4.3 BASIC DIRECTIONS OF REDEVELOPMENT

4.3.1 Development Framework

Based on cohort method applying demographic data in 2000, the future population and number of households are projected as target framework for planning purposes, with the following criteria taken into consideration:

- Moderate increase of population, as the Study Area already has a large population density, while substantial population growth is unlikely in BMA area; and
- Large increase of residential floor area in order to improve living standards corresponding to the economic development of Bangkok.

The following are the population and household numbers formulated as the framework for planning purposes.

Table 4.1: Development Framework in the Study Area

	2000	2005*	2010*	2015*	Growth
Census base (a)	185,489	181,214	175,737	169,714	-0.6%
Registration base (b)	162,002	-	-	-	
Actual base (1.414*b or 81.001*a)	228,909	223,618	216,859	209,427	
Population Density (person/ha)	274.0	267.7	259.6	250.7	
Target Population (persons)	228,909	230,200	243,500	246,800	0.5%
Target Household (households)	63,893	70,023	79,511	87,648	2.1%
Household Size (people/household)	3.6	3.3	3.1	2.8	
Growth number (Study Area)	-	1,291	13,300	3,300	
Growth number (BMA area)	-	170,946	84,490	29,544	
Share of the Study Area	-	0.8%	15.7%	11.2%	
Target Population by Area	-	6,600	20,000	10,800	
Din Daeng Community	-		8,800	0	
(Housing Units)			(2,200)	(0)	
Makkasan and other areas		6,600	11,200	10,800	
(Housing Units)		(4,000)	(3,500)	(3,500)	

Note: 2000 are estimated by 2000 Census, registered population.
Estimation of Actual Population based on "Non Permanent Resident Analysis in BMA", 2000, DTCP.
Growth Rate is average annual rate between 2000-2015.
Area of Din Daeng District: 8.354km^2

4.3.2 Land Use and Distribution of Core Functions

(1) Condition for Land Use Planning

In land use planning, several conditions were taken into account:

- The Bangkok General Plan designates the Study Area as a "High Density Residential Area". The land use planning in this Study therefore needs to be in conformity with the General Plan, but will be more detailed in both the size of zones and the types of land use.
- BMA is formulating a district-level urban master plan in Din Daeng District as the second step in a series of urban planning procedures to follow the formulation of the General Plan. The land use planning in this Study therefore needs coordination with BMA's efforts to have consistency.

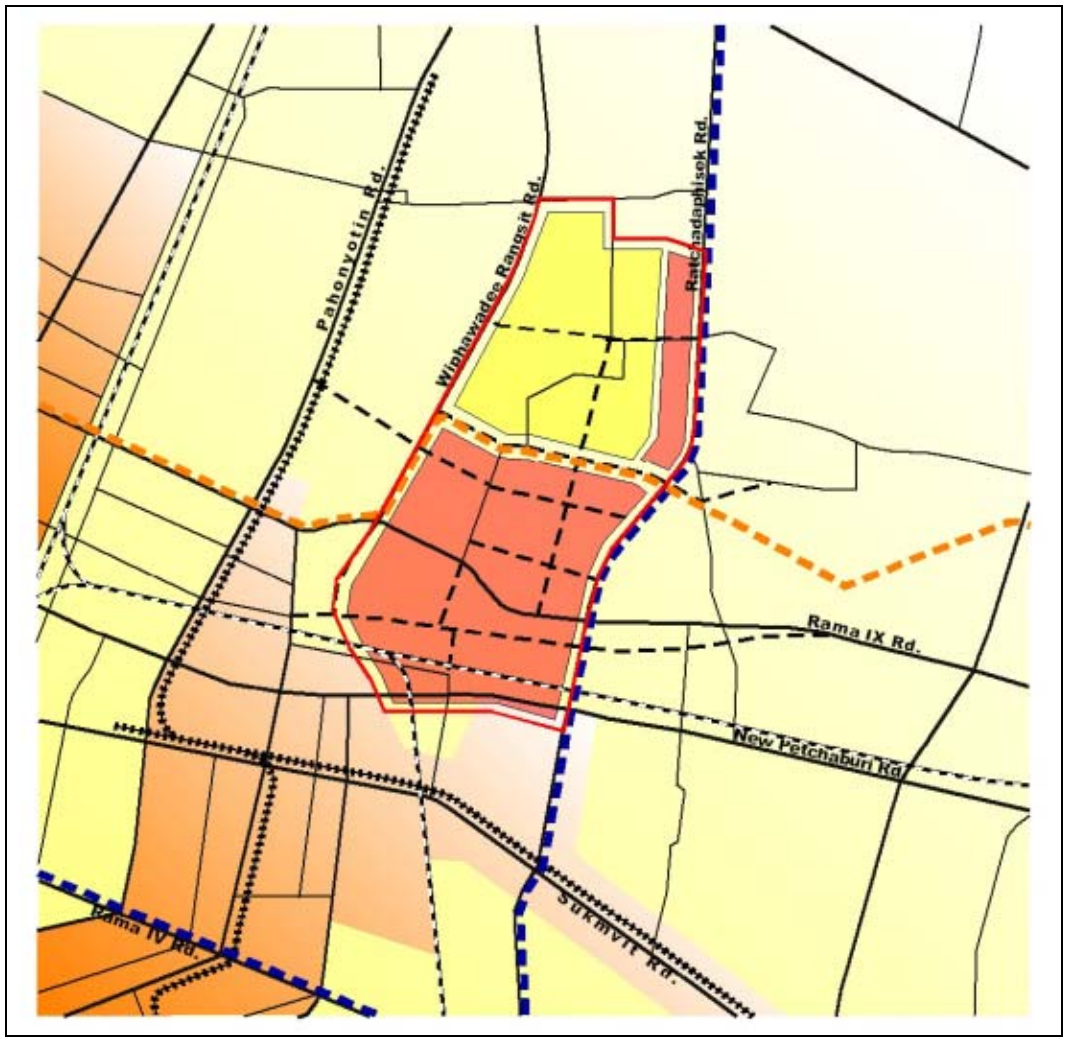
Given above, the land use plan for the study area will be formulated at the level of the General Plan, while a more detailed land use plan will be prepared with further discussion with BMA. The results of the collaboration will be compiled in the forthcoming Draft Final Report as part of a chapter dealing with recommendations for urban management in Bangkok.

