

3. DIRECTIONS FOR LAT KRABANG SUBCENTER DEVELOPMENT

3.01 International and National Policy Context

(1) Free Trade and Open Market

The international policy for trade and industry is moving towards free trade of goods and services. There is a steady movement towards a free trade zone within the ASEAN nations, denoted as the ASEAN Free Trade Area, of AFTA, which is calling for significantly lowering import tariffs at the international borders of the member countries from the present level. The other is the movement of bilateral free trade agreements, notably the one initiated by Japan, with a few of the emerging economies in the Southeast Asia, including Thailand.

It is widely discussed amongst the academics and practitioners alike that the policy framework towards free trade and open market will accelerate regional and international integration of manufacturing modes. Under more severe international and regional competition for survival, all the countries need to have industries with high domestic value-added components and need to find their own *niches* in the world economy.

In order to survive the competitive, open market, the key word for success is said to be human resources that would support and advocate an up-market shift of the Thai industries in the respective fields, by creating more value with higher quality.

(2) Need for Value Creation

The Thai Government has launched various promotion activities for their industries for higher value-added components or value creation. Some of the prominent targeted industries for Thailand, as declared by the Government and respective agencies, and their slogans include the following³.

The essence of higher added value or value creation resides in shifting from relatively low added value assembling and production of parts and components categories towards the upstream functions such as research and development (R&D) and designing, or downstream to marketing and branding⁴.

³ Following MOI-VDF Joint Mission on Industrial Policy Formulation of Thailand, March 2005, with amendments.

⁴ Mai The Cuong, et al. "Trade-Industry Linkage in the Thai Automobile Industry and its application to Viet Nam, June 2005.

Table 3.01: Major Directions of Up-Market Transition of Thai Industries and Slogans

Industry	Master Plan, and Slogan	Major Strategies
Automobile	Thai Automotive Master Plan 2002 - 2006 : The Detroit of Asia	Creating a predictable environment for business Information center Engineer development Enhancing the competitiveness Automotive research and development center Export promotion center for auto parts
Information Technology (IT)	IT 2010: Towards the Knowledge Based Economy	Equitable access for public ICT Knowledge enhancement ICT research and development ICT industry development
Fashion	Bangkok World Fashion City project	Develop human resources for the Thai fashion industry Transition from “cut, make & trim” to higher-value-added production Synergy of textile and apparel industry with no broken links in the supply chain
Tourism	Tourism Capital of Asia	Tourism promotion under “Amazing Thailand” Promotions to attract up-market visitors Niche market tourism such as MICE (Meetings, incentives, conventions and exhibitions)

The Thai automobile industry, for example, is said to be in the process of assembling and production of parts and components categories (Category C and D), while the industry is striving towards the upstream (Category A; R&D and Category B; designing) and downstream (Category E; marketing and Category F; branding) expansions.

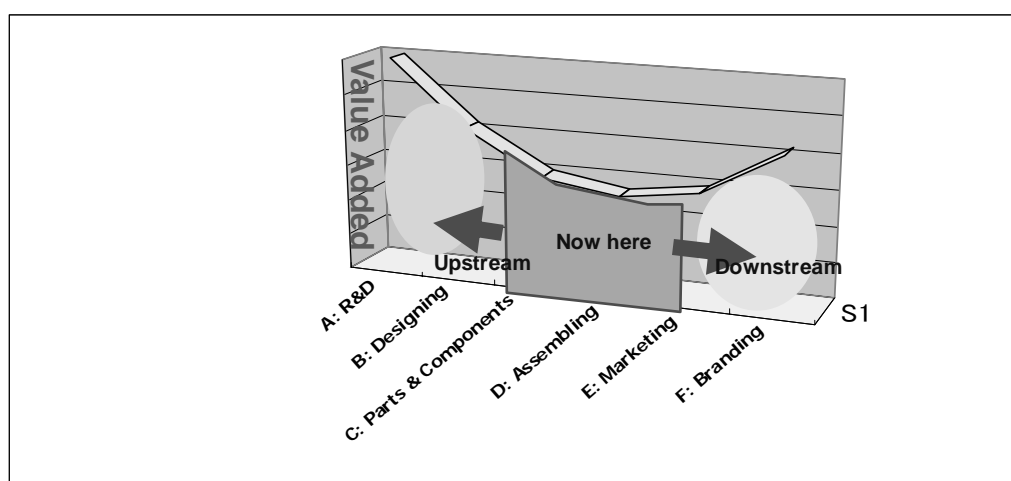


Figure 3.01: Value Creation of Thai Industries by Upstream and Downstream Expansion

3.02 Regional Development around the New International Airport of Bangkok

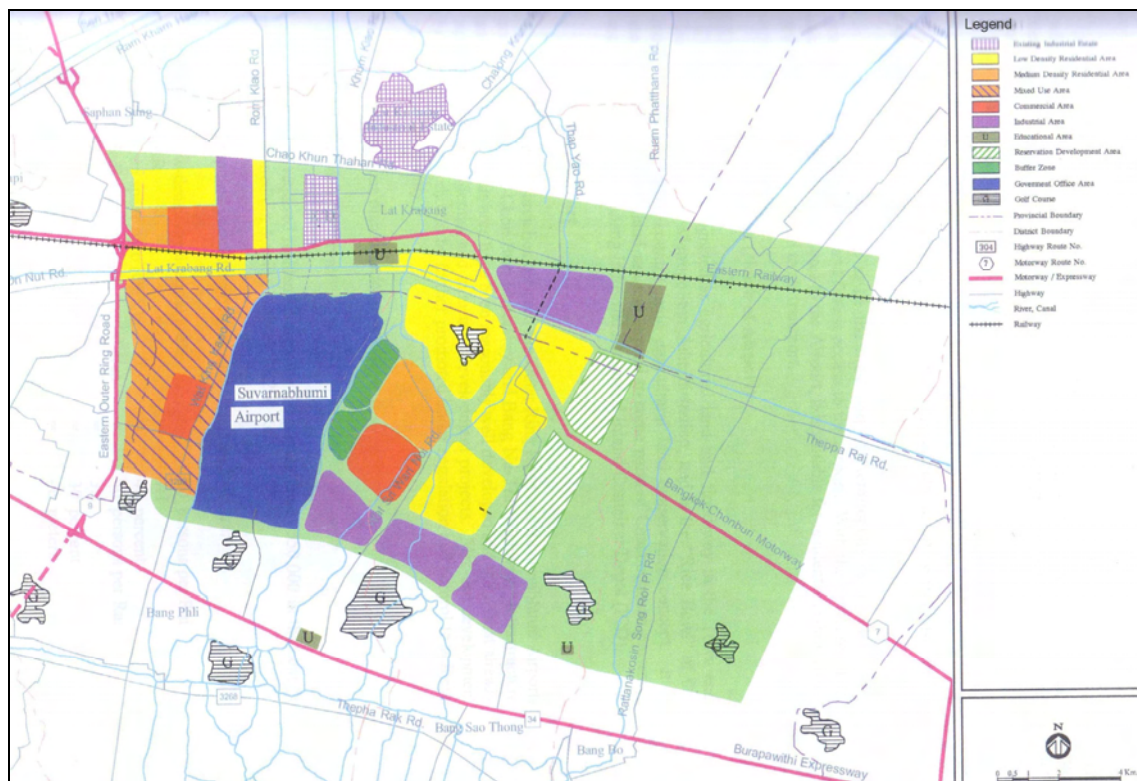
With regard to the regional development planned for the area including the Lat Krabang Study area, there are two important planning efforts by the Thai side, as in the following.

(1) Suvarnabhumi Aerotropolis Development Plan by NESDB

The Suvarnabhumi Aerotropolis Development Plan was prepared by the National Economic and Social Development Board (NESDB) for the development of a new airport, Suvarnabhumi Airport, and its immediate surrounding area over the next three decades to 2035. The planning work consists of land use, transportation, flood control, water supply,

wastewater and solid waste management, and utilities. The land use plan is to be developed with the concept of maximized land utilization considering preservation of the natural environment.

