hâra 1	shiakha	Al-Giza	South of Giza	2
442	Hâra 2	shiakha	Al-Giza	South of Giza	2
443	Hâra 3	shiakha	Al-Giza	South of Giza	2
444	Hâra 4	shiakha	Al-Giza	South of Giza	2
445	Sâqyat Makkî	shiakha	Al-Giza	South of Giza	2
446	Abû Qatâda (Nûfal al-Gadîda wa Nûfal al-Qadîma)	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
447	Bûlâq al-Dakrûr	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
448	Zinîn	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
449	Kafr Tuhurmus	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
450	Minshât 'Ilyân	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
451	Nazlat Khalaf	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
452	Nazlat Bahgat	shiakha	Boulaq al-dakrour	Boulaq al-dakrour	2
453	Ghatâty	shiakha	Al-Ahram	Al-Ahram	2
454	Kafrat al-Gabal	shiakha	Al-Ahram	Al-Ahram	2
455	Kafrat Nassâr wa Funduq Mînâ Haws	shiakha	Al-Ahram	Al-Ahram	2
456	Minshât al-Bakkârî	shiakha	Al-Ahram	Al-Ahram	2
457	Nazlat al-Batrân	shiakha	Al-Ahram	Al-Ahram	2
458	Nazlat al-Simmân	shiakha	Al-Ahram	Al-Ahram	2
459	6 Uktûbar Qism 1	Qism	6th of October-Qism 1	6th of October city	8
460	6 Uktûbar Qism 2	Qism	6th of October-Qism 2	6th of October city	8
461	al-Hawâmdiyya	madinah	Al-Hawamdia	Al-Hawamdia - Markaz	11
462	al-Shaykh 'Itmân	qurah	Al-Hawamdia	Al-Hawamdia - Markaz	11
463	Umm Khinân	qurah	Al-Hawamdia	Al-Hawamdia - Markaz	11
464	Abû al-Numrus	madinah	Giza-Markaz	Giza-Markaz	2
465	al-Harrâniyya	qurah	Giza-Markaz	Giza-Markaz	2
466	al-Manâwât	qurah	Giza-Markaz	Giza-Markaz	2
467	Tirsâ	qurah	Giza-Markaz	Giza-Markaz	2
468	Zâwiyyat Abû Misallam	qurah	Giza-Markaz	Giza-Markaz	2
469	Shubrâmant	qurah	Giza-Markaz	Giza-Markaz	2
470	Tamûh	qurah	Giza-Markaz	Giza-Markaz	2
471	Manyal Shîha	qurah	Giza-Markaz	Giza-Markaz	2
472	Mît Shammâs	qurah	Giza-Markaz	Giza-Markaz	2
473	Mît Qâdûs	qurah	Giza-Markaz	Giza-Markaz	2
474	Nazlat al-Ashtar	qurah	Giza-Markaz	Giza-Markaz	2
475	Bani yosef	qurah	Giza-Markaz	Giza-Markaz	2
476	al-Badrashîn	madinah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
477	Abû Ragwân al-Bahary	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
478	Abû Ragwân al-Qiblî	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
479	Abû Sîr	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
480	al-Shinbâb	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
481	al-Shûbak al-Gharbî	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
482	al-Tarfâya	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
483	al-'Azîziyya	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
484	al-Marâzîq	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
485	Dahshûr	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
486	Zâwiyyat Dahshûr	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
487	Zahrân wa Gâbir	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
488	Saqqâra	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11

Administrative Units			Qism Name	Hay/ Local units Name	Planning Zone
NO	Name	Unit			
489	Qal'at al-Marâzîq	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
