

CHAPTER 4: PHYSICAL DEVELOPMENT PLAN

4.1 Planning of Urban Structure

4.1.1 Pre-Conditions for Planning

(1) Existing Condition of Land Usage in the Study Area

The Study Team gathered information relating to the ownership of land within the Study Area with the cooperation of the BMA and the Ministry of Land. The following maps show the location of land which is owned by the public sector or used for public purposes.

1) *Public Land*

In the Study Area, there is a small amount of land owned by the public sector such as land for the public school, public roads, and sewer facilities, as indicated on the following map. The total area of public land is only 12.6 ha and accounts for 0.6% of the Study Area.

Table 4.1: Public Land in the Study Area

Organization	Area(ha)
BMA	4.2
Department of Highways	3.1
Metropolitan Waterworks Authority	5.3
Total	12.6

Source: DOL

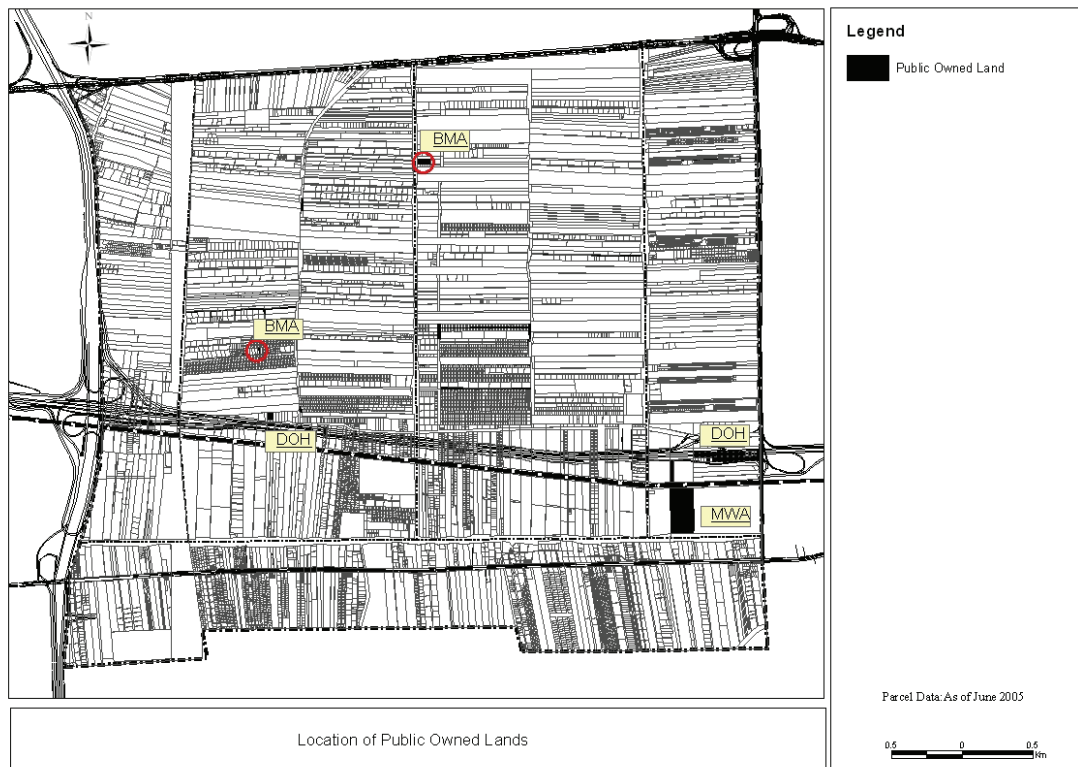


Figure 4.1: Public Land in the Study Area

2) *Public Roads and Canals*

The following two maps show the location of existing public roads and major canals in the Study Area. The total length and area of public roads is approximately 32,279 m and 82 ha respectively, which includes the Chonburi Motorway and On-Nut Road. The second map indicates the existing major canals whose total area is approximately 82 ha.



Figure 4.2: Public Road in the Study Area

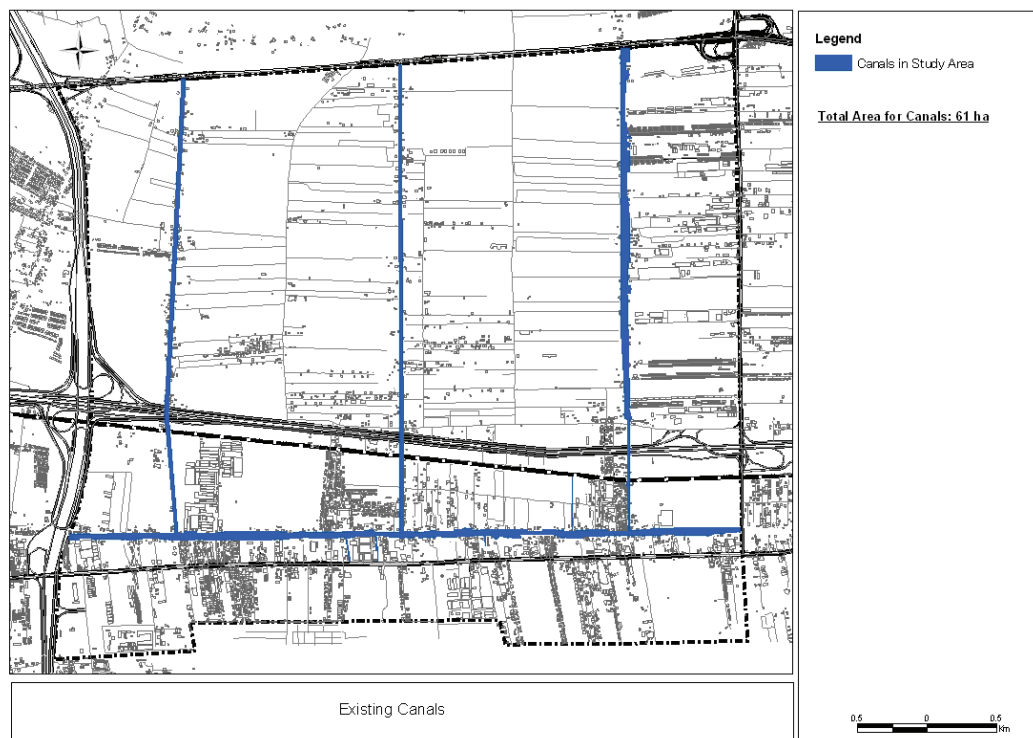


Figure 4.3: Canals in the Study Area

(2) Existing Condition of Land Ownership in the Study Area

The existing parcel sizes are depicted on the following map. Parcels which are relatively small (less than 1,000 square meters), are observed in the areas on the north side of Chonburi Motorway, the west side of Rom Klao Road, and in the existing communities on the south

side of Chonburi Motorway. To the north of the motorway, particularly in the region close to the motorway, there are scattered areas that contain a large number of subdivisions however no buildings have been constructed in these subdivisions. In these areas land subdivision has been conducted in the hope of developing the land for residential purposes. On the south side of the motorway, it is observed that most of the small parcels of land contain existing buildings that, to a large degree, utilize the capacity of the lot.

The small parcels of land, as shown on the second map, are mainly unused land to the north of the motorway and industrial land along Rom Klao Road. To the south of the motorway, the existing land use is residential.

