

Table 15 Urban Development Projects by Location and Phase (1/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
<u>Upper East Region</u>	(Re-structuring within the Study Areas)	(Strengthened links with the ESB and initial international links)	(Establishment of international links)
<u>1. Nakhon Nayok</u>		(Strong private sector initiative for all the economic activities)	(Private sector participation in the provision of some infrastructure and social services)
<u>Muang Municipality</u>	<p>1 Advanced Science & Technology R&D Centre</p> <ul style="list-style-type: none"> - Selection of Fields & Location Analysis (hopefully attached to University Site) <p>2 High-Tech Ind. R&D Institute (Small & Medium Scale)</p> <ul style="list-style-type: none"> - Selection of Research & Dev. Fields (Marketing Survey of the ESB activities) <p>3 Middle Income Housing Project</p> <ul style="list-style-type: none"> - Selection of the Project Site (Location Survey and Analyzing the Supporting Infrastructure (road, elect., water, etc.)) <p>4 Agricultural Marketing Information Centre</p> <ul style="list-style-type: none"> - Analyses of Network System (Distribution System) in the Community 	<ul style="list-style-type: none"> - Land Development & Construction of the Building with the Supporting Infrastructure Dev. - Staff Training - Organize the Small & Medium Scale Ind. (enterprises) Association & start the Information & Advisory Services - Marketing Survey of the ESB activities - Land Development & Housing Construction - Construction of Related Infrastructure - Collect the Data Base and Build the Display Board in Public Markets 	<ul style="list-style-type: none"> - Development of Intra-&Inter Information Network - Strengthen the Research Activities with Private Sector - Develop the new type of products and release the know-how to the associates members for self-sustained growth - Continue the Marketing Survey of the ESB activities - Operation of the Information Service
<u>2. Prachin Buri</u>	<p>1 Small & Medium Scale Ind. Supporting Centre</p> <ul style="list-style-type: none"> - Organize the Small & Medium Scale Ind. (enterprise) Association <p>2 Agricultural Marketing Information Centre</p> <ul style="list-style-type: none"> - Analyses of Network System (Distribution System) in the Community 	<ul style="list-style-type: none"> - Selection the Light Ind. Complex Estate - Land Dev. & Core Building Construction (R & D Centre, banks, shops, etc.) - Collect the Basic Data and Build the Display Board in Public Markets 	<ul style="list-style-type: none"> - Digin the Information Service & Operation of Private Enterprises - Operation of the Information Service

Table 15 Urban Development Projects by Location and Phase (2/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
3. Aranyaprathet Amphoe	1 International Trading Centre - Selection of the Project Site (same as bus terminal) & Survey of the Supporting Facility & Infrastructure	- Land Development & Build the Core Facilities (Custom House (Office), Display Shops, Business Facility)	- Operation of Trade Business by Private Section
	2 Bus Terminal Complex (Small Scale) - Selection of the Project Site (same as I.T.C.) & Survey of the Supporting Facilities & Infrastructures)	- Land Development & Build the Core Facilities (Bus Station, Repair Facility, etc.)	- Operation of Bus Service
	3 Housing Development - (Demand Survey) Selection of Development Site - Survey of the Supporting Facilities & Infrastructure	- Land Development & Housing Construction	
	4 Truck Terminal - Selection of Project Site & Development of Project Site	- Operation	
	5 Other Urgent Urban Development Project - Integrated Urban Development (IUD)		
<u>Lower North-east Region</u>	1 Agriculture Research & Development Centre (Key Station)		
4. Nakhon Ratchasima Muang Municipality	- Selection of R & D Subject & Location Survey (hopefully, near of beside University)	- Land Dev. & Construction of Building with the Supporting Infrastructure Dev. - Staff Training	
	2 Development Research Institute Intermediate Technologies - Organize the Related Industries (Enterprises) Association - Survey of the R & D Subjects, and Survey of Present Marketing Conditions	- Selection of the Land for Small & Intermediate Industrial Complex Estate - Land Development & the Construction of Core Buildings	- Operation of the Information Services & Operation of Private Enterprises
	3 Bus Terminal Complex (Large Scale) - Selection of the Project Site & Survey of the Supporting Facilities & Infrastructures	- Land Development & Built the Core Facilities (Bus Station, Repair Shops, etc.)	- Operation of Bus Service

Table 15 Urban Development Projects by Location and Phase (3/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
	4 Regional Amusement Parks & Arts & Science Museum - Survey of the Type of Park & Museum Facility Selection of the Project Site	- Land Development & Start the Construction of the Facility	- Open the Musium & Parks
	5 Agricultural Marketing Information Centre (Key Station) - Analysis of Network System (Distribution System) in the Community	- Collect the Basic Data and Construction of the Key Station - Build the Display Board in Public Market	- Operation of the Information Service
	6 Telecommunication Establishment of Multiple Access Subscriber System (Base Station)		
	7 Other Urgent Urban Development Projects - drainage - sewerage		
5. Buri Ram Muang Municipality	1 Agriculture & Reforestation R & D Centre - Selection of R & D Subject & Location Survey (hopefully, near or beside Unversity)	- Land Development & Construction of Building with the Supporting Infrastructure Development - Staff Training	- Development of Intra- & Inter Information Network - Strengthen the Research Activities with Private Sector
	2 Food Processing Centre (Fresh, Canned & Bottled goods) - Market Survey & Selection of goods to be processed - Selection of the Project Site	- Land Development & Construction of Factories - Operation of Factories	
	3 Bus Terminal Complex (Medium Scale) - Selection of the Relocation Site & Survey of the Supporting Facilities & Infrastructure	- Land Development & Built the Core Facilities (Bus Station, Repair Shops, etc.)	- Operation of Services
	4 Agricultural Marketing Information Centre (Sub-Station) - Analysis of the Network System (Distribution System) in the Community	- Collect the Basic Data and Built the Display Board in Public Market, etc.	- Operation of the Information Service

Table 15 Urban Development Projects by Location and Phase (4/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
	5 Other Urgent Urban Development Projects - Buri Ram - Surin Twin City Development (including water supply project)		
6. Surin Muang Municipality	1 Development Research Institute for Intermediate Technologies - Market Survey & Selection of R & D Subjects - Selection of the Project Site & Organize the Related Industries (Enterprises) Association	- Land Development & Construction of Core Building	- Operation of the Information Service & Operation of Private Sector
	2 Health Survey Centre - Survey of the Present Local Disease Condition - Selection or Survey of the Health Care Level - Selection of Project Site	- Land Development & Construction of Local Disease Research Building - Establishment of Emergency Report System	- Operation of Services
	3 Timber & Reforestation R & D Centre - Market Survey & Selection of R & D Subject - Organize the Related Industries (Enterprises) Association - Selection of the Project Site	- Land Development & Construction of Core Building	- Operation of the Information Service & Developing of New Goods with Private Associates (Participants)
	4 Agricultural Marketing Information Centre - Analysis of the Network System (Information Distribution System) in the Community	- Collect Basic Data and Built the Display Board in Public Market, etc.	- Operation of the Information Service
	5 Other Urgent Urban Development Projects - Buri Ram - Surin Twin City Development (including water supply project)		
7. Si Sa Ket Muang Municipality	1 Agriculture & Reforestation R & D Centre - Selection of R & D Subject & Location Survey (hopefully, near or beside University or College)	- Land Development & Construction of Building with the Supporting Infrastructure Dev. - Staff Training	

Table 15 Urban Development Projects by Location and Phase (5/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
	2 Food Processing Centre (Fresh, Canned & Bottled Goods)		
	- Marketing Survey & Selection the Food Processing Goods	- Land Development & Built the Factories	
	- Selection of Project Size	- Operation of Factories	
	3 Agricultural Marketing Information Centre		
	- Analysis of Network System (Information Distribution System) in the Community	- Collect Basic Data and Built the Display Board in the Public Market, etc.	- Operation of Information Centre
8. Ubon Ratchathani Muang Municipality	1 Agriculture & Timber R & D Centre (Key Station)		
	- Market Survey & Selection of R & D Subjects	- Land Dev. & Construction of Building	- Development of Intra-Inter Information Network
	- Selection of Project Site (Location Survey)		- Strengthen the Research Activities with Private Sector
	2 Development Research Institute for High-Tech Small & Medium Industry Technology		
	- Market Survey & Selection of R & D Subjects	- Land Dev. & Construction of Core Facilities	- Operating of the Information Service & Dev. of New Goods with Private Associates (Participants)
	- Organizing the Related Industries (Enterprises) Association		
	3 Bus Terminal Complex (Large Scale)		
	- Selection (or relocation) of the Project Site & Survey of the Supporting Facilities & Infrastructure	- Land Dev. & Start the Construction of the Core Facilities (Bus Station, Repair Shop, etc.)	- Operation of Services
	4 Regional Amusement Park and Arts & Science Museum		
	- Survey of the Types of Park & Museum Facility	- Land Dev. & the Construction of the Facility	- Open the Museum & Parks
	- Selection of the Project Site		
	5 Teleport Centre (and Training)		
	- Establishment of the Multiple Access Subscriber System (Base Station)	- Establishment of a Satellite Gateway (CAT)	- Establishment of Teleport & Operation
	6 Agricultural Marketing Information Centre (Key Station)		
	- Analysis of the Network System (Information Distribution System) in the Community	- Collection of Basic Data and Built the Display Board in the Public Market, etc.	- Operation of the Information Service

Table 15 Urban Development Projects by Location and Phase (6/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
	7 Other Urgent Urban Development Projects - Urban roads - Drainage - Border trade center development		
9. Yasothon Muang Municipality	1 Fish Farm (Pond) R & D Centre (+ Gene Bank Centre) - Selection the Project Site & Survey of the Supporting Facilities & Infrastructure 2 Food Processing Centre (Fresh, Canned & Bottled) - Market Survey & Selection of the Food Processing Goods (Fish, Fruits, etc.) 3 Health Survey Centre (Emergency Information Centre, Local Disease Research Centre) - Survey of the Present Local Disease Condition - Selection of Survey of the Health Care Centre - Selection of Project Site 4 Agricultural Marketing Information Centre - Analysis of the Network System (Information Distribution System) in the Community	- Land Dev. & Built Core Facilities (Buildings) - Land Dev. & Construction of Factories - Operation of Factories - Land Dev. & Construction of Local Disease Research Building (Facilities) - Establishment of Emergency Report System - Collect the Basic Data and Built the Display Board in the Public Market	- Operation of Services - Operation of the Information Service
10. Mukdahan Muang Municipality	1 International Trading Centre - Selection of the Project Site (same as Bus Terminal Site) & Survey of the Supporting Facilities & Infrastructure 2 Bus Terminal Complex (Small Scale) - Selection of the Project Site (same as I.T.C.) & Survey of the Supporting Facilities & Infrastructures) 3 Report Development Centre - Survey of the Necessary Information for Tourist & Visitors	- Land Dev. & Build the Core Facilities (Custom House (Office), Display Shops, Business Space, etc.) - Land Dev. & Built the Core Facilities (Bus Station, Repair Shop, etc.) - Set up the Office & Operate the Service	- Operation of Trade Business by Private Sector - Operation of Services - Develop the Resort Sport & Related Facilities