According to the land use plan for the Master Plan Area shown in the following map, the Lat Krabang Subcenter Study Area is prescribed for 4 types of proposed land use categories such as industrial, low density residential, medium density residential, and commercial. The major planned use of the area is industrial on the west side of Rom Klao road and low density residential in the northern half of the study area. The commercial area is to be located in the center of the study area north of the Bangkok-Chonburi Motorway.



Source: Suvarnabhumi Aerotropolis Development Plan

Figure 3.02: Land Use in the Master Plan Area around Suvarnabhumi Airport in the Year 2035

(2) Regional Development Plan around the Suvarnabhumi Airport by DTP

Upon instruction by the Bureau of the Suvarnabhumi Airport Development, NESDB, the Department of Public Works and Town and Country Planning (DPT), MOI initiated the regional development plan around the new airport. DPT formulated the draft final report in January 2006 and still continues to receive public comments on the report.

Since the DPT study focuses on physical planning rather than conceptual, and various analyses on physical aspects were conducted, the study consequently resulted in changing the proposals in the previous plan of NESDB. The committee of the DPT's development plan has decided to employ a draft land use plan as shown in the next page.

In regard to the Lat Krabang subcenter, the DPT study area includes the whole subcenter area. The land use categories for the study area are mid-density residential in most of northern part, commercial area in the northern part along Rom klao road and motorway, high-density residential in the southern part, and open space in the south-east corner of the study area.

Those land uses and regulations are inconsistent with the revised BMA's comprehensive plan Update No. 2 which will be described in the following part, and needs some minor practical adjustment between DPT's plan and BMA's plan concerning the Lat Krabang subcenter.

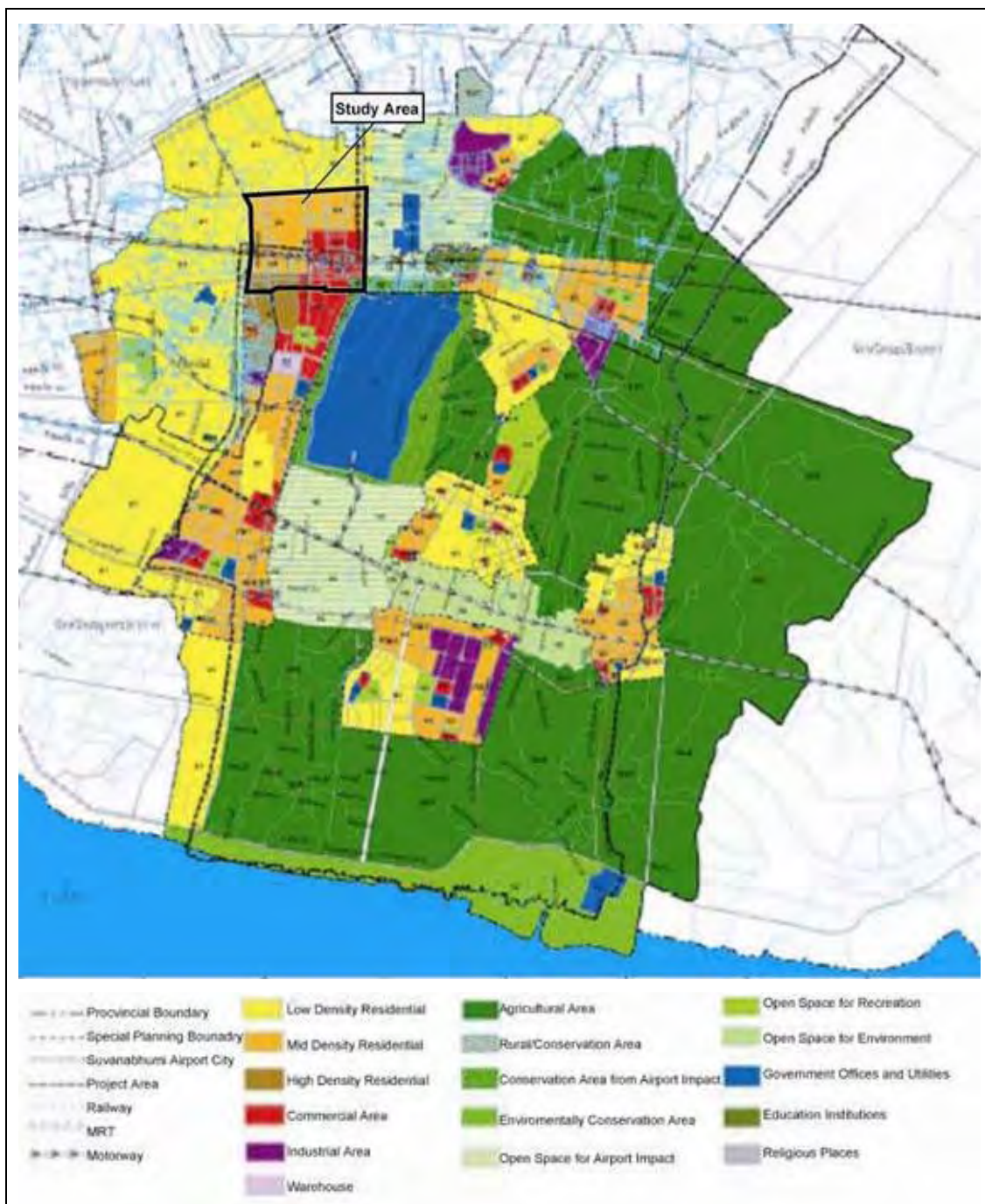


Figure 3.03: Draft Final of Land Use Plan by DPT

3.03 Development Principles

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

(1) Harmony with Existing Communities and New Communities

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

For this purpose, this 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 to hear their opinions and comments on development issues. In the course of the study, a series of stakeholder meetings were conducted in the form of open seminars 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 characteristics of the Lat Krabang areas as much as possible, and an open space network with plenty of greenery and water bodies will be incorporated in the plan.

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

(3) Coordination between Urban Development and Transport

In relation to the item (2) above, due attention will be paid to the coordination between the urban development and transport planning. Historically, urban development in Thailand tends to be sporadic, while 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, public parking etc. It will be essential to combine the public sector roles as a provider of infrastructure and as an initiator of urban development.

(4) Making a Flood-Free City

The Lat Krabang Area is a low-lying area with a history of flooding. The flooding tends to increase due to 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 affect downstream areas, a combination of polder dykes, enhancement of canal systems and retention ponds, and introduction of pumping stations will be considered for the most economical solution.

(5) Preserve and Activate the Thai Traditional Urban Atmosphere, where appropriate

Bangkok, which had once been denoted as the Venice of the East, evolved as a city with water. The city has an extensive canal network, which has been used for water transport and the floating markets. Nowadays, although canal systems are still existent, the lively activities thereupon have long gone, and BMA has an initiative to revive water markets where people are willing.

With the development of a new airport, there will be latent demand for day-tourism for the passengers using the new airport. In order to serve such demand, traditional Thai urban

culture needs to be enhanced wherever appropriate. This will be a core function of the Culture Town of the Lat Krabang Subcenter.

(6) Create a Model for Subcenter Development in Bangkok Metropolis

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

3.04 Socio-economic Development Framework

(1) Development Scenarios

The development framework will depend on, among other things, the foreseeable course of development of the Sub-Center. It is thus worthwhile to discuss various possible development scenarios and possible outcomes to choose a suitable development scenario. In Chapter 2 of this paper, the population and employment in Lat Krabang and surrounding districts were shown, according to the forecast of NESDB for the Aerotropolis project. As the planning documentation is to be officially adopted by the Government soon, the planning of the Lat Krabang Project will follow this framework

The following is the summary of increases projected by NESDB in the population and employment in Lat Krabang and surrounding districts.

Table 3.02: Summary of District-wise Population and Employment Increase 2003-35

District	Population (persons)			Employment (persons)		
	With airport	Without a/p	Difference	With airport	Without a/p	Difference
Lat Krabang	173,000	26,000	147,000	111,000	29,000	82,000
Prawet	88,000	29,000	59,000	59,000	26,000	33,000
Min Buri	50,000	25,000	25,000	39,000	25,000	14,000
Sub-total	311,000	80,000	231,000	209,000	80,000	129,000
3 other districts	89,000	43,000	46,000	27,000	19,000	8,000

Source: JICA Study Team estimates, following the framework established in Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

It is clearly seen that a large part of the increasing population and employment is to be accommodated in Lat Krabang District. This is compatible with the BMA policy to develop a substantial Sub-Center in Lat Krabang as a regional center.