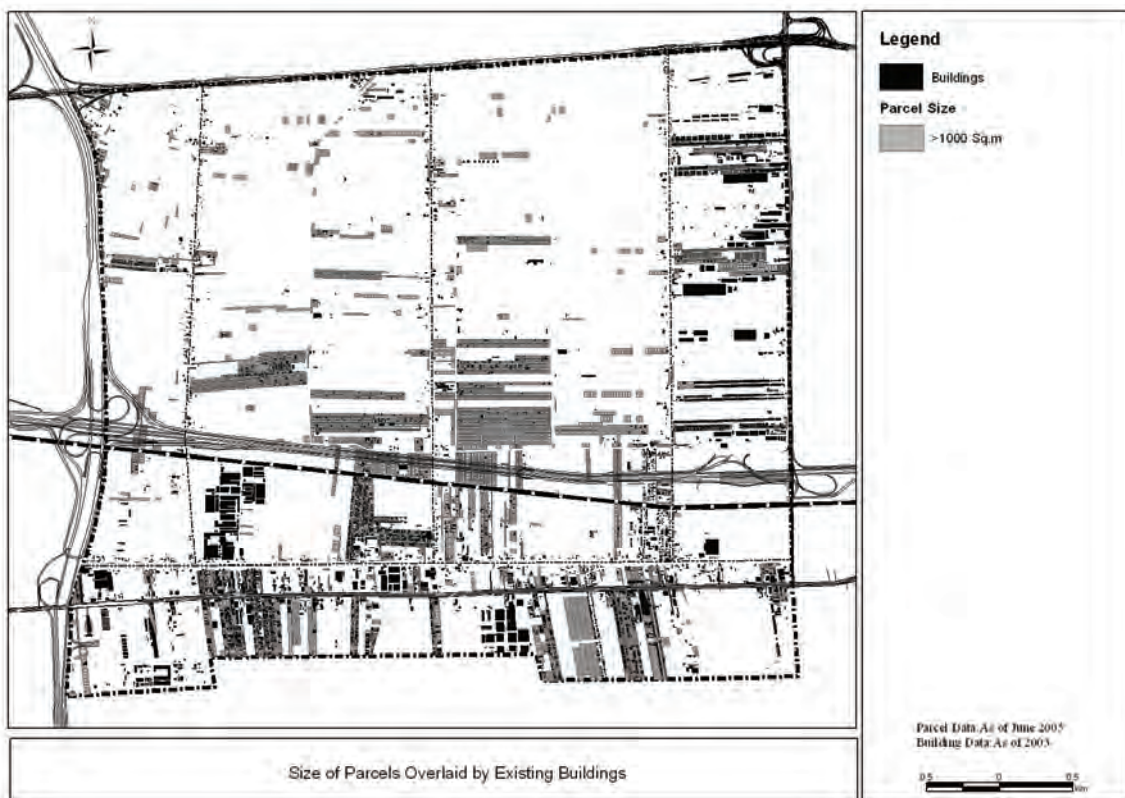


Figure 4.4: Parcel Size and Building Density in the Study Area

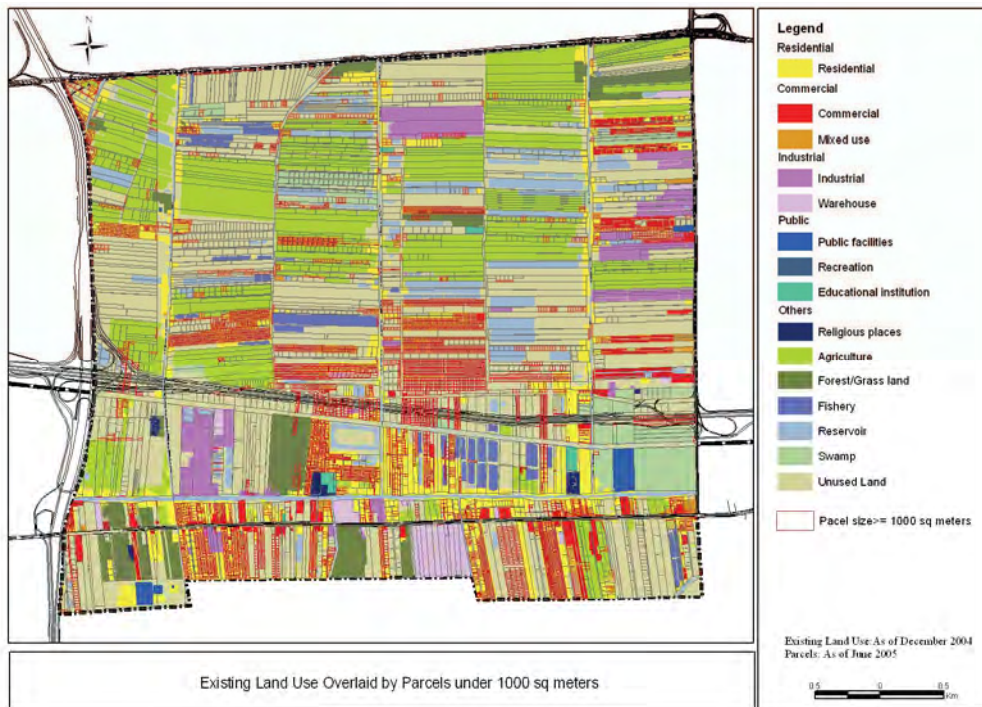


Figure 4.5: Existing Land Uses Overlaid with Size of Parcels

(3) Environmental Considerations in the Study Area

There are several environmental and social issues to be considered in the formulation of a physical plan for the Study Area, as shown on the following map. A brief description follows.

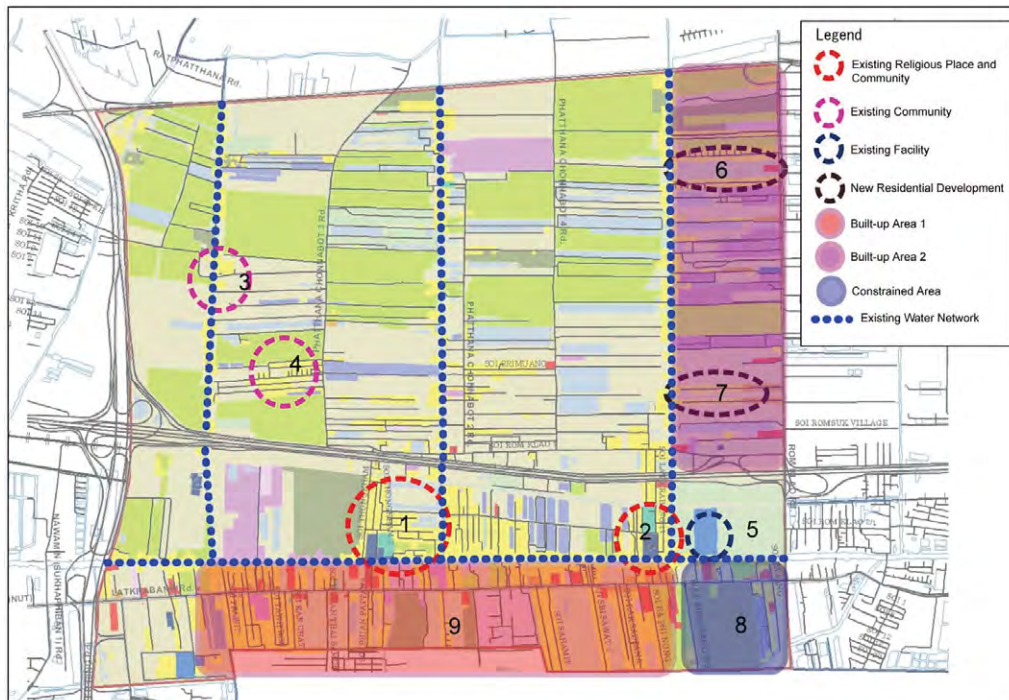


Figure 4.6: Existing constraints in the Study Area

1) *Religious places and surrounding communities*

There are two existing communities that contain temples, namely Wat Lamboom community and Wat San Kha Ra cha community, along Prawet Burirom Canal. Preservation of these communities should be considered in order to maintain the existing environment.

The south side of the canal has been built up mainly as a residential area with some vacant land that is yet to be developed. It is assumed that there will be market-driven development of the vacant land based on the fact that some of the undeveloped land has already been prepared for residential or commercial development. However, preservation of the existing community needs to be considered such that dwellers can remain in a fine residential environment. (Indicated as NO1, NO2 and NO9 on the map)

2) *Existing communities in the northern part of the Study Area*

There is a Muslim community along Mac Chan River and a Jitra community along Pattana Chonabhot Street that are surrounded by agricultural land and unused land. It is assumed that the undeveloped land will be converted to other uses, however future development around these communities should consider retaining the harmony of the existing environment. (Indicated as NO3, NO4 in the map)

3) *Existing Water Tank*

The existing water tank located to the south of Chonburi Motorway and to the west of Rom Klao Road needs to be taken into consideration. In the zoning plan, the existing facility should be maintained, and the option to expand it based on future population growth should be examined. (Indicated as NO5 on the map)

4) *New Residential Developments mixed with Industrial Land Uses*

Several new residential development activities, observed in the area along Rom Klao Road, are mixed with industrial buildings such as production or circulation industries. These developments are taking place not only in the area mentioned but also in the area surrounding the new airport. Furthermore, in the near future this area will be connected to the new airport by the extension of Rom Klao Road towards the south. Considering these ongoing developments, the area concerned should be suitable for production or circulation businesses in the future. (Indicated as NO6, NO7 on the map)

5) *Aircraft Noise*

The area in the south corner of the Study Area is subjected to air craft noise from the new airport, which indicates that it is not suitable for residential use. In the Comprehensive Plan 2, the area is categorized as an environmental consideration zone which regulates some development activities therein. Therefore, the zoning for the south corner should take into consideration of the environmental effects. (Indicated as NO8 on the map)

6) *Existing Water Network*

The Study Area has three canals running from north to south and one canal crossing from east to west. In the zoning plan the existing water network will be utilized for flood protection.

4.1.2 Development Principles

For the development of the Lat Krabang Sub-center, the following six (6) development principles were adopted.

(1) **Harmony with Existing Communities and New Communities**

The sub-center will necessitate the construction of a new business and commercial district to serve the population within and around the sub-center area. This will require securing an extensive land area for the development. Due attention will be paid to the population in the existing communities, so that the new development will not harm their livelihoods.

For this purpose the Study adopts a participatory planning process, with inputs from local residents, as detailed in Chapter 6 of this report. In addition, a survey of local residents was conducted in order to hear their opinions and comments on the development images. In the course of the Study, a series of stakeholder meetings were conducted in the form of an open seminar and small group meetings on site.

(2) **Environmentally Friendly Suburban Sub-Center**

A leading urban development project such as this ought to pay due attention to the preservation of the natural environment. The existing canal systems will be preserved to retain the riverine characteristic of the Lat Krabang area as much as possible, and an open space network with plenty of greenery and water bodies will be incorporated into the plan.