(2) Basic Policy and Criteria for Land Use Planning (General Plan Level)

The basic policy on land use planning was set as for the level of General City Plan of BMA as described above. Policy items are briefly mentioned below, and a conceptual drawing follows:

- The southern half of the Study Area should be designated as the fourth urban core of BMA, and therefore to accommodate mixed use of commercial/business and medium to high rise residential facilities;
- The northern half of the Study Area should continue to be a low rise detached residential zone for a while, taking existing satisfactory housing communities into consideration; and
- Following the existing activities and stock of building facilities, a strip along Ratchadaphisek road should be designated as a commercial/business zone accompanied with completion of widening of the road and opening of Blue Line.

Figure 4.2: Conceptual Land Use Plan (General Plan Level)



(3) Distribution of Core Functions

In order to induce potential urban functions into the Study Area, it will necessarily require project type initiative led by the large-scale redevelopment(s). There are three potential areas suitable for the large-scale project within the Study Area, i.e.; Makkasan Area, Din Daeng Community Area, and Huai Kwang Area.

It is judged that the redevelopment of Din Daeng Community Area is the most matured project among the three, taking level of the deterioration of the existing facilities, depth of the existing study, and simplicity of the project implementation body into consideration. The potential of Makkasan project will be raised by the initiation of the Din Daeng Community Redevelopment Project, along with the renewal of the private lands situated within the Study Area. Huai Kwang area is

rather isolated from the other two areas, but will play a key role on realizing the preservation of healthy urban central residence in the northern half of the Study Area.

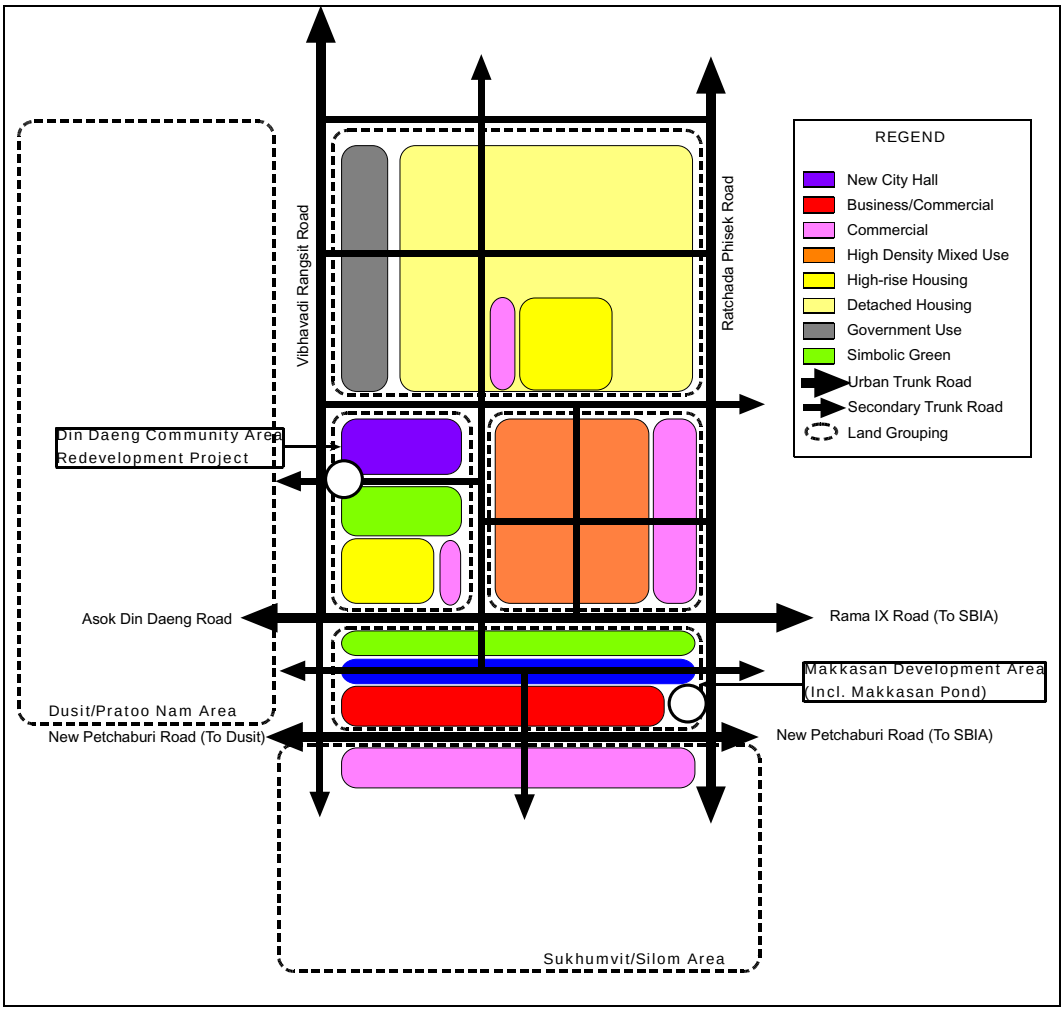
Given timing factors discussed above, the distribution pattern of urban functions can be identified in accordance with locational suitability as shown in the following table:

