

### 13-3 Planning Requirements

In view of the above-mentioned current land-use plans and in view of the RBCS Project now stake at issue, two planning requirements should be referred to in this sub-section, prior to getting into the Case Study (13-3). They are;

- To provide the suburban dwellers with the optimal transport policy for selection of commuting mode, considering the multi-modal nature of the Corridor on the one hand, and on the other, considering the variety of income-groups in the suburban housing development areas.
- To consider construction of new Halts along the Corridor.

#### 13-3-1 Multi-modal Corridor

Conventional road-based transport system has nurtured road-based urban pattern of K.L. Conurbation; namely the urban facilities in this region have been developed and dispersed along the road network.

Furthermore, under the Government housing policy involving the private sector, suburban housing development has been pushed on, in a manner where low, middle and high income groups live together in one place, as mentioned in 13-5-2(3).

Highway networks have been developed along the both northern and southern portions of the Corridor. The Corridor is multi-modal. The following considerations are important in both housing and transport planning.

- (1) An optimal transportation policy for the Corridor should be introduced, taking into account the preference for commuting modes of the new suburban dwellers and the public transportation network development.

(2) Linkage program at RBCS stations, in particular in the Center Area of K.L., of train and other modes should be developed.

(3) Suburban housing development around the railway stations should consider the layout which would suit the variety of resident's preference for commuting mode.

### 13-3-2 Construction of New Halts on the Corridor

At present there are 12 stations/ halts on the Rawang/Seremban Corridor. The DTP will add 7 more. The RBCS Project will add 3 more (in addition to the 7 of DTP) at places where a considerable number of commuters are expected to be generated or attracted, in line with the progress of the related development plans. Highest considerations should be given to the three new RBCS Halts, which are:

(1) Halt 1: Located at 366km from Butterworth, between Kuang and Sg.Buloh, close to the Districts' border of Gombak and Petaling.

The plantation area surrounding the new Halt is planned for a large scaled housing development which the Government has approved.

(2) Halt 2: Located at 378km, between Kepong and Segambut.

On the south side of the new Halt, a housing area is being developed. In future, another housing complex will be developed on the south side of it. The Halt will be favorably located surrounded by residences.

(3) Halt 3: Located at 409km, between Serdang and Kajang.

The Bangi Structure Plan envisages housing development in the north of the new Halt.

#### 13-4 Case-Study of RBCS Impacts on Land-Use

This section aims to study the basic impacts of RBCS on land-use of areas along the Corridor, and to evaluate the current land-use plans.

To give the conclusion first, the major impact of the introduction of RBCS on land-use, is the expansion of commuting zone of K.L. (13-4-1). Six areas were selected to evaluate this impact (13-4-2), and for this evaluation, concept of "Station-Area" was utilized (13-4-3). Considering the above-mentioned studies, the RBCS impact on the case-study areas were identified in the spatial dimension and strength (13-4-4), and the current development plans were evaluated to identify planning problems (13-4-5).

##### 13-4-1 Expansion of Commuting Zone

The present one-hour commuting zone from the suburbs to CPA (the Central Area of K.L.) by stage-bus will be expanded by RBCS as shown in Fig. 13-4-1. This will change the trip patterns of the inhabitants along the Corridor and this will promote the land utilization especially around the stations.

###### (1) Commuting zone by stage-bus:

One-hour commuting zone by stage-bus is restricted within an area of 10-15 km radius from CPA, except Shah Alam and Petaling Jaya with free way access. This was estimated by the slowest trip time which was surveyed in Stage-Bus Service Survey of JICA M/P 87. The survey made investigations on major bus routes leading to CPA (1985).

###### (2) Commuting zone by RBCS:

One-hour commuting zone by RBCS will expand as far as the satellite towns of Rawang/Kuang and Bangi New Town. It can be said conversely that, in terms of present travel time, the Northern/Southern suburban towns, which are now 20 to 30 km away from CPA will be, so to speak, shifted to

places 10 to 15 km nearer to CPA.

This was estimated as follows; The planned travel-time by train Rawang-K.L. is 44 minutes. That of Kajang-K.L. is 22 minutes by rapid commuting service. The feeder bus ride is about 10 minutes at origin and another 10 minutes at destination (K.L.). The Waiting/walking time is 10 minutes. The total is approximately one-hour.

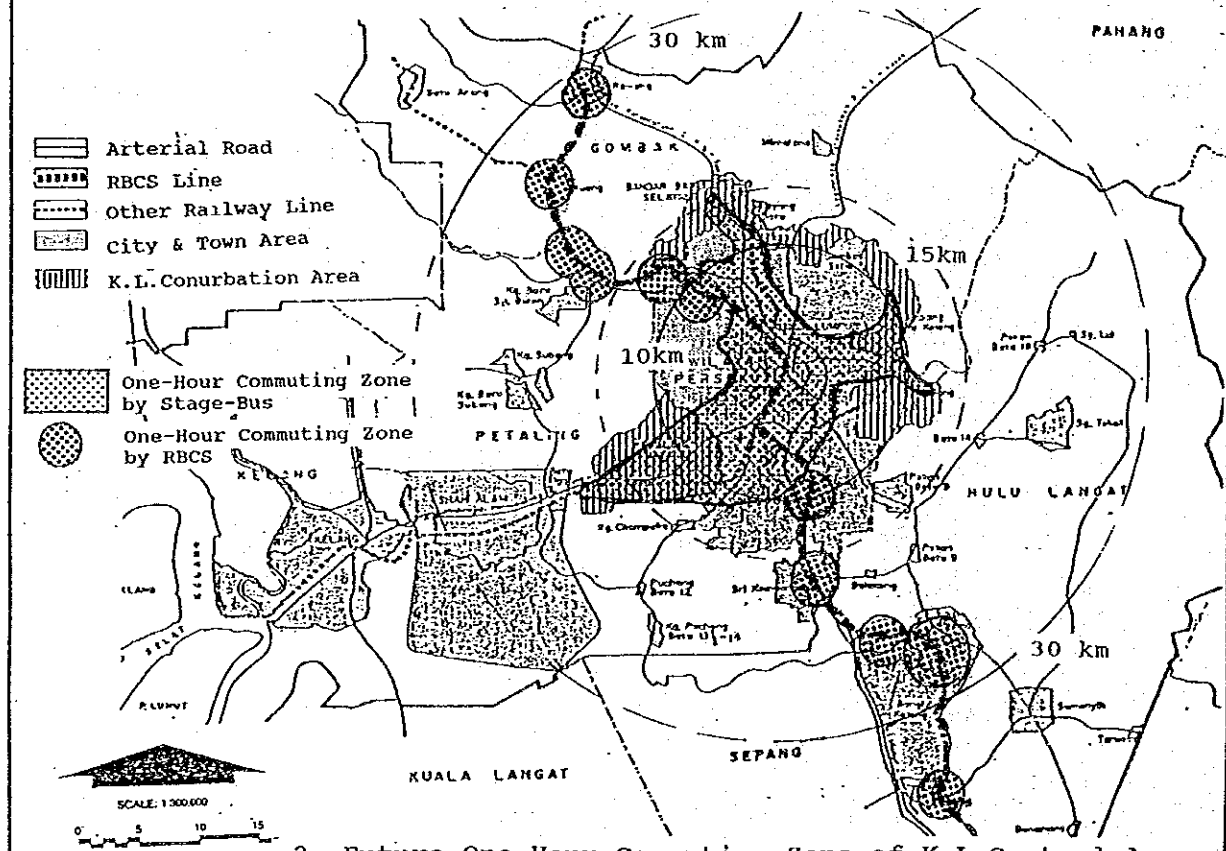
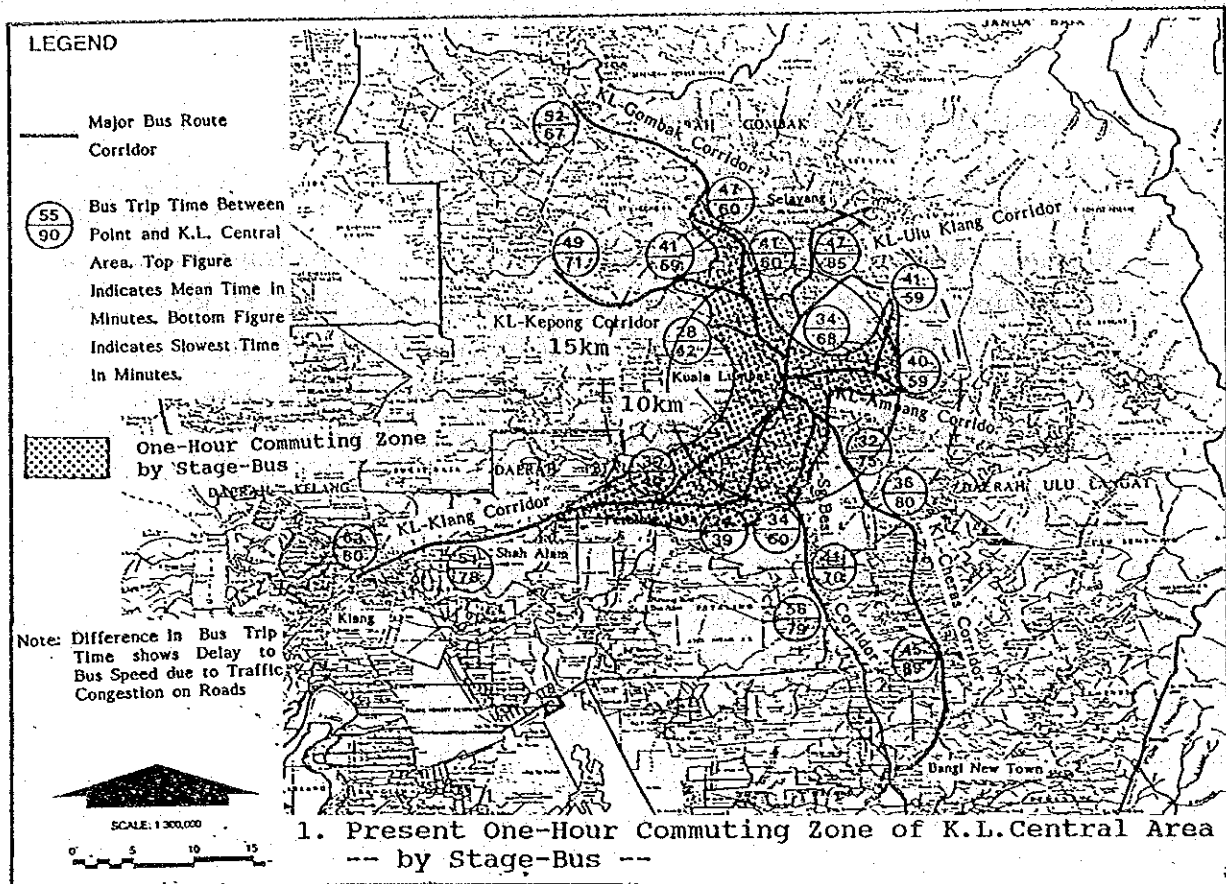