In addition, an environmentally friendly mode of transport, such as rail transit and public transport will be considered.

(3) **Coordination between Urban Development and Transport**

In relation to item (2) above, due attention will be paid to coordination between urban development and transport planning. Historically, urban development in Thailand tends to be sporadic and the public sector may exert only a limited role as the provider of infrastructure. In the Lat Krabang Sub-center development, special attention will be given to the inter-modal transport facilities such as a station plaza with bus/taxi bays and public parking. It will be essential to combine the public sector roles as a provider of infrastructure and as an initiator of urban development.

(4) **Creating a Flood-Free City**

The Lat Krabang area is a low-lying area with a history of flooding. The flooding tends to increase with urban development, as the flow rate is known to increase due to development. As the increase in the flood flow due to development should not be allowed to affect downstream areas, a combination of polder dykes, enhancement of canal systems and

retention ponds, and the introduction of pumping stations will be considered to determine the most economical solution.

(5) Preserving and Activating the Traditional Thai Urban Atmosphere, where appropriate

Bangkok was once denoted as a Venice of the East and has evolved as a city containing waterways. The city has an extensive canal network, which has been used for water transport and floating markets. Nowadays, although the canal system still exists, lively activities within the waterways no longer take place. The BMA has an initiative to revive water markets where people are willing.

With the development of the new airport, there will be a latent demand for day-tourism from the passengers using the airport. In order to serve such a demand, the traditional Thai urban atmosphere needs to be enhanced wherever appropriate, which will be a core function of the Culture Town in the Lat Krabang Sub-center.

(6) Create a Model for a Suburban Development in the Bangkok Metropolis

The Lat Krabang Sub-center is part of a top-priority BMA policy for the creation of a multi-centric urban structure. Thus this project should serve as a model for other planned sub-center development projects that will follow.

4.2 Functional Zoning

4.2.1 General Methodology for Functional Zoning

Based on the policies for the Lat Krabang Sub-center development discussed in Chapter 3, the key zones for the sub-center comprise of three zones with significantly different characteristics; the sub-center/Air Gate zone, the Garden Suburb zone, and the Culture Town zone. Taking into account the characteristics of the land in the Study Area, these zones can be assigned in the following manner.

- The Culture Town zone should be located to the south of the Bangkok-Chongburi motorway, as this area offers a very Bangkok-like atmosphere especially because of the two existing temples. This area is too built-up to assign the higher urban functions as they require a vast quantity of vacant land.
- The sub-center and Air Gate zones should be located to the north of the Bangkok-Chongburi motorway as these functions require a vast area of vacant land and will result in significant changes to the nature of the land use. The allotment of areas for these two zones is discussed in the following subsection.

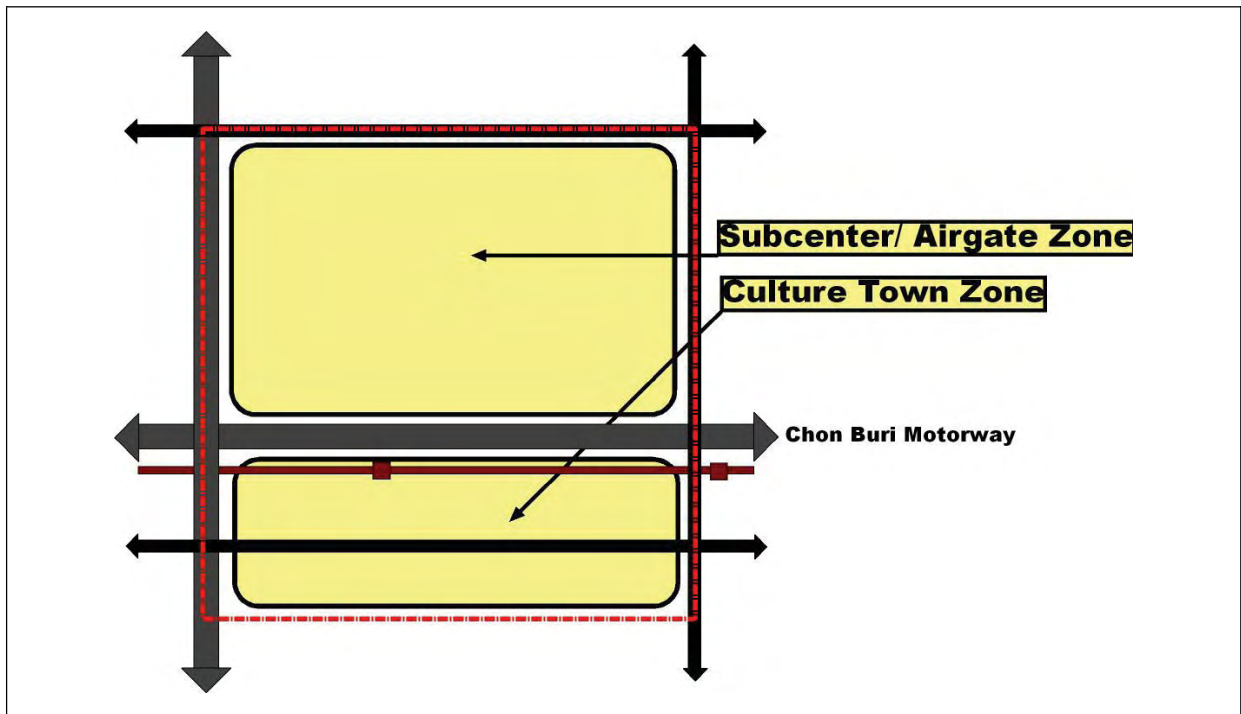


Figure 4.7: Schematic Development Plan for the Lat Krabang Sub-center

4.2.2 Overall Zoning

The location of regional facilities, such as canals and roads, is shown on the structure plan below. The Study area is broadly divided into the area to the north and the area to the south of the Chon Buri Motorway, and is dissected by three north-south branch canals.

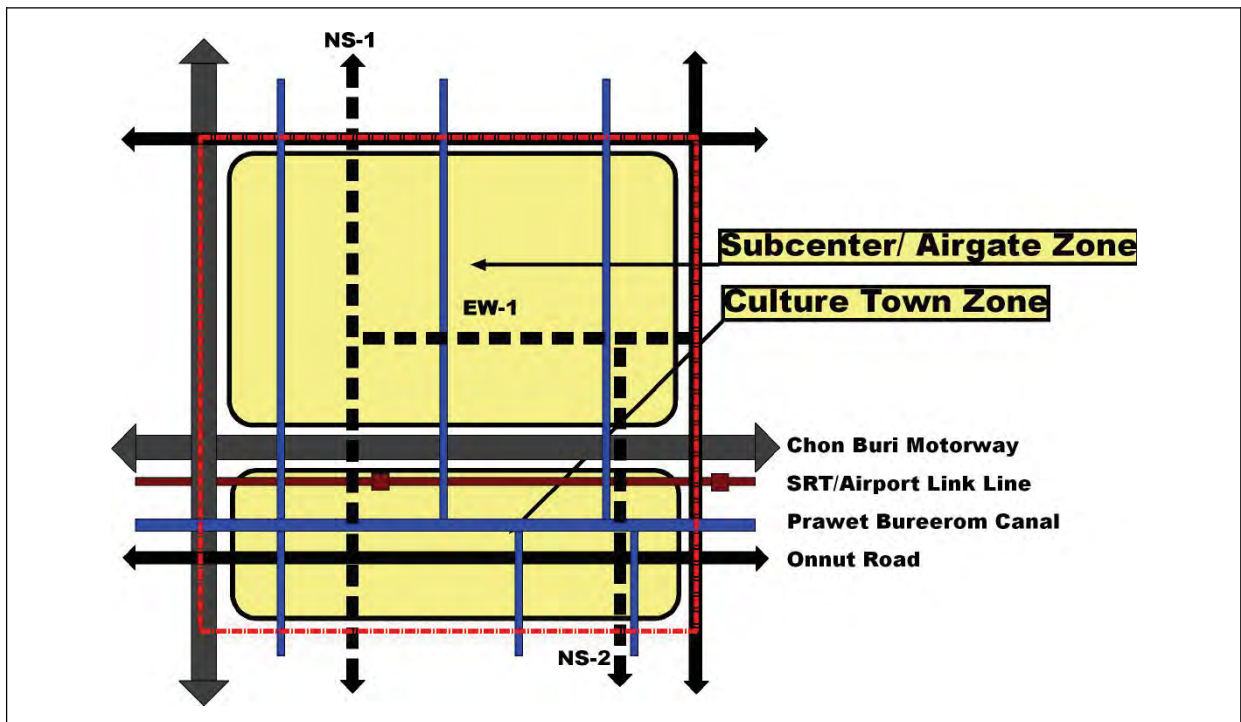


Figure 4.8 Conditions for Overall Zoning

The overall zoning plan depicts the overall urban development image for the Lat Krabang Sub-center area. As explained earlier, the town centers are split into areas to the north and south of the motorway. There is a larger town center to the north of the motorway.