Table 4.2: Distribution of Core Functions by Project Area

Area	Urban Function	Facility Type
Din Daeng Community Area	● Civic Center for the Citizens of BMA Area ● Urban Recreation ● Urban Central Residence	● BMA's New City Hall ● Educational facilities (existing) ● Health facilities (existing) ● Thai Japan Youth Center (Existing) ● Symbolic open space ● Public Housing (Renewal)
Makkasan Area	● International Gateway and Associated Business Center ● Urban Recreation	● City air terminal ● Office buildings ● Convention center ● Water front park
Huai Kwang Area	● Urban Central Residence ● Community Center for the northern half of the Study Area	● Public housing (renewal) ● Shopping center

Figure 4.3 shows a schematic image of the distribution pattern of core functions within the Study Area.

Figure 4.3: Distribution Pattern of Core Functions



4.3.3 Transport Plan

(1) Condition for Transport Planning

There are several plans on transportation directly related to the Study Area. These include 1) Orange Line (MRTA), 2) Mega-Project Area Transport Plan (OCMLT); and 3) some access roads plans by BMA, including Chaturathit Road which is under construction over the Makkasan Pond.

(2) Basic Policies and Criteria for Transportation Planning

The basic policy for the future transport system in and around the Study Area was set as follows:

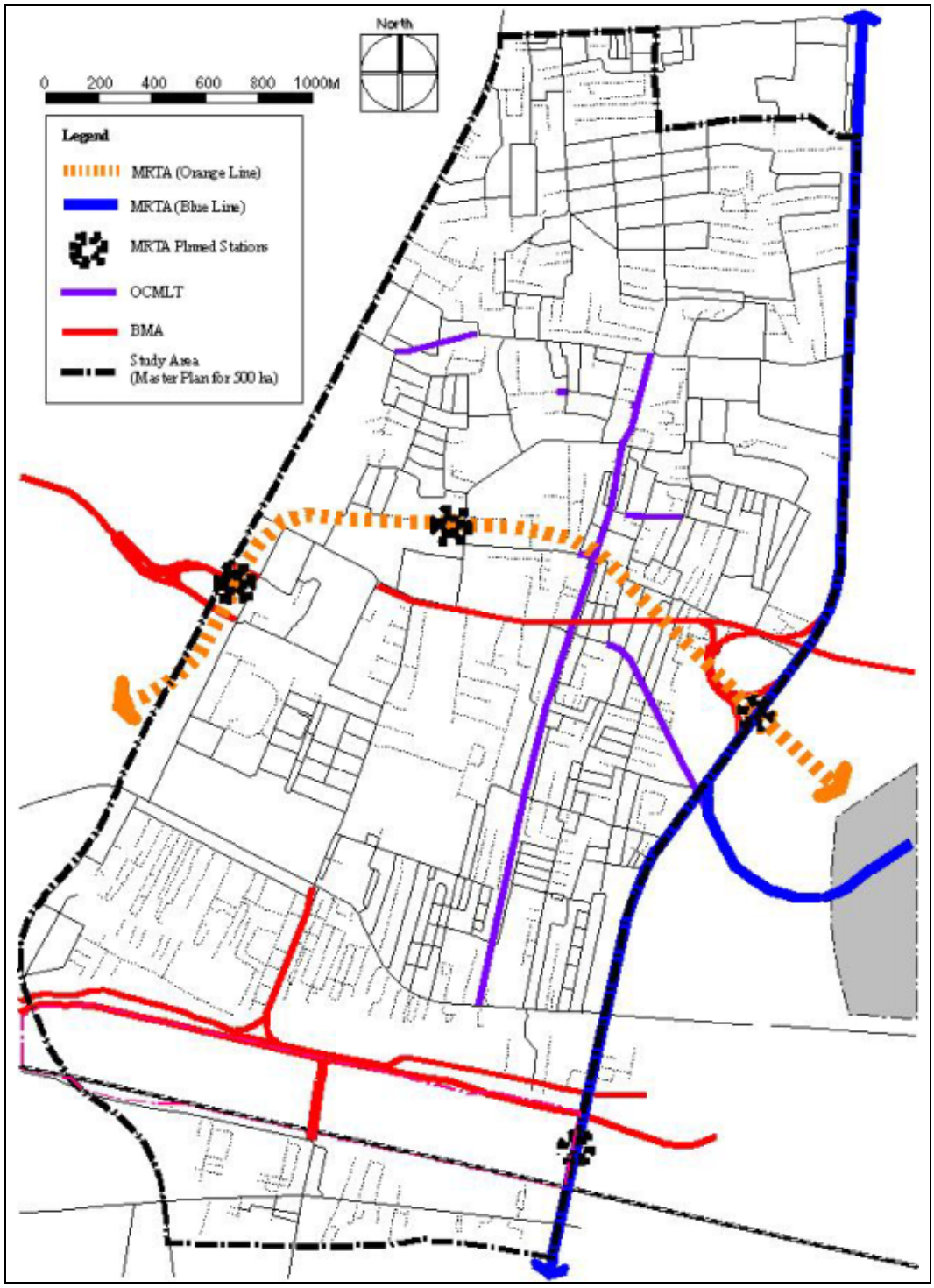
1) Establishment of public transport oriented system with:

