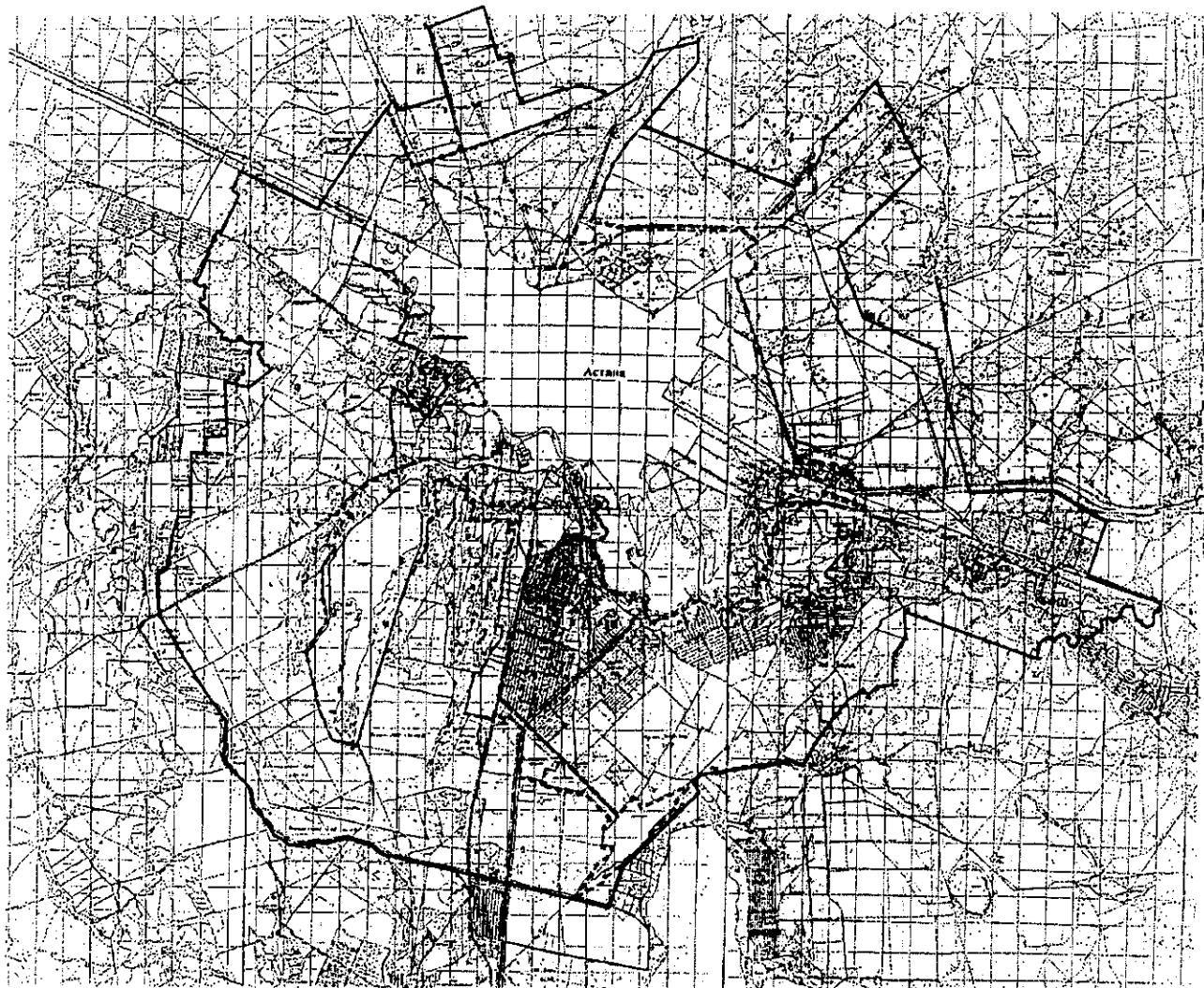


付 図

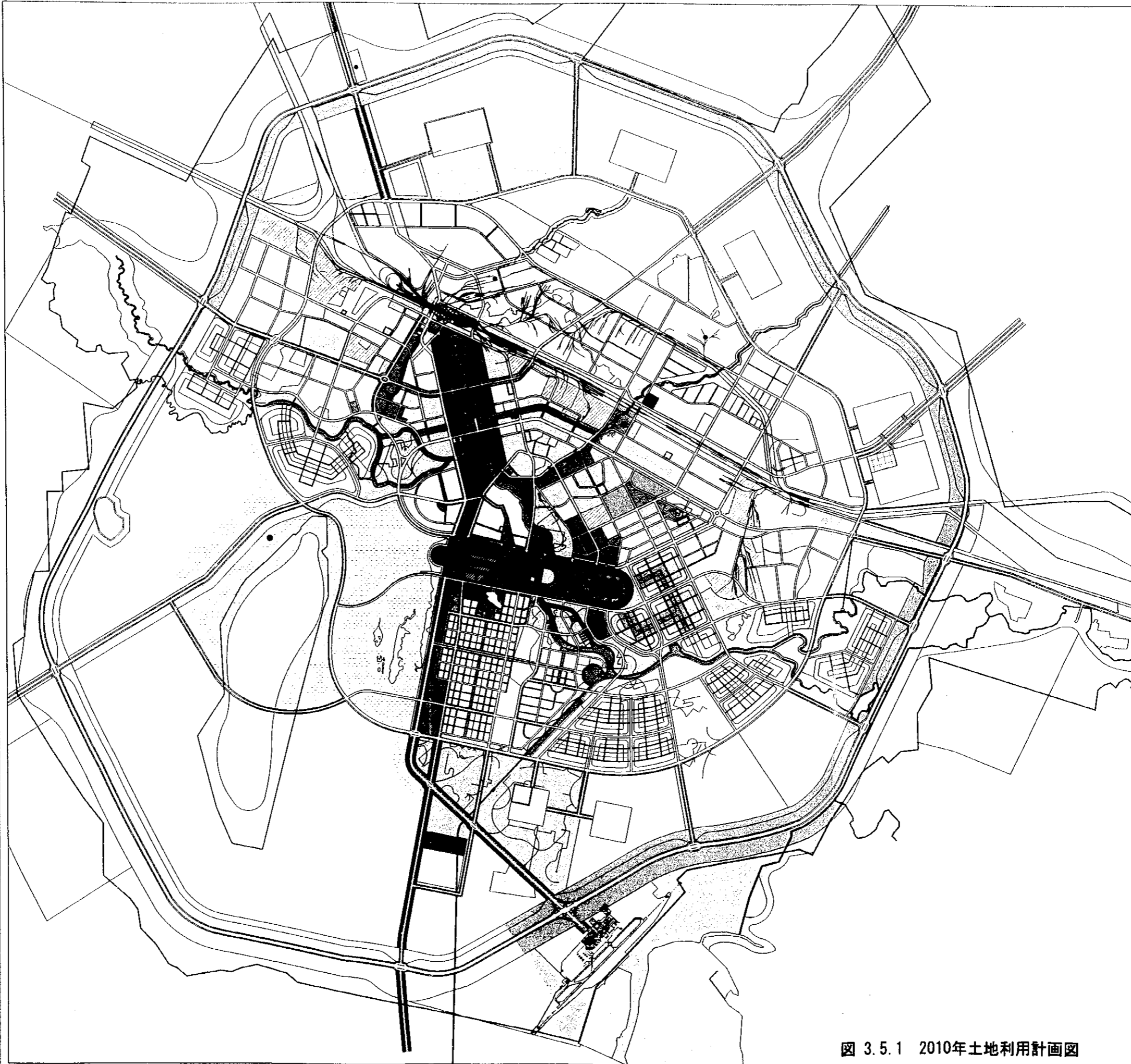


----- 旧市域界  
—— 新市域界

图 1.4.1 调查对象地域

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF  
IN  
THE REPUBLIC OF KAZAKHSTAN.