Fig.13-4-1 One Hour Commuting Zone by Stage-Bus and RBCS

### 13-4-2 Selection of Six Station-Areas

For the case-study, six station-areas were selected, in consultation with the KVPS counterparts. Three of them were chosen from among the Northern/Southern Suburbs and from the Seremban rural areas, as each represents the different planned statuses of development. One was selected from the Intermediate Area. Two others are the K.L. and Seremban Station areas; they were considered as the major stations representing the Corridor. The locations of the selected stations are shown in Fig. 13-4-2.

- Case 1: Rawang-, Kuang-, H1 and Sg.Buloh-Station-areas;  
They are the areas not yet covered by the Local Planning Authority Areas (LPPA). The Review indicates them as Satellite Towns and gives guideline of land-use, etc.
- Case 2: H3-, Kajang- and Bang-Station-areas;  
They are already included in LPPA. Bangi Structure Plan determines the centre/sub-centre location, basic land-use and road network, etc.
- Case 3: Nilai Station-area;  
This is located in a rural area of plantations with small villages. No LPAA and no urban development plans exist at present
- Case 4: Salak South-, Sg.Besi-, and Serdang-Station-areas;  
The first two areas are within K.L. and covered by LPAA. They are planned to be developed further.
- Case 5: K.L. Station-areas;  
Located in the Central Area, it is an LPAA.]
- Case 6: Seremban Station-areas;  
Located in the town center of Seremban Municipality, it is an LPAA.

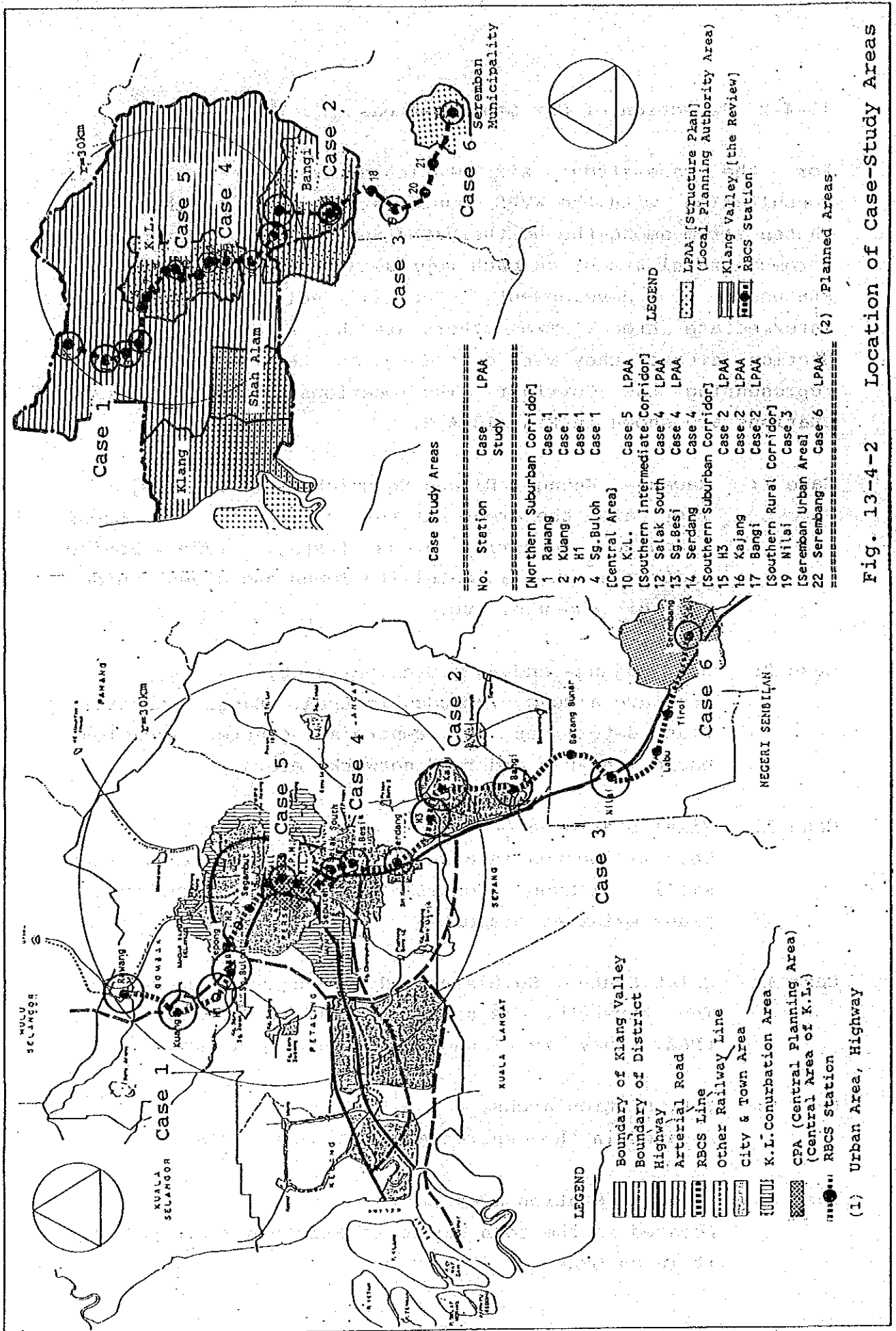


Fig. 13-4-2 Location of Case-Study Areas

### 13-4-3 Station-Area Concept for Analysis and Planning

The concept of the Station-Area is useful to clarify the RBCS impact and to prepare the land-use planning around stations. A station can be considered as an activity node, since all the RBCS users pass it. Access trips to it are the less dense, the longer from it. Hence the accessibility to the station defines the spatial spread of the impacts. In this sense, a station-area is a sphere where the station exerts a certain influence.

#### (1) Concentric circles around the station:

According to the major access modes, a station area can be schematized as two mono-centric circles. The inner circle (Primary Zone of Walking Access Zone) represents the area where one can reach the station on foot. The outer circle (Secondary Zone of major Feeder Transport Access Zone) represents the area accessible to the station by feeder means of transport.

Note: Two other circles are conceivable; a station-front zone within the inner circle and an outskirts zone (Tertiary Zone) out of the outer circle. The former concept works in planning a core of commercial activities. The latter works in dividing the impacts of the station into two, major and minor. But in this Report, these concepts are not utilized.