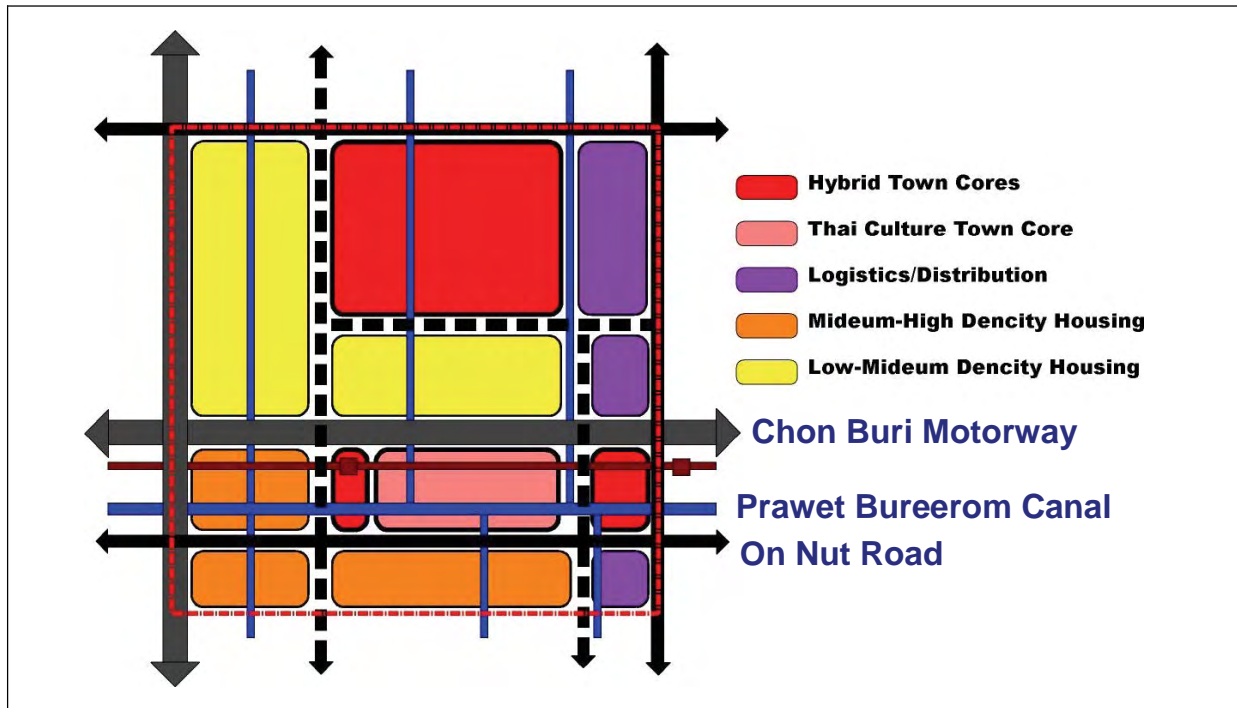


Figure 4.9: Overall Zoning Plan

4.2.3 Functional Zoning in the RD&D City Zone

The RD&D City is located on the northern side of the Chon Buri Motorway. The basic concept for the RD&D City is as follows:

- Mixing of inter-related functions, to lead the transformation of Thai industries and to create a model for sub-center development;
- To capitalize on the proximity to the new international airport for high value-added services;
- To provide a home for upstream functions, such as research, development and design, for higher value-added production;
- To relate to the automobile, ICT, medical and other high-tech industries attracted by the new airport;
- To create an FDI-friendly investment environment (FDI = Foreign Direct Investment).

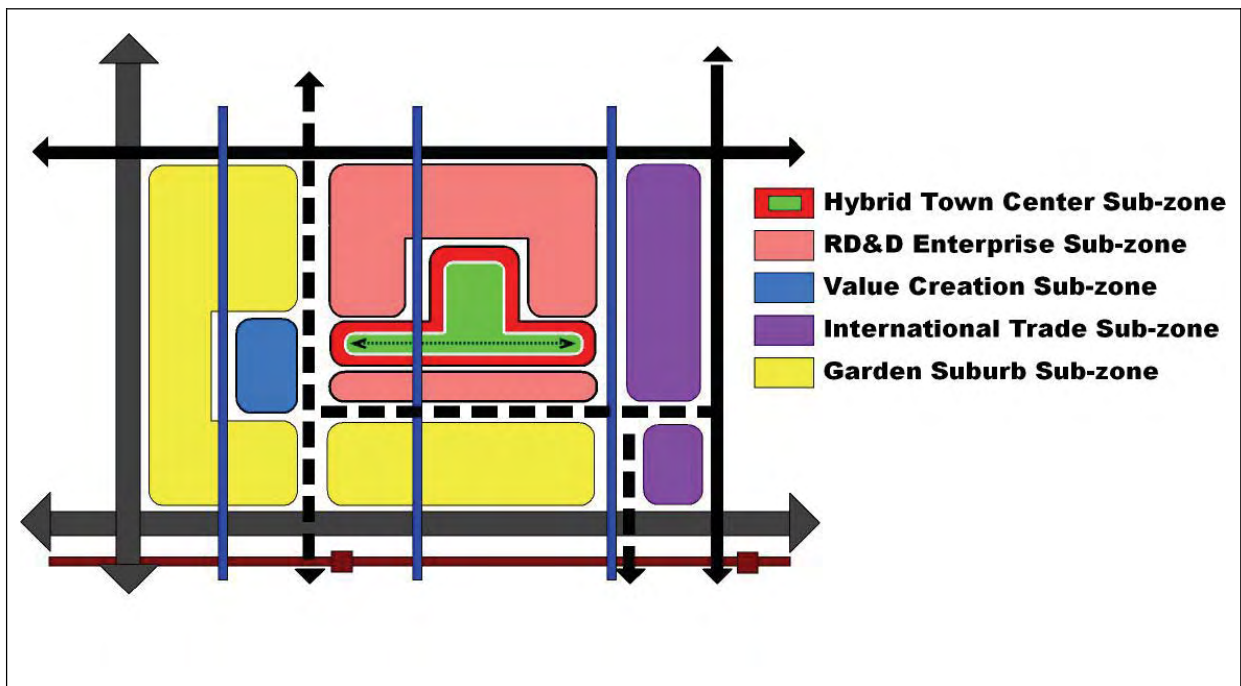


Figure 4.10: Zoning Plan for the Northern Part of the Study Area

The RD&D City Zone will comprise the following five zones.

Hybrid Town Center Sub-zone

- Commercial, service providers, etc
- Inter-modal transport node (such as railway stations and regional roads)
- Direct connection to the airport

RD&D Enterprise Sub-zone

- Low-rise business parks for research, development and design (RD&D)
- Good environment for creative businesses
- Good ITC infrastructure

Value Creation Sub-zone

- Higher education for the development of human resources in relevant fields, such as higher technology, medicine and international trade
- Branch/campus of an international university and research laboratories and/or graduate schools

International Trade Sub-zone

- International product marts and showrooms (such as home appliances, automobile, garment/fashion and interior goods)
- Wholesale markets for buyers and consumers

- Need to consider duty-free system

Garden Suburb Sub-zone

- Low-rise suburban residential, urban services and open spaces
- Good environment with greenery and water, representing a model for suburban residential development

The following is an artists image of the RD&D City.



Figure 4.11: Image Sketch of the RD&D City

4.2.4 Functional Zoning in the Culture Town Zone

The Culture Town Zone will be located in the southern part of the sub-center, and will be the gateway to the northern part of the sub-center as well as providing a day-tourism facility for airport passengers. This zone will have the atmosphere of a Thai city with easy access to the canal. The close proximity of the temples will be preserved and enhanced. The basic principles of the development will be as follows.

- Canal, temples, water market and water transport
- Lively and comfortable urban area, with lots of activities
- Tastes of a traditional Thai city
- Providing “Day-Tourism” for airport passengers
- Providing affordable and decent homes for the airport employees and workers
- Location: The south side of Chon Buri Motorway

The Culture Town Zone will comprise the following three sub-zones.

Air Gate Sub-zone (Railway Station)

- Inter-modal transport node (railway station, regional road) and direct connection to the airport
- Back-end offices for airport-related industries (such as airlines, logistics, transport and tourism)
- Hotels, shopping, day-tourism and medium-rise residential facilities

Canal Towns Sub-zone

- Existing temple towns around Wat Lan Boon and Wat Sangharacha will be preserved
- New development of presently unused land
- Preserving historic atmosphere with greenery and easy access to water
- Addition of a canal side plaza, amphitheater and event hall
- Easy-to-walk village streets with craftsman workshops for displays and manufacturing
- Riverside walk and a souvenir street

Airport Town Sub-zone

- Provide homes to airport staff and workers with a good environment and affordable prices
- Mostly in the areas along On Nut Road
- Road connections to airport and bus services

The following figure depicts a detailed image of the zonings in the cultural town and the surrounding area.