## LEGEND

- RESIDENTIAL USES**
  - LOW DENSITY
  - MEDIUM DENSITY
  - HIGH DENSITY
- COMMERCIAL/BUSINESS**
  - BUSINESS BLOCK
  - RAILWAY CENTER
  - FUTURE BUSINESS CORRIDOR
  - DISTRICT CENTER
  - SEMPUBLIC BLOCK
- INSTITUTIONAL USES**
  - PRESIDENTIAL BLOCK
  - GOVERNMENT BLOCK
  - DIPLOMATIC BLOCK
  - EXISTING & PLANNED EMBASSY
  - NEW UNIVERSITY
  - MILITARY ACADEMY
  - INTERNATIONAL EXHIBITION
  - CULTURAL BLOCK
- OPEN SPACE**
  - PARK
  - LOCAL GARDENS/PLAZA
  - BOULEVARDS/AVENUES
  - BUFFER BELT
  - GREEN OPEN SPACE
  - ECO FOREST
  - FUTURE GREEN CORRIDOR
  - RIVER
  - LAKES
- RECREATIONAL USES**
  - COTTAGE
  - SPORTS CITY
  - LOCAL STADIUMS
  - KAZAK SPORTS/PPODRO
- INDUSTRIAL USES**
  - EXISTING INDUSTRIES
  - NEW INDUSTRIES
  - EXISTING SEMI-INDUSTRIES
  - CARGO CENTER
  - SERVICES
- TRANSPORTATION**
  - RAILWAY STATION
  - BUS TERMINAL
  - RAILWAY BYPASS
- INFRASTRUCTURE**
  - POWER PLANT
  - WATER TREATMENT PLANT
  - SEWAGE TREATMENT PLANT
- OTHERS**
  - FUTURE EXPANSION
  - CEMETERIES
  - NEW CITY BOUNDARY

**MASTER PLAN**  
2010

JICA MASTER PLAN TEAM  
HEADED BY YOSHI KUROKAWA

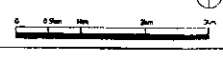
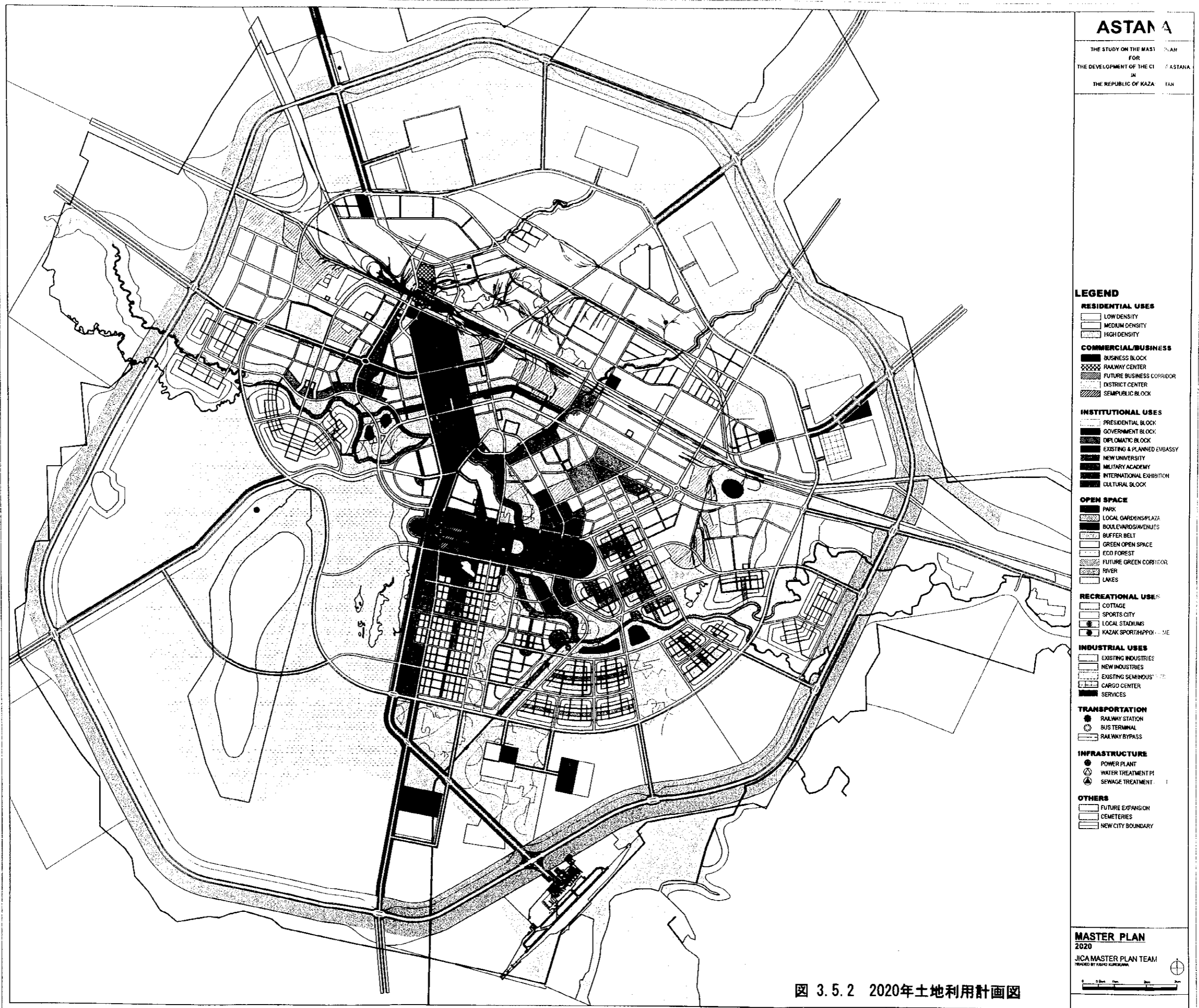


图 3.5.1 2010年土地利用計画图



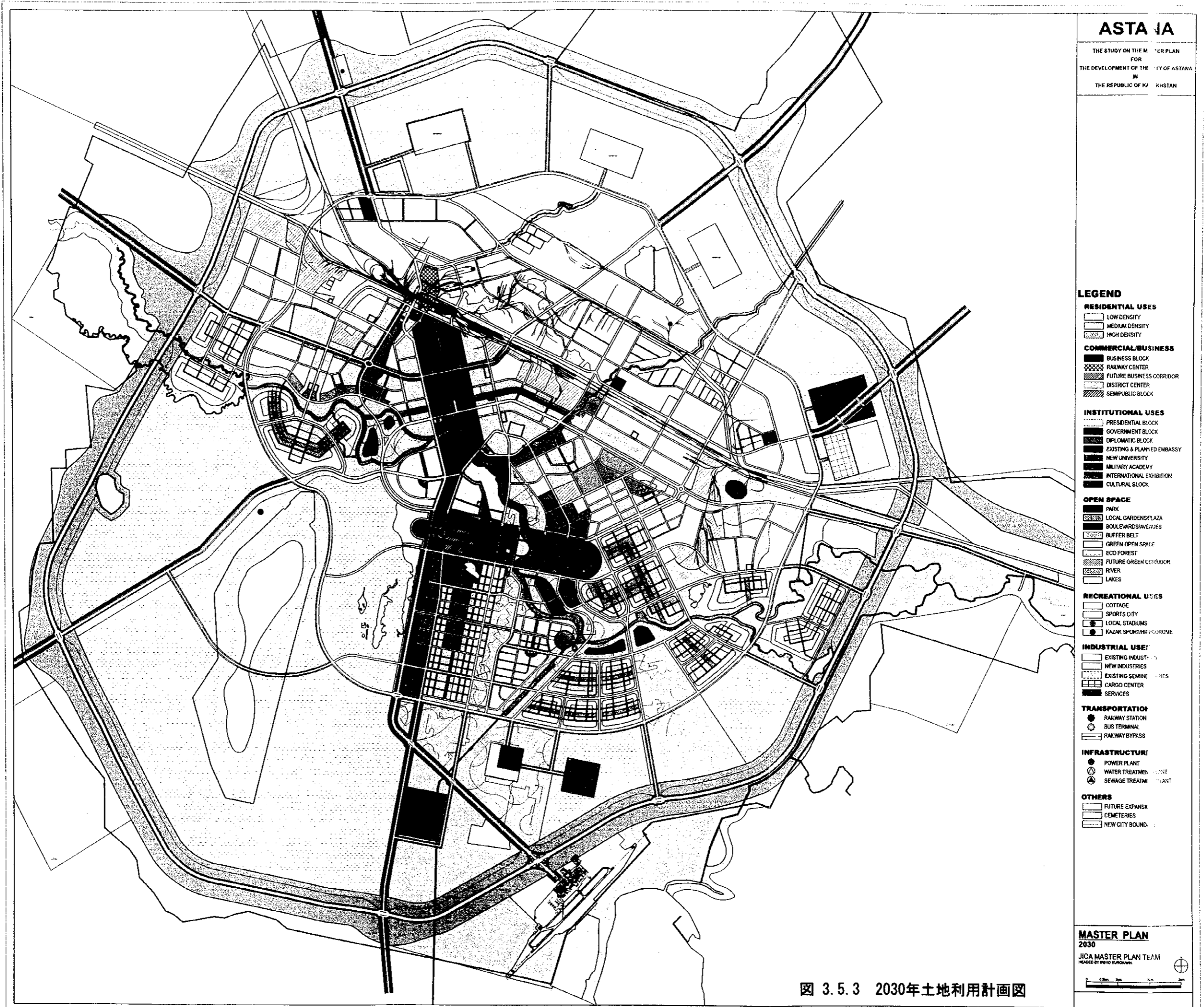
**ASTANA**  
 THE STUDY ON THE MASTER PLAN  
 FOR THE DEVELOPMENT OF THE CITY OF ASTANA  
 IN THE REPUBLIC OF KAZAKHSTAN