#### (2) Spatial dimensions of station-area:

##### 1) Primary zone;

RBCS will be most convenient to the people who go from/to a point in a zone of walking distance to/from the station. In this context, the zone is named "primary zone". In these areas, there will be the least resistance in mode shifting to RBCS from others. It is assumed in this study as a zone of 400m radius from the station.

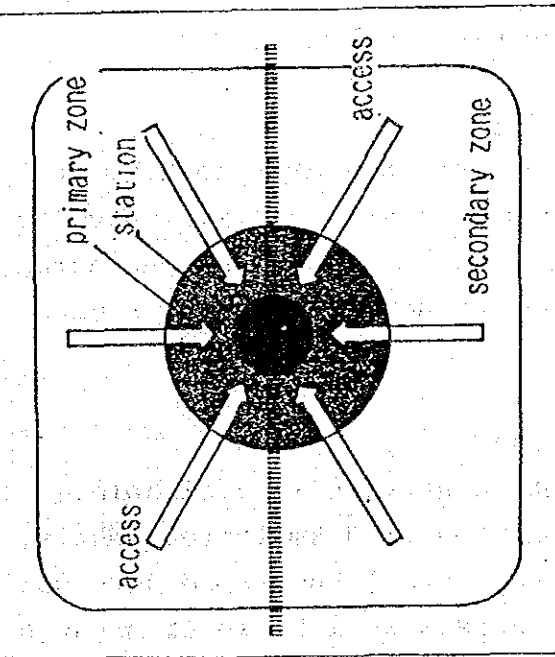


A walking distance is a physiological concept. Studies reveal that it is shorter in tropical areas than in others. It is considered to be approximately 400m in general. Actually it can be longer, say 700m, if the road is good and comfortable. The Team assumed that walking distance for commuting would be between 400m and 700m, hence, 550m as an average. Considering the meandering of the road, 550m length was assumed to be equivalent to 400m straight line distance from the station. (Refer to Fig. 13-4-3).

2) Secondary zone;

It is not simple to define a feeder transport access area, since the access time varies depending on the access modes (public mode or private mode). It also varies the road network and bus routes, bus operation headway, etc. As the matter of fact, a feeder transport access area is not a circle.

In this study, a Secondary Zone is assumed as a conceptual or potential circle of 1.5-2.2 km radius from the station, or a zone within which the average access time to the station ranges between 10 and 15 minutes of bus ride. It was presumed that the majority of railway users will not make a feeder-bus ride more than 15 minutes.



Conceptual Influential Sphere of the Station

**Primary Zone:** Walking Access Zone  
(a circle of 400m radius \*1; an area of 50ha)

**Secondary Zone:** 10- to 15-minute Bus Access Zone  
= Major Feeder Bus Access Zone  
(a circle of 1.5km to 2.2km radius \*2; an area of about 700ha to 1500ha)

**Tertiary Zone:** Outer Zone (outside of Secondary Zone)

- (Note) \*1: comfortable walking distance= 400m to 700m  
(the average= 550m)  
the radius= distance(550m) x 0.73 = 400m
- \*2: average speed of feeder bus= 10-15 km/h  
(the average=12km/h)  
the distance of 10-to 15-minute ride =2.0-3.km  
the radius = distance(2.0 to 3.0 km) x 0.73

[Assumption :  $\angle S = 30^\circ$  ]

Walking Distance = a + b;  $a = \sqrt{3} b$   
 Distance =  $(\sqrt{3} + 1)b$ ; r(radius) = 2 b  
 Distanc = 550m --> (  $\sqrt{3} + 1$  ) b = 550; b = 201  
 r = 2d = 400m

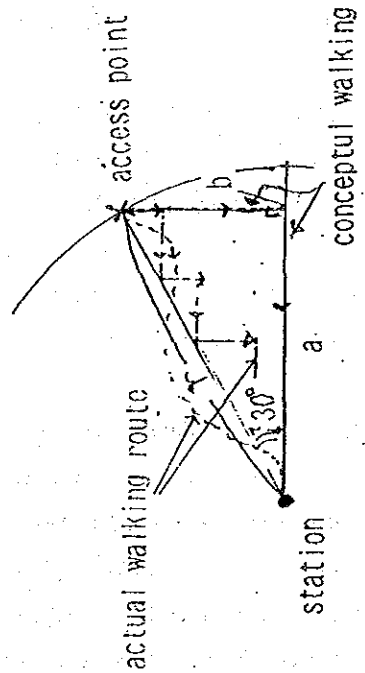


Fig.13-4-3 Station-Area Concept  
-- Station's Influential Sphere --

#### 13-4-4 Case Study on Dimension and Strength of Influential Sphere of RBCS Impact

A station area is a sphere within which the station exerts an influence i.e. the RBCS impact. If the Tertiary Zone can be ignored, the station-area can be identified with the spread of the Secondary Zone. The dimension of the Secondary Zone of selected stations were studied, each considering the characteristics of the location of the station. In determining the dimension of the influential sphere, it was presumed appropriate to consider, in middle-and long-term planning of suburban housing development, that one-hour commuting will be the standard commuting time for the suburban dwellers. Starting therefrom, the approximate distance of a commuter's trip to the station was assessed, and this was assumed as the radius of the influential sphere.

The strength of a station's impact on its station-area is proportional to the number of passengers getting on and off at the station. In general, when it is larger, the impact will be larger.

Both the dimension and strength of an influential sphere are utilized in proposing the alternative development actions regarding the Corridor.

##### (1) Dimension of influential sphere:

###### 1) Northern Suburbs (Case 1);

For the commuting time from this area to K.L. to be less than one-hour, the bus access time will have to be less than 10 minutes, or 1.5 km. This is considered to be the standard of the influential sphere radius of stations in this area.

###### 2) Southern Suburbs (Case 2);

At Kajang, rapid commuting service is available. The bus access will be 20 minutes or 3 km there. While at other stations (H3, Bangi, etc.) the rapid service is not available. The bus access will be 10-15 minutes or about 2 km there.

3) Seremban District (Case 3, and 6); the total RBCS commuting time will exceed one hour. But due to the comparatively punctual service of trains, some commuters will switch from stage-bus/private car to RBCS. Seremban Municipality is more than 60 km away from K.L. But the citizens' trip patterns show a relatively strong preference to railway rides (commuting, shopping, etc.) Nilai has potentials for housing development on long-term basis. In this case, 10 to 15 minutes bus ride or about 2 km radius station-area could be formed in future.

4) Intermediate area (Case 4);  
In this area, the influential sphere will be rather small (probably 1.0-1.5 km), because the area is nearer to the Central Area of K.L. and served by various transport modes (LRT, Mono-rail, buses)

5) Central area of K.L. (Case 5);  
K.L. station-area will cover the major parts of the Central Area; the linkage between the station and various modes should be developed.

(2) Strength of RBCS impacts:

K.L. station will have 112,000 passengers getting on/off per day in 2005. It is the largest of the Corridor, Salak South and Sg.Besi will be second largest, with 60,000. Kajang, Rawang and Serdang follow them, with 30,000-40,000.

At these larger stations with more than 30,000 passengers per day, the station impacts will be such that the station front areas will have potentials for getting developed as the centers for commercial/business activities, as well as for administrative/cultural services. K.L., Rawang and Kajang Stations, in particular, are expected to have larger impacts on the surrounding areas.

#### 13-4-5 Case Study on Land-Use and RBCS Impact

##### (1) Items reviewed

The following topographical maps were used for the base-maps of case-study:

- Case 1, 4 and 5: maps with a scale of 1/25,000, based on the aerial photographs in the later half of 1990's. (These are under preparation in the Survey Department of Malaysia.) Furthermore maps with a scale of 1/5,000 were available for Case 1 (Rawang) and Case 5.
- Case 2: maps with scale of 1/25,000 (in 1970's)
- Case 3 and 6: map (1/63,600, in 1970's) for Case 3 and map (1/10,000, in 1970's) for Case 6.

The Team reviewed the following items considering the station-area concept above-mentioned:

- Klang Valley Land-use Plan (2000) in the Review, KVPS.
- Key Diagram (for 2000) in K.L. Structure Plan
- Key Diagram (for 2005) in Bangi Structure Plan
- Key Diagram (for 2000) in Seremban Structure Plan
- Housing development projects approved

Furthermore, "8-chain sheets" (with a scale of 1/6,360) were used to review the land ownership around stations.

Fig. 13-2-3 shows existing/planned land-use of case study areas.