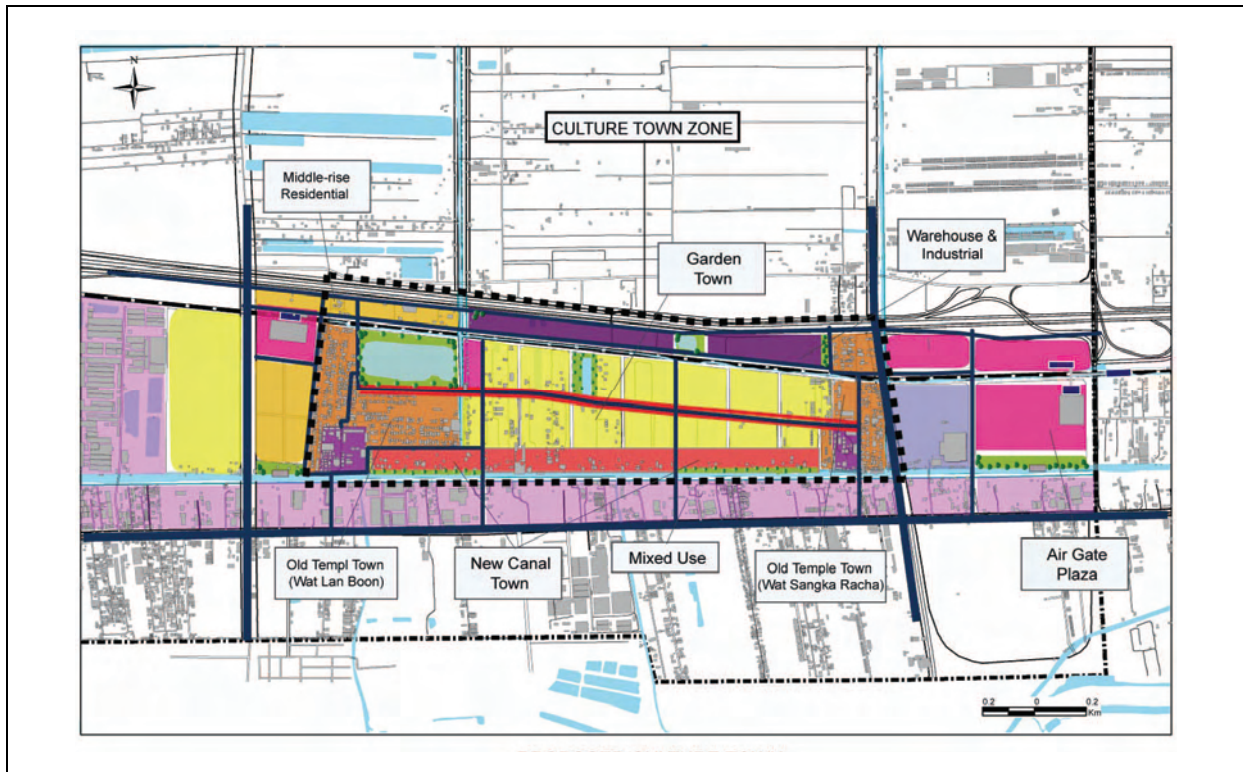


Figure 4.12: Detailed Image of Zonings Culture Town and the surrounding area

The following is an artists image of the Culture Town.

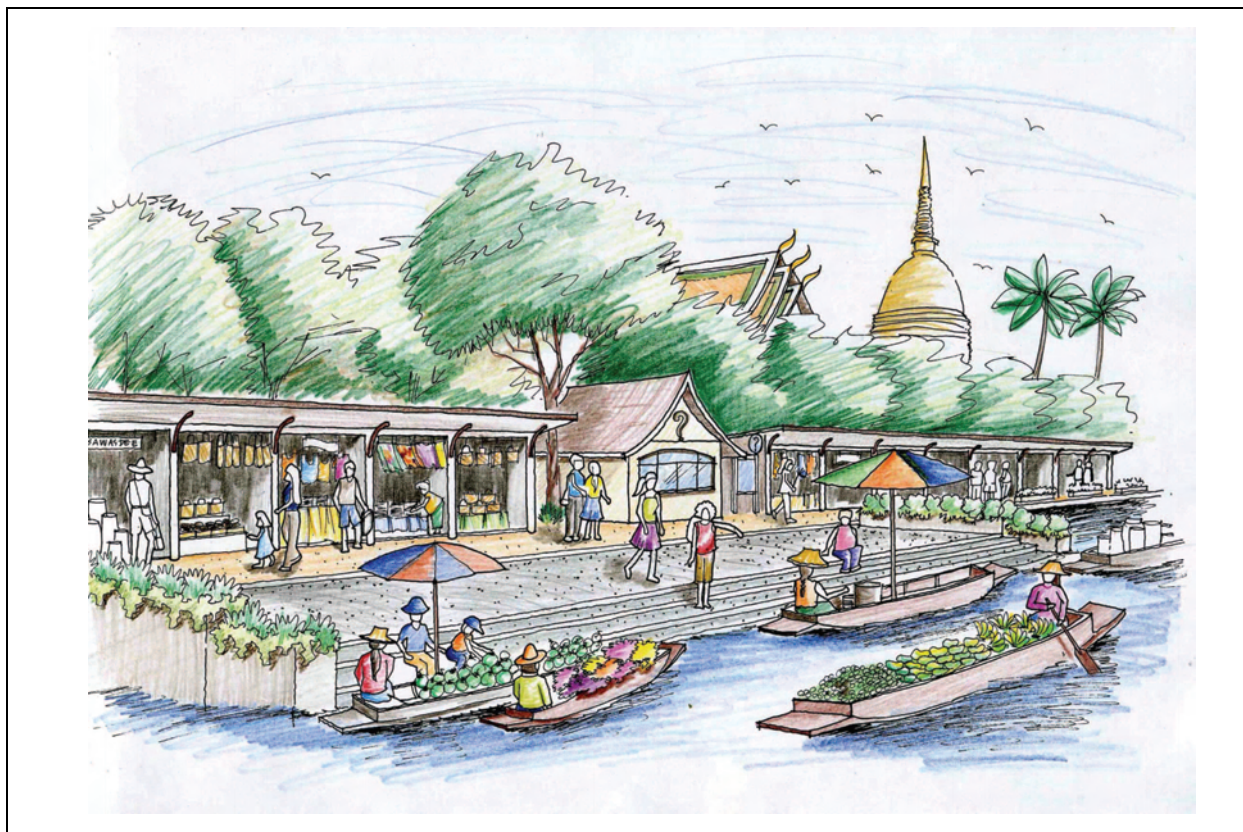


Figure 4.13: Image Sketch of the Culture Town

The Culture Town zone will include the floating market scheme advocated by the BMA in selected locations including the Lat Krabang District. The floating market will be carried out over a wide region including both the sub-center and the existing town of Lat Krabang.

The following schematic, prepared by the Study Team for consideration, shows the proposed water market in the Prawet Burrirom Canal in the Lat Krabang District.

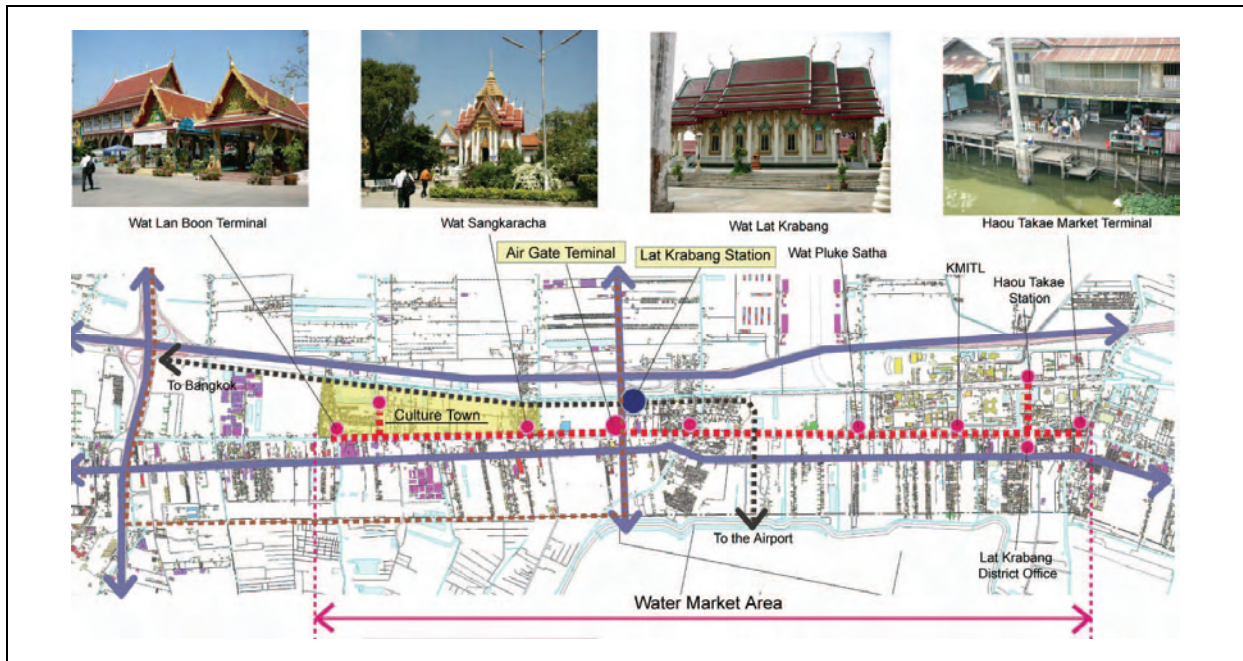


Figure 4.14: Schematic of the Culture Town

The following chart summarizes the facilities and functions by zoning cluster in the study area.