Table 15 Urban Development Projects by Location and Phase (7/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
	4 Agriculture & timber R & D Centre		
	- Market Survey & Selection of R & D Subjects	- Land Dev. & Construction of Building	- Development of Intra- & Inter-Information Network
	- Selection of Project (Location Survey)		- Strengthen the Research Activities with Private Sector
	5 Agricultural Marketing Information Centre (Sub-Station)		
	- Analysis of the Network System (Information Distribution System) in the Community	- Collect the Basic Data and Built the Display Board in the Public Market	- Operation of the Information Service
	6 Other Urgent Urban Development Projects		
	- Integrated Urban Development (IUD)		
11. Pak Chong Tambon Municipality (Nakhon Ratchasima Province)	1 Fish Farm (Dam Site) R & D Centre (+Gene Bank Centre)		
	- Selection of the Project Site & Survey of the Supporting Facilities & Infrastructure	- Land Dev. & Construction of Core Facilities	
	- Survey of the R & D Infrastructure		
	2 Food Processing Centre		
	- Market Survey & Selection of the Food Processing Goods (Fish, Dairy Products, etc.)	- Land Dev. & Construction of Factories & Storage Rooms	
		- Operation of Factories	
	3 Truck Terminal		
	- Selection of Project Site & Dev. of Project Site	- Operation	
	4 Agriculture Marketing Information Centre (Sub-Station)		
	- Analysis of the Network System (Information Distribution System) in the Community	- Collect the Basic Data & Built the Display Board in the Public Market	- Operation of the Information Service

Table 15 Urban Development Projects by Location and Phase (8/8)

<u>City/Town</u>	<u>Phase I (~ 1996)</u>	<u>Phase II (1997~ 2001)</u>	<u>Phase III (2002~2010)</u>
12. Si Khiu Amphoe (Nakhon Ratchasima Province)	1 Truck Terminal (Storages, Cooling House, etc.)		
	- Selection of Projects & Construction of the Site	- Operation	
13. Nang Rong Tambon Municipality (Buri Ram Province)	2 Light Industry Estate Dev.		
	- Market Survey & Selection the Project Site & Survey of the Supporting Facilities & Infrastructure	- Land Dev. & Construction of Core Facilities & Infrastructure	- Operation (open) the Activities (production)
14. Warin Chamrap Tambon Municipality (Ubon Ratchathani Province)	3 Agriculture Marketing Information Centre (Sub-Station)		
	- Analysis of the Network System (Information Distribution System) in the Community	- Collect the Basic Data & Built the Display Board in the Public Market	- Operation of the Information Service
14. Warin Chamrap Tambon Municipality (Ubon Ratchathani Province)	1 Fish Farm (Pond) R & D Centre (+Gene Bank Centre)		
	- Selection the Project Site & Survey of the Supporting Facilities & Infrastructure	- Land Development & Built Core Facilities	- Operation of Services
14. Warin Chamrap Tambon Municipality (Ubon Ratchathani Province)	2 Housing Development		
	- Selection of Development Site (Demand Survey)	- Land Development & Housing Construction	
14. Warin Chamrap Tambon Municipality (Ubon Ratchathani Province)	- Survey of the Supporting Facilities & Infrastructure		
	3 Bus Terminal Complex (Small Scale)		
	- Selection (or Relocation) of the Project Site & Survey of the Supporting Facilities & Infrastructure	- Land Development & Construction of the Facilities	- Operation

Figures

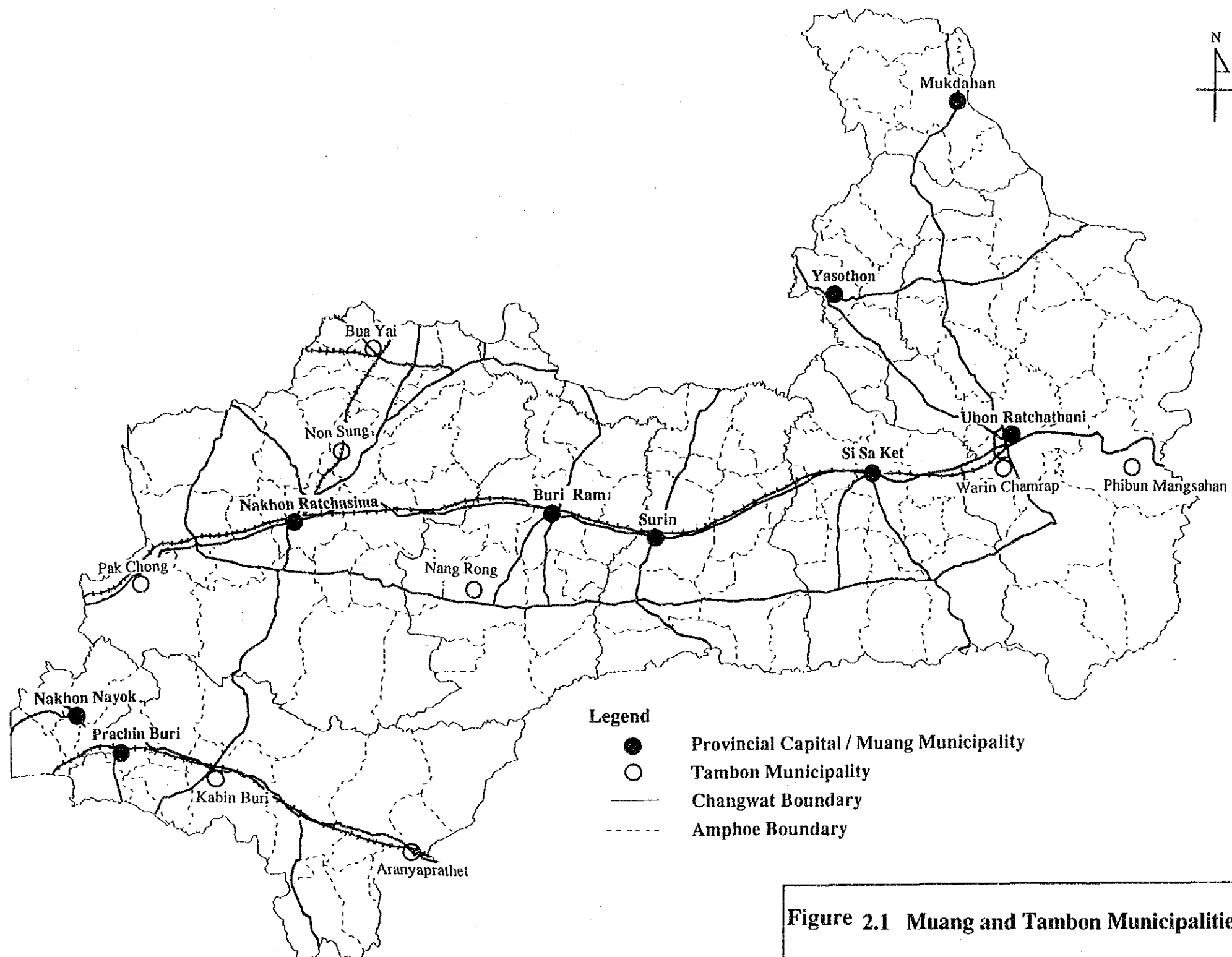


Figure 2.1 Muang and Tambon Municipalities in the Study Area

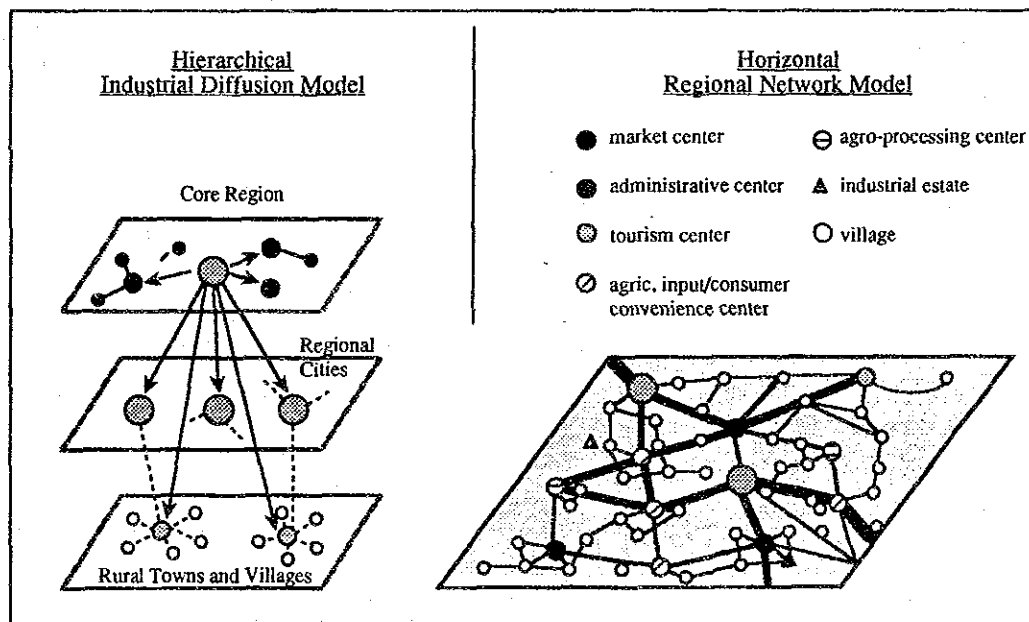
The Study on the Regional Development Plan
for the Lower Northeast and the Upper East Regions
in the Kingdom of Thailand

Figure 4.1 Growth Pole and Regional Network Models Compared

COMPONENT	GROWTH POLE CENTER MODEL	REGIONAL CLUSTER/NETWORK MODEL
1. Basic Sector	Urban-based manufacturing; usually focuses on large-scale 'propulsive' industries and 'footloose' production units headquartered outside the region.	all sectors, depending on local regional endowments and conditions; emphasis on local small-medium size regionally-based enterprises.
2. Urban system	Hierarchical, centered on a single dominant center, usually identified by population size and associated with the assumptions of central place theory.	Horizontal, composed of a number of centers and their hinterlands, each with own specializations & comparative advantages.
3. Rural-urban Relations	Image of diffusion processes moving down the urban hierarchy and outward from the city/town to its rural periphery. Rural areas as passive beneficiaries of 'trickle-down' from urban growth.	Image of a complex rural-urban field of activities, with growth stimuli emanating from both rural and urban areas and with the intensity increasing along regional inter-settlement transportation corridors
4. Planning style	Usually top-down via sectoral planning agencies and their field offices. Regions have 'misty' boundaries determined by economic interaction.	Implies the need for decentralized planning systems, with integration and coordination of multi-sectoral and rural and urban activities at the local level.
5. Major policy areas	Industrial decentralization incentives; tax holidays, industrial estates, national transportation trunk roads.	agricultural diversification, agro-industry, resource-based manufacturing, urban services, manpower training, local inter-settlement transportation networks.

Source : C. Michael Douglas "Urban and Regional Development Policy for the 7th Five-Year Plan in Thailand", paper prepared for the National Urban Development Policy Framework Project NESDB/TDRI, October 1990, Table2.