490	Mazghûna	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
491	Minshât Dahshûr	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
492	Minshât Kâsib	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
493	Mît Rahîna	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
494	Nazlat al-Shûbak	qurah	Al-Badrashin - Markaz	Al-Badrashin - Markaz	11
495	Manshiyyat al-Qanâtir	madinah	Imbaba - Markaz	Imbaba - Markaz	9
496	al-Galâtma	qurah	Imbaba - Markaz	Imbaba - Markaz	9
497	al-Hasâniyyîn	qurah	Imbaba - Markaz	Imbaba - Markaz	9
498	al-Rahâwî	qurah	Imbaba - Markaz	Imbaba - Markaz	9
499	al-Sabîl	qurah	Imbaba - Markaz	Imbaba - Markaz	9
500	al-Manâshî	qurah	Imbaba - Markaz	Imbaba - Markaz	9
501	al-Mansûriyya	qurah	Imbaba - Markaz	Imbaba - Markaz	9
502	Umm Dînâr	qurah	Imbaba - Markaz	Imbaba - Markaz	9
503	Birqâsh	qurah	Imbaba - Markaz	Imbaba - Markaz	9
504	Baharmis	qurah	Imbaba - Markaz	Imbaba - Markaz	9
505	Gizzâya	qurah	Imbaba - Markaz	Imbaba - Markaz	9
506	Zât al-Kûm	qurah	Imbaba - Markaz	Imbaba - Markaz	9
507	Kafr Higâzî	qurah	Imbaba - Markaz	Imbaba - Markaz	9
508	Manshiyyat Radwân	qurah	Imbaba - Markaz	Imbaba - Markaz	9
509	Mahmûd 'Abd al-Samad	qurah	Imbaba - Markaz	Imbaba - Markaz	9
510	Nikla	qurah	Imbaba - Markaz	Imbaba - Markaz	9
511	Al-akhssass	qurah	Imbaba - Markaz	Imbaba - Markaz	9
512	al-Qattâ	qurah	Imbaba - Markaz	Imbaba - Markaz	9
513	Usîm	madinah	Awsim- Markaz	Awsim- Markaz	9
514	al-Barâgîl	qurah	Awsim- Markaz	Awsim- Markaz	9
515	al-Zaydiyya	qurah	Awsim- Markaz	Awsim- Markaz	9
516	al-Qîrâtiyyîn	qurah	Awsim- Markaz	Awsim- Markaz	9
517	al-Kûm al-Ahmar	qurah	Awsim- Markaz	Awsim- Markaz	9
518	Burtus	qurah	Awsim- Markaz	Awsim- Markaz	9
519	Zâwiyyat Sâbit	qurah	Awsim- Markaz	Awsim- Markaz	9
520	Saqîl	qurah	Awsim- Markaz	Awsim- Markaz	9
521	Shinbârî	qurah	Awsim- Markaz	Awsim- Markaz	9
522	Sîda	qurah	Awsim- Markaz	Awsim- Markaz	9
523	Warrâq al-'Arab	madinah	Warraq - Markaz	Warraq - Markaz	2
524	Bashtîl	qurah	Warraq - Markaz	Warraq - Markaz	9
525	Gazîrat Warrâq al-Hadar	qurah	Warraq - Markaz	Warraq - Markaz	2
526	Gazîrat Muhammad	qurah	Warraq - Markaz	Warraq - Markaz	2
527	Tanâsh wa Nazlat al-Zumur	qurah	Warraq - Markaz	Warraq - Markaz	9
528	al-Tâlbiyya	shiakha	Al-Omrania	Al-Omrania	2
529	al-'Umrâniyya al-Sharqiyya	shiakha	Al-Omrania	Al-Omrania	2
530	al-'Umrâniyya al-Gharbiyya	shiakha	Al-Omrania	Al-Omrania	2
531	al-Kanîsa	shiakha	Al-Omrania	Al-Omrania	2
532	al-Kûm al-Akhdar	shiakha	Al-Omrania	Al-Omrania	2
533	al-Haram	shiakha	Al-Omrania	Al-Omrania	2
534	el sheikh zayed city	madinah	Al-Sheikh Zayed - Qism	Al-Sheikh Zayed city	8
535	Kirdâsa	madinah	Kerdasa Markaz	Kerdasa Markaz	9
536	Nâhyâ	qurah	Kerdasa Markaz	Kerdasa Markaz	9
537	Birak al-Khiyâm	qurah	Kerdasa Markaz	Kerdasa Markaz	9
538	al-Mu'tamdiyya	qurah	Kerdasa Markaz	Kerdasa Markaz	9
539	Saft al-Laban	qurah	Kerdasa Markaz	Kerdasa Markaz	9
540	Abo Rawash	qurah	Kerdasa Markaz	Kerdasa Markaz	9
541	Banî Magdûl	qurah	Kerdasa Markaz	Kerdasa Markaz	9
542	Kûmbira	qurah	Kerdasa Markaz	Kerdasa Markaz	9
543	Kafr Hakîm	qurah	Kerdasa Markaz	Kerdasa Markaz	9
544	Ard el-Lewa	qurah	Kerdasa Markaz	Kerdasa Markaz	9