Development scenarios would accrue from differentiating the share of the projected increases in population and employment to be borne by the Lat Krabang Sub-Center. Four scenarios are formulated as below.

1) Low Growth Scenario

The first scenario is the “Low Growth Scenario”, in which the Lat Krabang Sub-Center is assumed to accommodate about half of the projected increases in population and employment by 2035. This is a modest assumption considering the high potential of the Sub-Center area with good accessibility to public transportation systems and highway and regional arterial road networks.

Table 3.03: Development Framework for the Lat Krabang Subcenter Area (Low Growth Scenario)

Item	Incremental Population (Increase from 2003)				Total Population			
	2003	2015	2025	2035	2003	2015	2025	2035
Population	0	45,000	84,000	173,000	132,000	177,000	216,000	305,000
Sub-Center Area	0	14,000	32,000	85,000	30,000	44,000	62,000	115,000
Non-Sub-Center Area	0	31,000	52,000	88,000	102,000	133,000	154,000	190,000
Employment	0	33,000	57,700	112,000	59,000	92,000	116,700	171,000
Sub-Center Area	0	10,000	23,000	56,000	3,000	13,000	26,000	59,000
Non-Sub-Center Area	0	23,000	34,700	56,000	56,000	79,000	90,700	112,000

Source: JICA Study Team estimates following the framework established in the Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

2) Medium Growth Scenario

The second scenario is the “Medium Growth Scenario”, in which the Lat Krabang Sub-Center accommodates about 70% of the projected increases in population and employment by 2035. This is a middle-of-the-road scenario, with a good balance of the expansion of the existing Lat Krabang town center area and the new Sub-Center area.

Table 3.04: Development Framework for the Lat Krabang Subcenter Area (Medium Growth Scenario)

Item	Incremental Population (Increase from 2003)				Total Population			
	2003	2015	2025	2035	2003	2015	2025	2035
Population	0	45,000	84,000	173,000	132,000	177,000	216,000	305,000
Sub-Center Area	0	23,000	50,000	121,000	30,000	53,000	80,000	151,000
Non-Sub-Center Area	0	22,000	34,000	52,000	102,000	124,000	136,000	154,000
Employment	0	33,000	57,700	112,000	59,000	92,000	116,700	171,000
Sub-Center Area	0	16,000	35,000	79,000	3,000	19,000	38,000	82,000
Non-Sub-Center Area	0	17,000	22,700	33,000	56,000	73,000	78,700	89,000

Source: JICA Study Team estimates following the framework established in the Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

3) Medium-High Growth Scenario

The third scenario is the “Medium-High Growth Scenario”, in which the Lat Krabang Sub-Center accommodates about 90% of the projected increases in population and employment by 2035. This is a relatively aggressive scenario in which the development of the new Sub-Center is set in the center of the Lat Krabang District, absorbing a large part of the required urban expansion.

Table 3.05: Development Framework for the Lat Krabang Subcenter Area (Medium-High Growth Scenario)

Item	Incremental Population (Increase from 2003)				Total Population			
	2003	2015	2025	2035	2003	2015	2025	2035
Population	0	45,000	84,000	173,000	132,000	177,000	216,000	305,000
Sub-Center Area	0	27,000	59,000	138,000	30,000	57,000	89,000	168,000
Non-Sub-Center Area	0	18,000	25,000	35,000	102,000	120,000	127,000	137,000
Employment	0	33,000	57,700	112,000	59,000	92,000	116,700	171,000
Sub-Center Area	0	20,000	47,000	99,000	3,000	23,000	50,000	102,000
Non-Sub-Center Area	0	13,000	10,700	13,000	56,000	69,000	66,700	69,000

Source: JICA Study Team estimates following the framework established in the Suvnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

4) *High Growth Scenario*

The fourth and final scenario is the “High Growth Scenario”, in which the Lat Krabang Sub-Center accommodates all the projected increases in population and employment by 2035.

Table 3.06: Development Framework for the Lat Krabang Sub-Center Area (High Growth Scenario)

Item	Incremental Population (Increase from 2003)				Total Population			
	2003	2015	2025	2035	2003	2015	2025	2035
Population	0	45,000	84,000	173,000	132,000	177,000	216,000	305,000
Sub-Center Area	0	45,000	84,000	173,000	30,000	75,000	114,000	203,000
Non-Sub-Center Area	0	0	0	0	102,000	102,000	102,000	102,000
Employment	0	33,000	57,700	112,000	59,000	92,000	116,700	171,000
Sub-Center Area	0	33,000	57,700	112,000	3,000	36,000	60,700	115,000
Non-Sub-Center Area	0	0	0	0	56,000	56,000	56,000	56,000

Source: JICA Study Team estimates following the framework established in the Suvarnabhumi Aerotropolis Development Plan, Final Report, NESDB, Dec. 2003.

(2) Adopted Planning Framework

The following Table shows the summary of the four development scenarios for the Lat Krabang Sub-Center.

1) *Population (Night-Time Population)*

The following shows the summary of the development framework for the population for the Lat Krabang Sub-Center Area (Study Area) from the present to the target year of 2035. This population framework indicates the night-time (residence based) population.

Table 3.07: Population Framework for Lat Krabang Sub-Center (Summary)

Development Scenarios	Population			
	2003	2015	2025	2035
Low Growth Scenario	30,000	44,000	62,000	115,000
Medim Growth Scenario	30,000	53,000	80,000	151,000
Medium-High Growth Scenario	30,000	57,000	89,000	168,000
High Growth Scenario	30,000	75,000	114,000	203,000

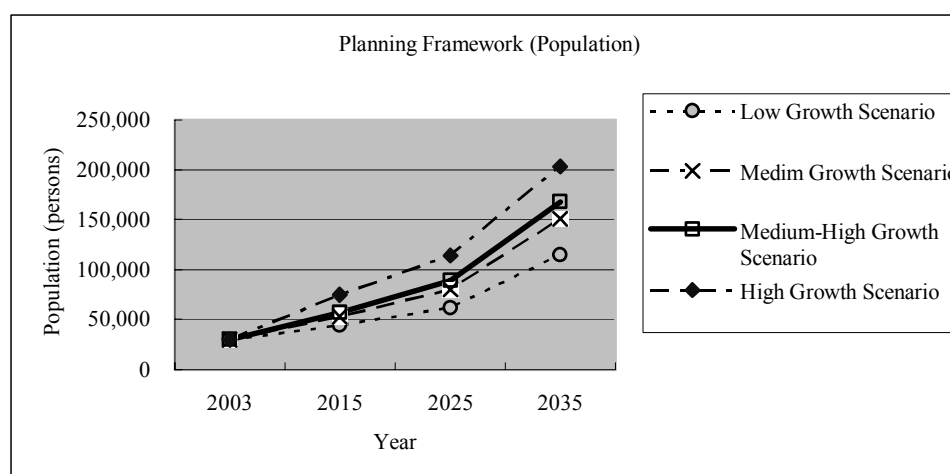


Figure 3.04: Population Framework for the Lat Krabang Sub-Center (Summary)

2) Employment

The following shows the summary of the development framework for employment in the Lat Krabang Sub-Center Area (Study Area) from the present to the target year of 2035. The employment framework indicates the number of people having a workplace in this area.