Table 4.2: Designated facilities and functions by zoning cluster

Sub-zones	Cluster Categories	Facility	Function	Remark
RDD Town	Hybrind Town Center	City Park	Serves the Subcenter – also flood protection function integrated	These block constitute the core of the Subcenter. Development with the transit mall concept. Flood protection ponds will be integrated with urban parks. Good for residence, offices and retail.
		Middle & High rise residential	High-end suburban residential units for new residents	
	Office buildings and commercial complex	Accommodates offices, retail shops and service centers		
	RDD&Enterprise	Business Parks	Houses high-tech research, development and design laboratories in IT, automobile, electronic, field	Accommodate research, development and design oriented firms in the business park
Internatioanl Trade	International Trade	Transportation / Logistic Companies	Offices and transshipment centers	Faces Rom Klao Rd, high potential for development. Need coordination with existing residential development.
		Training School	Vocational training for technicians / mechanics	
		Warehouse	Warehouses	
Low-medium Density Housing	Value Creation	University	Faculty of engineering, graduate school	Either BMA University or other high-class university campus for of engineering field
	Garden Suburb	Residential	High-end suburban residential units	Good access if NS1 is built. Good for university and other educational facilities.
Medium-High Density Housing	Garden Suburb	Residential	High-end suburban residential units	Close to Motorway, high potential for development.
Culture Town	Garden Suburb	Residential	High-end suburban residential units	Along exiting canal and desinated for culture town
	Canal Town	Commercial	Shophouses and boating place	Tourism area for culture town

4.3 Land Use Planning

Prior to finalizing the land use master plan, which will focus on strategically important areas that are suitable for employing some types of urban development projects, it is necessary to formulate a land use zoning plan. This is because the Lat Krabang Sub-center area covers various small sub-areas many of which require regulations rather than projects.

Policies for land use zoning are described in the following subsections. In addition a zoning plan has been formulated from known facts and the results of recent analysis. It is intended that this plan will facilitate vital discussions amongst the stakeholders.

4.3.1 Land Use Zoning Categories

Based on the policy of functional allocation discussed above, land use has been classified into nine categories in order to fit the area specific conditions. These categories are employed to realize the strategic development plan for the sub-center, and take into consideration the existing environmental conditions in the Study Area.

The characteristics of the categories proposed in the Study are described below.

Table 4.3: Proposed Land Use Categories and Area by Zones

Categories	Major Function	Area(ha)	Ratio(%)
Residential- Low-Medium Density	The zone shall consists of low-medium density residential which is in good quality with green open spaces.	265	13.6
Residential- Medium-High Density	The zone shall consist of medium-high residential uses with mixed use such as neighborhood commercial and business.	515	26.4
Culture Town	The existing residential areas shall be preserved to keep the environemnt of the communities. Other areas where are vacant or undeveloped land shall be used for fill-in development by considering the harmony with existing communities.	115	5.9
International Trade	With an advantage of accessibility to the new airport, this zone shall accommodate international trade business such as internaitonal product marts, showrooms, and whole sale.	250	12.8
Hybrid Town Center	The zone shall consist of major commercial activities such as shopping mall, hotel, and multi tenant offices as a subcenter's core, which target tourists or visitors from new airport and Bangkok area.	65	3.3
RDD & Enterprise	The zone shall accommodate low-rise business parks for research development and designing. The designated types of business are high-tech industries related to automobile, ICT, and medical industries.	310	15.9
Public Facility	The zone shall be used for public uses such as government institutions or public facilities to serve for residents in the subcenter.	7	0.4
Value Creation Park & Green	The zone shall consist of higher education for human resources development in the fields of high technology, medical, and internatinal trade in order to create a FDI-friendly investment.	40	1.9
Park & Green	The zone has two major functions such as establishing a central park as symbolic space for the subcenter and preserving spaces for retention ponds to protect from flooding hazards.	75	3.8
Infrastructure & Canal	The category includes infrastructure, major streets, railway and canals.	310	15.9
Total		1,950	100



Figure 4.15: Proposed Land Use

4.3.2 Conditions and Criteria for Land Use Planning

The land use categories and descriptions are summarized in the previous section. In order to make the proposed land use plan achievable, certain criteria need to be established as indicated in the following chart. The chart indicates the permitted land use types by land use category and proposed regulations, such as floor area ratio and building coverage ratio.

(1) Permitted use

The permitted land use types by land use category are the types of land uses that are permitted in each zone. These are established in order to induce development activities that follow the land use plan.

(2) Floor Area Ratio

One of regulations presented in the chart, floor area ratio (FAR), defines the gross floor area permitted on a site. The proposed FAR by land use category is determined in the following manner.

- The ratio is determined in accordance with the planned land use types and as to achieve the planned population in the Study Area.
- The ratio is determined in consideration of the existing conditions so that existing buildings are not too different from the standard.

(3) Building Coverage Ratio

Another new regulation is the Building Coverage Ratio (BCR) which controls the allowable building coverage in relation to the size of the lot. This control prevents overcrowding or overdevelopment and contributes to the safety of the area and the creation of open spaces on a site. The proposed BCR is determined in the following manner.

- The ratio takes into consideration the land use type and the development volume set by the land use.
- The ratio is determined in accordance with the planned land use types and so as to achieve the planned population in the Study Area.

Considering these directions and regulations, as well as other factors relating to land use planning as discussed previously, the criteria by Study Area zone are summarized below.

1) Residential Low-Medium Density

Conditions:

- Major land uses in this zone are unused land and rice fields with existing low density residential areas. The communities are concentrated in the western part and southern part of the zone.
- New residential development activities are observed near to the intersection of the outer ring road and Chonburi Motorway.

Criteria:

- Considering the existing low-density residential land use, this zone shall be kept as a low rise and low density residential district with essential facilities serving dwellers in the zone.
- The FAR is set as low as 120% which is a suitable volume for low-rise residential.
- The BCR is set at 0.5 in order to avoid overcrowding and to retain an attractive and safe environment.

2) *Residential Middle-High Density*

Conditions:

- This zone is filled with existing buildings with few vacant lots, some of which are reserved land for residential buildings.
- The existing density is high and there is overcrowding in the developed areas.
- The area along On-nut Road, which is within 15 meters in distance, is regulated by the BMA to legally allow the construction of townhouses, commercial and entertainment buildings, industrial buildings, and warehouses.

Criteria:

- The existing conditions in the built-up area shall be retained with comparatively loose restriction of the FAR and BCR.
- This zone shall be filled with middle to high rise residential buildings as well as facilities to serve the residents in the zone. Developments should be in harmony with the existing communities.

3) *Culture Town*

Conditions:

- This zone consists of existing communities and two major temples. The communities are very dense and lack sufficient street networks.
- The existing undeveloped areas are mainly used for retention ponds or fisheries.

Criteria:

- This zone shall become the central cultural and historic area aiming to accommodate visitors from the new airport or from outside of the Study Area. Considering the target for future development, improvement of the existing facilities will be required, such as the temple ports and the street network.
- The built-up area should be kept in its existing condition.

4) *Hybrid Town Center*

Conditions:

- This zone is classified into three districts; the town center zone located to the north of Chonburi Motorway, and two zones that surround the existing train stations. The major land uses in this zone are unused land and agriculture fields. There are a few buildings situated in the zone.
- This zone needs to be developed as the sub-centers symbol and transportation node to connect areas that are inside and outside of the Study Area.

Criteria:

- The town center zone located to the north of Chonburi Motorway shall accommodate large scale commercial facilities such as a shopping mall, a convention center, and hotels to attract visitors. The FAR and BCR shall be set as high as possible to allow the construction of large scale buildings.
- The other two zones, located on the south side of Chonburi Motorway and including the existing train stations, shall be developed to provide a transportation node to both residents and visitors with a station plaza facilitated by middle-rise to high-rise buildings.

5) *International Trade*

Conditions:

- This zone is a relatively new high-density development and contains a mixture of industrial and residential land uses. It is necessary to consider keeping the existing community in a fine living environment.
- The southern part of this zone is not suitable for residential use as it is affected by the noise from the new airport located in the south of the Study Area.
- The area along Rom Klao Road, which is 15 meters in distance, is regulated by the BMA bylaw to allow the construction of townhouses, industrial buildings and warehouses.

Criteria:

- This zone shall be developed to facilitate an international trade center or logistics center. Green buffers shall be introduced between industrial and residential areas.
- In the southern part of the zone, suitable land uses shall be introduced that take into account the expected noise levels due to the proximity of the airport.
- The FAR and BCR shall be set so as to accommodate the existing building volume in the newly developed areas.

6) *RDD Enterprise*

Conditions:

- Major land uses in this zone are unused land and agricultural fields. There are few buildings situated in the zone.
- Two major canals, which run from north to south, will require widening in order to provide flood protection in accordance with the growth in demand due to future development.

Criteria:

- This zone shall mainly accommodate low-rise buildings (for research, development and design) in large size lots. The allowable FAR and BCR is lower in the northern part of the zone and higher in the southern part which is located close to the town center zone.
- The land that is required for the improvement of the canals shall be taken into consideration in the land use planning.