- LEGEND**
- RESIDENTIAL USES**
- LOW DENSITY
  - MEDIUM DENSITY
  - HIGH DENSITY
- COMMERCIAL/BUSINESS**
- BUSINESS BLOCK
  - RAILWAY CENTER
  - FUTURE BUSINESS CORRIDOR
  - DISTRICT CENTER
  - SEMPUBLIC BLOCK
- INSTITUTIONAL USES**
- PRESIDENTIAL BLOCK
  - GOVERNMENT BLOCK
  - DIPLOMATIC BLOCK
  - EXISTING & PLANNED EMBASSY
  - NEW UNIVERSITY
  - MILITARY ACADEMY
  - INTERNATIONAL EXHIBITION
  - CULTURAL BLOCK
- OPEN SPACE**
- PARK
  - LOCAL GARDENS/PLAZA
  - BOULEVARDS/AVENUES
  - BUFFER BELT
  - GREEN OPEN SPACE
  - ECO FOREST
  - FUTURE GREEN CORRIDOR
  - RIVER
  - LAKES
- RECREATIONAL USES**
- COTTAGE
  - SPORTS CITY
  - LOCAL STADIUMS
  - KAZAK SPORTS/PPD...
- INDUSTRIAL USES**
- EXISTING INDUSTRIES
  - NEW INDUSTRIES
  - EXISTING SEMIPUBLIC
  - CARGO CENTER
  - SERVICES
- TRANSPORTATION**
- RAILWAY STATION
  - BUS TERMINAL
  - RAILWAY BYPASS
- INFRASTRUCTURE**
- POWER PLANT
  - WATER TREATMENT PL
  - SEWAGE TREATMENT
- OTHERS**
- FUTURE EXPANSION
  - CEMETERIES
  - NEW CITY BOUNDARY

**MASTER PLAN 2020**  
 JICA MASTER PLAN TEAM  
 TRACED BY ARIKO KUROKAWA

0 1km 2km 3km

图 3.5.2 2020年土地利用計画図



**ASTA JA**

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

**LEGEND**

- RESIDENTIAL USES**
  - LOW DENSITY
  - MEDIUM DENSITY
  - HIGH DENSITY
- COMMERCIAL/BUSINESS**
  - BUSINESS BLOCK
  - RAILWAY CENTER
  - FUTURE BUSINESS CORRIDOR
  - DISTRICT CENTER
  - SEMPUBLIC BLOCK
- INSTITUTIONAL USES**
  - PRESIDENTIAL BLOCK
  - GOVERNMENT BLOCK
  - DIPLOMATIC BLOCK
  - EXISTING & PLANNED EMBASSY
  - NEW UNIVERSITY
  - MILITARY ACADEMY
  - INTERNATIONAL EXHIBITION
  - CULTURAL BLOCK
- OPEN SPACE**
  - PARK
  - LOCAL GARDENS/PLAZA
  - BOULEVARDS/AVENUES
  - BUFFER BELT
  - GREEN OPEN SPACE
  - ECO FOREST
  - FUTURE GREEN CORRIDOR
  - RIVER
  - LAKES
- RECREATIONAL USES**
  - COTTAGE
  - SPORTS CITY
  - LOCAL STADIUMS
  - KAZAK SPORTS/PEDROME
- INDUSTRIAL USES**
  - EXISTING INDUSTRIES
  - NEW INDUSTRIES
  - EXISTING SEMI-INDUSTRIES
  - CARGO CENTER
  - SERVICES
- TRANSPORTATION**
  - RAILWAY STATION
  - BUS TERMINAL
  - RAILWAY BYPASS
- INFRASTRUCTURE**
  - POWER PLANT
  - WATER TREATMENT PLANT
  - SEWAGE TREATMENT PLANT
- OTHERS**
  - FUTURE EXPANSION
  - CEMETERIES
  - NEW CITY BOUNDARY

**MASTER PLAN**

2030  
JICA MASTER PLAN TEAM  
HEADED BY YASUO KUROKAWA

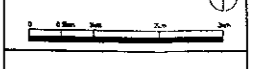
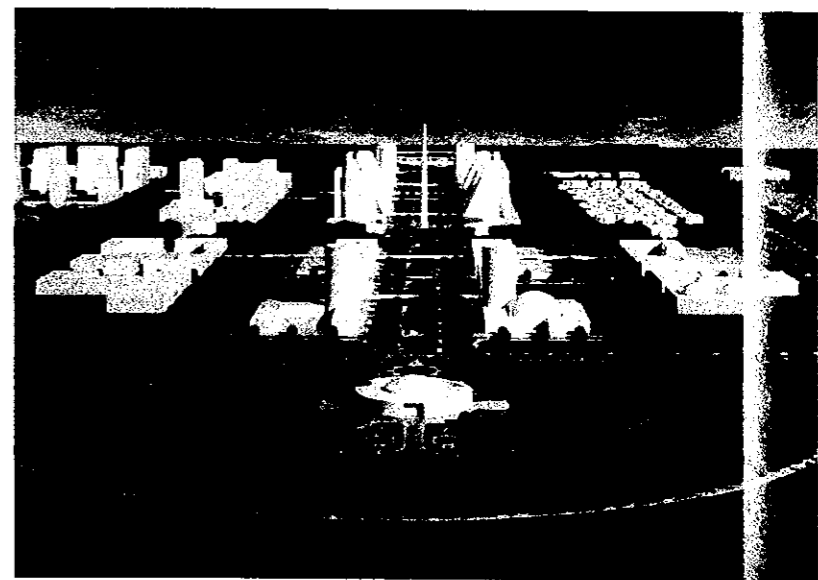
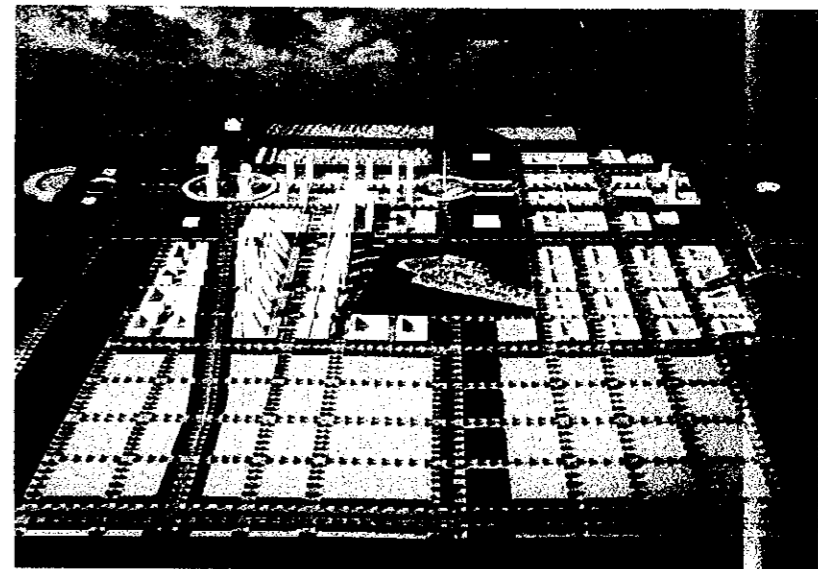
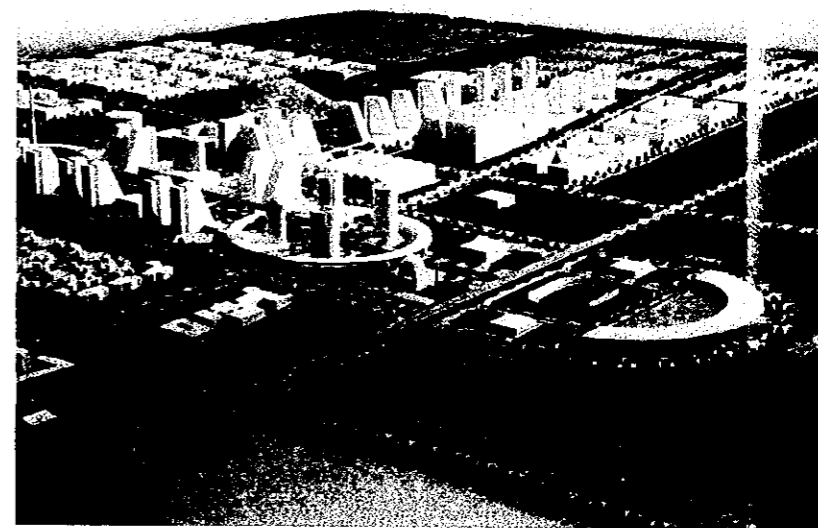
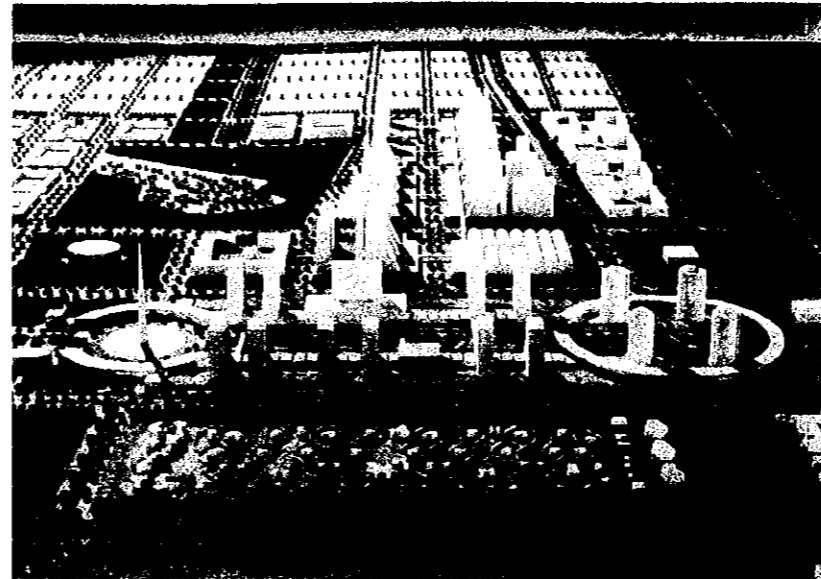
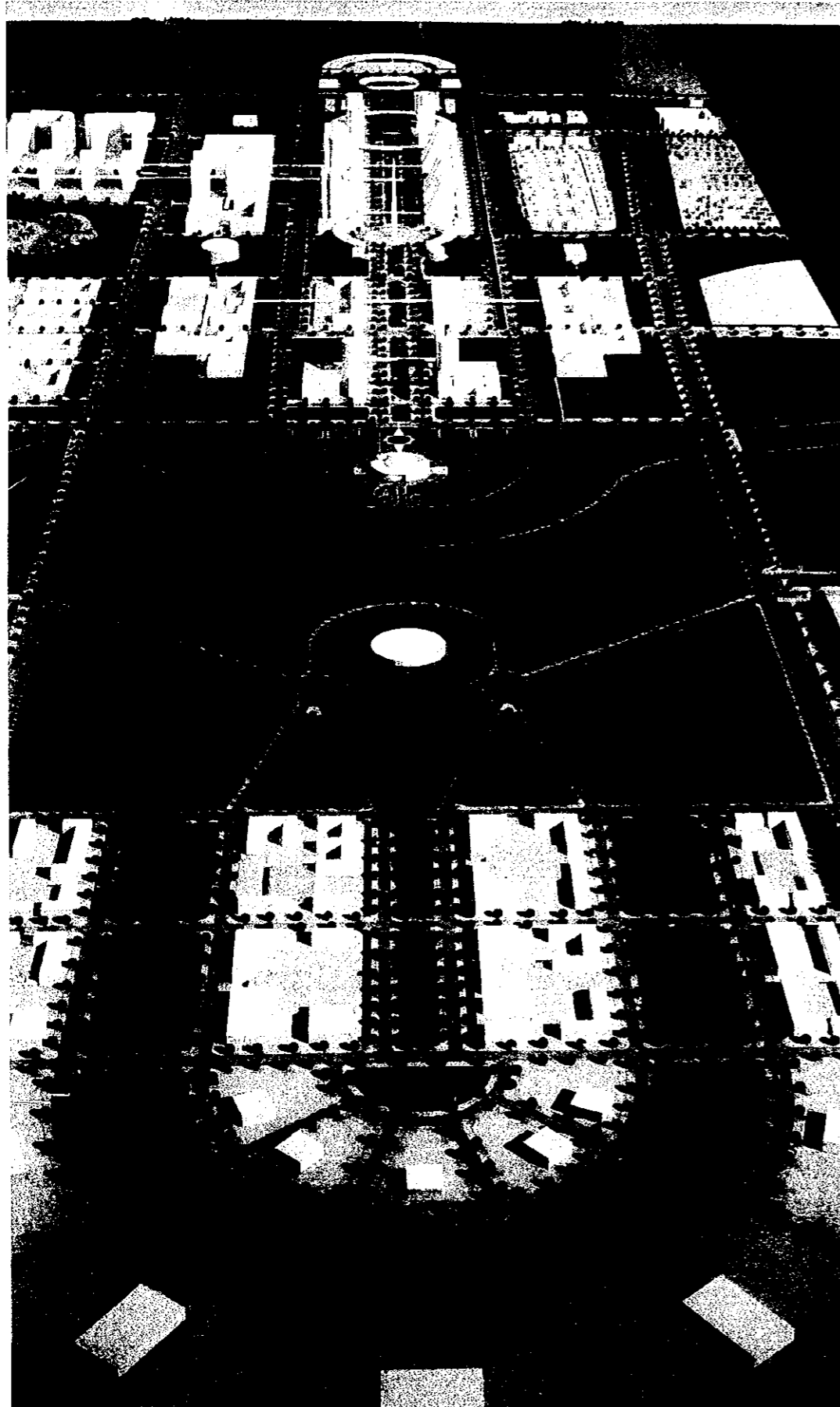