Table 3.08: Employment Framework for the Lat Krabang Sub-Center (Summary)

Development Scenarios	Employment			
	2003	2015	2025	2035
Low Growth Scenario	3,000	13,000	26,000	59,000
Medim Growth Scenario	3,000	19,000	38,000	82,000
Medium-High Growth Scenario	3,000	23,000	50,000	102,000
High Growth Scenario	3,000	36,000	67,000	115,000

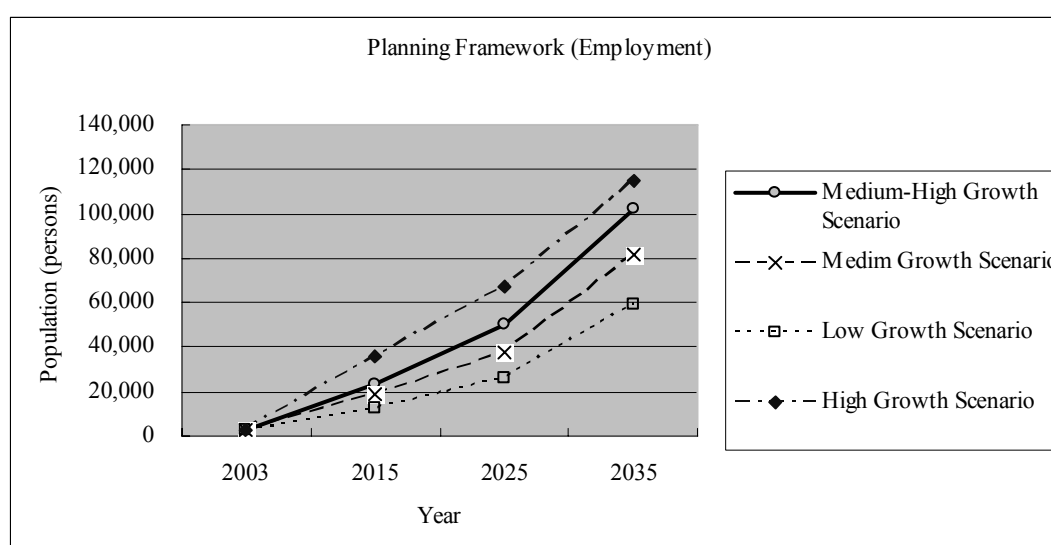


Figure 3.05: Employment Framework for the Lat Krabang Sub-Center (Summary)

Among the four development scenarios above, the Medium-High Scenario was adopted. This selection is recommendable in consideration that the Lat Krabang Sub-center is the leading project amongst the sub-center projects of BMA towards a multi-centric urban structure of Bangkok metropolis, and that most of the areas outside of the Lat Krabang Sub-center are either relatively already built-up with no large potential for urban growth or are buffer areas under the comprehensive plan of BMA.

3.05 Land use Framework

The following are the considerations for the functions to be introduced in each of the zones in the Lat Krabang Subcenter.

(1) Research, Development and Design Function

As the manufacturing industries in Thailand seek higher value-added components from the present status, which is predominantly production of parts and components and assembling, it is important to accommodate the upstream functions of manufacturing towards the research, development and designing (RD&D). There are already examples of firms investing in these

fields, and many major manufacturing industries located in Thailand are said to be considering expanding in these fields. As the Lat Krabang Subcenter has a location advantage with the proximity to the international hub airport which shall provide superb international connection to major international production bases by air, and accessibility to the metropolis of Bangkok, which is the center of knowledge-based activities in Thailand, the site will be suitable for research laboratories for development and design of new products.

(2) Airport Related Business Function

The new international airport, which will be open soon, will stimulate various airport related businesses, including logistics, international tourism, information technology, research and venture, etc. In addition, the projected 45 million annual passengers of the airport in the initial stage will create various business opportunities such as lodging, logistics, day-tourism, shopping etc. The Lat Krabang Sub-center will have a prime location to serve such functions that are not contained in the airport site itself.

Example of Research, Development and Design Function Development

One of the famous successful examples of research-oriented development in parallel with an international airport is Las Colinas, in the Dallas-Fortworth Texas metropolitan area in the USA. The development comprises 4,855 ha (about 2.4 times the Lat Krabang area) of business parks, where approximately 98,000 employees are working. The enterprises located in Las Colinas include Abbot Laboratories, Microsoft, Citigroup, and Boeing Electronics. There are some of the headquarters of world famous enterprises such as Exxon-Mobil, NCH Corporation, Kimberly-Clark and Zale Corporation, and American regional headquarters to companies such as Nokia, NEC and Verizon. Las Collinas is a ten minute drive from the Dallas-Fortworth International Airport.

(3) International Trade Function

Savarnabhumi Airport, which will be one of the largest international airports in Southeast Asia, will create an impact on international trade. The air cargo tonnage is projected as in the following. Considering that the present level of air cargo is 826,229 tons, the projected increase will be substantial.

Promotion of international trade is an important strategy for the future of Thailand. There are examples of developing an international trade zone in the vicinity of an international hub airport, such as the one depicted below. Increasing the international trade function will strengthen the cargo flow as well as boost the added value of the goods. Such as seen in the policy advocacy for the Bangkok Fashion City, the promotion of international trade will enhance the position of Bangkok for regional and international goods and trade in the future.

Table 3.09: Projected Air Cargo Tonnage at Suvarnabhumi Airport

Year	2005	2015	2025	2035
Conservative Scenario	1,183,000	1,928,000	3,149,000	4,871,000
Middle Scenario	1,200,000	2,200,000	3,500,000	5,500,000
Asia-Forecast Based Scenario	1,331,000	2,744,000	4,469,000	7,906,000

Source: Aerotropolis Master Plan

Example of International Trade Function Development

One of the noteworthy successes in accumulating the international trade function is depicted in the Dallas Market Center in the vicinity of the Dallas-Fortworth International Airport (DFW), with the handling of 52 million passengers annual, which is ranked 4th in the US. The Dallas Market Center (DMC) commands an area of 400 ha, where such facilities as the International Trade Center, World Apparel Mart, International Flower and Gift Center, Trade Mart, International Men's Wear Mart and Market Hall are located. According to DMC,

annual visits to DMC are estimate to be 130,000 from 84 nations, and the annual turnover is US\$7. 5 billion. DFW is the hub airport for American Airways.

(4) Value Creation Center Function

Research laboratories are known to seek a good environment as well as accessibility to the high quality human resources; the Lat Krabang Subcenter requires establishing itself as a site for such functions by accumulating a magnet institution within itself such as a value creation center for advanced research and human resources development.

Example of Value Creation Function Development

The accumulation of research-oriented institutions and laboratories was the main concept for the Tsukuba Science City development in the north of Tokyo. The Government officially decided to develop the Tsukuba Science City in 1963 and since then the national research and academic institutions were relocated to this area. One of the core institutions is Tsukuba University, a national university relocated from the city center of Tokyo. Today, the Tsukuba Science city has about 13,000 employees working at national or public institutions (of which 8,500 are researchers), and 4,500 researchers working at private research institutions. For details, refer to Appendix IV of Progress Report 1.

As research, development and design (RD&D) is closely related to the availability of quality human resources in advanced technology and science, management and business, The Lat Krabang Sub-center requires a value creation center function. The Value Creation function primarily comprises higher education institutions related to advanced technology and science, such as a graduate school of technical universities, national or municipal research laboratories and branch/campus of international universities. The Sub-center may provide a site for first rate higher education, such as a branch of a university, particularly in the science and technology fields. The location of universities and colleges in Bangkok is highly concentrated in the city center area, and locating some of the campuses out into suburban areas will be beneficial to decentralization of urban functions, too.

(5) Sub-Center Core Function

1) Town Center Function

The Sub-Center core function is primarily to serve as a business, commercial and administrative district that provides essential urban functions to the Subcenter area itself as the town center and transportation hub, as well as to the “Eastern Bangkok” area, and replaces, in part, the functions now provided by Bangkok CBD (Central Business District). This function is necessary to restructure the mono-centric urban structure into a multi-centric one, by providing regional business districts in the suburban areas of Bangkok metropolis that can provide both employment opportunities and urban services for the residents.

2) Transportation Function

The proximity to the new airport will inevitably benefit improvement in the transportation conditions, both road and rail. As has been seen, there are various ongoing projects, including the motorway connection, improvement of arterial roads for airport access, rail link etc. As the Lat Kranag is conveniently located for express and arterial road transport and railway link, accommodating the necessary transport functions, particularly the inter-modal connection, will be much hoped for.

(6) Garden Suburb Function

This is the zone where people seeking to live in a decent suburban environment could build their houses.