7) *Public Facilities*

Conditions:

- In the Study Area, there is little land owned by the public sector and few public facilities. It is necessary to incorporate additional public services to accommodate residents and visitors in the area based on the anticipated future development.

Criteria:

- The existing public facilities, such as water tanks or public schools, shall be kept in their existing condition.
- Each zone shall accommodate necessary public facility.

8) *Value Creation*

Conditions:

- This zone is currently unused land and agricultural fields. No buildings are located in this zone.

Criteria:

- This zone shall accommodate educational facilities in large size lots, and the FAR shall be balanced with the neighboring low-rise residential areas.

9) *Parks & Green*

Conditions:

- The Study Area currently has few parks or green areas and requires the creation of additional green areas such as walkways along canals or in residential areas.
- The existing built-up area has little land available for green areas because of the high-density development. New green areas should be incorporated into the future developments.

Criteria:

- Large-scale parks shall be located in the center of the sub-center area in order to provide a symbolic function as well as allowing for the provision of retention ponds to fulfill the role of flood prevention.
- Each zone to be developed shall accommodate sufficient spaces for parks and green areas.

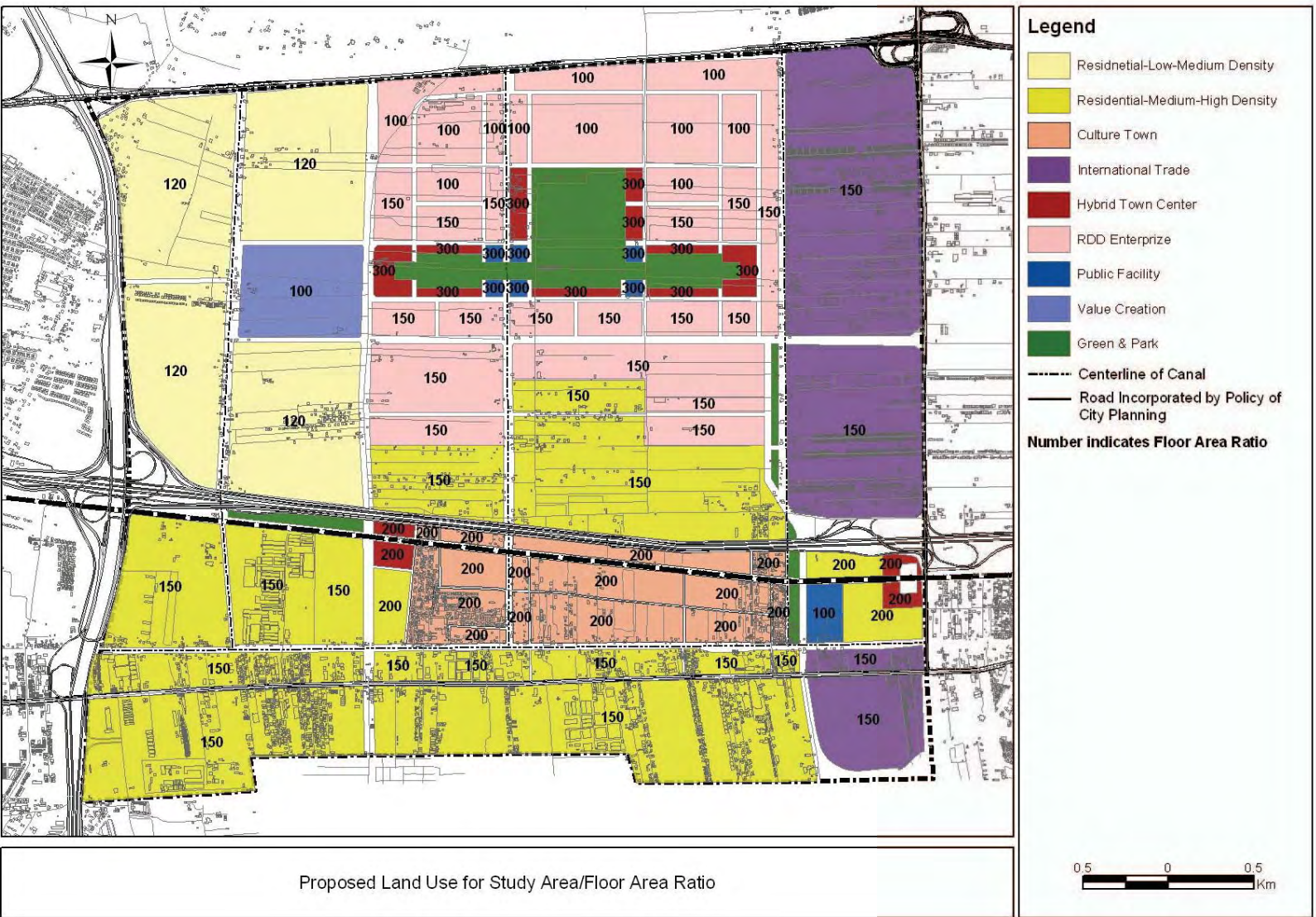


Figure 4.16: Plan of the Distribution of Floor Area Ratio

4.4 Population Distribution Plan

4.4.1 Population and Employment Distribution

The following maps show the population and employment densities by planned land use zones. These densities were established after consideration of the land use type and the proposed volumes of population and employment by the target year of 2035.

With regard to the population distribution, the distribution policy is summarized below.

Low Density Areas:

- The residential zone for detached houses, named as a garden town
- The town center and RD&D zones, located on the northern side of Chonburi Motorway, whose major uses are commercial and business functions.

Middle Density Areas:

- Existing communities located on the southern side of Chonburi Motorway, except for the cultural town due to the existing building density in this zone.
- The residential zone located between the RD&D Enterprise zone and Chonburi Motorway which shall accommodate middle to high-rise residential buildings.
- The middle density Trade & Distribution zone.

High Density Areas:

- The culture town, which is already a high density area.

With regard to the distribution of employment opportunities, the distribution concept is summarized below.

Low Density Areas:

- Residential zones such as residential low-rise buildings, residential middle-high rise buildings, and culture town zones.

Middle Density Areas:

- The Trade & Distribution zone which accommodates residential buildings as well as non-residential facilities.
- The employment density of the RD&D Enterprise will be set up differently based on the proposed types of RD&D.

High Density Areas:

- The town center and RD&D Enterprise zones located on the northern side of Chonburi Motorway whose major functions are commercial and business activities.
- The employment density of the RD&D Enterprise will be set up differently based on the proposed types of RD&D.

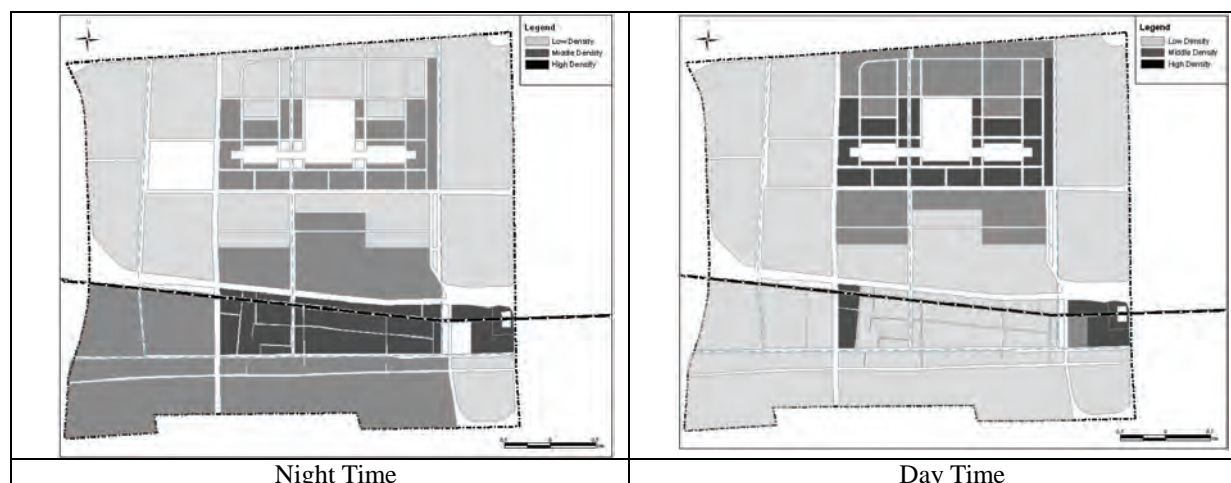


Figure 4.17: Density of Population in the Study Area

4.4.2 Distribution of Population and Employment

Based on the density distribution policy summarized previously, population and employment shall be distributed as shown in the following table and on the maps of density by land use zone.

By 2035 (which is the target year for the completion of the sub-center development), the total population is estimated to be approximately 168,000 persons, 70% of which is contained in residential zones such as residential low-rise buildings, residential middle to high-rise buildings, and the cultural town. Total employment in the Study Area is estimated to reach approximately 100,200 persons, 73% of which is concentrated in new development areas including the town center zones and the RD&D Enterprise zone.