图 3.5.3 2030年土地利用計画図





ASTANA CITY THE REPUBLIC OF KAZAKHSTAN

THE IMAGE OF NEW CITY CENTER AREA

JICA MASTER PLAN TEAM / HEADED BY KISHO KUROKAWA

図 3.7.1 新中心地区イメージ

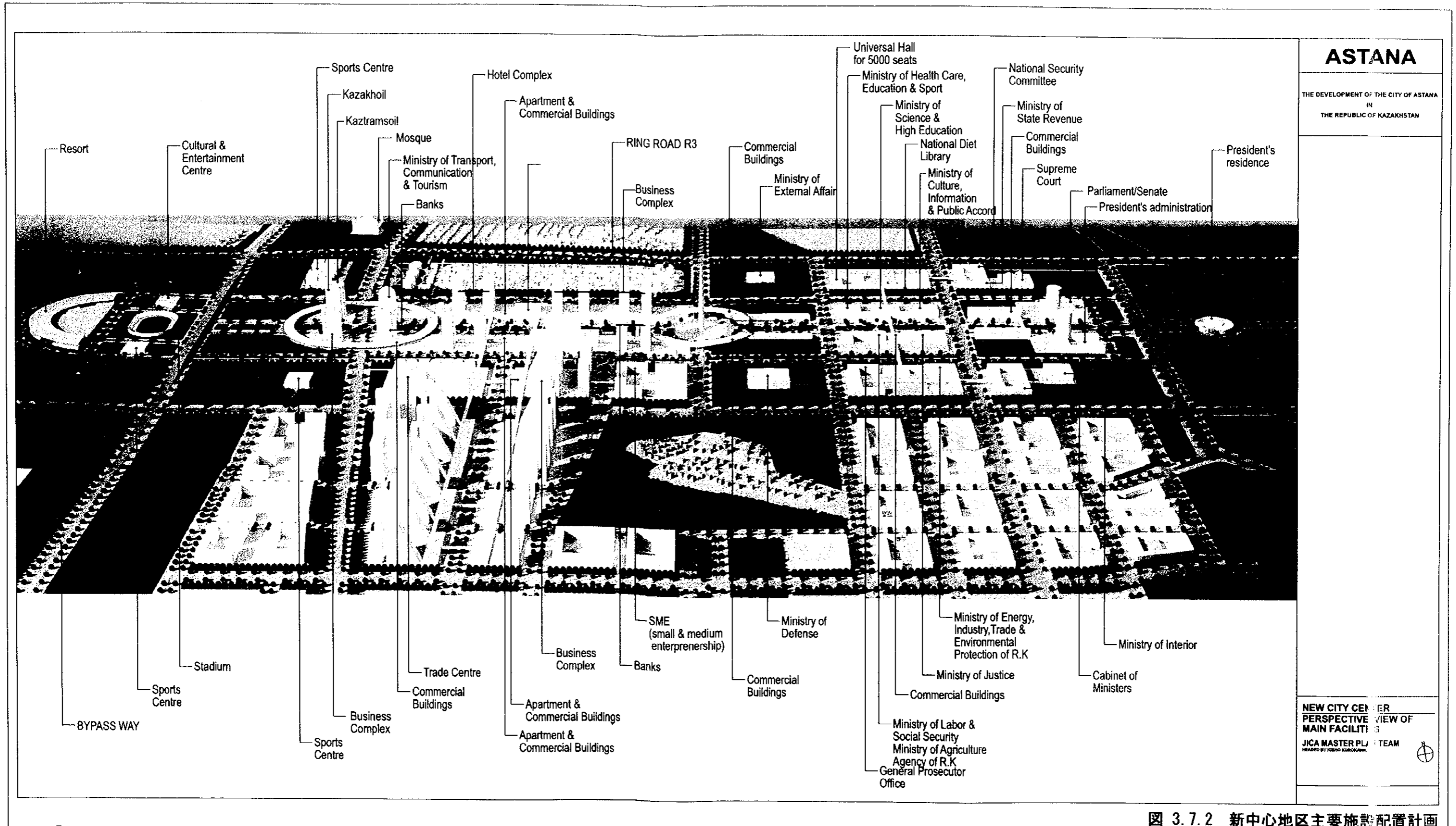


图 3.7.2 新中心地区主要施設配置計画

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

### ROAD

- EXISTING
- 2010
- 2020
- 2030

### LRT

- 2010
- - - 2020
- - - 2030

### TERMINAL

- MULTI-MODAL TERMINAL (2010)
- MULTI-MODAL TERMINAL (2020)
- MULTI-MODAL TERMINAL (2030)
- CITY AIR TERMINAL
- LRT STATION