- Full utilization of the Blue Line, existing bus route, and planned City Air Terminal (CAT) in Makkasan Marshalling Yard;
- Introduction of feeder transport system connecting major attraction nodes such as the projected station on the Blue Line, new BMA city hall and Thai Japan Youth Center; and
- Provision of pedestrian decks/footpath and sidewalk to major roads.

2) Establishment of hierarchical road network system with:

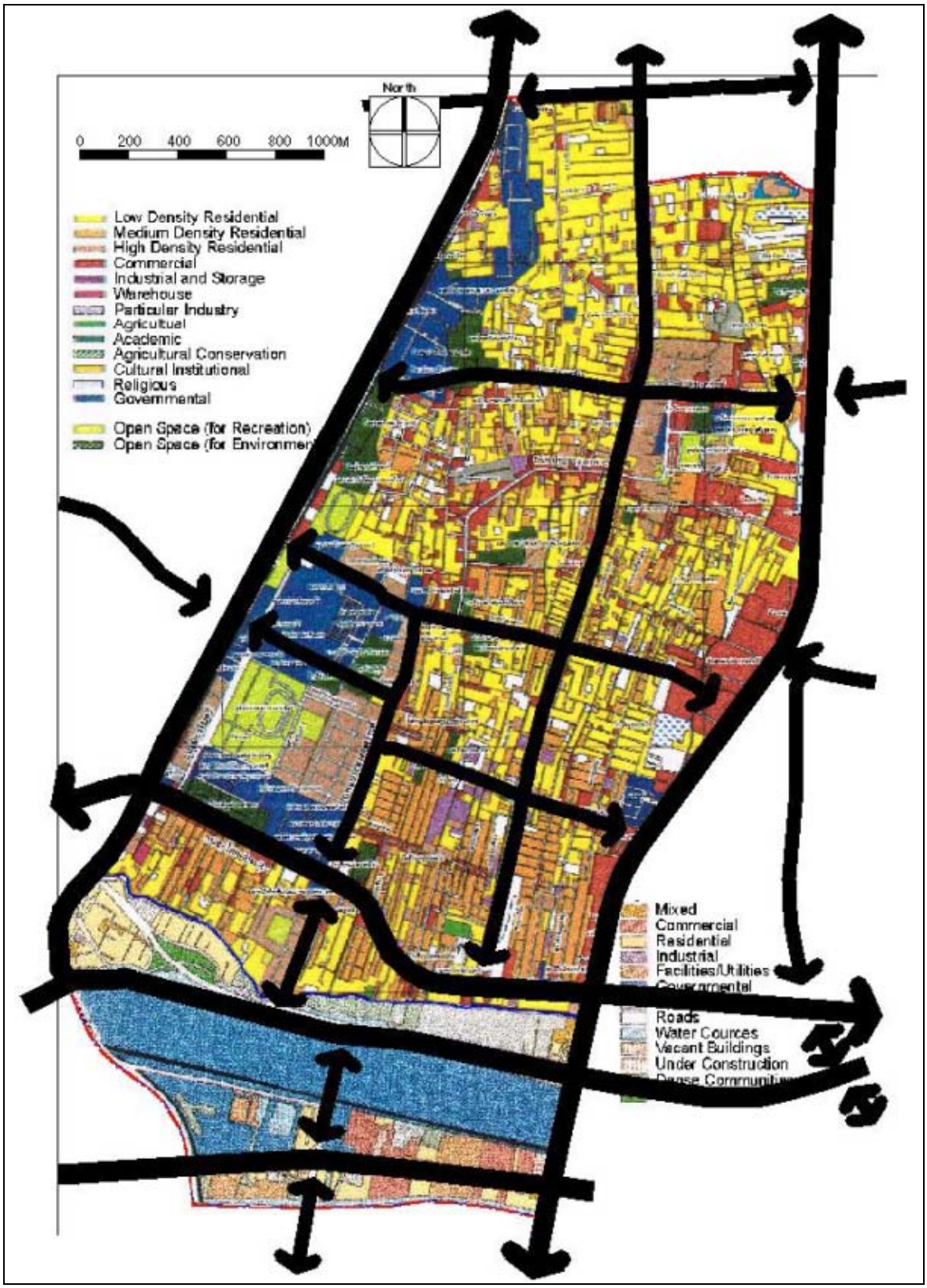
- Provision of secondary arterial roads (with 1 km grid in the northern residential zone, and 500 m grid in the southern commercial and business zone); and
- Supplementary connection of some *sois*.