1) *Suburban Residential Function*

As seen in Chapter 2, the population of suburban areas is growing rapidly. This indicates that Bangkok metropolis would need to provide residential areas in the suburban areas outside of the existing urbanized areas, particularly to the west and to the east. The Lat Krabang Subcenter area is a highly potent area for providing a suburban residential zone. The new suburban residential zone needs to be provided with a high quality urban environment and essential urban services to accommodate the increasing suburban population.

2) *Neighborhood Commercial Function*

It is important that the residents of the Garden Suburb zone will have good access to essential neighborhood commercial functions, such as super markets and retail/service shops etc. .

(7) Culture Town Function

The Culture Town zone will have the atmosphere of a traditional Thai town with intimacy with the water and canal system. Cultural heritage will be utilized to attract passengers who will be using the SBIA for day-tourism.

1) *Canal Function*

The Lat Krabang area is one of such areas, where the canal system provides a site for water transport, commercial and even religious activities. It could be seen that the two major temples within the Study Area, Wat Sangkracha and Wat Lanboon, have a small wharf on the canal, and that many of the houses face the canal.

As the SBIA will have 45 million passengers annually at the initial stage, attention needs to be paid to promotion of “day-tourism”, where the tourists would have options for short-duration tourism activities, such as visiting temples, experiencing water markets, moving by boat and viewing the traditional Thai dances. The zone south of the Motorway, denoted as the Culture Town zone, is suited to accommodate such functions.

2) *Airport Town Function*

SBIA, when complete and in operation, will require various working staff for the passengers and cargo handling as well as for various relevant services. The Aerotropolis Masterplan estimates the employment associated with Suvarnabhumi Airport as in the following.

Table 3.10: Projected Employment Associated with Suvarnabhumi Airport

Year	2005	2015	2025	2035
Number of projected employees	210,000	257,000	306,000	343,000

Source: Aerotropolis Master Plan

A substantial part of the projected employees, together with their families, will seek housing near the Airport. The Lat Krabang Sub-center needs to provide decent housing units at reasonable prices for the working population for the airport.

3) *Neighborhood Commercial Function*

It is important that the residents of the Garden Suburb zone will have good access to essential neighborhood commercial functions, such as super markets and retail/service shops etc. .

Based on the subsequent conditions, the key zones of the Lat Krabang Sub-center are to be comprised of the three characteristic zones; i. e. Sub-center/Air Gate zone, Garden Suburb zone and Culture Town zone.

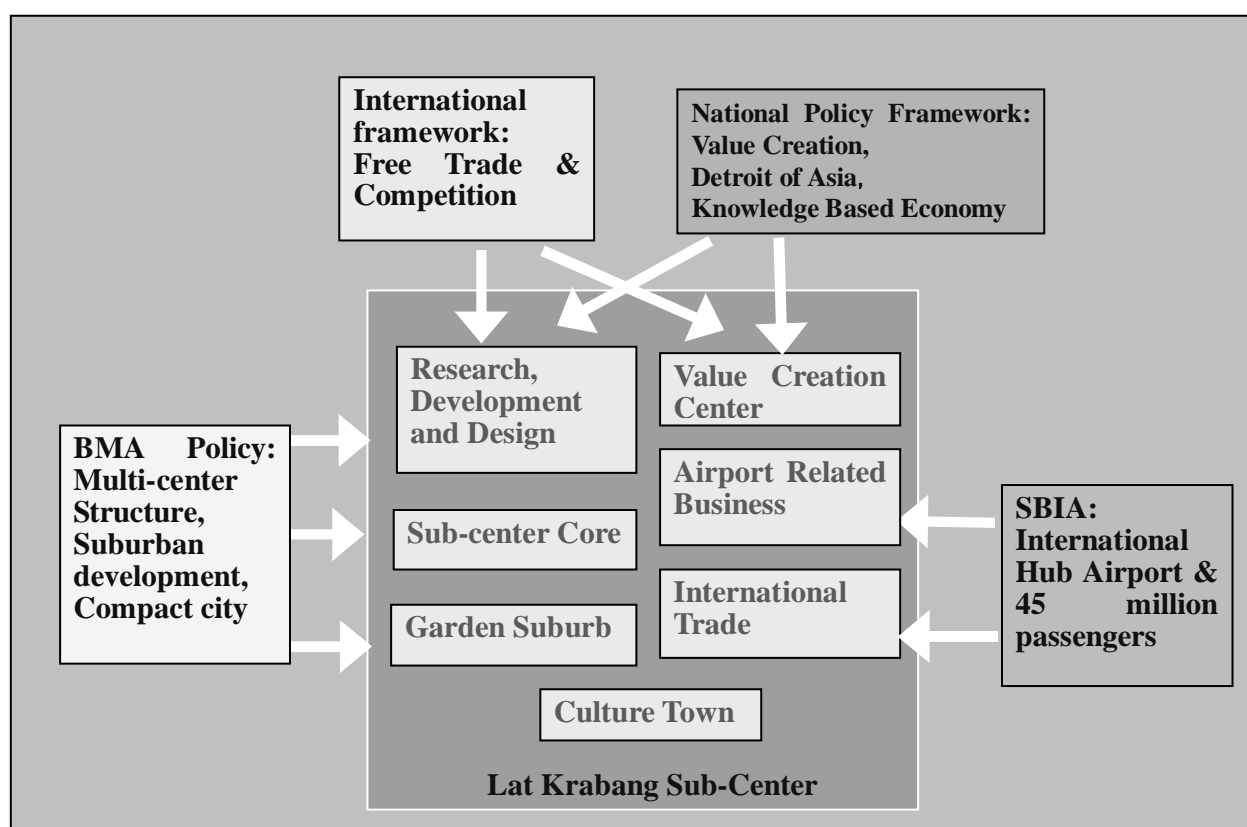


Figure 3.06: Conceptual Diagram for Setting of Functions to be Introduced

4. PHYSICAL DEVELOPMENT PLAN

4.01 Functional Zoning

(1) General Direction for Functional Zoning

Based on the policies for the Latkrabang Subcenter development discussed in Chapter 3, the key zones of the Sub-center are comprised of three zones with significant difference in characteristics; i. e. Sub-center / Air Gate zone, Garden Suburb zone and Culture Town zone. Taking the characteristics of the condition of the land in the Study Area, these zones can be assigned in the following manner.

- The Culture Town zone should be located in the southern parts near the Bangkok-Chonburi motorway, as this area offers a very Bangkok-like atmosphere, especially represented by the existing two nice temples, and is already too built-up for intense development as this requires vast vacant lands:
- The Subcenter/Air-gate zone should be located in the northern parts near the Bangkok-Chongburi motorway as these functions require vast vacant area and will result in significant change of the nature of the land use. Allotment of area for these two zones is discussed in the following subsection.