STAGED PLAN OF ROAD & LRT  
CONSTRUCTION/IMPROVEMENT  
2010, 2020, 2030

JICA MASTER PLAN TEAM









图 3.9.1 道路及びLRT段階的整備計画



# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  MAIN STREET OF CITY IMPORTANCE (ARTERIAL ROAD)
-  MAIN STREET OF CITY IMPORTANCE (PRIMARY ROAD)
-  MAIN STREET OF REGIONAL IMPORTANCE (SECONDARY ROAD)
-  STREET and ROAD OF LOCAL IMPORTANCE (TERTIARY ROAD)
-  SPECIAL ROAD
-  MAIN ROAD



## ROAD HIERARCHY

2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KENGO KUROKAWA








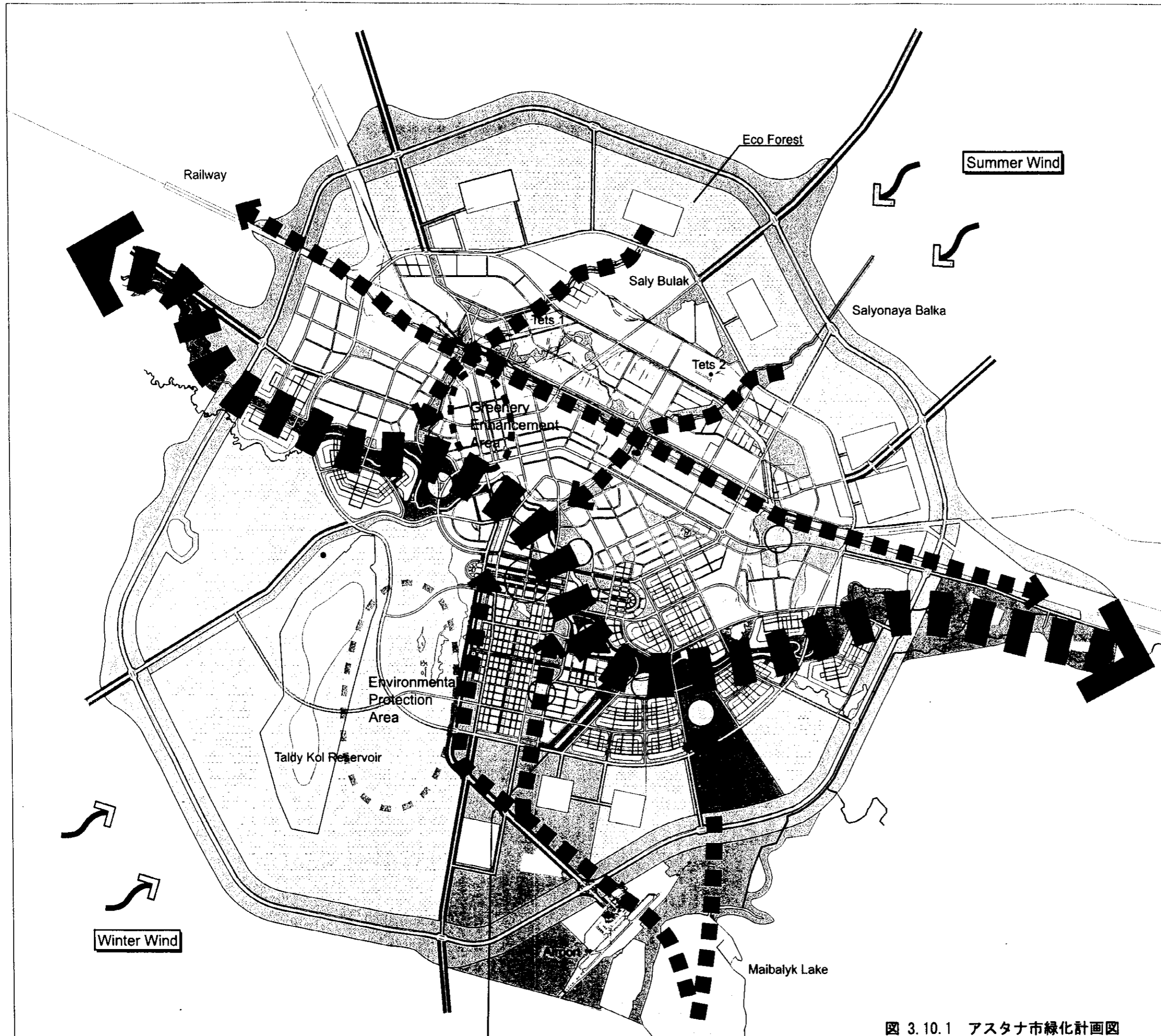
图 3.9.2 道路区分計画图

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  MAIN GREENERY AXIS
-  MINOR GREENERY AXIS
-  CORE GREENERY  
(CITY PARK)
-  ECO FOREST
-  BUFFER BELT



JICA MASTER PLAN TEAM  
MADE BY JICA MASTER PLAN TEAM

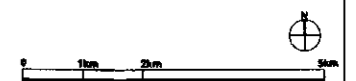
















図 3.10.1 アスタナ市緑化計画図

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  WATER SUPPLY SERVICE AREA (EXISTING)
-  WATER SUPPLY SERVICE AREA (2010)
-  WATER SUPPLY SERVICE AREA (2020)
-  WATER SUPPLY SERVICE AREA (2030)
-  MAJOR WATER SUPPLY PIPELINE (EXISTING)
-  MAJOR WATER SUPPLY PIPELINE (2010)
-  MAJOR WATER SUPPLY PIPELINE (2020)
-  MAJOR WATER SUPPLY PIPELINE (2030)
-  WATER TREATMENT PLANT (EXISTING)
-  WATER TREATMENT PLANT 100,000m<sup>3</sup>/d (2010)
-  WATER TREATMENT PLANT 120,000m<sup>3</sup>/d (2020)
-  WATER SUPPLY TREATMENT PLANT 100,000m<sup>3</sup>/d (2030)
-  EXISTING INTAKE PUMPING STATION
-  EXISTING DISTRIBUTION PUMPING STATION



### WATER SUPPLY DEVELOPMENT PLAN 2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KENJI KUROKAWA

SCALE 1:60,000

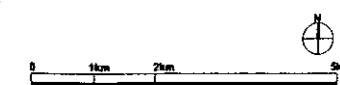


図 4.3.1 上水道整備計画図

# ASTANA

THE STUDY IN THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHISTAN

## LEGEND

- SEWER PIPE (EXISTING)
- SEWER PIPE (2010)
- SEWER PIPE (2020)
- SEWER PIPE (2030)
- SEWAGE TREATMENT PLANT
- MAJOR PUMPING SYSTEM (EXISTING)
- MAJOR PUMPING SYSTEM (2010)
- MAJOR PUMPING SYSTEM (2020)



### PLAN FOR SEWER PIPE SYSTEM 2010, 2020, 2030

JICA MASTER PLAN TEAM  
PREPARED BY KOICHO KUROKAWA

SCALE 1:50,000

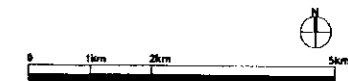


図 4.4.1 下水道施設計画図

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

- EXISTING SWITCHING SUBSTATION
- SUBSTATION (EXISTING)
- SUBSTATION (2010)
- SUBSTATION (2020)
- SUBSTATION (2030)
- 110kV T.LINE (EXISTING)
- 110kV T.LINE (2010)
- 110kV T.LINE (2020)
- 110kV T.LINE (2030)



**PLAN OF 110kV TRANSMISSION LINES,  
SWITCHYARDS AND SUBSTATIONS**  
2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KEIICHI KUROKAWA