Table 4.4: Distribution of Population and Employment

Land Use Categories	Land Area (ha)		Targeted Year 2035						
			Planned Num.of Population		Planned Num.of Workers		Floor area (ha)		
			Population	Population density	No.of workers at work place	Density of workers at workplace	Floor area of Residential buildings	Floor area of Non-Residential buildings	Total floor area
			Gross	%	Persons	Persons/ha	Persons	Persons/ha	
Residential-Low rise building	263	16.91%	13150	50	1315	5	39.45	2.63	42.08
Residential-Middle-high rise building	515	33.12%	82400	160	5150	10	247.2	10.3	257.5
Culture Town	113	7.27%	22600	200	2260	20	67.8	4.52	72.32
Trade & Distribution	250	16.08%	15000	60	16250	65	45	32.5	77.5
Hybrid Town Center1	28	1.80%	2200	100	7000	250	6.6	14	20.6
RDD & Enterprise 1	100	6.43%	12000	120	25000	250	36	50	86
RDD & Enterprise 2	115	7.40%	6900	60	18400	160	20.7	36.8	57.5
RDD & Enterprise 3	89	5.72%	6230	70	13350	150	16.17	23.1	39.27
Public facility	7	0.45%	0	0	700	100	0	1.4	1.4
Value Creation	38	2.44%	0	0	1520	40	0	12.16	12.16
Hybrid Town Center2	37	2.38%	7400	200	9250	250	22.2	18.5	40.7
Total	1,555	100.00%	167,880		100,195		501.12	205.91	707.03

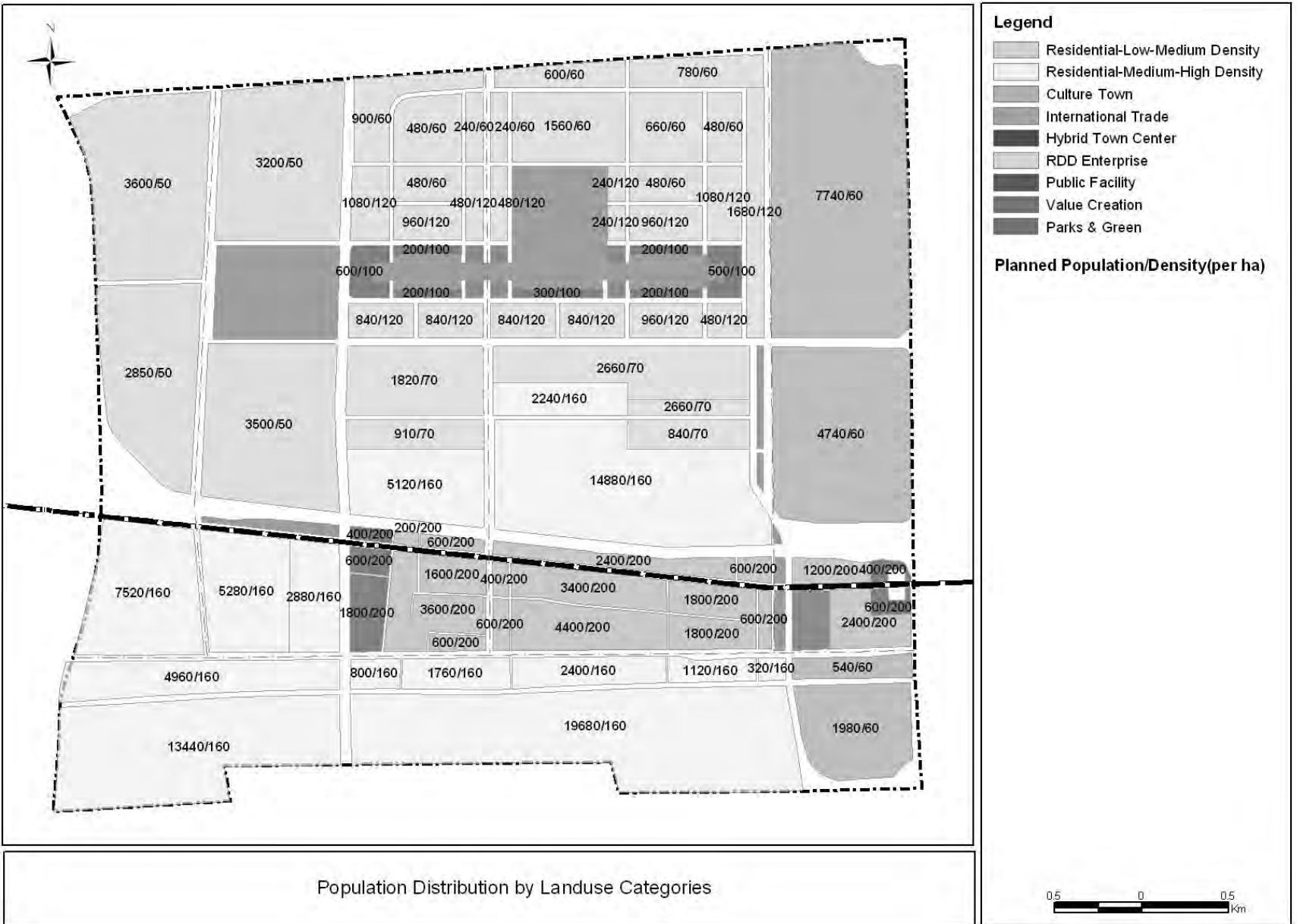


Figure 4.18: Population Distribution by Land Use Category

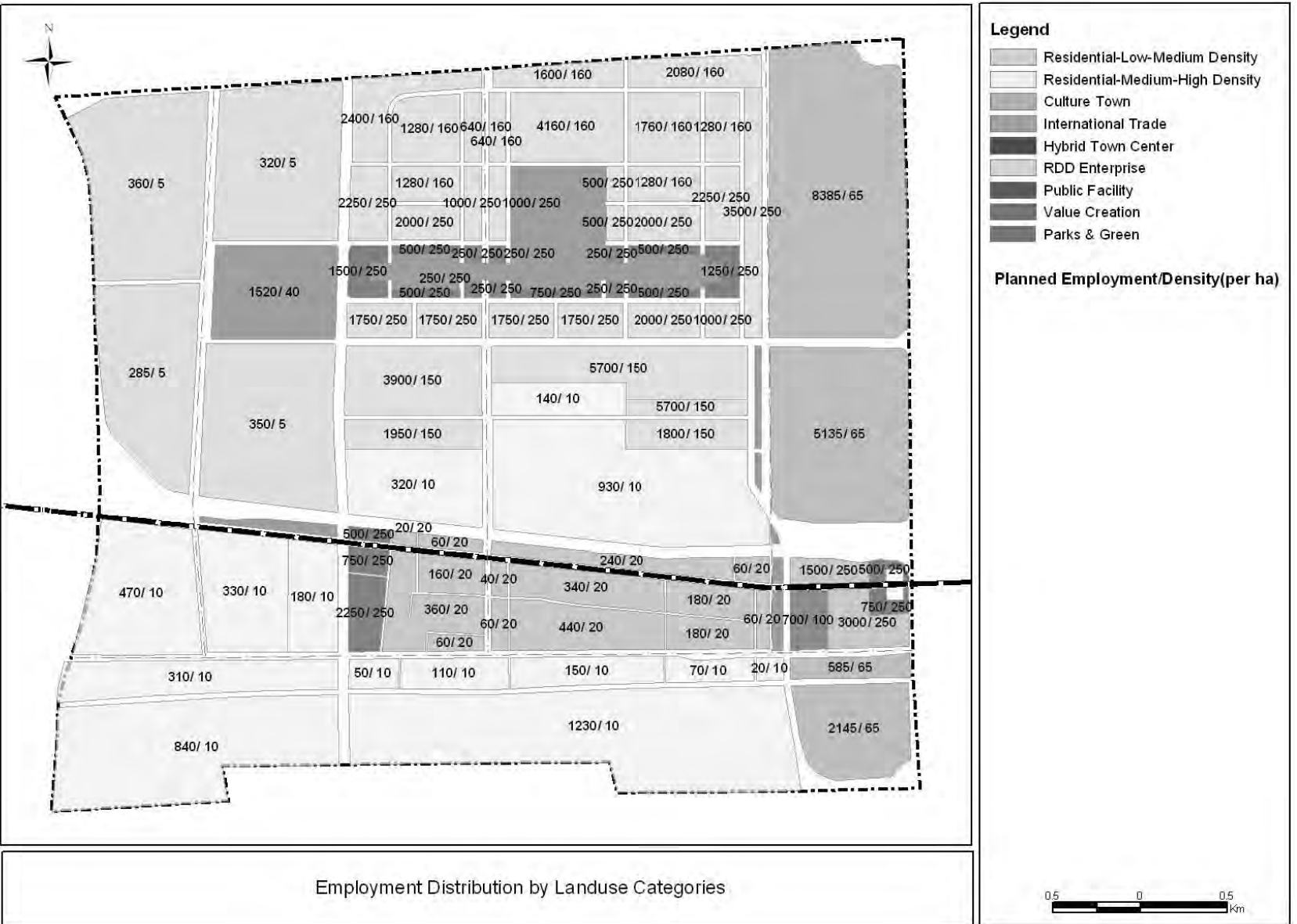


Figure 4.19: Number of Employed Persons by Land Use Category