##### (2) Case 1: Rawang, Kuang, HI and Sg.Buloh Stations

The one-hour commuting to the Central Area of K.L., resulting from RBCS, will be a momentum for encouraging the Satellite Town developments of Rawang and Kuang, as follows:

- The Secondary Zones, the major Feeder Transport Access Zones will cover major parts of the Satellite Towns (Rawang, Kuang and Sg.Buloh). Each of Rawang and Kuang is planned to have 60,000 population (2000).
- The review recommended that the measures, such as low-cost housing construction, should be introduced to encourage the development of suburban growth centres and the Satellite Towns.
- Each Town Centre planned for Rawang and Kuang is located in the Primary Zone or its periphery.
- Road access from Rawang or Kuang to the Central Area of K.L. has not yet been well-developed; but a highway under construction will link Rawang to K.L. in near future.
- Both of rail and road are available for Sg.Buloh-K.L. due to 15 km distance.
- Rawang Station-area has housing and industrial development projects approved. But Kuang Station-area has almost no approved development project.

### (3) Case 2: Kajang, Bangi and H1 Station-areas

In order to encourage the achievement of the basic policies of the Structure Plan, three station-areas should be treated by the different ways/countermeasures to the RBCS impacts, as follows:

- Bangi New Town area is too large to be covered by one transportation corridor. The RBCS could cover the eastern half of the town. The remained western half, which is major parts of New Town development, is covered by the K.L.-Seremban Highway; but the Structure Plan proposed to introduce MRT or LRT along the highway.

- The Review emphasized the necessity of measures for encouraging the growth of Bangi New Town, as mentioned above. 22-minute commuter express service, brought by RBCS, will attract the migrants from K.L.
- The centre structure was defined in the Structure Plan. The major town centre is placed along the highway. The existing centre of Kajang is planned as a second-class centre. Kajang Station, removed in future, will be about 1000m far from the major local centre of Kajang.
- Major parts of the Secondary Zones of the three stations are planned as urban areas. Bangi area includes the UKM (University of Malaya).
- The southern area of H3 Station is being developed as low-density housing area; the northern half is planned as housing area but not yet developed. In addition, the northern periphery of the Station-Area is planned as buffer zones separating the Bangi New Town and the K.L. Conurbation Area.

#### (4) Case 3: Nilai Station-area

Introducing the commuter-express service for Nilai Station will make the Station-area one-hour commuting zone of K.L. and will encourage the development of the area in long-term.

- Existing land-use around the station is now plantation areas dotted with small villages.
- The Negeri Sembilan (Draft) points out that urban activities will be spilled from Klang Valley onto the area; but the land-use guideline has not yet been prepared.

- K.L.-Seremban Highway links the area to K.L. by the Nilai I.C. located at the station's vicinity.

(5) Case 4: Salak South, Sg.Besi and Serdang

Housing developments around the Stations depend on the road-based access to the K.L. City Centre, but the road traffic conditions in the areas are getting increasingly worse. Due to the multi-modal access, the secondary zones of the stations will be rather smaller.

- Salak South and Sg.Besi Station-areas have been developed for housing as the peripheries of the Central Area of K.L. These are mixed by developed and developing areas and not yet developed areas.

- The Secondary Zone of Salak South includes a New Growth Area of Razak New Town. A planned arterial road in front of Salak South Station will connect the New Town to the highway.

- Railway, LRT and road-based transportation will be available for the area-K.L. commuting. But the railway passengers at Salak South and Sg. Besi are estimated to be more than 60,000 a day (2005) due to large numbers of population and day-time employments.

- Furthermore, a large-scaled project in combination with leisure (horse race) and housing development are on-going along the railway line.

(6) Case 5: K.L. Station-area

The largest number of RBCS passengers and inter-city train passengers will require the large-scale intermodal-facilities; the space requirement will involve the large-scaled urban redevelopment of the Station-area.



- More than 100,000 passengers a day are estimated to board or alight at K.L. Station (2005). The large volume of passengers and feeder traffic will give the largest impact on the surrounding.
- The Primary Zone and the periphery include historical and prestigious architectures, such as K.L. Station (built in 1911), MRA Headquarters (1917), National Mosque, Church of The Holy Rosary (1903) and National Museum (1963).

(7) Case 6: Seremban Station-area

Seremban Station will be the main terminal station of a big city. Linked to the Town Centre's activities, the RBCS impact will encourage various urban activities around the station.

- The station is located at the periphery of the Town Centre defined in the Structure Plan.
- K.L.-Seremban Railway will be used not only for daily commuting but also for weekly inter-city trips between K.L. and Seremban. It will bring various roles to the station-area.

13-5 Proposals for Land-Use Planning

13-5-1 Introduction

(1) Proposals of common planning concepts for RBCS Corridor:

Studied and reviewed the Corridor and the six case-study areas, firstly the Team proposes the common planning and implementation concepts for the whole Corridor; namely the concepts for station-area planning, the government actions, development action categories. These are explained in Section 13-5-2.

(2) Proposals of development actions for case-study areas:

Based on the above planning concepts, the Team proposes guidelines for land-use planning of the Station-areas; namely, the basic development concepts for the Station-areas, the main development actions, in Section 13-5-3.

(3) Location and implementation diagrams of development actions proposed for the case-study areas:

Appendices 13-5-1 to 13-5-8 present: the location diagram of proposed development actions; the integration of development actions; and the government actions.

(4) Future tasks for preparing local plans:

It will be indispensable for the actual plan-making process of planning authorities to study/review the physical/non-physical conditions/factors on the area. Important planning factors among them are expected to be: actual urban development demands for housing/industrial developments, local communities and land ownership, urban environmental factors (relating to the land development), local transportation study (including the study on the public's preference patterns for transport mode), etc.

13-5-2 Proposals of Common Planning Concepts for RBCS Corridor

(1) Regional setting beyond 2000:

Introduction of RBCS will expand the commuting zone along the Corridor. The one-hour commuting area by stage-bus is expected to be an area of 10-to-15 km radius circle from the Central Area of K.L.. This will be expanded to a 30 km radius zone.

K.L.-to-Kuang/Rawang and K.L.-to-Bangi are two major growth directions (1985-2000) which the Review adopted; this development strategy could be extended beyond 2000 through combination with the RBCS development plan.

(2) Proposal of the planning concept of "Station-Area"

1) Necessity of "Station-Area" Development

In the long view, the RBCS will encourage to form intensive land-use of the areas around stations because the station will work as a strong node to link urban activities to the Railway. However the built-up areas around the existing/planned stations are dispersed land-use patterns because they have been developed depending on mainly road-based transportation system.

The most urgent task must be the linkage program between the stations and existing built-up areas. Furthermore, in order to make the RBCS more convenient and attractive alternative urban transportation, the station-area development should be one of the basic strategy for middle-/long-term.

The station-area development program should be the optimal selection for the both of the RBCS project and the development policies. The Team propose the planning concept for the station-area development program, as mentioned in 13-1-2.

2) Planning concept for "Primary Zone" (Walking Access Zone within a 400m radius circle having a 50ha area)

The Primary Zone, as mentioned in 13-4-3(2), will be the strategic area for the following development actions:

a. Action 1: Pedestrian network improvement/development;

The walking distance is a physiological concept, as mentioned in 13-4-3(2). A survey in an European country reveals that the public's comfortably walking distance depends on the physical conditions of pedestrian path, as follows:

Walking distance	Conditions of pedestrian path
750 m	Comfortable/attractive pedestrian path with shelters to protect from the strong sunshine and the rain.
375 m	Comfortable/attractive pedestrian path but without shelter
200 m	Path without any shelter in the rain

Therefore betterment in the pedestrian path/network around the station will lengthen the public's walking distance and spread the Primary Zone of the station considerably. This action is indispensable for making better use of the railway, and furthermore it will increase urban amenities of the area.

The planning and the implementation should be cooperated/integrated to other development actions in the area.

b. Action 2: Inter-modal transport facilities/square improvement/development;

As a matter of course, this also is an indispensable for the RBCS Project. The planning and the implementation should be cooperated/integrated to the above pedestrian betterment, other transportation projects, and urban development actions around the station.

c. Action 3: Town centre/sub-centre development;

K.L., Salak South, Sg.Besi, Kajang, Rawang Stations are estimated to have more than 30,000 passengers a day (2005). These stations will have an impact to encourage commercial/service/business activities; furthermore the primary zones of the stations will be recommended for a civic service centre, cultural service centre also because they will have well-developed local transport service.

d. Action 4: Large-scale trip-attraction and trip-generation facilities introduction;

Facilities of this category are shopping centre, urban amusement centre, large park, exhibitions etc. Because railway users can access from a station directly without any other transport, it would contribute to ease road traffic around the station.