SCALE 1:50,000









図 4.5.1 110kV送電線、開閉所及び変電所計画図

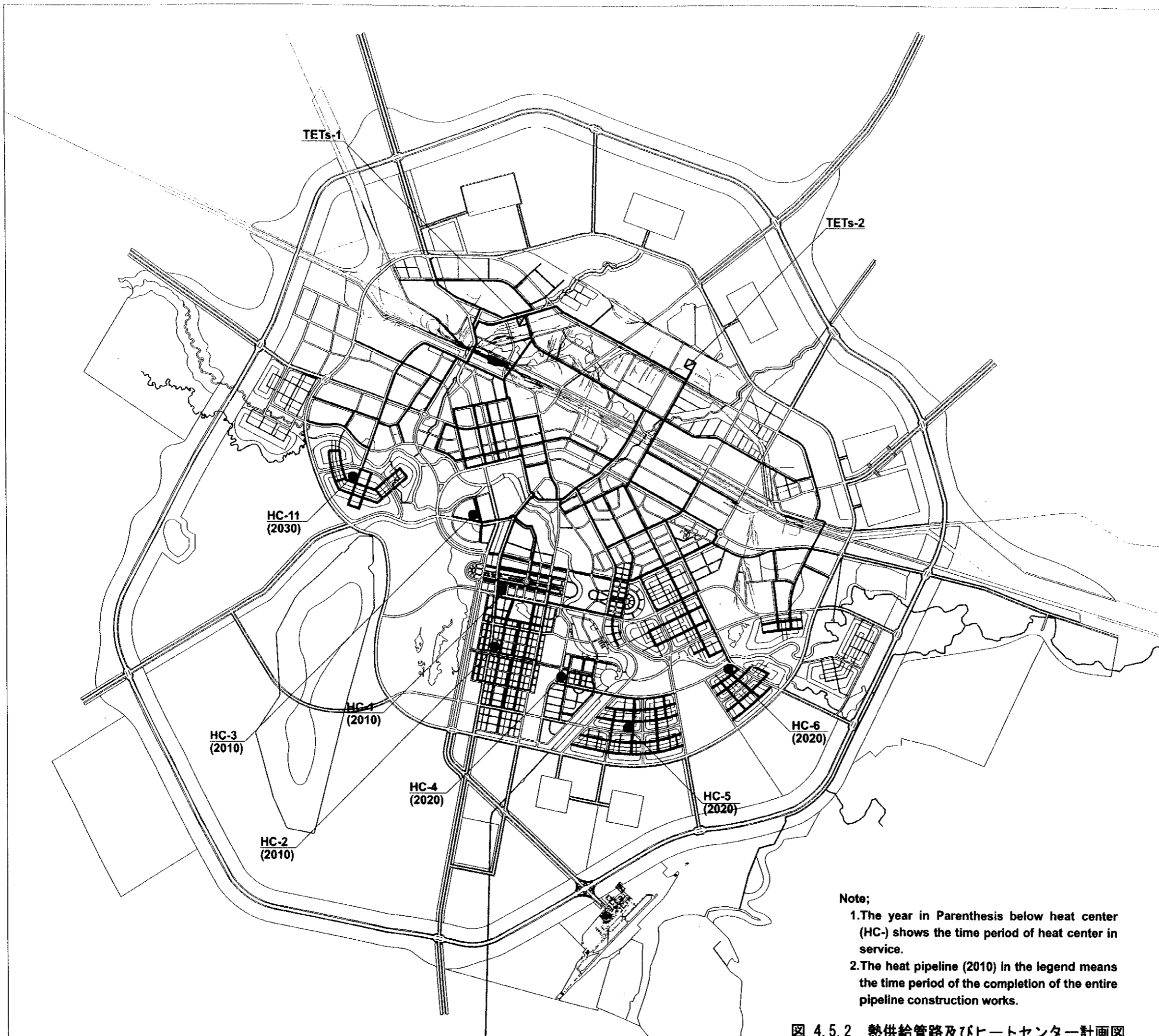


# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  HEAT STATION  
(TETs-1, TETs-2)
-  HEAT CENTER  
(HC-1, 2, 3, 4, 5, 6, 11)
-  HEAT PIPE-LINE (EXISTING)
-  HEAT PIPE-LINE (2010)
-  HEAT PIPE-LINE (2020)
-  HEAT PIPE-LINE (2030)



**Note;**

1. The year in Parenthesis below heat center (HC-) shows the time period of heat center in service.
2. The heat pipeline (2010) in the legend means the time period of the completion of the entire pipeline construction works.

**LAYOUT OF MAJOR DISTRICT  
HEAT PIPING AND HEAT CENTER**  
2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KINYO KUROKAWA  
SCALE 1:80,000



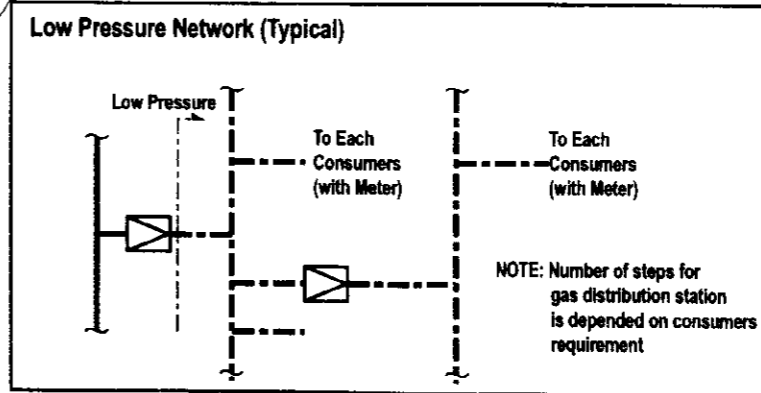
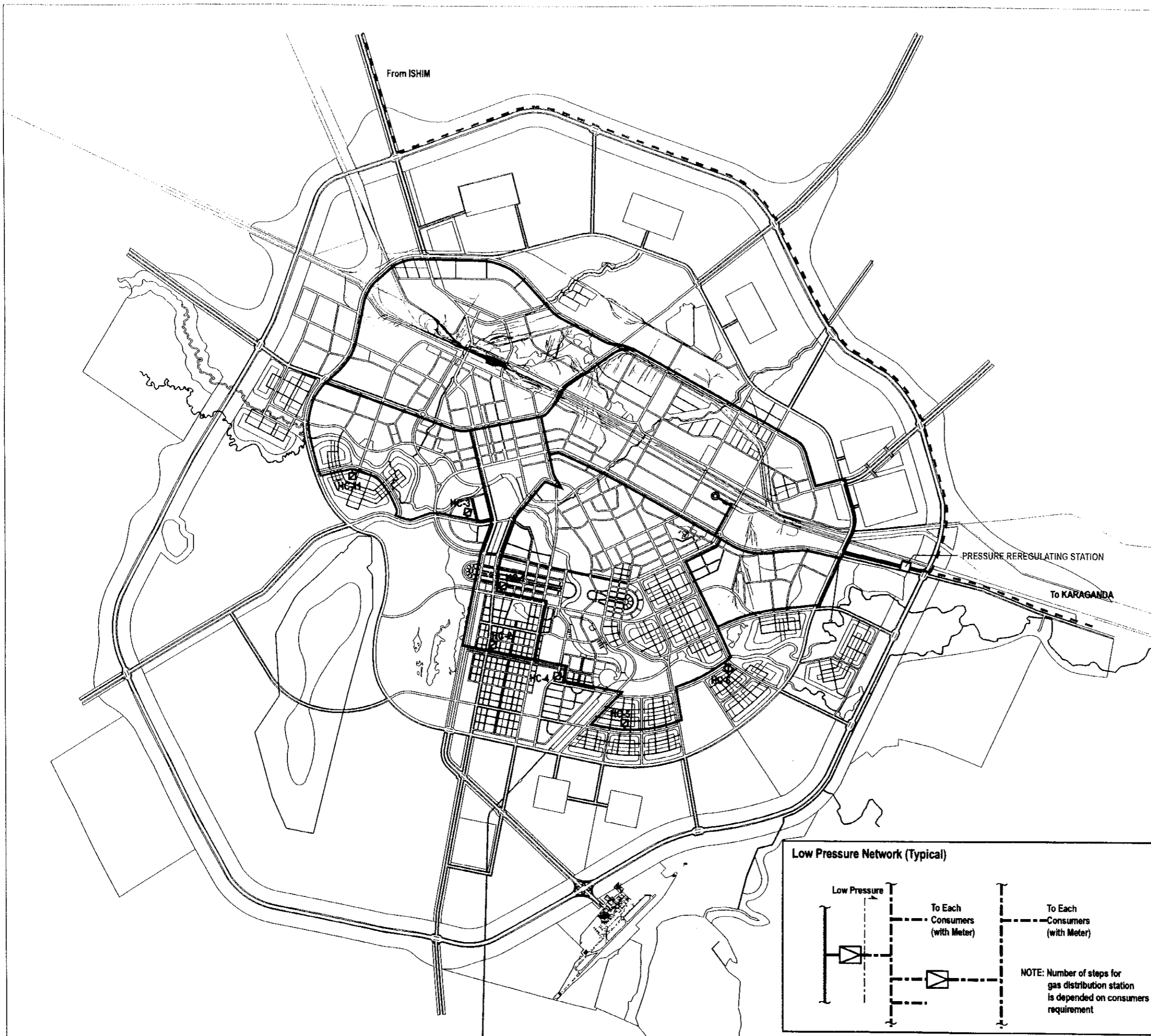
図 4.5.2 熱供給管路及びヒートセンター計画図

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

- INTERNATIONAL GAS PIPELINE (BY OTHERS)
- HIGH PRESSURE NETWORK(1.2MPa) (2010)
- HIGH PRESSURE NETWORK(1.2MPa) (2020)
- HIGH PRESSURE NETWORK(1.2MPa) (2030)
- - - LOW PRESSURE NET WORK (BELOW 0.6MPa)
- ⊙ STORAGE & PEAK SAVING FACILIT
- ☒ HEAT CENTER (HC-1,2,3,4,5,6,11)
- ☒ GAS DISTRIBUTION STATION