Figure 4.4: Existing Plans on Transportation Facilities



Source: Super Block Road Improvement Plan, 2000, OCMLT
Preliminary Study for Orange Line, 2001, MRTA
Road Planning Studies for Din Daeng Community Area Development by BMA

Figure 4.5: Transportation Plan



4.3.4 Water Environment Improvement Plan

Main topics of water environment improvement in this section consist of three features, i) storm drainage, ii) sewage treatment system, and iii) water quality improvement scheme.

(1) Storm Water Drainage System

The improvement works outlined below are recommended in the flood-prone areas in southeastern part of the Study Area.

- Road surface raising to reduce chances of inundation by storm water.
- Modification of storm water catchment areas along Asok-Din Daeng road and Phracha Songkhro road to reduce surface runoff to the southeast area. Rainfall in Din Daeng Community Area (100 ha) should be drained to the ditch along Vibhavadi Rangsit road and eventually down to Khlong Sam Sen.

Other improvement works for the specific areas consist of the following.

- Expansion of pumping capacity for F1 area;
- Replacement of existing drainage pipes to larger size for F5 and F6 areas;
- Installation of pumping station for F4 area; and
- Dredging of main khlongs, Khlong Sam Sen, Khlong Huai Khwang, Khlong Na Song, khlong beside Maephra Fatima Church and ditch along Vibhavadi Rangsit road to enhance drainage capacity.

The existing storm drainage systems have been designed for storms of 2-year return period. This will theoretically cause inundation of less than 2 cm over the entire Area assuming the land is flat. In order to maintain the DMH Area as flood-free new urban core in BMA, it is recommended that the drainage capacity be upgraded to 5-year return period by expansion of pumping capacity and flood water retention capacity of Makkasan pond.

(2) Sewage Treatment System

Even after implementation of the redevelopment projects, wastewater discharged from various facilities will remain within the capacity of Din Daeng Sewage Treatment Plant (the Treatment Plant), as the water demand in 2015 will decrease to the level similar to that of 1990.

Interceptor pipelines along Asok-Ratchadaphisek Road need to be installed to accommodate sewage from the redevelopment area in SRT Makkasan, since this area is outside the central sewerage system in Makkasan district.

Dredging of small khlongs is recommended to in parallel with proper maintenance of septic tanks to collect wastewater and avoid stagnation within the canals.

Considering the limited water resources, reuse of treated wastewater is recommended in the latter stage after construction of sewerage system. It is recommended that highly treated effluent of less than 2 mg/l BOD, from the Treatment Plant be conveyed to the Makkasan Pond along pedestrian walkways.

(3) Canal Water Quality Improvement

At present, water pumped from the Chao Phraya river is contributing to the water circulation in Khlong Sam Sen and making water quality stable in the dry season. However, in the rainy season water stagnates in the khlong and is left to deteriorate.

On the other hand, water quality in Makkasan Pond seems to be worse than that of Khlong Sam Sen. After the Treatment Plant begins to operate, it will become more difficult to improve water quality as the inflow of treated water to the pond will retard water flow. (combine with the next sentence)The water in Makkasan pond could flow more actively throughout the year by connecting it with Khlong Sam Sen.

In parallel with the above work, proper cleaning and maintenance of septic tanks is necessary to reduce water pollution in small khlongs that eventually connect with Khlong Sam Saen and Makkasan Pond.

(4) Integrated System for Water Environment Improvement

Based upon the recommendation for water environment schemes as above, the following integrated system is proposed for water environment improvement.

- Expand Makkasan Pond to enhance its flood retention capacity for storms of 5-year return period and create a better waterscape along the Chaturathit road (King's road).
- Install an additional treatment system to reuse treated effluent from the Treatment Plant for a new stream flowing from the pond along the pedestrian walkway beside Phracha Songkhro road. The stream will contribute to urban

spatial amenity. The expansion of the pond will also enable the high water level to be reduced from 0.5 m MSL to 0.0 m MSL.

- Integrated water circulation system of the water in the pond by connecting it with Khlong Sam Sen and installing a pumping station to Khlong Sam Sen.