Figure 4.2 Growth Pole VS. Regional Network Images of Spatial Pattern of Development

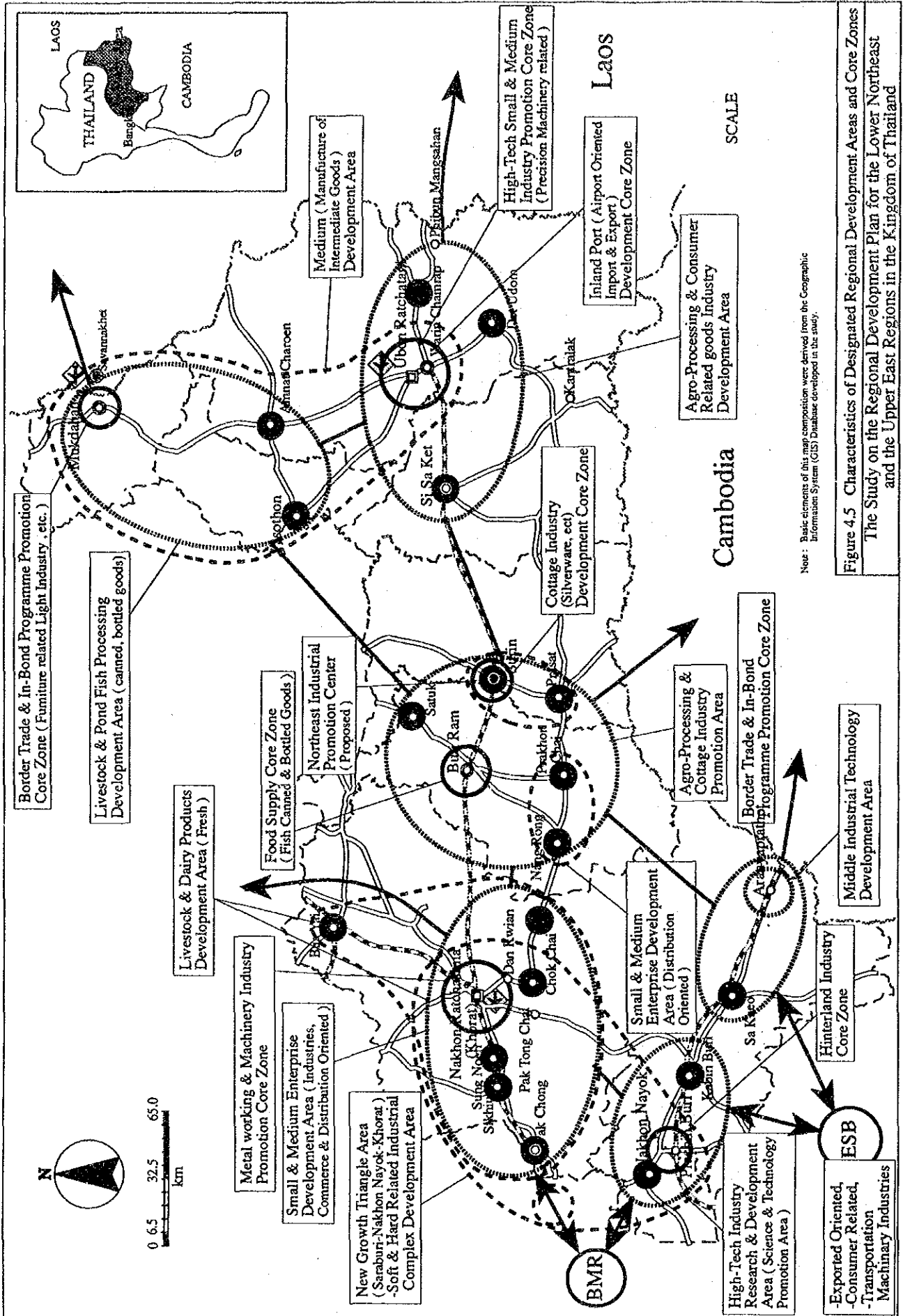


Source : C. Michael Douglas "Urban and Regional Development Policy for the 7th Five-Year Plan in Thailand", paper prepared for the National Urban Development Policy Framework Project NESDB/TDRI, October 1990, Figure 1.

Figure 4.3 New Urban Functions and Facilities by Provincial Capital Cities and Towns

Recommended New Urban Function & Facility	RECOMMENDED NEW URBAN FUNCTIONS & FACILITIES																
	1. Agriculture Research (Agro-Bio Industry)	2. Development Research (Agro-Bio Industry)	3. Institute for Interdisciplinary Technology (Research & Innovation for Local Technology)	4. Agricultural Marketing Information Centre (Wireless Radio Network)	5. Human Resource Development (Educational Technology)	6. Trade & Distribution (Domestic & Overseas Ports Centre)	7. Teleport (Telecommunication & Port & Education Training Centre)	8. Housing Development (Housing Supply)	9. Food Processing Centre & Storage Facility (Production & Storage)	10. Best Terminal Complex (Ware, Transit Information, Shopping, Restaurant Service)	11. International Trading Centre (Custom House, Display, etc.)	12. Health Centre (Emergency Information Centre, Local Disease Research Centre)	13. Timber Research & Development Centre (Housing Woodwork, Furniture, etc.)	14. Fish Farm (Pond) Research & Development & Gene Bank Centre	15. Restoration Extension Centre (Pond Farm)	16. Amusement Park & Science Museum	17. Resort Development
Upper Esar Papan																	
1. NAKHON NAIYOK Muang Municipality																	
2. PRACHIN BURI Muang Municipality																	
3. ANANTAPRATHET Tambon Municipality (Prachin Buri)																	
Lower Northeast Region																	
4. NAKHON RATCHASIMA Muang Municipality																	
5. BURI RAM Muang Municipality																	
6. SURIN Muang Municipality																	
7. SI SA KET Muang Municipality																	
8. UBON RATCHATHANI Muang Municipality																	
9. WHOTHON Muang/Municipality																	
10. MUKDAPHAN Muang/Municipality																	
11. PHU CHONG Tambon Municipality (Nakhon Ratchasima Province)																	
12. NAI THAN Muang/Municipality (Ubon Ratchathani Province)																	
REMARKS																	

● 1: Agriculture SBT; Science & Technology M: Medium ● 2: Including the Northern Industrial Promotion Centre (Proposed)



Note: Basic elements of this map composition were derived from the Geographic Information System (GIS) Database developed in the study.

Figure 4.5 Characteristics of Designated Regional Development Areas and Core Zones The Study on the Regional Development Plan for the Lower Northeast and the Upper East Regions in the Kingdom of Thailand

Appendix A

Future Development Roles and New Urban Functions of Provincial Capital Cities and Major Towns in the Study Area

Appendix A

Future Development Roles and New Urban Functions of Provincial Capital Cities and Major Towns in the Study Area

Development roles, and new urban functions and facilities are listed below for each Provincial Capital City or Major Town according to the characteristics given in previous sections.

(1) Nakhon Nayok Provincial Capital City

(a) Development Roles in the Study Area

- To develop human resource (promotion of advanced science, technology and education)
- To induce high-tech industry R&D (in connection with ESB industrial activities)
- To supply housings for workers commuting to BMR.

(b) Expected New Urban Functions and Facilities

- **Advanced Science and Technology R&D Centre** (university, college)
- High-tech Industry (small and medium scale R&D Institute: (public sector)
- Middle Income Housing Development
- Agricultural Marketing Information Centre (sub-station) as a part of Nationwide Network
- Silo Facility (small or medium scale)

(2) Prachin Buri Provincial Capital City

(a) Development Roles in the Study Area

- To create hinterland industrial development zone
- To develop industrial estate in connection with ESB industrial activities (light industry complex estate)

(b) Expected New Urban Functions and Facilities

- Supporting centre for small and medium scale industries (including R&D institute)
- Agricultural Marketing Information Centre (sub-station)
- **Food Processing Centre & Silo Facility** (Production & Storage Facility)

(3) Nakhon Ratchasima Provincial Capital City

(a) Development Roles in the Study Area

- To establish key centre of agricultural R&D
- To promote and develop the intermediate technologies for industrial sector
- To establish a key centre for agricultural marketing information network

- To organize high education system for business administration (marketing, finance, etc.)
 - To create places with amenities for communities
 - To establish advanced food-processing industries
 - To create effective distribution system (transportation and commodity distribution)
 - To strengthen an administrative capabilities as a regional administration centre
 - To promote internationalization for inducing various foreign companies
- (b) Expected New Urban Functions and Facilities
- Agricultural R&D Centre (agro-bio industry promotion centre: public sector)
 - **Metalworking and Machinery Industry Promotion Estate**
 - Agricultural Marketing Information Centre (key station) as a part of Nationwide Network
 - **University and College** (to strengthen advanced agricultural science and technology, medical and administration fields)
 - Trade and Distribution Centre (domestic office supply, industrial parts, etc.)
 - Amusement Parks, and Arts and Science Museum (regional level)
 - **Food Processing Centre** (industries: large scale)
 - **Bus Terminal Complex** (hotel, tourist information centre, shopping facilities, restaurant service, etc.: large scale)
 - **Truck Terminal** (large scale)
 - **Housing Development for Low and Medium Income Families**
 - International Schools
 - Health Service Centre
- (4) Buri Ram Provincial Capital City
- (a) Development Roles in the Study Area
- To support agricultural activities in the central area of lower northeast region
 - To develop its area as a centre city of agro-processing industries
 - To arrange tourist services for the tourism development
 - To strengthen administrative capabilities as a center city of Surin sub-region
- (b) Expected New Urban Functions and Facilities
- **Food Processing Development Centre** (fresh, canned and bottled goods)
 - **Bus Terminal Complex** (hotel, tourist information centre, shopping facilities, restaurant service, etc.: medium scale)
 - Agricultural and Reforestation R&D Centre (agro-bio industry promotion centre - seeds development and plant guidance services)
 - Agricultural Marketing Information Centre (sub-station) as a part of nationwide network
- (5) Surin Provincial Capital City
- (a) Development Roles in the Study Area
- To develop and promote cottage industries

- To promote community health services and prevention
 - To strengthen administrative capabilities as a centre city of Surin sub-region
 - To strengthen research and development activities in the university or college
- (b) Expected New Urban Functions and Facilities
- **Development Research Centre for Small and Intermediate Technologies** (fresh, canned and bottled goods, handicraft (silverware), etc.)
 - Agricultural Marketing Information Centre (sub-station) as a part of nationwide network
 - **Health Survey Centre** (emergency information centre, local disease research centre)
 - Timber and Reforestation Research and Development Centre (house woodworks, furniture, etc., seeds and guidance services)
 - Silo Facilities (small scale)
- (6) Si Sa Ket Provincial Capital City
- (a) Development Roles in the Study Area
- To develop and promote agro-processing industries
 - To strengthen research and development activities in the University or College
 - To support the Ubon Ratchathani's various activities
- (b) Expected New Urban Functions and Facilities
- **Food Processing Development Centre**
 - Silo Facilities (middle scale)
 - Agriculture and Reforestation Research and Development Centre (agro-bio industries, plant nursery station, etc.)
- (7) Ubon Ratchathani Provincial Capital City
- (a) Development Roles in the Study Area
- To develop Hi-tech small and medium scale industries
 - To create inland port (import/export) activities and services
 - To establish a key centre for agriculture and timber R&D activities (agro-bio industries)
 - To establish a key centre for agricultural marketing information network
 - To strengthen administrative capabilities as a regional administration centre
- (b) Expected New Urban Functions and Facilities
- Agriculture and Timber R&D Centre (agro-bio industry promotion centre : public sector)
 - **Development Research Institute for Hi-tech, Small and Medium Scale Technologies** (precision machinery related industries)
 - Agricultural Marketing Information Centre (key station) as a part of nationwide network
 - **University and College** (To strengthen advanced agricultural science and technology, medical and administration field, etc.)