### PLAN FOR CITY GAS NETWORK

2010,2020,2030

JICA MASTER PLAN TEAM

SCALE 1:80,000

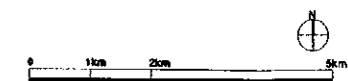










図 4.6.1 都市ガス供給網計画図

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  SERVICE AREA (EXISTING)
-  SERVICE AREA (2010)
-  SERVICE AREA (2020)
-  SERVICE AREA (2030)
-  TELECOMMUNICATION CENTER  
IN A NEW DISTRICT (HOST)
-  TELECOMMUNICATION CENTER  
IN A NEW DISTRICT (RSU)
-  TELECOMMUNICATION CENTER  
IN AN EXISTING DISTRICT (HOST)
-  TELECOMMUNICATION  
CENTER SERVICE AREA



### LOCATION PLAN OF TELECOMMUNICATION CENTER AND SERVICE AREA

2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KISHIO KUROKAWA

SCALE 1:60,000




















图 4.7.1 通信網整備地区計画図

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

-  LANDFILL (EXISTING) + LANDFILL-1 (2010)
-  LANDFILL-2 (2020)
-  ALTERNATIVE CANDIDATE AREA FOR LANDFILL-2 (2020)
-  HAZARDOUS HOSPITAL WASTE INCINERATOR (2010)
-  PILOT SCALE MSW INTERMEDIATE TREATMENT PLANT (2020)
-  REFUSE DERIVED FUEL (RDF) PLANT or ENERGY RECOVERY INCINERATOR
-  RECYCLING CENTER FOR NEW CITY CENTER (2020)
-  TRANSFER STATION (2030)
-  COLLECTION SERVICE AREA (EXISTING)
-  COLLECTION SERVICE AREA (2010)
-  COLLECTION SERVICE AREA (2020)
-  COLLECTION SERVICE AREA (2030)
-  TRANSPORT ROUTE DIRECTION (EXISTING)
-  TRANSPORT ROUTE DIRECTION (2010)
-  TRANSPORT ROUTE DIRECTION (2020)
-  TRANSPORT ROUTE DIRECTION (2030)
-  WASTE COLLECTION AREA DIVISION



### PLAN FOR SOLID WASTE DISPOSAL

2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY ROBERTO KUROKAWA

SCALE 1:60,000

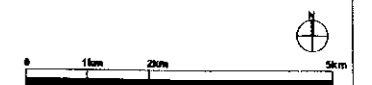


图 4.8.1 废弃物处理计划图

# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

— RIVER

— DIKE

⊙ GATE

⊙ WEIR

□ 2010 RIVER

□ 2020 RIVER

□ 2030 RIVER

Flood Regulation  
Basin

Kalinina

GL360m  
(Contour Line)

## PLAN FOR FLOOD PROTECTION

2010, 2020, 2030

JICA MASTER PLAN TEAM  
REVISION BY TOSHIO SUZUKI

SCALE 1:60,000



图 5.1.1 洪水防御施設計画

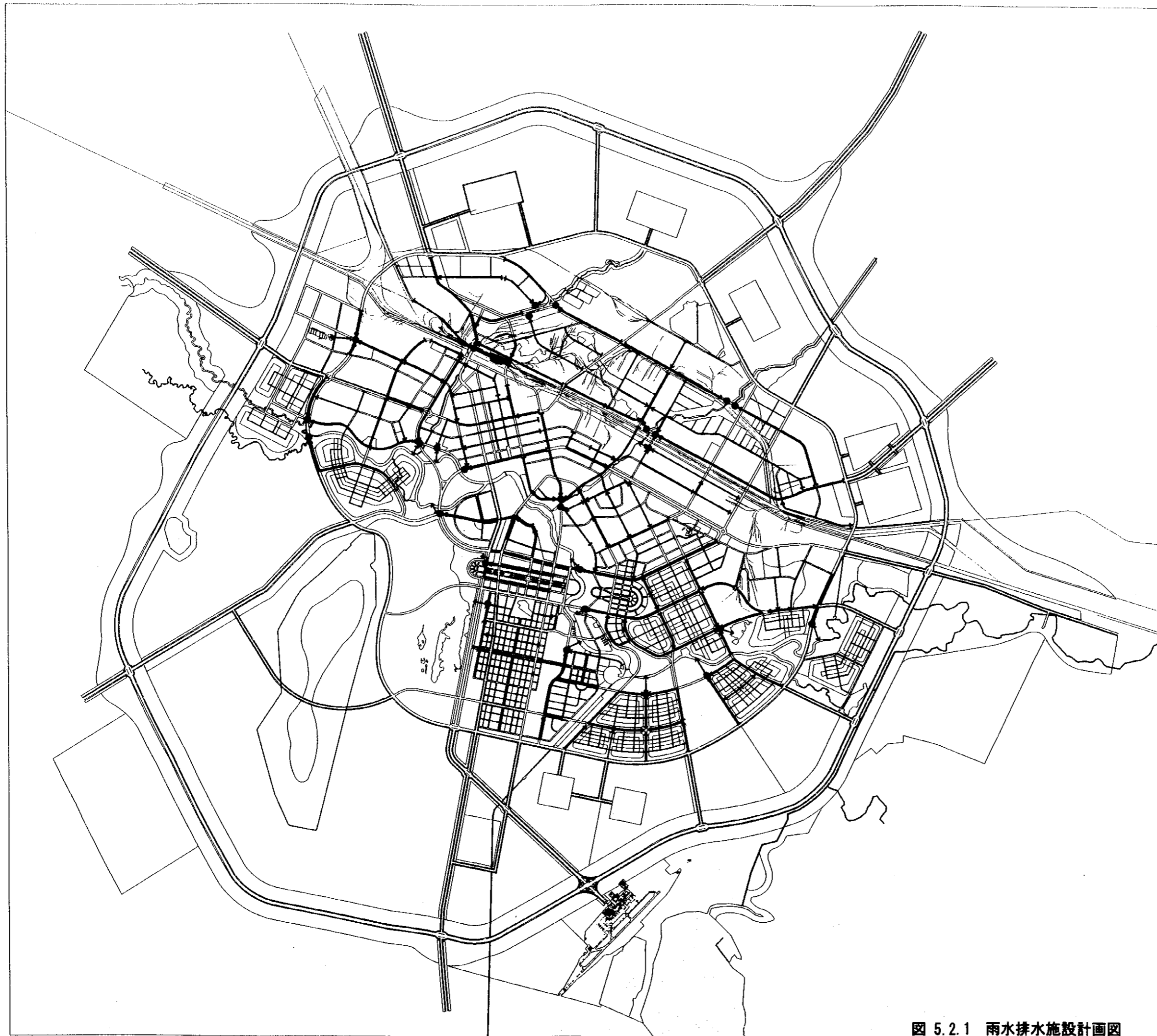


# ASTANA

THE STUDY ON THE MASTER PLAN  
FOR  
THE DEVELOPMENT OF THE CITY OF ASTANA  
IN  
THE REPUBLIC OF KAZAKHSTAN

## LEGEND

- PIPE LINE (EXISTING)
- PIPE LINE (2010)
- PIPE LINE (2020)
- PIPE LINE (2030)
- PUMP STATION WITH TREATMENT FACILITIES (EXISTING)
- PUMP STATION WITH TREATMENT FACILITIES (2010)
- PUMP STATION WITH TREATMENT FACILITIES (2020)
- PUMP STATION WITH TREATMENT FACILITIES (2030)



**PLAN FOR STORM WATER DRAINAGE**  
2010, 2020, 2030

JICA MASTER PLAN TEAM  
HEADED BY KENJI KIMOTO

SCALE 1:60,000



图 5.2.1 雨水排水施設計画図



図 7.3.1

段階的プロジェクト実施計画(フェーズ I、IIおよびIII)

Cost code	Implementation Items	Unit	Q'ty	Phase I (2001-2010)										Phase II (2011-2020)										Phase III (2021-2030)									
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
10	<b>Townscape and Architectures</b>		69,881																														
10-1	Central planning region	ha	1,689	[Gantt bars for 10-1]																													
10-2	Northern planning region	ha	22,614	[Gantt bars for 10-2]																													
10-3	Southeastern planning region	ha	11,270	[Gantt bars for 10-3]																													
10-4	Southern planning region	ha	24,399	[Gantt bars for 10-4]																													
10-5	Northwest planning region	ha	9,909	[Gantt bars for 10-5]																													
<b>Infrastructures and Engineering Protection</b>																																	
20	Transportation	LS	1	[Gantt bars for 20]																													
30	Water resources	LS	1	[Gantt bars for 30]																													
40	Water supply	LS	1	[Gantt bars for 40]																													
50	Sewarage	LS	1	[Gantt bars for 50]																													
60	Stormwater drainage	LS	1	[Gantt bars for 60]																													
70	Flood protection	LS	1	[Gantt bars for 70]																													
80	Power & heat energy	LS	1	[Gantt bars for 80]																													
90	Gasification	LS	1	[Gantt bars for 90]																													
100	Telecommunication	LS	1	[Gantt bars for 100]																													
110	Solidwaste	LS	1	[Gantt bars for 110]																													

lead time (financial arrangement, feasibility study, basic design, detailed design, tendering, contracting etc.)  
 construction