Table 4.3: Outline of Expansion of Makkasan Pond

Item	Unit	Existing (2 year return period)	Expansion for 2 year return period	Expansion for 5 year return period
Required capacity	M^3	327,000	327,000	419,744
H.W.L.	M	0.50	0.00	0.00
L.W.L.	M	-1.62	-1.62	-1.62
Fluctuation of water level	M	2.12	1.62	1.62
Required pond area	M^2	154,245	201,701	258,907
Available pond area	M^2	165,000	273,000	273,000
Retention capacity	M^3	350,000	442,591	442,591

Note: Additional required capacity for 5 year is estimated to keep max. remaining water volume similar to the 2 year return-period level.

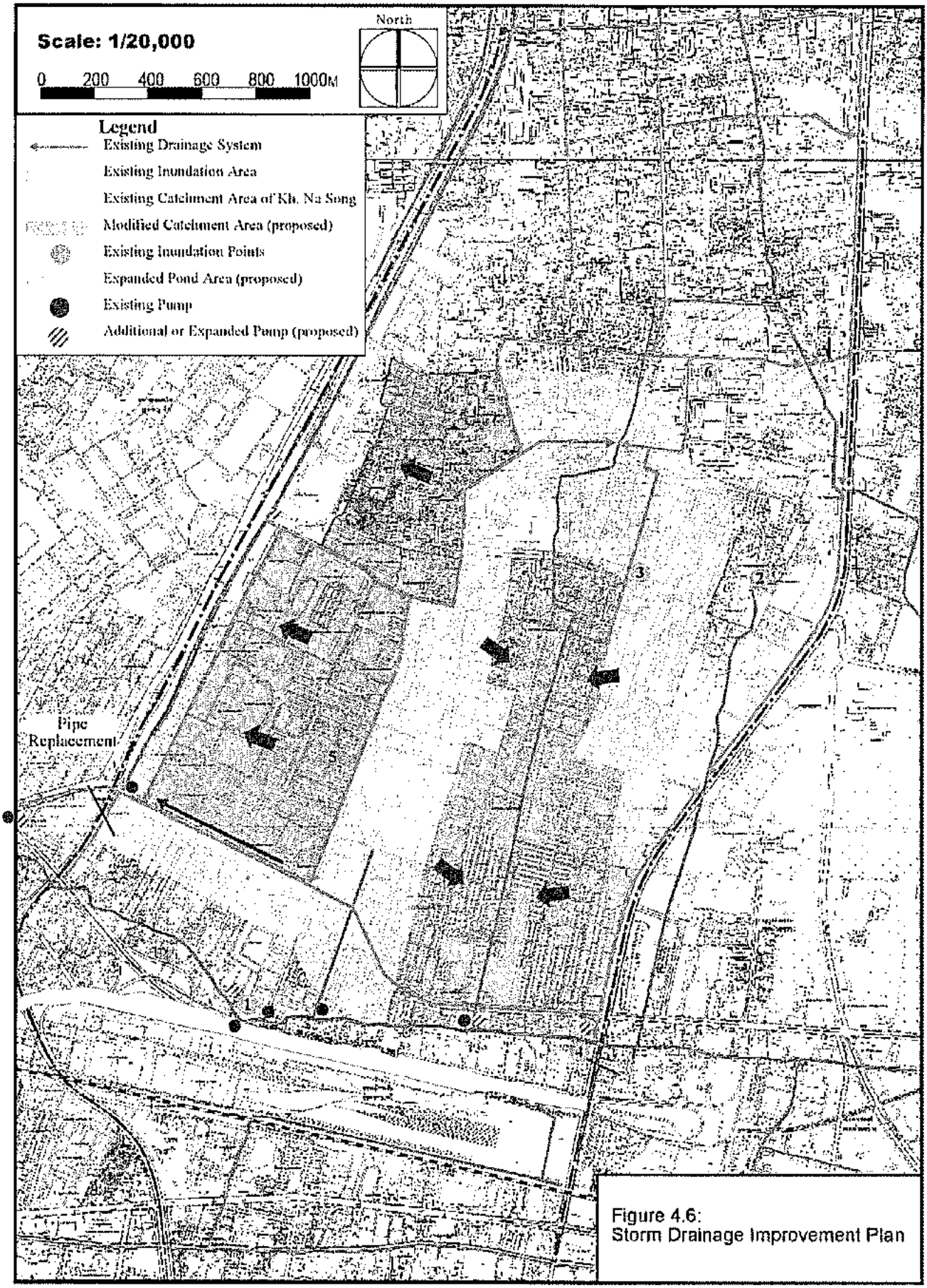


Figure 4.6:
Storm Drainage Improvement Plan

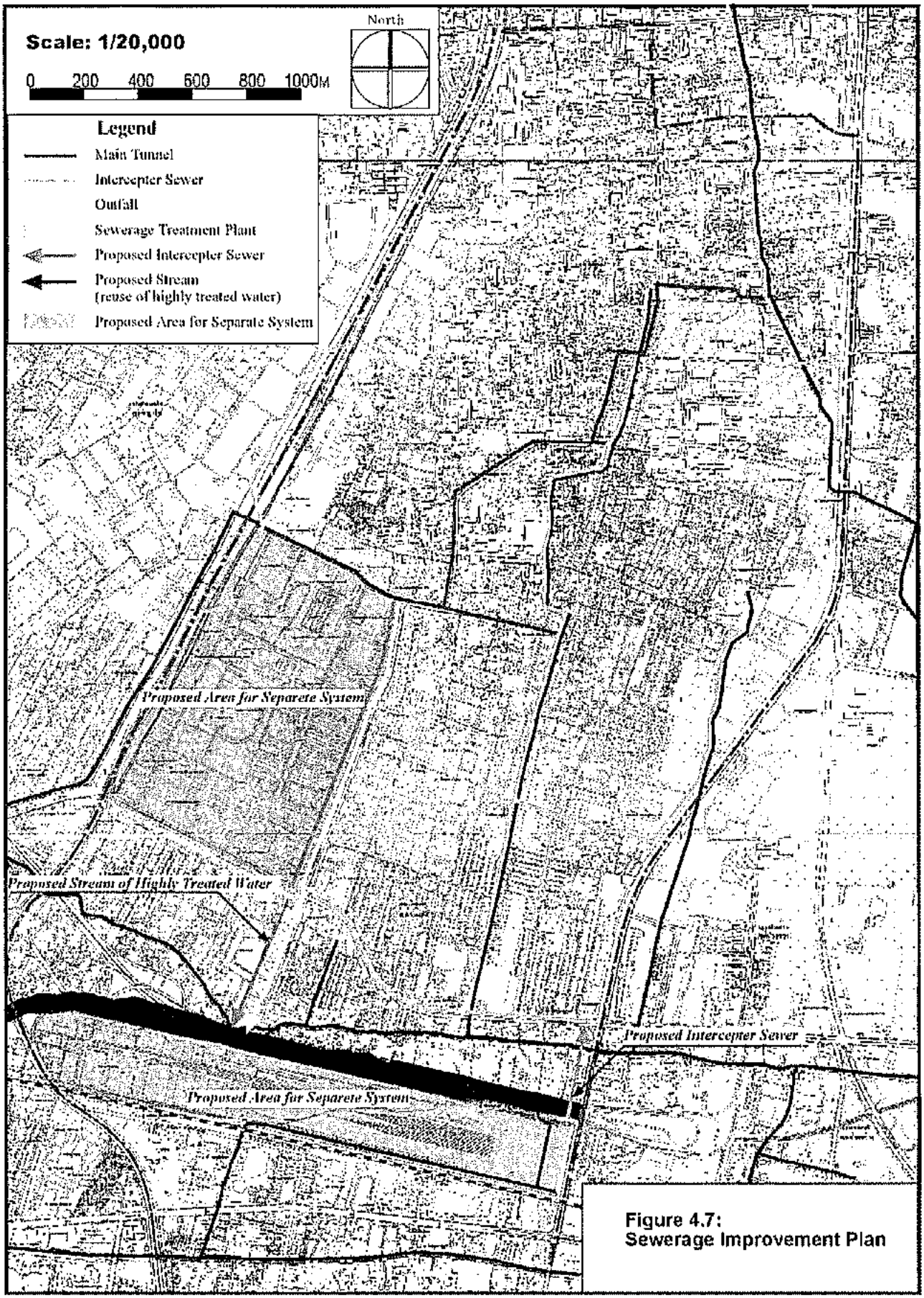


Figure 4.7:
Sewerage Improvement Plan

Figure 4.8:
Water Quality Improvement Plan

4.3.5 Park/Greenery Plan

As there are scarce public open spaces in the Study Area, it will be crucial to provide parks and greenery to improve both the urban environment and living conditions. Since the method of providing parks and open spaces is not systematically established in the practice of urban management in BMA, this has been one of the most difficult and uncertain tasks.

The following items were presented for improving the current shortage of parks and green open spaces:

- Preservation of Thai-Japan Youth Center (designated to be preserved in the General Plan);
- Making parks on unutilized land plots (by buying out these lands, as planned in Din Daeng District Plan, BMA);
- Provision of greenery along existing canals (by cooperation of land owners with tax reduction incentives, etc. as planned in Din Daeng District Plan);
- Establishment of an aqua park along Makkasan Lake; and
- Provision of trees lining streets along pedestrian walkways.

4.4 CONSIDERATIONS FOR REALIZATION

(1) Basic Consideration on Realization

In order to realize the policies and plans for the Study Area presented above, there needs to be proper actions responding to the nature of the type of land. Following are the basic approaches for realizing the intended outcomes:

- Mega-Project areas (Din Daeng Community Area, Makkasan SRT Marshaling Yard Area, and Huai Khwang NHA Housing Complex Area) are to be implemented by project type development.
- Other areas used by citizens and private corporations, usually having smaller land plots, are to be developed in the appropriate manner through incentives and regulative measures based on the City Planning Act and related regulations.