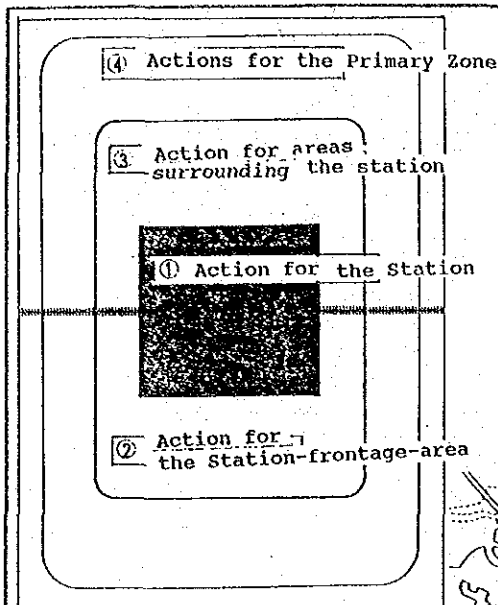
e. An example of primary zone development;

The following is a well-arranged example of primary zone development in the suburbs of a big city in Japan (Tama New Town in Tokyo Metropolitan Area):

- A centre zone development includes shopping centres, administrative service facilities, library, gymnasium, clinics, railway station, bus-terminal, car parking areas, etc. The comfortable pedestrian network links the station to other facilities within the area.

- Multi-modal access (urban railway, buses, taxi, private-cars etc.) from the surroundings.

Refer to Figs. 13-5-1.



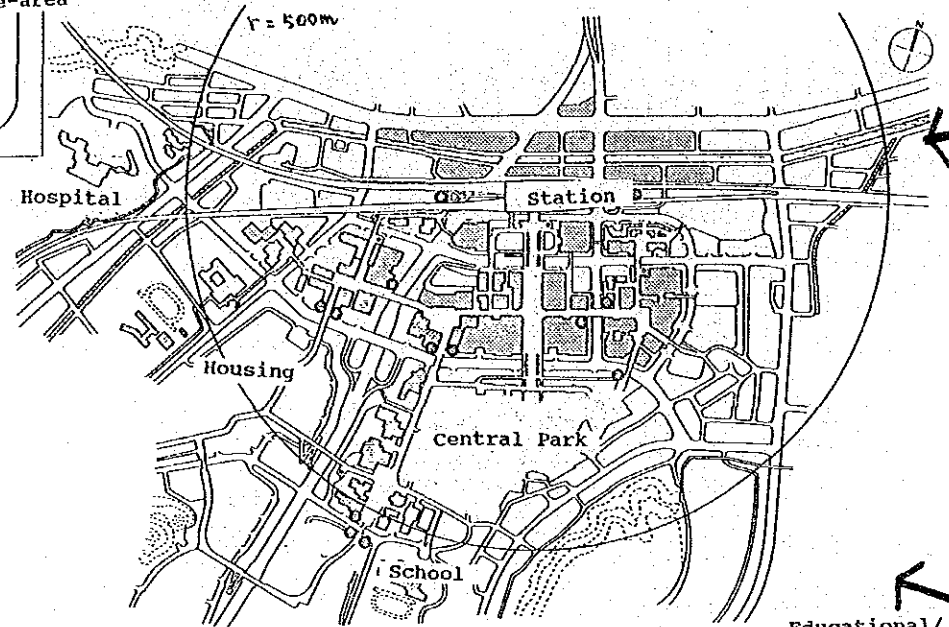
**Actions for "Primary Zone"**  
 (Walking Access Zone within a 400m radius circle; an area of 50-ha)

Action 1: Pedestrian network improvement/development

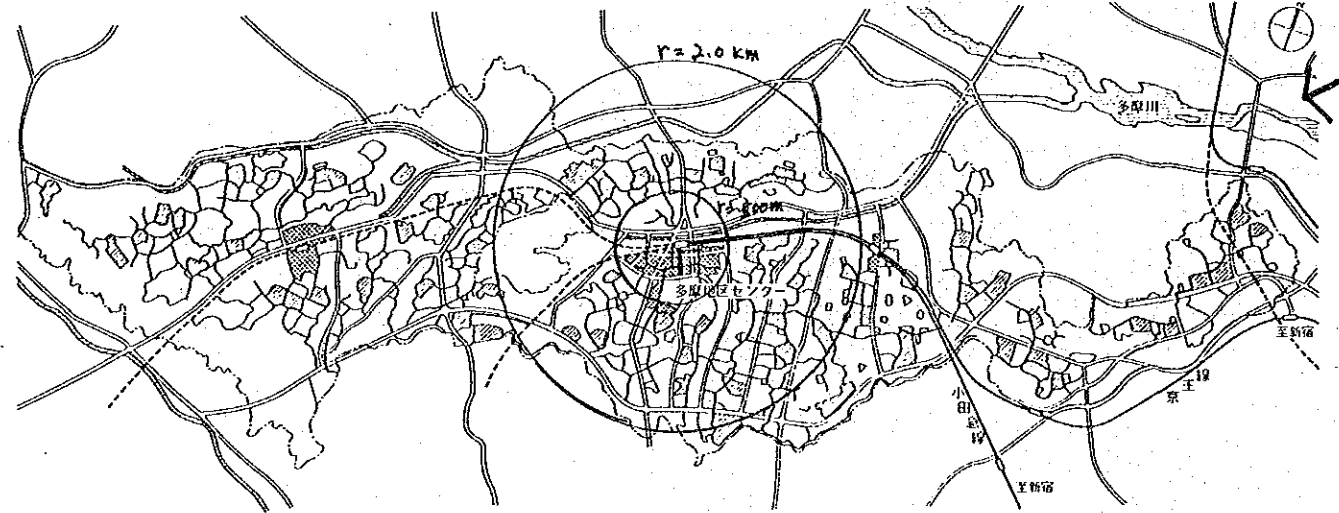
Action 2: Inter-modal transport facilities/square improvement/development

Action 3: Local Centre/Town Centre Development

Action 4: Large-scale Trip-Attraction/Generation Facilities Introduction



Transportation Plan of Tama Town Centre



Transportation Plan of Tama New Town

**Case: Town Centre of Tama New Town**

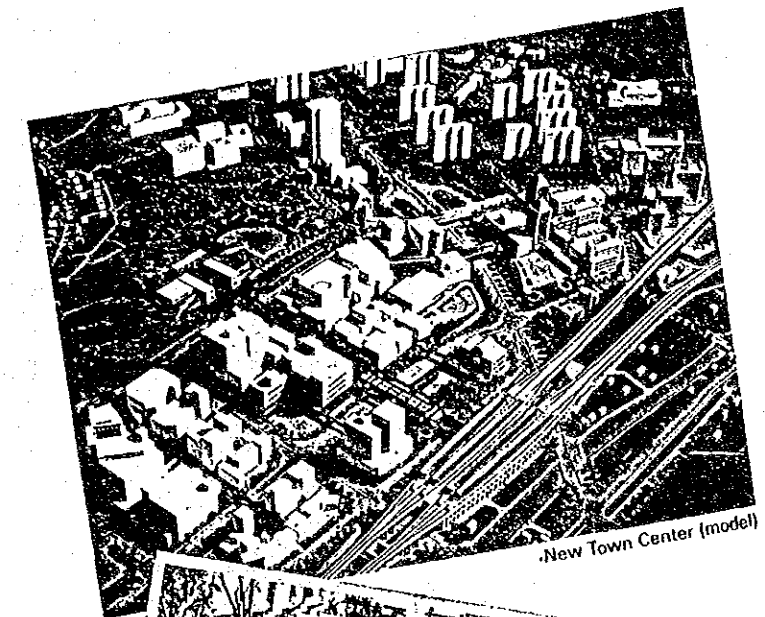
Refer to Appendix 13-1-1 B.

**Centers**

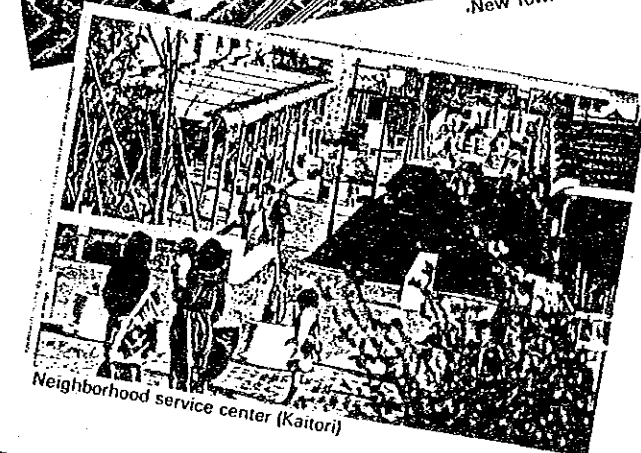
- **New Town Center (Tama Center)**  
 The New Town Center has been built around the Tama Center Station to serve as the center of activities for the Tama New Town as a whole. Department Stores, hotels and other commercial businesses, as well as large and small halls, a folkcraft museum, multi-use cultural facilities, public offices, a large park, and other leisure facilities are planned. Banks and a large superstore have already been opened.
- **District Center**  
 A shopping center, banks, leisure and cultural facilities as well as various kinds of service facilities are planned to be set up in front of each station. Such facilities have already been set up in front of Nagayama Station.
- **Neighborhood Service Center**  
 The neighborhood service center serves the residential areas, with shops selling necessities for daily life, supermarkets, clinics, police box, and a sub-post office.