- Trade and Distribution Centre (domestic : office supply, industrial parts, etc.)
- **Housing Development for Low and Medium Income Families**
- **Food Processing Centre** (industries : large scale)
- Bus Terminal Complex (hotel, tourist information centre, shopping facilities, restaurant services, etc.)
- Truck Terminal Complex (large scale)
- **International Trading Centre** (regional centre : display hall, business centre, etc.)
- Amusement Parks, and Arts and Science Museum (regional level)
- **Teleport Centre** (and Training Centre)
- Health Service Centre

(8) Yasothon Provincial Capital City

(a) Development Roles in the Study Area

- To develop and establish "Fish Farm Industry", including R&D activities
- To promote metalworking and machinery industries (inland industry promotion)
- To promote community health service and prevention

(b) Expected New Urban Functions and Facilities

- **Fish Farm (Pond) R&D and Gene Bank Centre**
- Food Processing Development Centre (fresh, canned and bottle goods)
- Agricultural Marketing Information Centre (sub-station) as a part of nationwide network
- Health Service Centre (emergency information centre, local disease research centre)

(9) Mukdahan Provincial Capital City

(a) Development Roles in the Study Area

- To promote border trades as a center of East Gate in Northeast Region
- To create a resort and refresh centre for developing surrounding forest areas
- To develop timber related light industries

(b) Expected New Urban Functions and Facilities

- Bus Terminal Complex (custom house, hotel, tourist information centre, shopping facility, restaurant services, etc.)
- **International Trading Centre** (custom house, display hall, business office, etc.)
- Agriculture and Timber Research and Development Centre (agro-bio industry)
- Agricultural Marketing Information Centre (sub-section) as a part of nationwide network
- **Resort and Refresh Centre**
- Amusement Park at River-side of Mae Nam Khong

(10) Aranyaprathet Town (Tambon Municipality)

(a) Development Roles in the Study Area

- To promote border trades as a centre of South Gate in Upper East Region
 - To create intermediate industrial technologies in connection with ESB activities
 - To supply middle and low income housing
- (b) Expected New Urban Functions and Facilities
- **International Trading Centre** (custom house, display hall, business office, etc.)
 - Bus Terminal complex (hotel facility, tourist information centre, shopping facilities, restaurant services, etc.)
 - Housing Development for Middle Income Families
 - **Truck Terminal Complex**
- (11) Pak Chong Town (Tambon Municipality)
- (a) Development Roles in the Study Area
- To develop and promote livestock farming
 - To develop fish farm industry
- (b) Expected New Urban Functions and Facilities
- **Food Processing Centre** (production and storage facilities)
 - **Fish Farm (Dam) R&D Centre** (with gene bank centre)
 - Truck Terminal (storage facility, cooling facility, etc.)
- (12) Warin Chamrap Town (Tambon Municipality)
- (a) Development Roles in the Study Area
- To develop fish-farm industry
 - To develop efficient transportation network
 - To supply middle income housings for workers commuting to neighboring town : Ubon Ratchathani
- (b) Expected New Urban Functions and Facilities
- Fish Farm (Pond) Research and Development, and Gene Bank Centre
 - Bus Terminal Complex (tourist information centre, shopping centre, etc.)
 - **Housing Development for Middle Income Households**
- (13) Nang Rong Town (Tambon Municipality)
- (a) Development Roles in the Study Area
- To develop efficient commodity distribution centre
 - To develop advanced food processing industries and storage facilities
- (b) Expected New Urban Functions and Facilities
- **Truck Terminal**
 - Food Processing Centre (medium scale industries, cottage industries)

Appendix B

The Objectives, Functions and Recommended Locations of New Urban Functions and Facilities in the Study Area

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The Objectives, Functions and Recommended Locations of New Urban Functions and Facilities in the Study Area

1) Agricultural Research and Development Centre (ARDC)

Objective

- to identify and promote most suitable approach for agriculture productions
- to assist and advice technical consultancy for farmers in order to perform maximum cultivation conditions in their lands (including crops cycles research, noxious preventive measures, etc.)
- to introduce new crops, varieties and species for promoting various forms of mixed farming enhancing farmer's alternative incomes.

Functions

- to research and develop efficient cop production by conventional local technologies or by the latest biotechnologies
- to develop diverse crops suited to local cultivation fields
- to develop and research diverse processing outlets of rice, fruits and vegetables.

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional centre in the Study Area. Buri Ram, Si Sa Ket and Mukdahan as a supporting (Secondary) centre.

2) Development Research Institute for Intermediate Technologies

Objectives

- to support the agro-industries in the local area
- to support the industries of other regions by introduction of linkage industries in the local area
- to promote trade information with Indochina countries
- to promote metal working and machinery industries including electrical and transportation equipment

Functions

- Technical support and management guidance for the small and intermediate industries in the local area
- to develop and foster various local based technologies (i.e. agro-industries; cottage industries, etc.)
- to provide assistance of technical training and consultancy services in the local area

Major recommended locations

- Nakhon Ratchasima, Ubon Ratchathani and Surin (handicraft, etc.) as a regional centre.
- The Northeast Industrial Promotion Centre is recommended to establish in Surin area. Manufactures of intermediate goods based on raw materials

both local and imported from the Indochina countries will be located in the Ubon Ratchathani - Mukdahan - Yasothon industrial triangle.

3) Agricultural Marketing Information Centre

Objective

- to increase farmer's bargaining power
- to maintain price stability
- to distribute accurate market information

Functions

- to facilitate operations for buyers and sellers under the regulations and procedures in an open manner
- to control qualities of crops/products marketed and contribute to stabilize the process
- to set quality standards

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional centre. It is recommended to set up a sub-centre in a central commodity market in all Muang municipality areas.

4) Human Resource Development (Programme)

Objectives

- to accelerate qualities and quantities of human resources for local areas in order to activate local economies
- to enhance research and development capabilities for utilizing local resources

Functions

- to increase and establish various types of higher education schools and institutes (agriculture, science & technology and medical schools; vocational schools - industry and commerce; etc.)

Major recommended locations

- Nakhon Nayok (high-tech research centre)
- Nakhon Ratchasima (agriculture, science & technology and medical schools)
- Ubon Ratchathani (agriculture, science & technology and medical schools)
- Prachin Buri, Surin (agriculture, science & technology schools)
- Mukdahan (agriculture school)

5) Trade and Distribution (Commerce and Industry Plaza Complex)

Objectives

- to promote efficient economic activities
- to reduce cost on distribution and stock of parts and maintenance of machinery

Functions

- to stock appropriate volume of parts and office supplies
- to hold experts for maintenance
- to provide information network among suppliers, traders, distributors and other related service industries

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional centre (to establish and industrial parts trade and distribution centre is proposed as a public-private joint venture entity)

6) Teleport, and Education and Training Centre

Objectives

- to increase the telephone lines in tambons for basic communication for inhabitants, and
- to establish and informations base, so called "teleport", for the promotion of industrial activities

Functions

- Teletopia is a combined work of telecommunication and Utopia. A concept of teletopia is to provide inhabitants and local society with various useful services through established telecommunications lines. Following services will be expected.
- Agricultural information system
- Rainfall and water level telemetering system
- Medical treatment information system
- Telemeter VAN system
- Tourism information system

Major recommended locations

- Ubon Ratchathani as a teleport centre

7) Housing Development (Scheme)

Objectives

- to organize and control urban landuse conditions
- to reduce social tension in the urban area in order to supply housing for low income families (including migrants from rural areas)

Functions

- to research and develop low cost housing units
- to subsidy or loan construction costs for individual builders
- to build prototype housings (townhouses, apartments, etc.)

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani (housings for low income family)
- Nakhon Nayok, Aranyaprathet, Warin Chamrap (housings for middle income family)

8) Food Processing Centre and Silo Facility (Agro-polis)

Objectives

- to enlarge market of products by increasing value-added
- to reduce the risk of price fluctuation of crops

Functions

- contract-farming
- process facility
- trade-and-distribution,
- storage (including silo facility)

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani (private-based agricultural export and processing centres are recommended. - large scale)
- Prachin Buri, Buri Ram, Si Sa Ket, Pak Chong, and Nang Rong (medium scale)

They can handle crop seeds, flowers, vegetables and fruits, etc. especially for Bangkok and for export, utilizing their airport.

9) Bus Terminal Complex

Objectives

- to improve efficiency in passenger flow
- to increase commercial activities in central area

Functions

- Bus terminal complex consists of the combination of following facilities and services in the area
 - Shopping facilities (souvenir shops, etc.)
 - hotel facilities (accommodation, meeting rooms, etc.)
 - tourist information centre (package tours, tickets, etc.)
 - temporary storage services
 - restaurant services
 - airport checkin counter services, etc.

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional level scale
- Buri Ram and Aranyaprathet as a medium level scale
- Mukdahan and Warin Chamrap as a local level scale

10) International Trading Centre

Objectives

- to expand border trade activities through delivering information, strengthening coordination, and providing other services

Functions

- trading information centre
- coordination centre with Indochina countries (including the grievance committee on trade dispute)
- small exhibition centre

- temporary storage and processing centre such as labeling and packaging
- branch of the customs office
- financial facility (bank)

Major recommended locations

- Ubon Ratchathani (regional centre)
- Aranyaprathet and Mukdahan

11) Truck Terminal

Objectives

- to improve efficiency in goods distribution and handling
- to reduce the burden on transportation problems including cost for manufactures and traders
- to smooth road traffic

Functions

- to serve as regional centre for receiving, sorting, and delivering to consignees general cargo brought in/out of Bangkok and urban centres
- to take charge of picking up, sorting and loading local manufactured products destined for Bangkok and urban centres for shipment on line-haul heavy trucks
- basically regional truck terminals need to be installed or equipped with facilities such as berths for loading and unloading general cargo, handling space/platform for sorting general cargo and reserved space for temporary storage.

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional truck terminal
- Aranyaprathet, Mukdahan, Pak Chong and Nang Rong as a medium and small scale truck terminal

12) Health Centre (Emergency Information Centre, Local Disease Research Centre)

Objectives

- to accelerate primary health care services and education for the local people
- to research and prevent specified local diseases

Functions

- training and education centre for primary health care workers
- emergency information centre
- local disease research centre

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani as a regional centre
- Yasothon and Surin

13) Timber Research and Development Centre

Objectives

- to introduce and develop woodwork cottage industries and pulp industries in local area

Functions

- to research and develop new products of housing woodworks, furniture, etc., using imported timber resources from neighboring countries
- to provide assistance of technical training and consultancy services for local cottage industries

Major recommended locations

- Ubon Ratchathani as a regional centre
- Surin and Mukdahan

14) Fish Farm (Pond) Research & Development, and Gene Bank Centre

Objectives

- to utilize existing large and medium size reservoirs for fisheries, particularly of aquaculture
- to develop and supply alternative income resources for farmers

Functions

- to develop and distribute fingerling for farmers who want to develop an aquaculture industry
- to provide assistance of technical training and consultancy services for farmers, etc.