: 1st priority group   
  : 2nd priority group   
  : 3rd priority group

図 7.4.1 新中心地区(第13及び14地区)市街地及び建築開発実施計画

No.	Name or User of Building	Type	No. of story	Unit	Q'ty (floor area)	Phase I (2001-2010)										Phase II (2011-2020)										Phase III (2021-2030)									
						1	2	3	4	5	6	7	8	9	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##
<b>I Government Area</b>																																			
1	Residence for President	RC	4	m2	20,000	■■■■■										1st priority group																			
2	President's Administration	RC	17	m2	40,500	■■■■■										2nd priority group																			
3	Parliament	RC	17	m2	63,500	■■■■■										3rd priority group																			
4	National Security Committee	RC	7	m2	30,000	■■■■■																													
5	Supreme Court	RC	7	m2	40,000	■■■■■																													
6	Cabinet of Ministers	RC	7	m2	30,000	■■■■■																													
7	Ministry of Interior Affairs	RC	7	m2	30,000	■■■■■																													
8	Ministry of State Revenue	RC	7	m2	20,000	■■■■■																													
9	Ministry of External Affairs	RC	12	m2	12,000	■■■■■																													
10	Ministry of Culture, Information and Public Accord	RC	7	m2	20,000	■■■■■																													
11	Ministry of Science and High Education	RC	7	m2	30,000	■■■■■																													
12	Ministry of Health Care, Education and Sports	RC	7	m2	30,000	■■■■■																													
13	Ministry of Energy and Mineral Resources and Environmental Protection, R.K.	RC	7	m2	38,000	■■■■■																													
14	Ministry of Labor and Social Security, Ministry of Agriculture, Agency of R.K.	RC	7	m2	40,000	■■■■■																													
15	Ministry of Defense	RC	7	m2	20,000	■■■■■																													
16	Ministry of Justice	RC	7	m2	20,000	■■■■■																													
17	General Prosecutor Office	RC	7	m2	15,000	■■■■■																													
18	SME (Small & Medium Enterprise)	RC	14	m2	130,000	■■■■■																													
19	Ministry of Transport and Communications	S	40	m2	40,000	■■■■■																													
20	Universal Hall	RC	4	m2	66,000	■■■■■																													
21	National Library	RC	6	m2	400,000	■■■■■																													
22	Service Facility (Commercial Building and Apartment)	RC	3	m2	56,525	■■■■■ (1)										■■■■■ (2)																			
	Total			m2	1,191,525																														
<b>II Business Area including Commercial Area</b>																																			
1	Business District 13			m2	901,475	■■■■■ (1)										■■■■■ (2)																			
2	Business District 14			m2	1,088,000	■■■■■ (1)										■■■■■ (2)										■■■■■ (3)									
3	World Trade Center			m2	150,000	■■■■■																													
4	Commercial District 13			m2	145,747	■■■■■ (1)										■■■■■ (2)										■■■■■ (3)									
	Total			m2	2,285,222																														

Legends;

Structure type of building:

S : Steel structure type

RC : Reinforced Concrete structure type

SRC : Steel Reinforced Concrete type

Implementation:

■■■■■ lead time (financial arrangement, feasibility study, basic design, detailed design, tendering, contracting etc.)

■■■■■ construction

# 付 録



## アスタナ市マスタープラン主要開発指標項目 (1/2)

Indicator	Unit	2000	2010	2020	2030
<b>1. Territory</b>					
1.1 Settlement area within the city boundaries	ha	71,000	71,000	71,000	71,000
1.1.1 Residential area		4,052	5,726	7,840	9,075
1.1.2 Government, Diplomat and New Business City		-	750	850	950
1.1.3 Expansion area of New business		-	-	-	300
1.1.4 Industrial area		7,000	7,000	7,000	7,000
1.1.5 River zone, waterbodies and Other open areas		N.A.	6,405	4,191	2,556
1.1.6 Green buffers (316m <sup>2</sup> /p to 250m <sup>2</sup> /p)		10,180	13,543	16,726	20,000
1.1.7 Buffer zones and open land (non urban areas)		N.A.	37,576	34,393	31,119
<b>2. Population</b>					
2.1 Population taking into account the dependent settlements	th. people	331	490	690	800
2.2 Density of population					
within the residential area	person/ha	99	109	114	118
within the city development area		82	86	88	88
2.3 Number of employed people, total	th. people	147	254	374	436
<b>3. Residential construction</b>					
3.1 Housing stock	th. m <sup>2</sup> of the total area	5,016	7,968	12,429	15,197
3.2 Maintained housing resources	th. m <sup>2</sup> of the total area	5,016	4,628	7,690	12,299
3.3 Demolition for redevelopment		0	388	278	130
3.4 Floor area per person	m <sup>2</sup> /person	15	16	18	19
3.5 New residential development, total	th. m <sup>2</sup> of the total area	-	3,340	4,740	2,898
<b>4. Social facilities</b>					
4.1 Kindergartens, total/1000 people	places	8300/25	14700/30	27600/40	40000/50
4.2 Secondary schools, total/1000 people	places	52700/160	83306//170	116863/170	135324/170
4.3 Colleges, total/1000 people		7628/23	10915/33	22685/33	26269/33
4.4 Higher education, total/1000 people		33611/100	39203/80	54995/80	61522/80
4.5 Polyclinics, total/1000 people	visits per shift	4772/14.4	7350/15.0	11730/17.0	16000/20.0
4.6 Hospitals, total/1000 people	bed	2911/8.8	4312/8.8	6049/8.8	7005/8.8
4.7 Police stations (catchment area of 1PS=17500p)	No.	19	28	39	44
4.8 Fire stations	Fire-station/No. of fire engines	6/24	11/61	17/69	21/80
<b>5. Transport</b>					
5.1 Length of the main streets and roads, total (to be constructed after 2000)	km				
5.2.1 Special Road			3.76	3.76	3.76
5.2.2 Arterial Road			105.18	177.84	231.58
5.2.3 Primary Road			26.77	62.96	62.96
5.2.4 Secondary Road			41.29	115.86	137.96
5.2.5 Tertiary Road			19.75	67.75	79.60
5.2 Number of vehicle					
Vehicle ownership	(ver./1000 person)	92	(178)	(264)	350
Number of vehicle	ver.	29,000	(112667)	(196333)	280,000
<b>6. Engineering equipment</b>					
<b>6.1 Water Supply</b>					
6.1.1 Total water consumption (including leakage and water loss)		160,320	175,100	243,700	295,300
Drinking water	m <sup>3</sup> /day	138,100	151,700	217,100	264,600
Technical water	m <sup>3</sup> /day	17,800	23,400	26,600	30,700
6.1.2 Capacity of water treatment plants	m <sup>3</sup> /day	165,000	200,000	270,000	320,000
6.1.3 Water supply sources	MCM/year	89.2	152.2	152.2	215.2
Ishim River		89.2	89.2	89.2	89.2
Irtish Karaganda Canal		-	63.0	63.0	126.0
6.1.4 Groundwater reserves confirmed by the relevant State Commission (potential)		4.4 - 6.2	4.4 - 6.2	4.4 - 6.2	4.4 - 6.2
6.1.5 Average daily consumption per capita	l/day	322	235	239	251
<b>6.2 Sewerage</b>					
6.2.1 Total volume of effluent	m <sup>3</sup> /day	104,133	112,224	171,273	216,842
6.2.2 Capacity of the wastewater treatment facilities	m <sup>3</sup> /day	136,000	136,000	176,000	218,000
6.2.3 Sewerage Service Population	person	220,100	421,400	641,700	760,000

## アスタナ市マスタープラン主要開発指標項目 (2/2)

Indicator	Unit	2000	2010	2020	2030
<b>6.3 Power supply</b>					
6.3.1 Electric Power Demand Forecast	GkWh/year	1,480	2,374	3,189	3,749
6.3.2 Annual average power consumption per head, including domestic	kWh	4,598	4,845	4,621	4,687
<b>6.4 Heat supply</b>					
6.4.1 Capacity of centralized sources	MW	1,272	1,596	1,841	2,140
6.4.2 Maximum heat energy demand forecast	Gcal/hour	764	1,306	1,619	1,974
<b>6.5 Gas Supply</b>					
6.5.1 Natural gas consumption, total	mln.m <sup>3</sup> /year	0.0	176.9	317.6	466.7
<b>7. Engineering preparation of the territory</b>					
<b>7.1 Network length</b>					
7.1.1 Water Supply Pipe, Dia: 150 - 1,200 mm (accumulated length to be constructed after 2000)	km		72.7	134.7	167.6
7.1.2 Pump stations of water supply (to be constructed after 2000)	unit		1	2	3
7.1.3 Sewer Pipe, Dia: 350 - 1,500 mm (accumulated length to be constructed after 2000)	km		36.1	86.6	101.6
7.1.4 Pump stations of sewerage (to be constructed after 2000)	unit		3	4	4
7.1.5 Stormwater Drainage Pipe, Dia: 500 - 1,800 mm (accumulated length to be constructed after 2000)	km		204.0	262.0	277.0
7.1.6 Pump stations of stormwater drainage (to be constructed after 2000)	unit		19	24	26
<b>7.2 River Improvement</b>					
Widening river cross and dike construction	km		7	21	30

JICA