**Parks and Green Spaces**

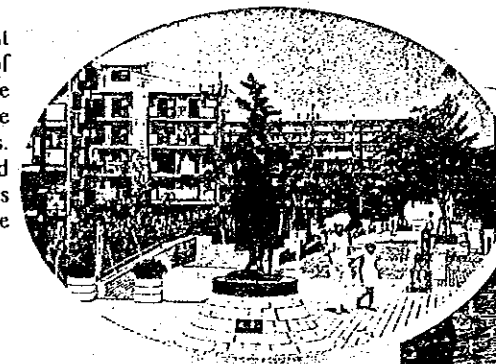
- **Parks and Green Spaces**  
 Parks and green spaces are being built making use of the rich greenery and topology of the Tama district. These parks will include a children's park, and a park with a pool and a baseball field.
- **Pedestrian ways**  
 Pedestrian ways have been built for the safety and convenience of the residents. They lead to the station, the neighborhood service center, and to other facilities. Overpasses have been provided at the principal road junctions for the further safety of the pedestrians.



New Town Center (model)



Neighborhood service center (Kaitori)



Pedestrian way (Minami Osawa)



Park with a pond (Uryu Green Space)

Fig.13-5-1 Actions for "Primary Zone"





3) Secondary Zone (10- to 15-Minute Bus Access Zone within a 1.5km to 2.2km radius circle having a 700ha to 1500ha area)

a. Action 1: Suburban housing development including low-cost housing

This zone will cover large-scale suburban housing development areas. The secondary zone which will serve the one-hour access to the Central Area of K.L. is recommendable for suburban housing development including low- to middle-cost housing.

b. Action 2: Large-scale trip-attraction/generation facilities introduction

Introducing the large-scale facilities in the suburban Secondary Zone will contribute the easing of traffic concentration into the Central Area. Furthermore it will be easier in the suburbs than in the Central Area of K.L. to obtain the large-scale development site. Facilities of this category are: urban resort/recreation facilities, large park, university, exhibition ground, etc.. It will be linked to the station by shuttle service of bus, monorail, etc..

c. An example of a new town depending on the RBCS reveals:

The planning concept is a compact development; namely, a cluster of housing is developed around a station and a local centre, and it is located mainly within a 2km radius circle of the station.

A station-oriented road network is adopted to save time in bus operations. As a result of the centre development, feeder buses introduced for commuting

will be operated for local zone-bus service in off-peak hours.

Refer to Figs. 13-5-1 and 13-5-2. Fig. 13-5-2 is a station-area of the Chiba New Town in the Tokyo Metropolitan Area.

(3) Suggestion for government actions to encourage/control the station-area development:

1) Cooperation between the RBCS Project and the housing policy of Klang Valley

a. The necessity of cooperation

The RBCS project is expected to work as a countermeasure to encourage the development of Bangi New Town, Rawang/Kuang Satellite Towns which are planned to achieve the development policy of Klang Valley.

In this context, the cooperation between the RBCS Project and the housing policy of Klang Valley should be emphasized. Namely the encouragement of housing development, including low-cost housing, in the suburban station-area will be an important strategy to cope with urgent needs of low-cost housing in the K.L. Conurbation area and to attract migrants from the K.L..

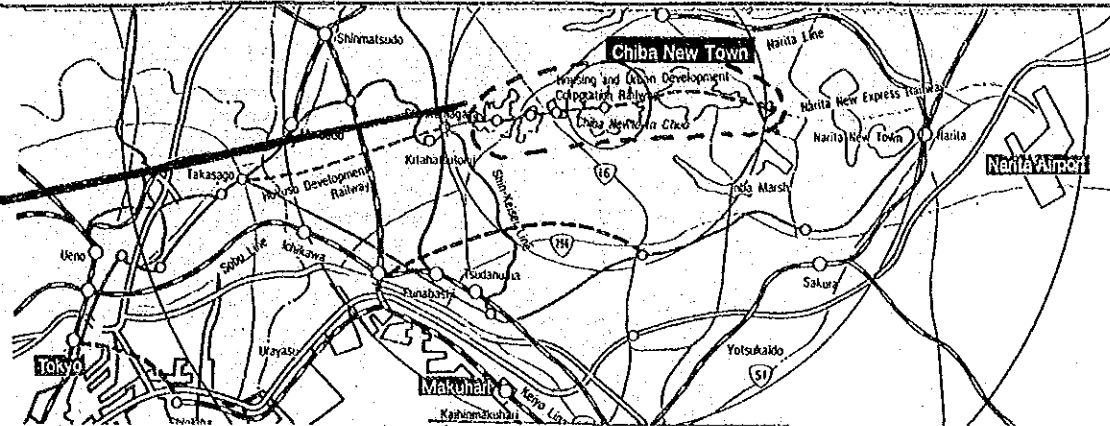
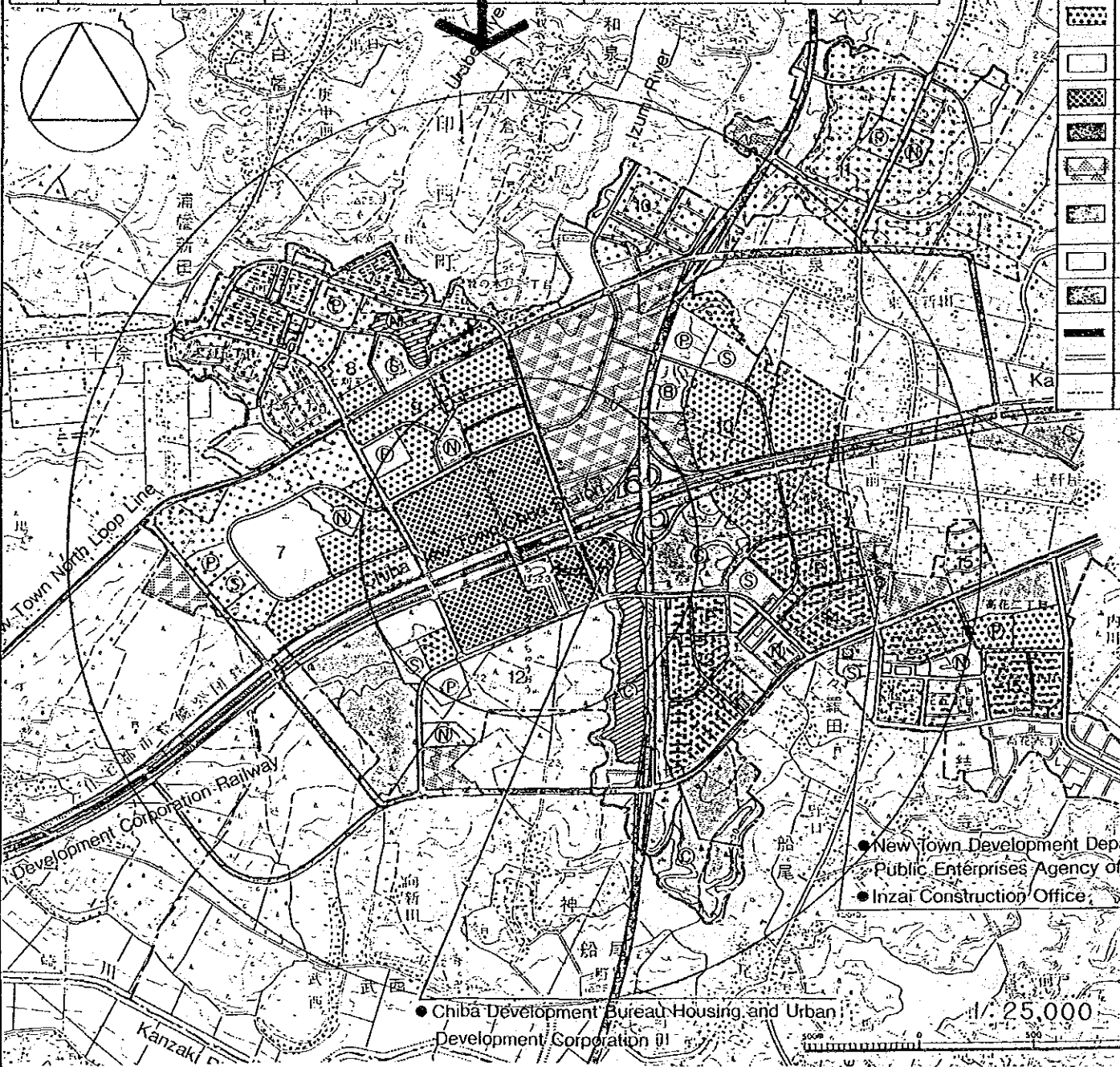
b. Development of low-cost housing