Major recommended locations

- Yasothon as a regional centre
- Pak Chong and Warin Chamrap

15) Reforestation Extension Centre (Plant Farm)

Objectives

- to improve water holding capacity in the soil and develop suitable tree species of fragrant wood in the Study Area

Functions

- to research and develop implementation works for tree plants and seeds suited to local soil conditions (nursery station)
- to enhance technical support of afforestation projects
- to formulate local people's participation for various afforestation programmes

Major recommended locations

- Buri Ram, Surin and Si Sa Ket

16) Amusement Park and Art & Science Museum

Objectives

- to foster art and scientific mind in the region
- to research and conserve local (national) inheritances
- to introduce latest science & technology information for people's curiosity (education)

Functions

- to exhibit arts & science events (information centre)
- to conduct educational events (gathering and festival for experimental works)
- to research and collection local and national inheritances at exhibition hall (centre)

Major recommended locations

- Nakhon Ratchasima and Ubon Ratchathani (regional level)
- Mukdahan (amusement part)

17) Resort Development

Objectives

- to activate local economic activities
- to supply various leisure facilities

Functions

- to operate tourist guide centres for visitors
- to build hotels and resort accommodations
- to develop tourist spots within a local area

Major recommended locations

- Mukdahan

Appendix C

Outline Maps of Selected Municipalities in the Study Area

**Figure C-1 Outline Map of Nakhon Nayok Muang Municipality
(with General Plan Boundary)**

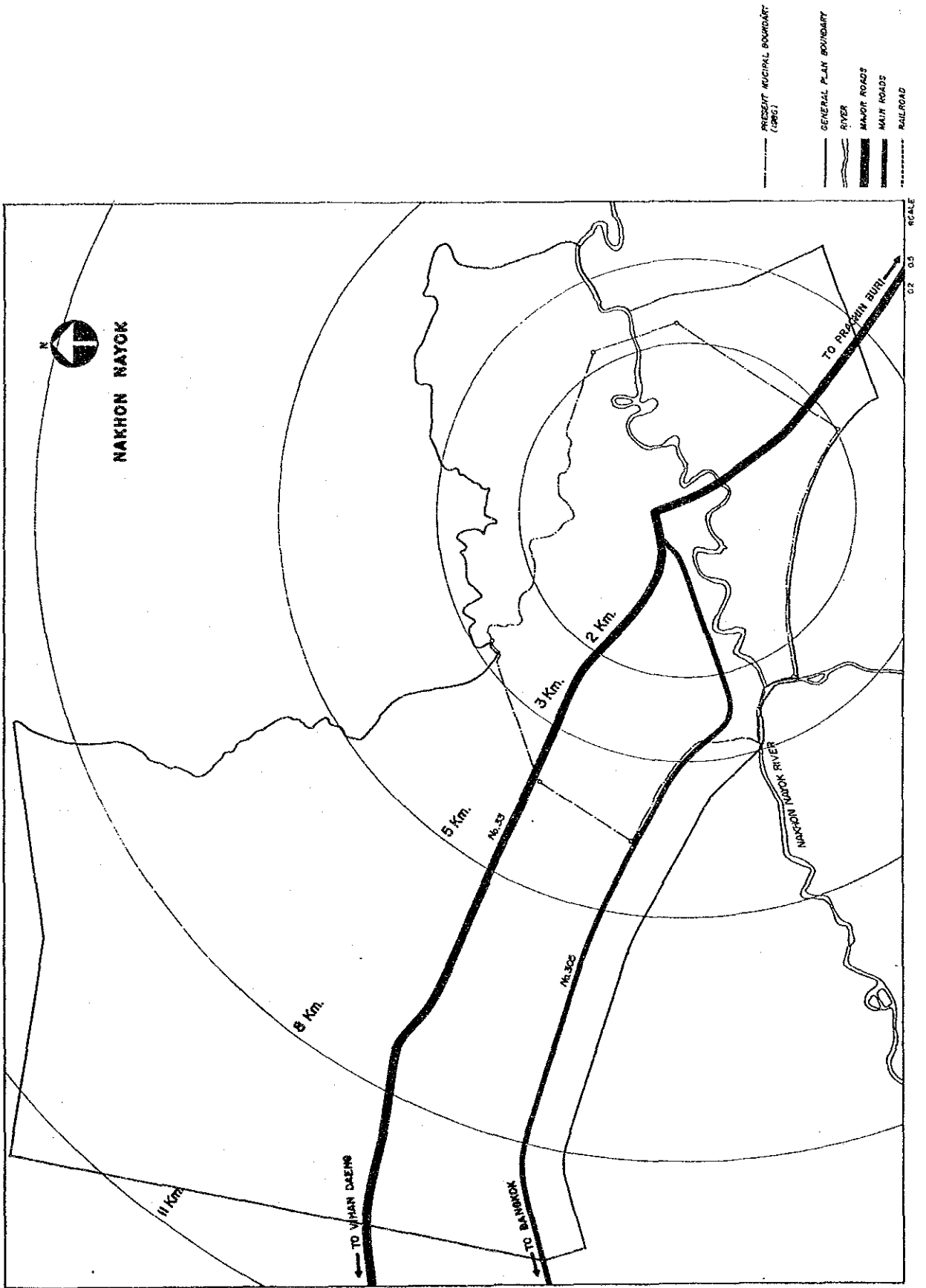


Figure C-2 Outline Map of Prachin Buri Muang Municipality
(with General Plan Boundary)

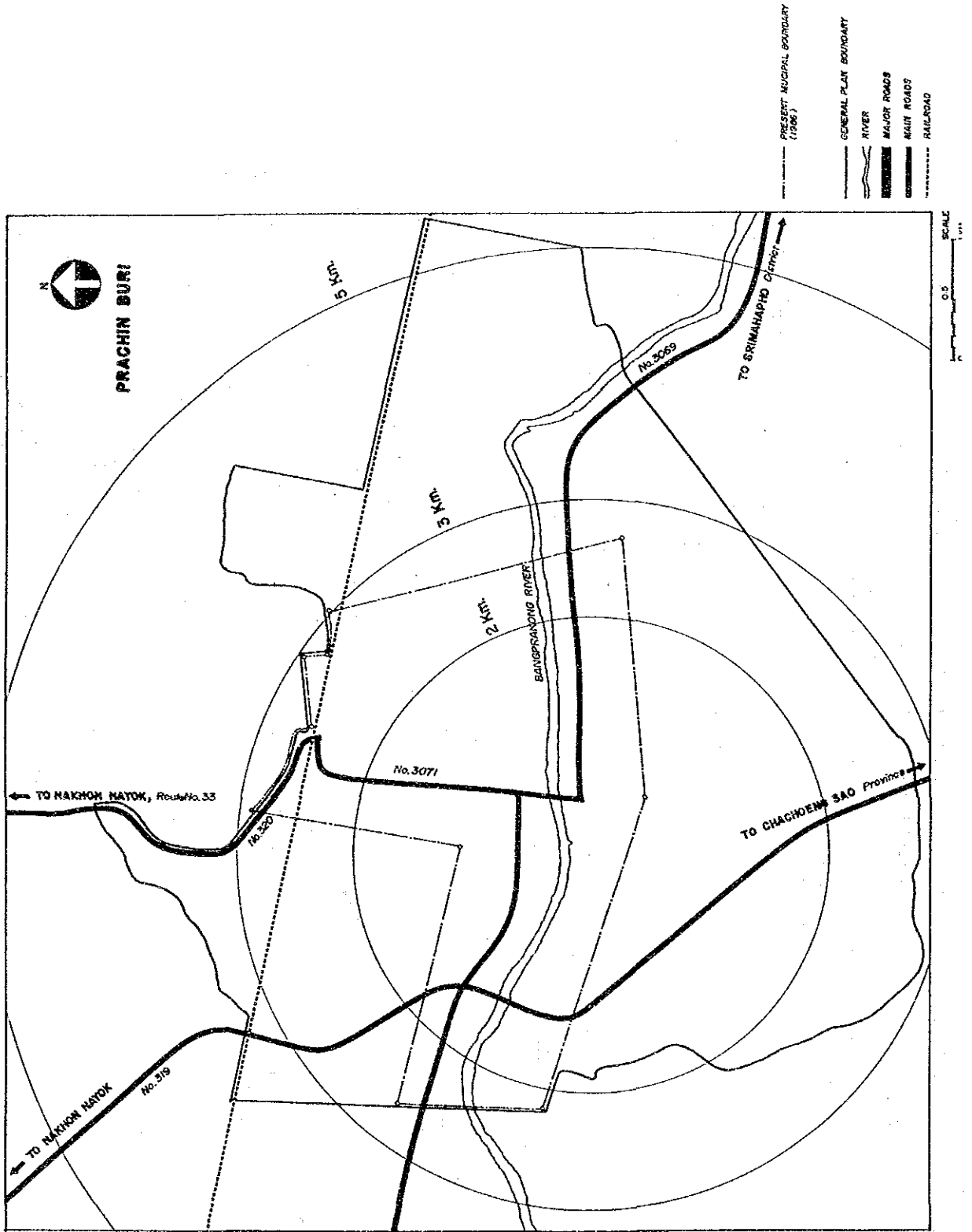
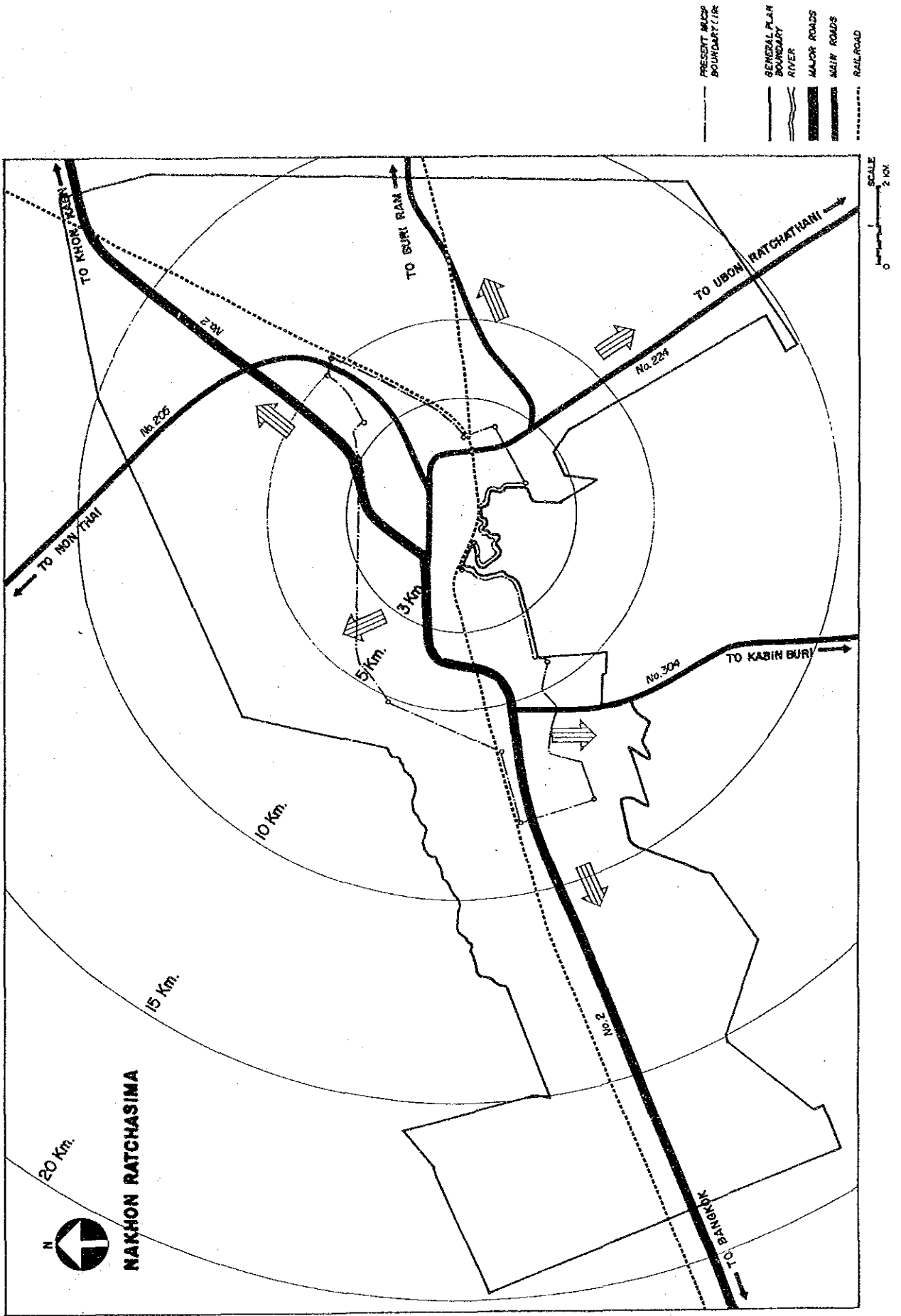
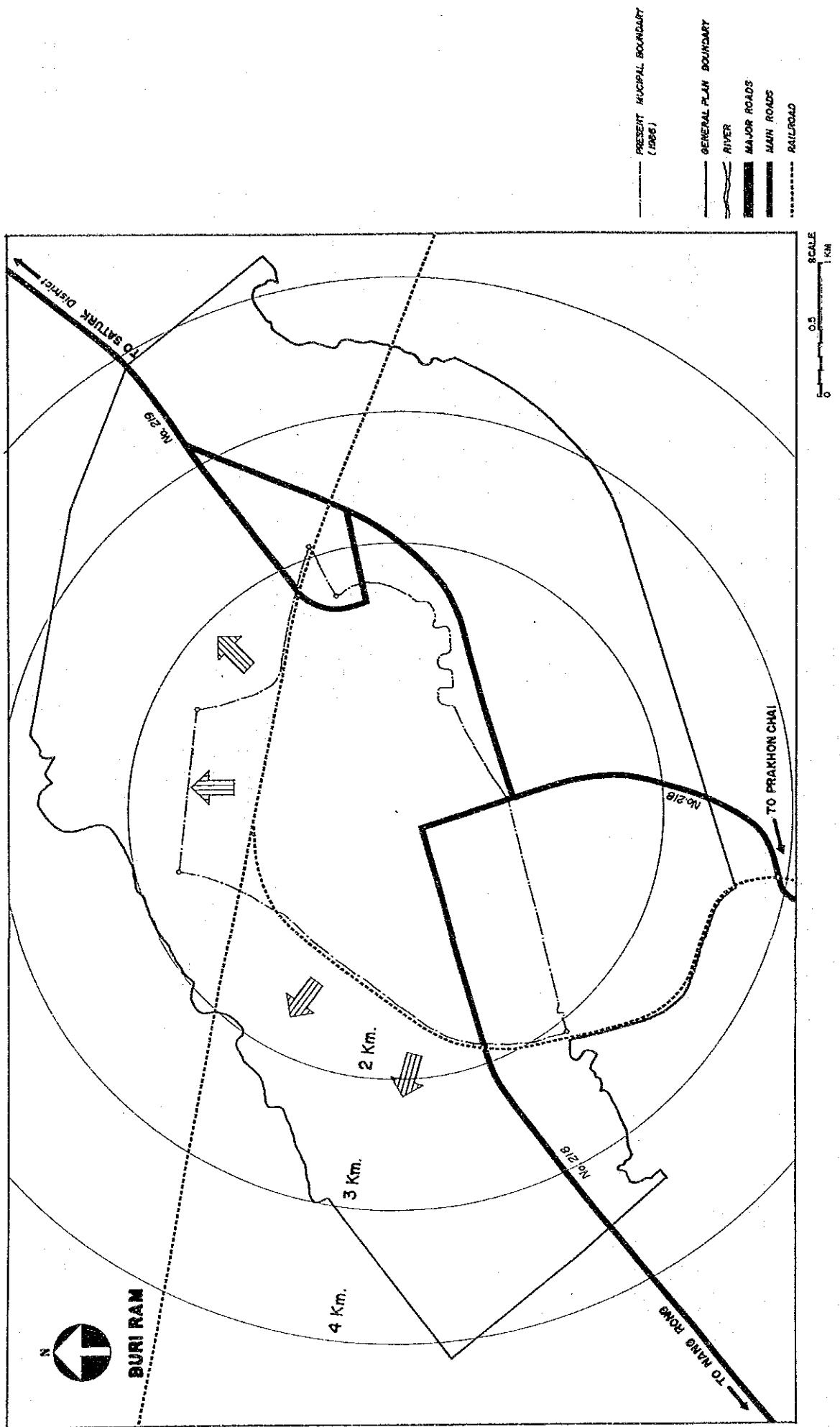