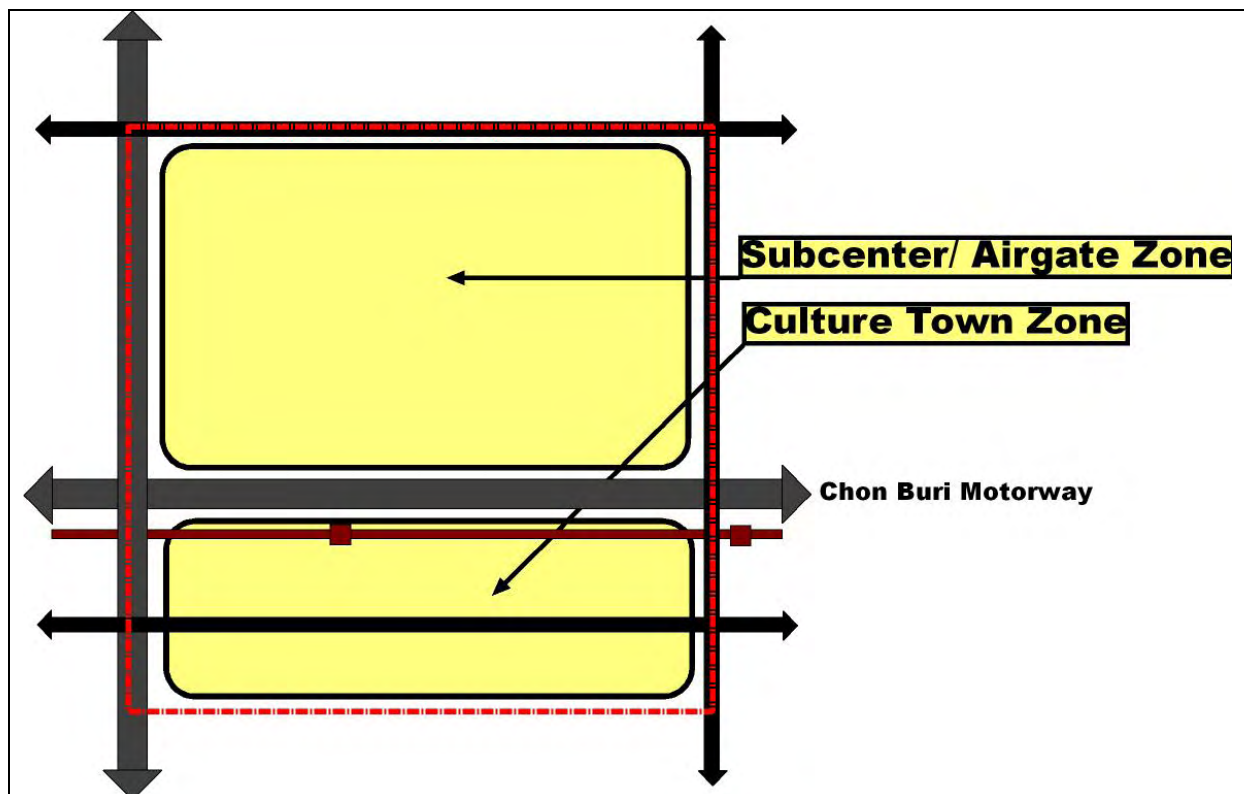


Figure 4.01: Schematic Development Plan of the Lat Krabang Sub-center

(2) Overall Zoning

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

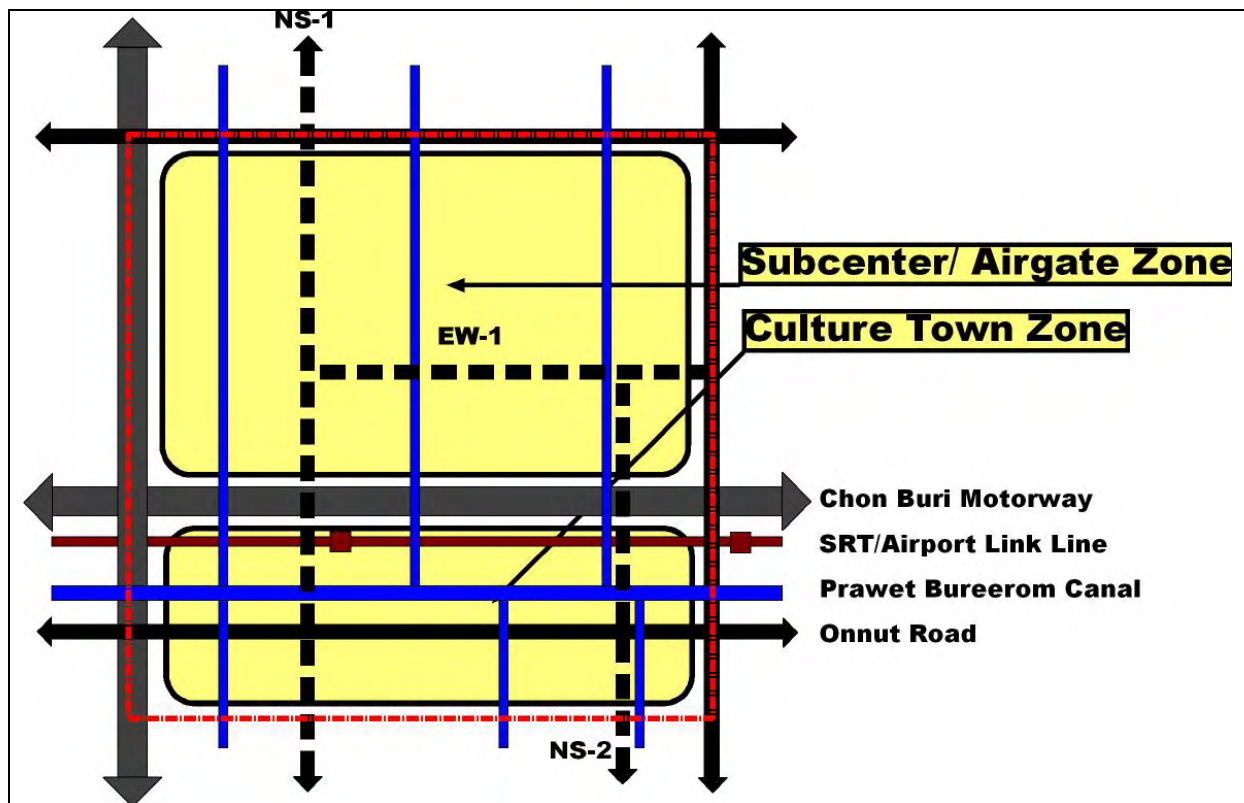


Figure 4.02: Conditions for Overall Zoning

The overall zoning plan depicts the overall urban development image of the Lat Krabang Sub-center area. As explained earlier, the Town Centers are split into the areas north and south of the Motorway, with the one in the north being larger.

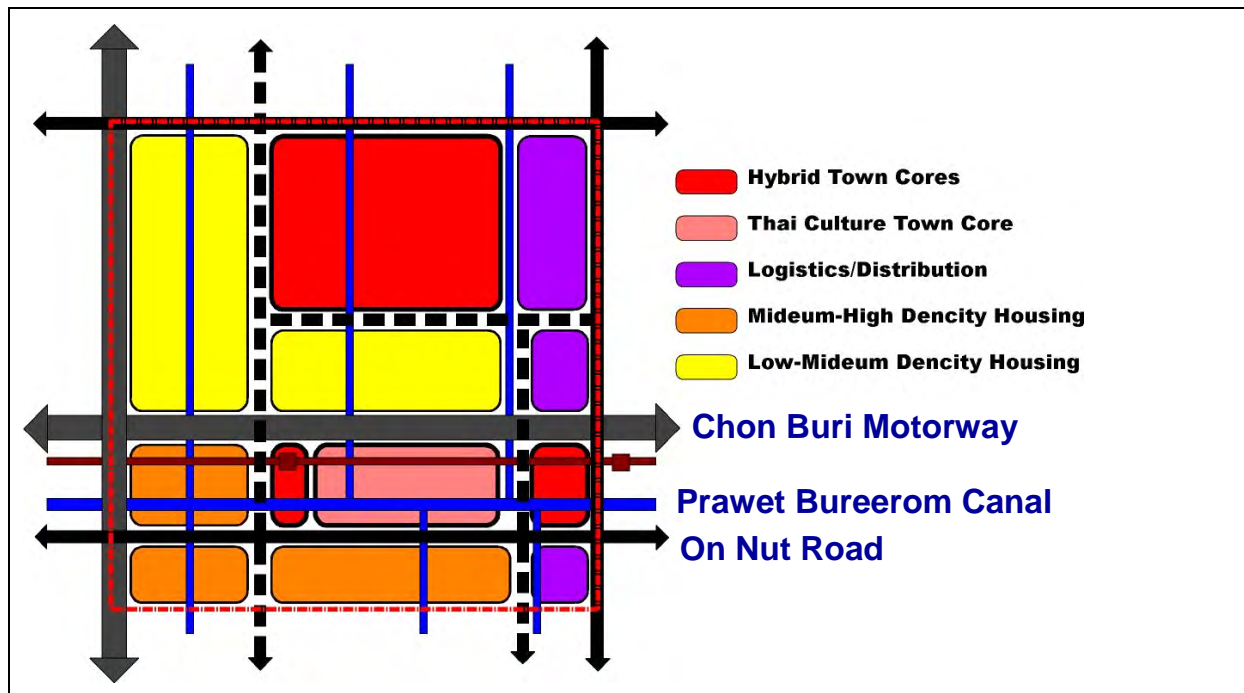


Figure 4.03: Overall Zoning Plan

(3) Functional Zoning in RD&D City Zone

The RD&D City extends along the northern side of the Chon Buri Motorway. The basic concept for the RD&D City Zone is as follows.