The RBCS and the government action will increase a potential of developing the low-cost housing in the suburban station-area, as follows:



Neighborhood Unit Composition Chart

Unit	1	2	3	4	5	6	Total
Planned area (ha)	199	197	90	764	579	104	1,933
Planned population	19,400	18,600	8,500	73,200	47,700	8,600	176,000
No. of Units	3	2	1	9	6	1	22



Legend	
[Pattern]	Detached and low-rise apartment housing
[Pattern]	Middle-high-rise apartment housing or low-middle-rise apartment housing
[Pattern]	Educational facilities
[Pattern]	Public-use facilities Center
[Pattern]	Other public-use facilities
[Pattern]	Special business facilities
[Pattern]	Parks, green zone and pedestrian paths (⊙ means flood control pool)
[Pattern]	River and flood control pool
[Pattern]	Other public facilities
[Pattern]	City planning road National highway and prefectural road outside the area
[Pattern]	Local administration border

Legend	
(P)	Primary School
(S)	Secondary School
(H)	High School
(N)	Neighborhood Park
(C)	Comprehensive Park
(B)	Block Park

Example of Station-Area Development in Japan -- Chiba New Town --

This is located at the eastern suburbs of Tokyo Metropolitan Area. The public/private sectors joined to develop the New Town and a New Railway Line to link it to the Center of Tokyo, as mentioned in Appendix 13-1-1 (1) A.

The integration between the New Town Planning and RBCS are:

- A Compact Housing Development: A main cluster of housing areas (as shown) is planned to be within approximately a 1.5 radius circle of a station (a 764ha area); but it will be developed at a 73,000 population.
- A 50ha area around the station will be developed for the Town Centre.
- Surrounding the Centre Area, apartment housing areas with comparatively densely population are planned/developed within a 1.0km radius circle of the station, the surroundings of the Centre. Most residents can walk to go to the Station/Centre. Outer zone is planned/developed for detached houses and low-densely housing.
- The road network is planned to orient to the Station and the Centre. It will save the road access time to there and will make better use of bus in peak hours and off-peak hours also.

Typical case of Centre Area Development in the New Town integrated to the railway station is:

- Variety of facilities introduced: shopping centre and shops, administrative service offices, library, gymnasium, swimming pool, clinics, and railway station, bus-terminal or inter-modal transport square, car parking, etc.)
- Comfortable Pedestrian Network, Park
- Multi-modal Accessibility (Railway, Bus, Taxi, Private-car, Bicycle etc.)

Fig.13-5-2 Example of Station-Area Development in Japan -- Chiba New Town --



- The RBCS will make the above area the one-hour commuting zone of K.L. Central Area; it also will provide a comparatively cheap commuter service.

- If the Government controls the land price of the station-area before and after the RBCS introduction, the land price of the area will attract private developers' housing development. The Government will be able to utilize the controlled land price as an incentive which will encourage the low-cost housing supply in the private housing development.

In addition, the background of low-cost housing development with private sector involvement is:

- Since the Forth Malaysia Plan, the government introduced a housing policy which involved the private sector to supply low-cost housing. Under the policy, the Local Planning Authorities ensured that a minimum of 30% of the total housing units developed by the private sector were low-cost.

- Because the private sector must finance the construction costs of low-cost housing by cross subsidies of the project, the government provided the incentives to aid it. The disposal of public lands to the developer was an important incentive.

2) Preparation of the guideline on the land-use and development actions in the Station-area;

In order to examine and coordinate the proposed actions relating to the area, the concerned planning authorities should prepare the guideline of the land-use and development actions. It will define the followings:

- the location and space requirement of the intermodal transfer facilities, square in front of the station
- the basic pattern of road network and the location of urban facilities
- the priority zone for low-cost housing,
- other facilities, if necessary, as mentioned in 15-5-2(2)
- The development project which will meet the guideline, will be approved and be given the permission of land acquisition. The land prices will be controlled, as mentioned later.

3) Preparation of a measure to control land price in the Station-area;

As mentioned above, some countermeasures should be adopted to control the land price of the station-area before and after the introduction of RBCS. It will be a basement to encourage the planned land-use of Station-area.

As a result, the government disposes land value increments, resulting from the RBCS Project, to the private sector.

4) Study and adaptation of new development methods, such as land readjustment;

Conventional large-scale development methods will be available for the Nilai and H1 Station-areas because the areas are mainly plantation areas. However a new development method will be necessary for the integrated development of the Kuang, H3, Bangi station-areas and so on because these areas area consist of small

settlements and rather small plantations.

The land readjustment method will be useful for developing the station-areas. The characteristics of land readjustment are expected:

- Develop the station-area without large-scale land acquisition under the cooperation with the residents and land ownership
- Finance the development costs by cross subsidies
- (generally) Make private developers join. Private developers can construct and sell market-price housing, shopping center, etc. to increase the cross subsidies of the project.

#### 5) Coordination of development projects;

In the coordination of the development projects in the station-area, the government should introduce a development system to share the construction costs of access road, intermodal transfer facilities, etc.

#### (4) Categories on development actions

As mentioned in section 13-1-2, alternative development actions should be proposed based on the established development policies as the long-term primary targets. A set of categories on the actions were formulated to propose alternative development actions, as follows:

##### 1) Linkage action;

This is the indispensable action for operating the RBCS, such as access road linking the station to an existing road, the intermodal transfer facilities.



The implementation of the above actions will involve the surrounding areas. The minimum countermeasure is in this category: but the more aggressive countermeasure is called the "Alternative/Optional Actions", as mentioned later.

2) Planned development action;

This is planned in the Structure Plan or the Review.

3) Alternative development action;

This will be proposed based on the above two actions; it will make better integration between the RBCS impact and the land-use. However it should meet the basic development policies in the Structure Plan and the Review. An example of this action is:

- The following housing development action may be proposed for a planned housing development area of the station-area: a centre development for the intermodal transportation square and for a local centre which will serve the station-area; and low-cost housing development around the station. This is called "Alternative Action".

4) Optional development action;

This may be more aggressive to develop the integration between land-use and RBCS impact. Factors outside of the RBCS Project, ex. commercial development trend/potentiality, etc., will be very important to make a proposal. An example is:

- A commercial redevelopment action may be proposed for the area around a station located at the town centre. The action will include: an intermodal transportation square development, pedestrian network development, urban land-scape development around the station. But the action must be depended on the commercial activities.

### 13-5-3 Guideline for Land-Use Planning of Case-Study Areas

Basic concepts on the current development plans and the RBCS impact of each case were mentioned in Section 13-3-3 and 13-3-4.

This section proposes the guidelines for land-use planning in the concepts. The definite development actions and the spatial diagram for each case are proposed in Appendices 13-4-1 to 13-4-8, accompanied with the proposals on the packages of development actions and the government actions.

#### (1) Case 1: Rawang, Kuang, H1 Station-areas in the Northern Suburbs

##### 1) Basic concept:

The established urban hierarchy, functions, and population by 2000 should be unchanged. But the achievement of the development target and the frame (population and day-time employment frame) for 2000 requires to sustain the rapid growth of the areas up to 2000.

Therefore an aggressive scenario should be adopted to encourage the Satellite Town developments of Rawang, Kuang and Sg. Buloh and also promote the railway ridership. The basic development tasks are to:

- Encourage the population growth. The commuter housing development will encourage the rapid growth in population, and sustain the Town Centre development and other commercial and service activities. The increased activities will provide the area with job opportunities.
- Plan and execute the Town Centre Project. This will increase activities and amenities of the Towns, and will make the Town-image more attractive. As a

result, these actions will encourage to attract migrants from K.L. and to introduce industrial developments with excellent companies.

- Achieve the "relatively self-contained town". The composition of commuters in a total of the population must be considered in long-term development; but in short-/middle-term, commuter housing developments will nurse the basis of the self-contained town, as mentioned above. The self-contained town concept will be more emphasized for Rawang than for others.

## 2) Main development actions and necessary government actions

Under a compact development concept, the Town Centre development, low-cost housing development are proposed. Appendices 13-5-1 to 13-5-3 show the development action diagram (the proposed actions, the location and the integration etc.) for each station-area.

The areas have not yet been in the LPAA; concerned planning authorities should prepared the following guidelines:

- A development guideline of Rawang, will include comprehensive treatment, to integrate development actions planned, approved and expected in future.
- A development guideline for Kuang will be a local plan (action-area plan) because the station-area is expected to be suitable for a compact development of Satellite Town.
- A guideline for H1 station-area will be mainly for the coordination because major parts of the station-areas have been developed or planned already.