Figure C-3 Outline Map of Nakhon Ratchasima Muang Municipality
(with General Plan Boundary)



**Figure C-4 Outline Map of Buri Ram Muang Municipality
(with General Plan Boundary)**



**Figure C-5 Outline Map of Surin Muang Municipality
(with General Plan Boundary)**

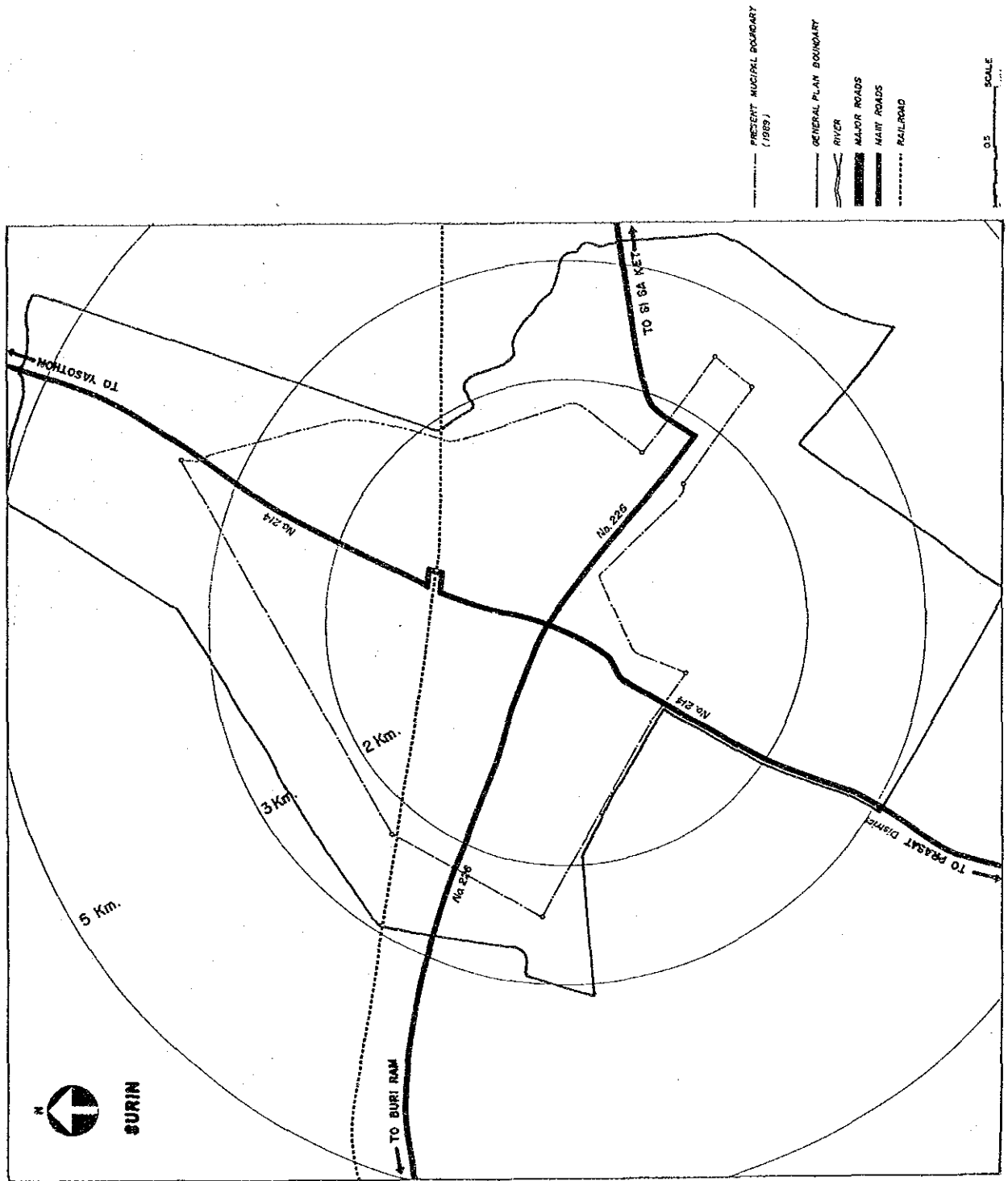
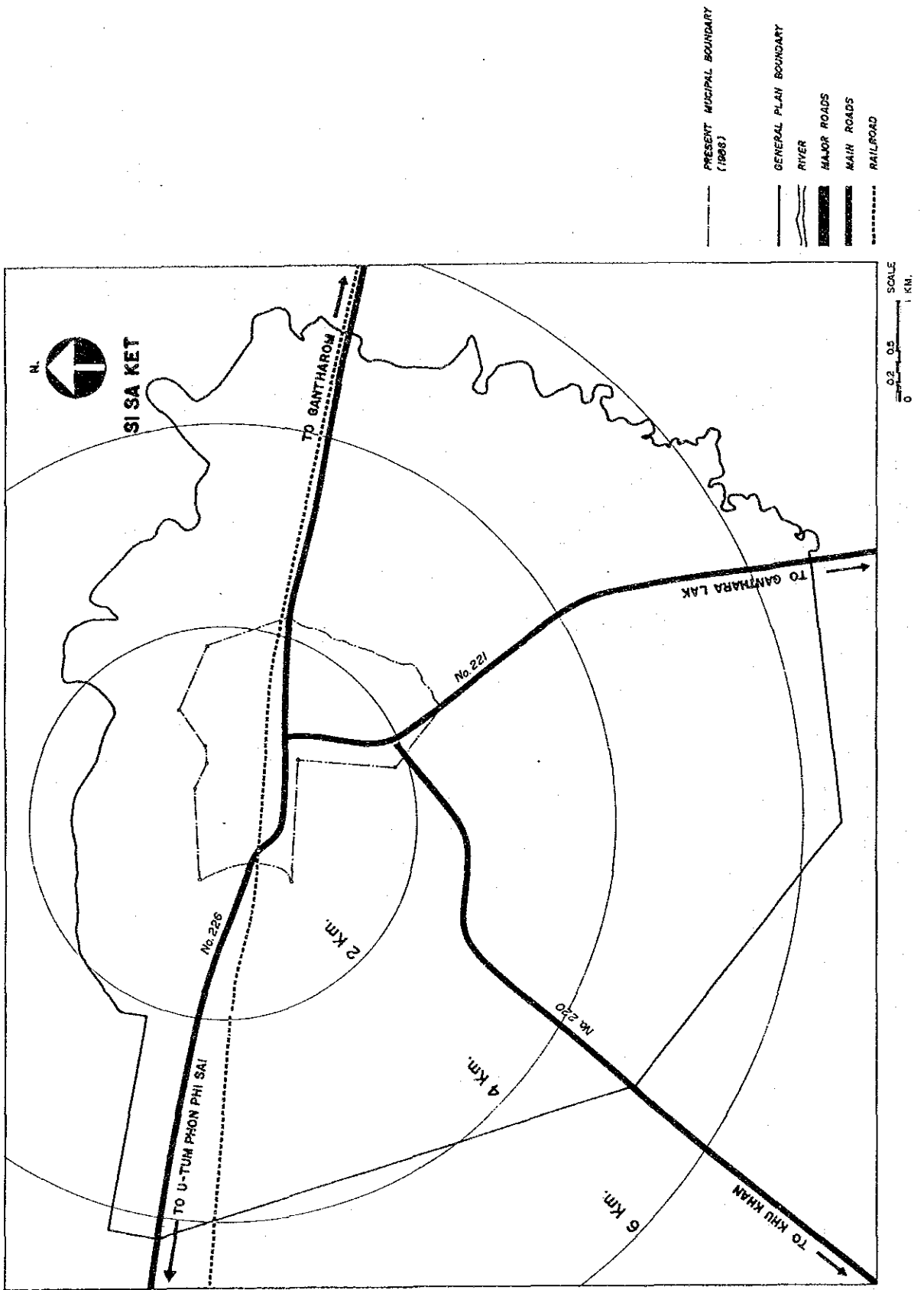
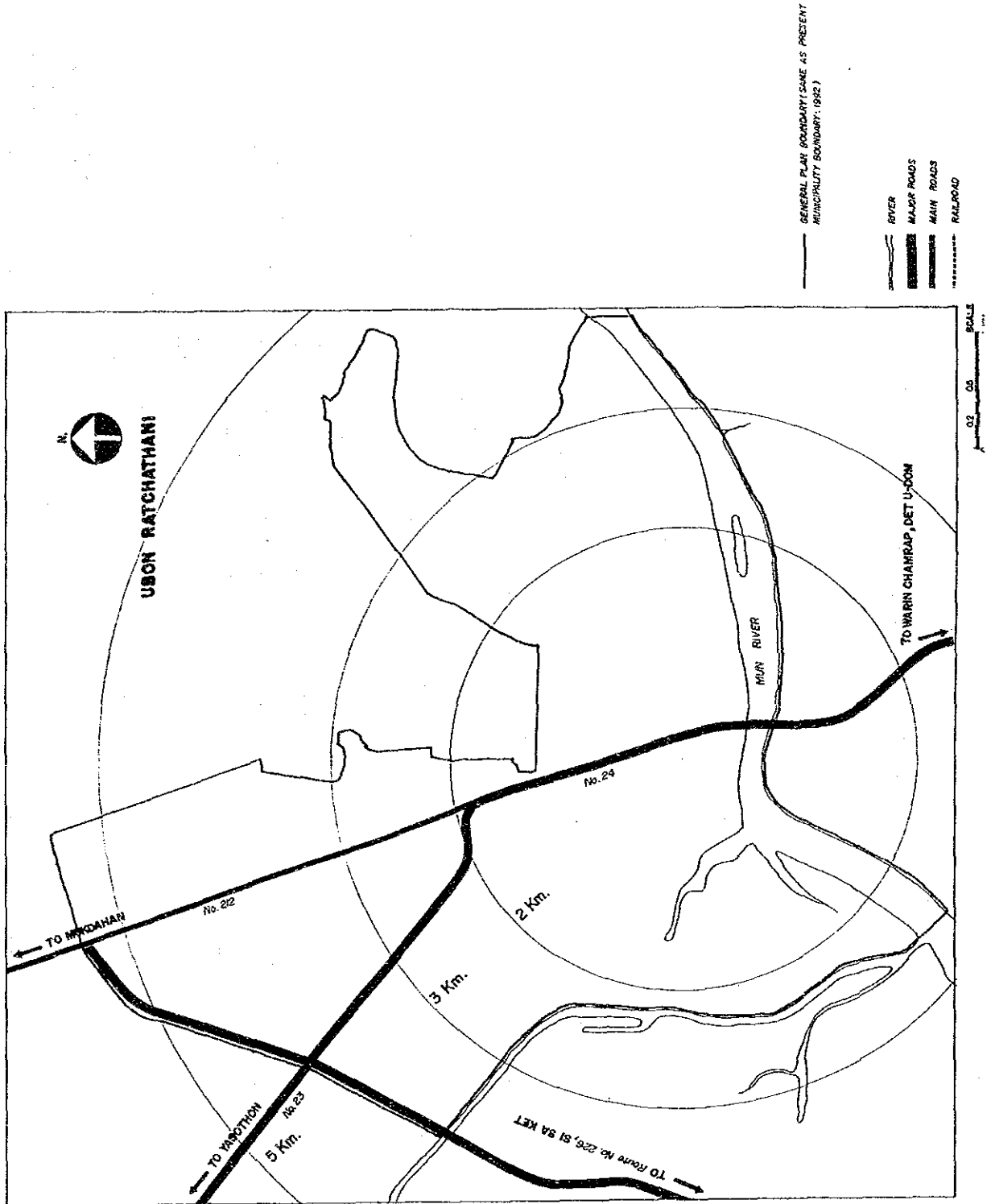