- Mixing of inter-related functions, to lead transformation of Thai industries and create a model for Sub-Center development
- Capitalize on proximity to the new international airport for high value added services
- Provide home to upstream functions of production, such as research, development and designing, for higher added value
- Businesses related to automobile, ICT, medical and other high-tech industries attracted by the new airport
- Create a FDI-friendly investment environment (FDI = Foreign Direct Investment)

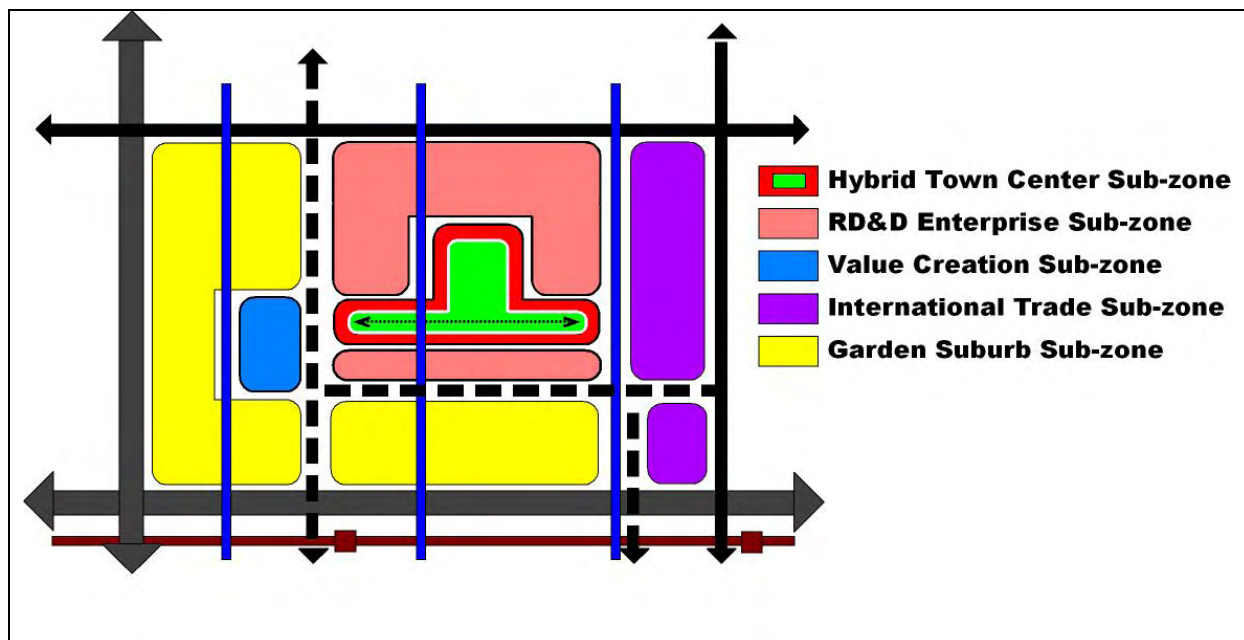


Figure 4.04: Zoning Plan for North Part of Study Area

The RD&D City Zone will be composed of the following five zones.

Hybrid Town Center Sub-zone

- Commercial, service providers, etc.
- Inter-modal transport node (rail station, regional road etc.)
- Direct connection to Airport

RD&D Enterprise Sub-zone

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

Value Creation Sub-zone

- A Higher education institution for human resources development in relevant fields, such as high technology, medicine, international trade etc.
- Branch/campus of international university and research laboratories and/or Graduate schools

International Trade Sub-zone

- International product marts and showrooms (such as home appliances, automobiles, garments/fashion, interior goods, etc.)
- Wholesale markets for buyers and consumers
- Need to consider duty-free status

Garden Suburb Sub-zone

- Low-rise suburban residential, urban services, open space etc.
- Good environment with greenery and water, model for suburban residential development

The following is an artist's image of the RD&D City.



Figure 4.05: Image Sketch of the RD&D City

(4) Functional Zoning in the Culture Town Zone

Culture Town Zone comprises the southern part of the Sub-Center, which will be the gateway to the Sub-Center in the northern part, and also provide the day-tourism function for the airport passengers. The atmosphere of a Thai city with easy access to the canal and proximity to temples will be preserved and enhanced. The basic principles of development will be as in the following.

- Canal, temples, water market, water transport
- Lively and comfortable urban area, with lots of activities
- Tastes of Traditional Thai city
- Provides “Day-Tourism” for Airport passengers
- Provides affordable and decent home for the airport related employees and workers
- Location: South side of Chon Buri Motorway

The Culture Town Zone will be composed of the following three sub-zones.

Air Gate Sub-zone (Railway Station)

- Inter-modal transport node (railway station, regional roads etc.) and direct connection to the Airport
- Back offices of airport-related industries (airlines, logistics, transport, tourism, etc.)
- Hotel, shopping, day-tourism, medium-rise residential facilities etc.

Canal Towns Sub-zone

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

Airport Town Sub-zone

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

The following depicts a detailed zoning image of the culture town and the surrounding area.

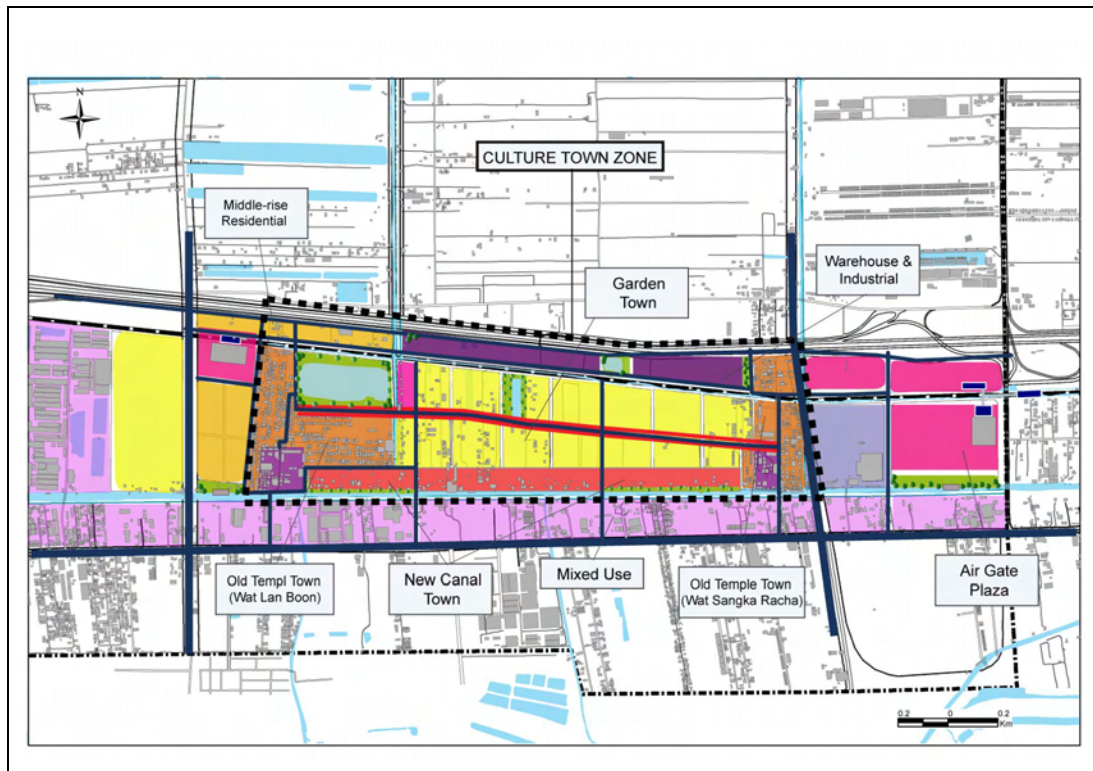


Figure 4.06: Detailed zoning Image of Culture Town and the surrounding area

The following is an artist's image of the Culture Town.