(2) Responsibility and Necessary Action by the Public Sector (BMA)

Although there are several large land blocks owned by public bodies, most of the lands belong to citizens and private sector enterprises. Urban redevelopment will, therefore, have to be implemented by the private sector. Given the current urban structure of Bangkok, it is hard to expect these redevelopment activities by the private sector to occur spontaneously.

Considering the strategic location of the Study Area, there can be a significant change in the nature of private sector investment, if there were to be prior investment by the public sector in infrastructure and environmental improvement such as:

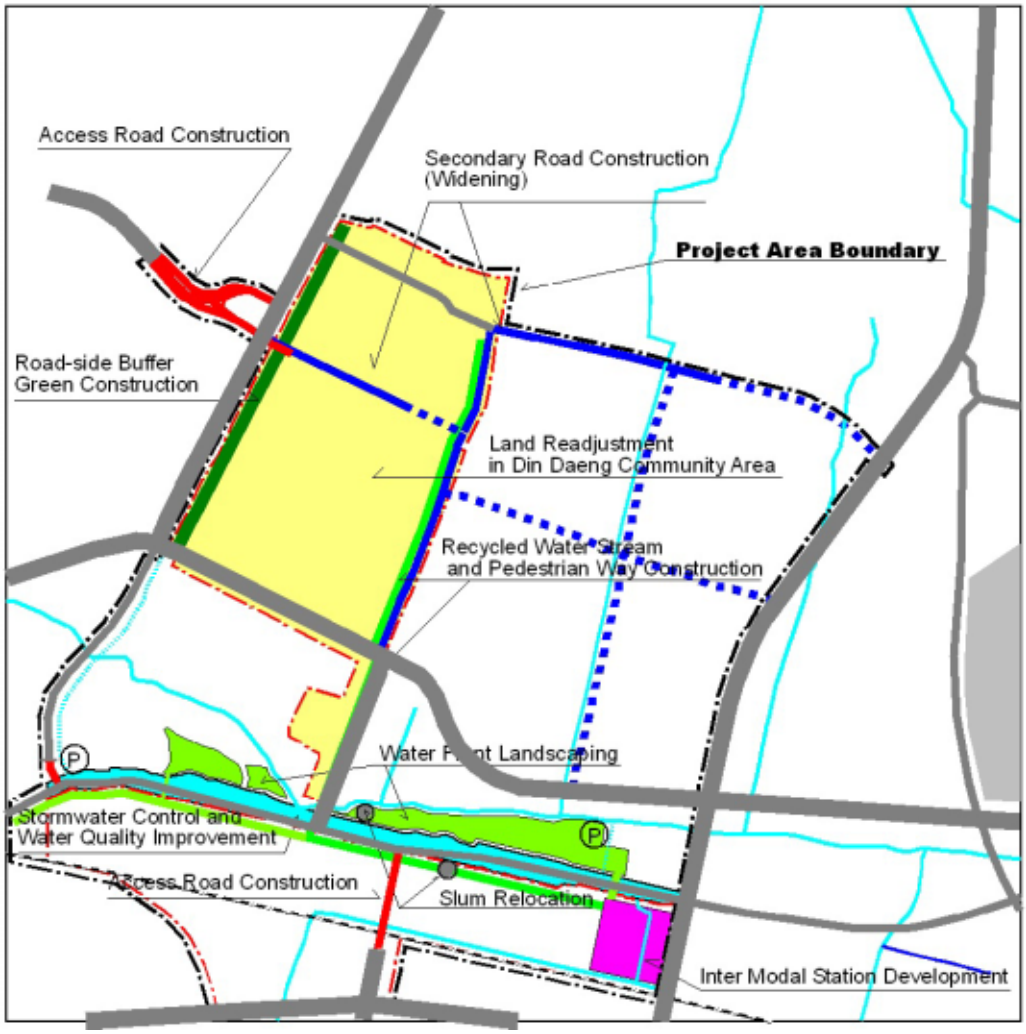
- Supplement of roads (access roads, secondary urban trunk roads, and establishment of hierarchical network system);
- Establishment of public transport based system (feeder transport and pedestrian network system);
- Creation of open spaces (waterfront landscaping, roadside green buffers, and community level parks); and
- Improvement of environmental factors (especially water quality).

Also, for promoting habitation in the inner city area, revitalization and/or stabilization of people's existing activities should be enhanced by the support of public sector in such fields as:

- Provision of job and education opportunities (e.g., vocational schools); and
- Promotion of effective land use (e.g., incentive zoning).

The following figure shows a package of multi-sector projects recommended for inducing and activating private sector participation in the southern half of the Study Area.

Figure 4.9: Recommended Multi-sector Project



(3) Selection of Priority Area

As discussed in Section 4.3.2, an initiative of a large-scale urban redevelopment project is desired to induce positive spiral of redevelopment trend in the Study Area. Among the three projects discussed earlier, the Din Daeng Community Redevelopment Project is the most matured and therefore be able to start in the quickest manner. Taking significant effects of the relocation of the BMA's City Hall, as well as the importance of holding the population within the Study Area, the Din Daeng Community Redevelopment Project was selected as a priority project.