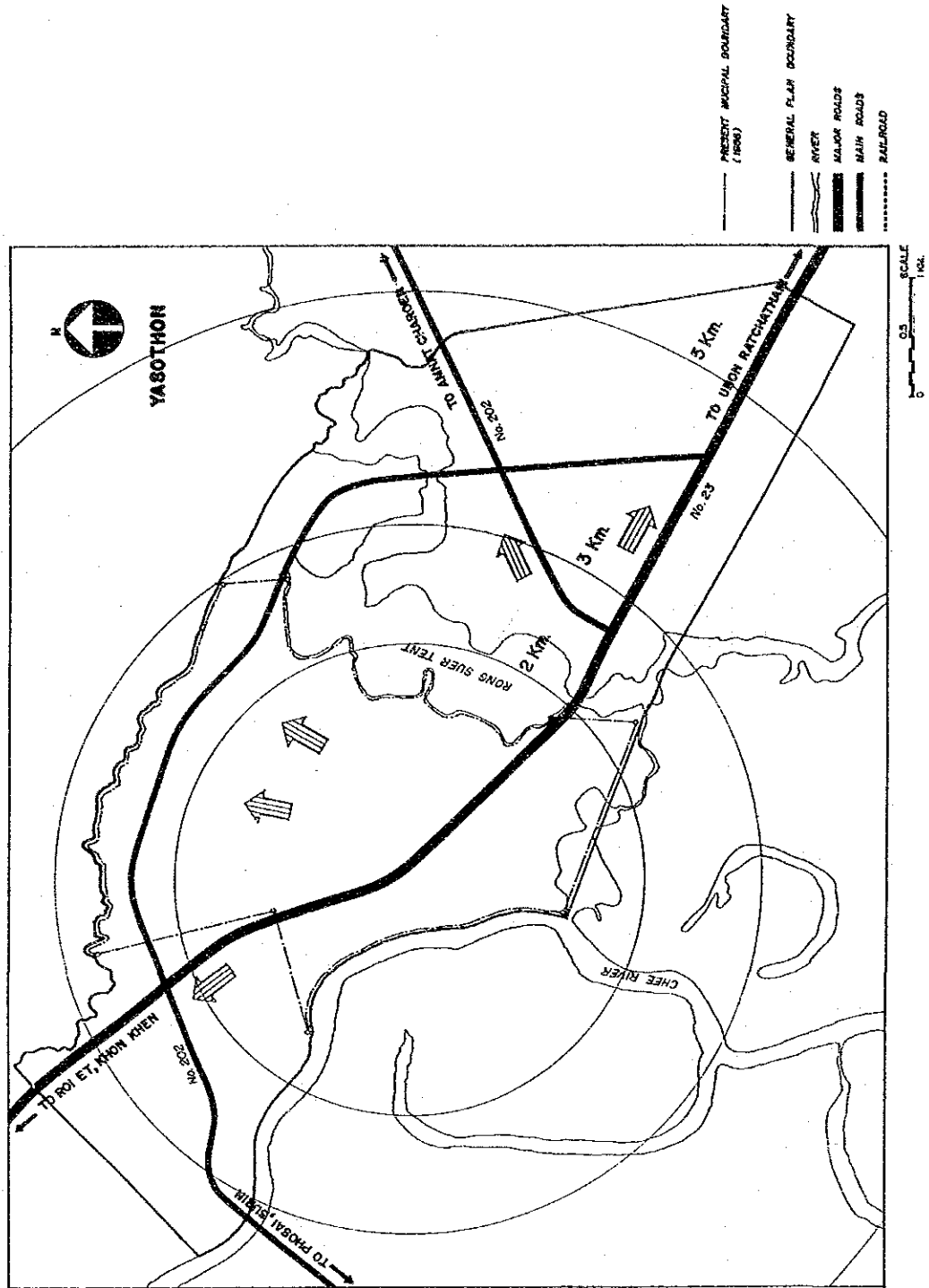
Figure C-6 Outline Map of Si Sa Ket Muang Municipality
(with General Plan Boundary)



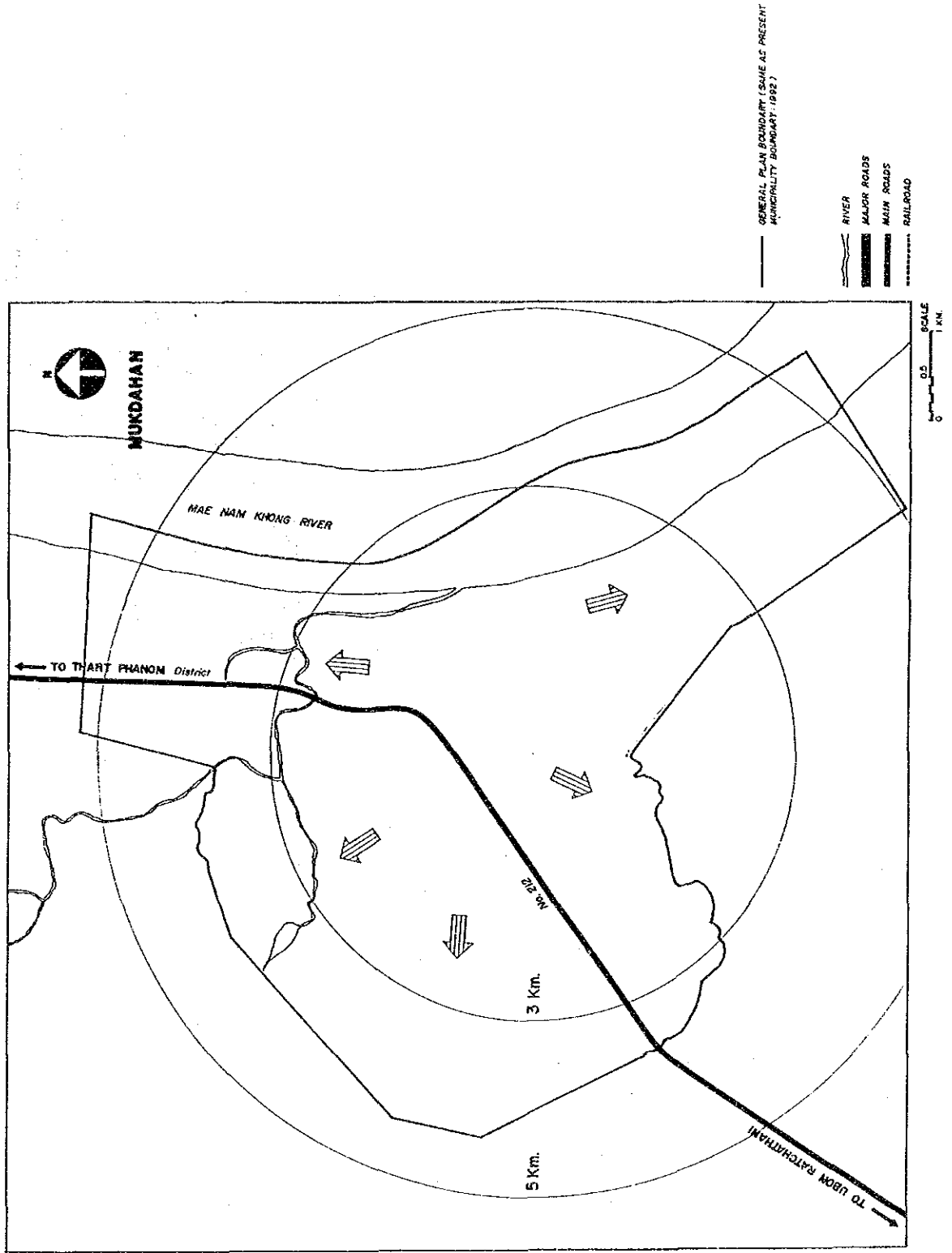
**Figure C-7 Outline Map of Ubon Ratchathani Muang Municipality
(with General Plan Boundary)**