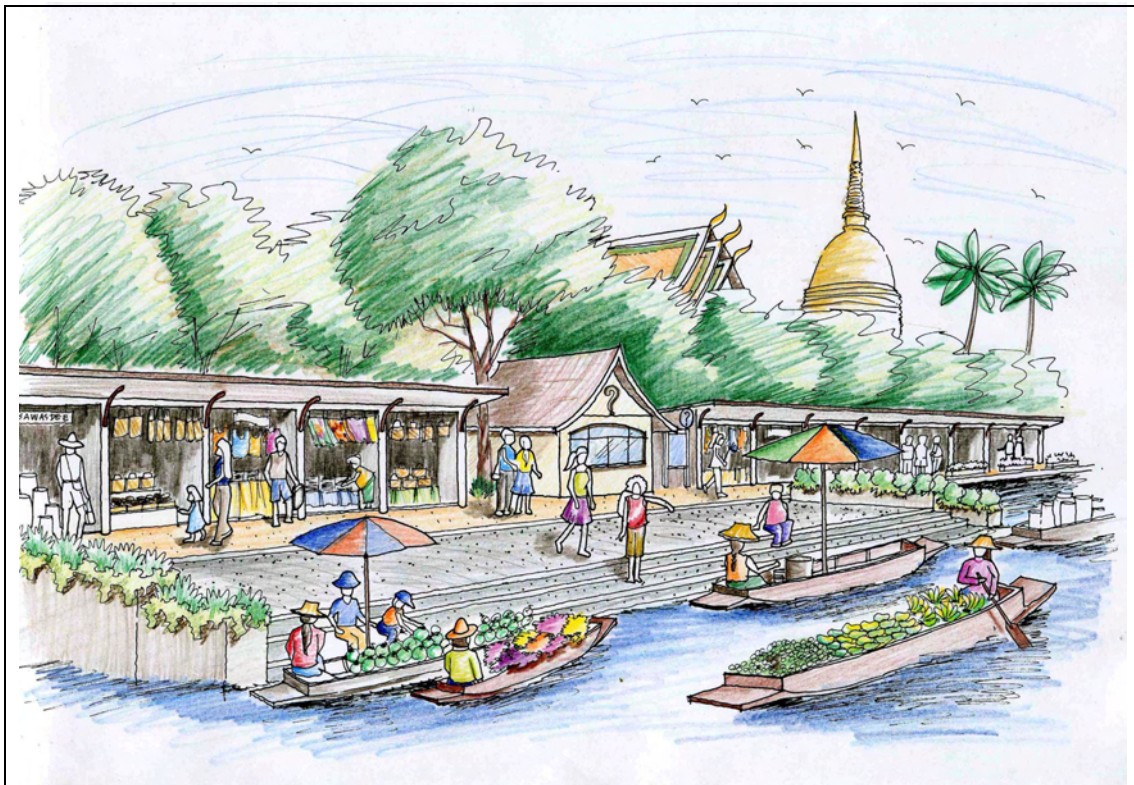


Figure 4.07: Sketch Image of Culture Town

The Culture Town Zone will be a part of the Floating Market scheme advocated by BMA in the selected locations including Lat Krabang District. The Floating Market will be carried out in a wider region including the Subcenter and the existing town of Lat Krabang.

The following is a scheme by the Study Team for consideration for the promotion of a water market in the Prawet Burrirom Canal for Lat Krabang district.



Figure 4.08: Scheme of Culture Town

The following chart summarizes the facilities and functions by zoning clusters for the study area.

4.02 Overall Masterplan Zoning

Based on the conceptual plans mentioned above, the overall master plan was formulated as presented in the following figure.

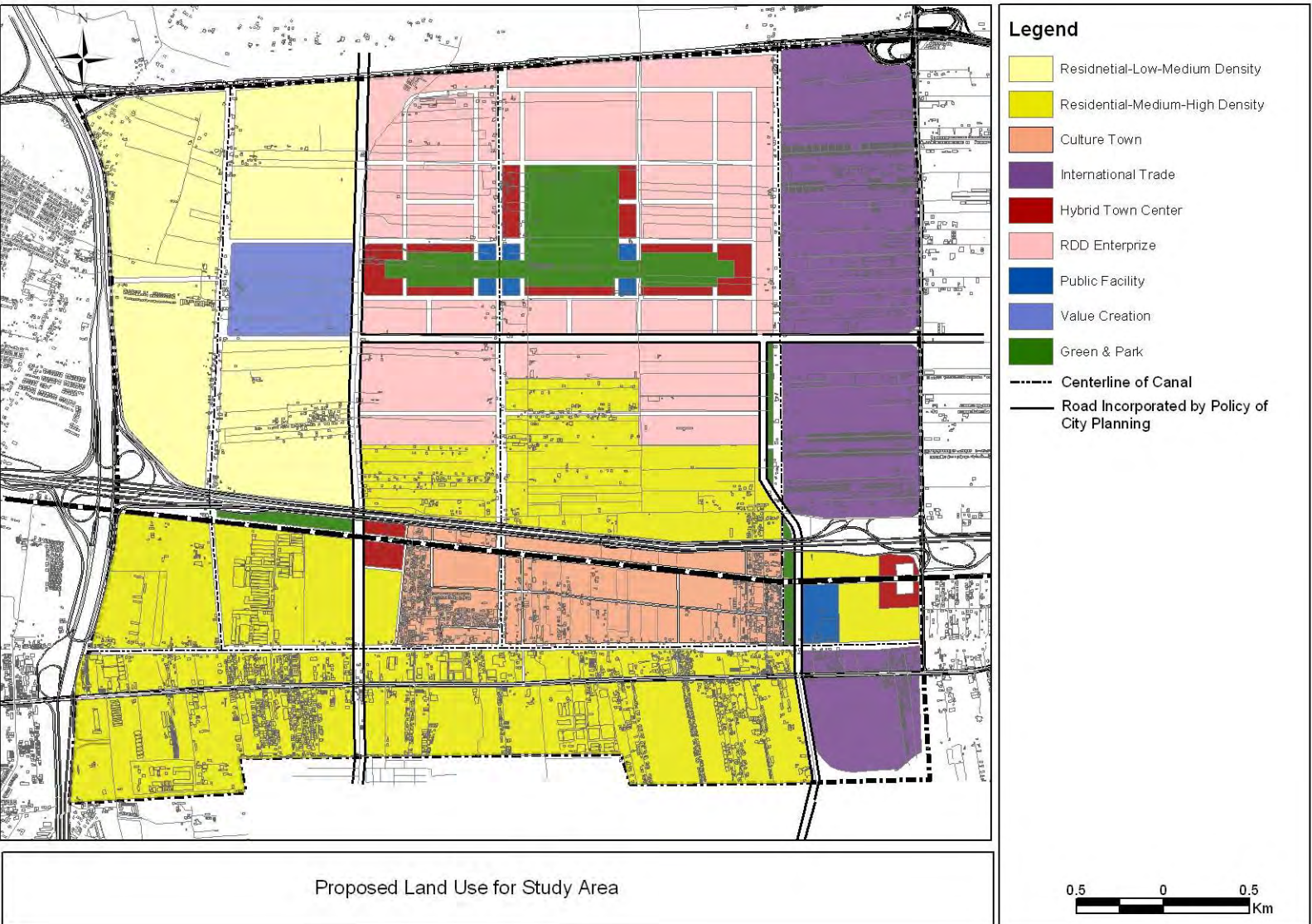


Figure 4.09: Overall Master Plan

Based on the planning framework mentioned earlier, the following table shows the breakdown of zones.

Table 3.11: Rough Breakdown of Land Use by Zones

Zone	Sub-Center / Air Gate Zone	Garden Suburb Zone	Culture Town Zone	Total
RESIDENTIAL ZONE	0	300	500	800
COMMERCIAL ZONE	80	10	10	100
ENTERPRISE ZONE	380	0	20	400
PUBLIC ZONE	40	20	20	80
RECREATION ZONE	120	80	120	320
INFRASTRUCTURE - Main trunk road/railway	100	100	50	250
TOTAL	720	510	720	1,950

Table 4.12: Designated facilities and functions by zoning clusters

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