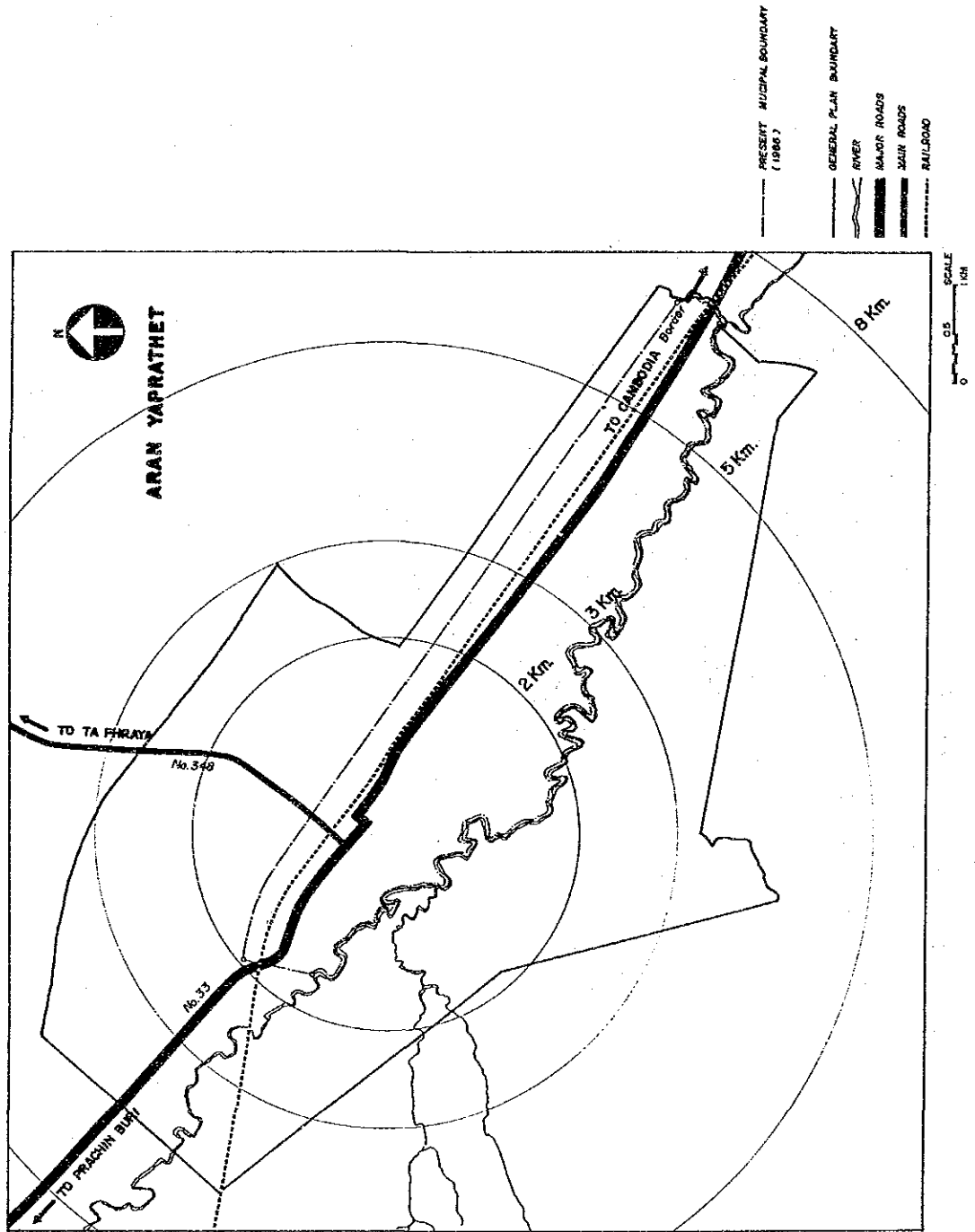
**Figure C-8 Outline Map of Yasothon Muang Municipality
(with General Plan Boundary)**



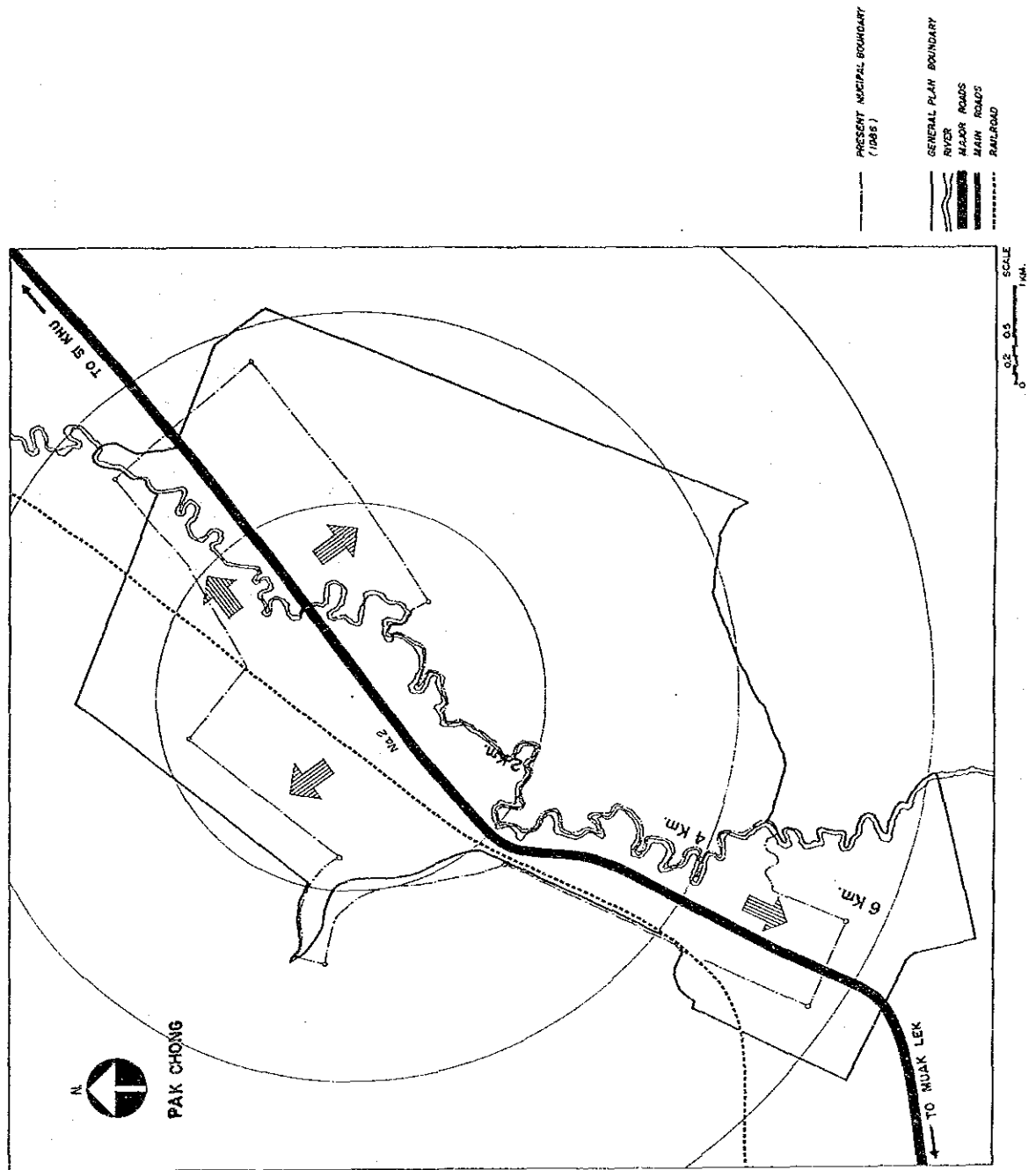
**Figure C-9 Outline Map of Mukdahan Muang Municipality
(with General Plan Boundary)**



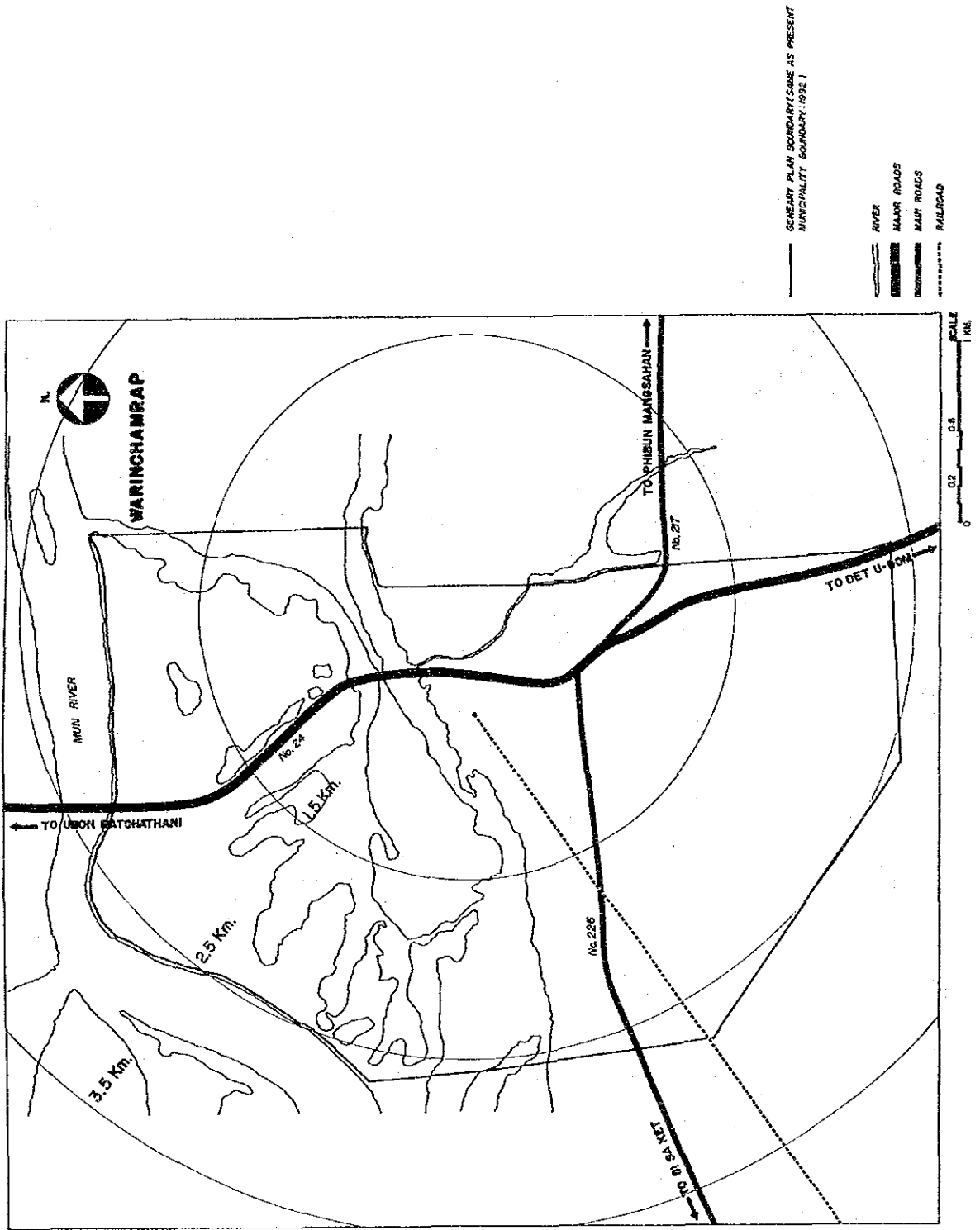
**Figure C-10 Outline Map of Aranyaprathet Tambon Municipality
(with General Plan Boundary)**



**Figure C-11 Outline Map of Pak Chong Tambon Municipality
(with General Plan Boundary)**



**Figure C-12 Outline Map of Warin Chamrap Tambon Municipality
(with General Plan Boundary)**



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