(2) Case 2: Kajang, Bangi and H1 Station-areas in the Bangi New Town

1) Basic concept:

The established urban hierarchy, functions, and population by 2005 should be unchanged. The major concept established is the "self-contained town". On the other hand, the achievement of the development frame (the population and day-time employment) requires to continue the rapid growth the up to 2005.

Therefore the selected scenario for alternative actions is that:

- RBCS should encourage the growth of Bangi New Town; but actual development actions in the station-areas should be harmonized with the basic development policies established in the Structure Plan.

2) Main development actions

To stretch the RBCS impact to the surrounding areas effectively, the feeder transport development is the indispensable "linkage action" for three stations, in particular for the Kajang station-area which will have the potential secondary zone of a 2 to 3km radius circle, as mentioned in 13-4-4(1).

a. Kajang Station-area;

- a combination of the full-scale intermodal transfer square development and (small-scale) commercial and housing redevelopments at the involved surrounding area.

b. H3 Station-area;

An integrated housing development project, such as land readjustment, was proposed for not-yet developed area (the northern half of the Station-area). It should include:

- a combination of the intermodal transfer facilities development and a local centre development (which the Structure Plan plans it for Kampung Sungai Ramal Ruar)
- low-cost housing development aided by disposal of land value increment resulting from the RBCS Project, as mentioned in 15-5-3(3).

Furthermore, in the preparation of the Local Plan, the proposed actions would be reviewed and integrated.

c. Bangi Station-area;

An integrated project, as mentioned for the H3 station-area, is proposed for this area.

Appendix 13-5-4 presents the proposed development action diagram for the three station-areas.

(3) Case 3: Nilai Station-area in the Seremban District

1) Basic concept:

For the middle- and long-term development, an optimum development scenario should be prepared based on the development actions to be spilled from Klang Valley. The RBCS will increase a potential of development for the area.

Therefore, in short-term, proposals of development actions relating to the station-area should be selected to promote the future potential. For the long-/middle-term development, the Team proposed a Satellite Town. The New Town is placed at a satellite town of Klang Valley at the first stage; but it will work as a growth centre for the surrounding rural area in future. It will include commuter housing, industrial, and other cultural, institutional purposes. A variety of options

are expected on the urban hierarchy, functions, population frame, etc..

Related development guideline of the State is, therefore, urgently required.

Development actions and the space diagram are shown in Appendix 13-5-5.

(4) Case 4: Salak South, Sg.Besi and Serdang Station-areas in the Southern intermediate area

1) Basic concept;

The areas are placed at multi-modal corridor. The station-areas will be comparatively small. The integration planning should be focused in the primary zone.

2) Main alternative actions;

- Transportation square development in-front-of the station
- Pedestrian network improvement in the Primary zone
- Local centre development to serve mainly the station-area

These actions around station should be coordinated and/or integrated as a comprehensive action. The proposed action diagram is shown in Appendix 13-5-6.

(5) Case 5: K.L. Station-area

1) Basic concept:

An aggressive scenario is recommendable for this area, considered the following:

- K.L. Station is the Central Station for the K.L. Conurbation Area and Klang Valley. It will require the wide-range development factors including the prestigious design for the building, land-scape, town-scape, etc.
- K.L. Station will require large-scale linkage program to cope with: large number of passengers estimated; physical conditions (river, fly-over, etc.); and the locations of related intermodal facilities (a bus terminal, stations of planned monorail and LRT, etc.).
- K.L. Station will be a focus for the urban redevelopment action of the Central Area because of: the urban activities of the surrounding area (a part of the Center of K.L.); a large-scale trip concentration (by passengers of commuter trains, long-distance trains and other public transportation, and visitors, etc.); and the existence of MRA's areas and other public areas.

2) Alternative and optional development actions;

Inter-modal linkage actions (between RBCS, LRT, Monorail and other road-based transports) should be developed into a integrated station-area planning with a combination of the "pedestrian mall or plaza development" and "station-area redevelopment".

a. Alternative action;

- The pedestrian mall/plaza will be developed on the large deck which will cross over the railway track, roads and a river and connect a bus-terminal, a planned monorail station and a proposed LRT station.

b. Optional action developed from the alternative action;

- The station-area redevelopment project will utilize the air-right above the MRA's sites, a river, roads and other public areas and/or the development right transfer. The urban functions to be introduced are: large park and mall (on the deck or as roof garden), hotel, convention centre, theatre and other cultural facilities, tourist service centre, shopping centre, shops and offices, bus terminal and parking facilities, etc..

Development actions proposed and the spatial diagram are presented in Appendix 13-5-7.

These will be planned and executed by a coordination of the MRT and the City Hall and other authorities.

#### (6) Case 6: Seremban Station-area

##### 1) Basic concept;

The Structure Plan states the necessity of urban renewal of the Town Centre. In this context, Seremban Station, located within the Town Centre, will be able to work as a momentum for the Town Centre redevelopment. Considering that Seremban Station is the Central Station for a big city with a population of 400,000 in 2005, a comparatively aggressive scenario is recommendable.

##### 2) Alternative action;

The proposed development action is a combination of: the intermodal transfer square development (including a bus terminal); and an urban redevelopment using the MRA's sites. Urban function to be introduced are:



shopping centre and shops, tourist service centre and hotel, cultural facilities, gymnasium, sub-terminal of bus, parking facilities, and urban housing etc.

The development activities diagram is shown in Appendix 13-5-8.

**Chapter 14**

**MANAGEMENT**



## Chapter 14 MANAGEMENT

This chapter deals with the important matters which the Government and RBCS carriers are recommended to be prepared for. What matters is how to best organize the efforts and resources of each related authorities and carriers.

All of these matters should be considered in the entire framework of the Integrated RBCS (not limited to the Rawang ~ Seremban Corridor only).

### 14-1 Organization and Ownership

#### 14-1-1 Governmental organization during preparatory stage

Double Tracking Project of MRA has been initiated. Monorail is now being planned. LRT will follow. Feeder bus system must be created. All of these works are placed under the control of different authorities and undertakers. Problems will arise, of which this chapter is a short list. The list will grow longer as the Project gets detailized and its practical images get clearer. Many of these problems demand inter-departmental efforts to be solved. For example, the desired harmonization between the RBCS policy and the related regional development policies cannot be attained by a single ministry.

##### (1) A steering top:

RBCS is a new planning concept. Consensus is urged to be achieved among the federal/local planners as to its implications, impacts and the necessary actions to be taken. It is advisable that a steering top be designated, with limited duration, for example, from among the Prime Minister's Offices (referred to in this chapter as

"the Agency"). All the RBCS related information and plans are to be gathered and coordinated there under a notion of integrated RBCS.

(2) Powers:

It is possible, with reasons, that some ministries may lack in motivations to encourage RBCS, because of their conventional, or normal, jurisdictions. It is desired that the coordinating function of the Agency be leveraged by a power specially given to it for drafting bills and regulations which would fill the said lacks. These bills and regulations should include the authorization of the following:

- 1) Detaxation or tax alleviation for undertakings of those facilities which would create, encourage the RBCS ridership, particularly through converting individual car riders to RBCS mode users.
- 2) Prohibitive impositions on the profit from the land transaction of speculative nature, the areas being specified along the RBCS routes.
- 3) Additional budget to the relevant ministries and regulatory bodies to subsidize RBCS carriers in limited cases (Refer to 14-3-5).

(3) Expected achievements:

The main achievements expected to be worked out by this organization of government agencies will be as follows:

- 1) Review of regional plans;

Some Structure Plans of the areas covered by the RBCS corridor of Rawang ~ Seremban may require reviewing (Refer to Chapter 13). Local governments and developers must be encouraged to materialize the adjustments (when this review results in them) by their participation in the Project. Said review, adjustment and participation will be guided and encouraged by the Agency.

2) Legislation/Regulation giving priority to RBCS;

The primary means of urban transport in this area should be track-typed. New setting of bus-routes which would be parallel to RBCS lines must be banned. Some road vehicles should be restricted to get into or pass through the city centers under specified conditions. In this context, the relevant agencies must be empowered to enforce such measures as Cordon Pricing on road users in specified emergencies. On the other hand, construction of parking lots and facilities for change of mode along the Cordon line must be encouraged. All these will require new legislations/regulations. The drafts will be prepared by the Agency.

3) Intermodal facilities;

At RBCS stations where plural modes meet, such facilities should be provided as would minimize the passengers' time for mode changing. The completion timing of each new RBCS mode should be synchronized reasonably. Creation of feeder bus service must be particularly urged. In this context, budgetary arrangements will be monitored by the Agency.

4) Common ticketing;

A ticketing system should be developed whereby passengers could dispense with getting a new ticket as often as they change the mode. But a radical zone-fare system may threaten the carrier's private initiatives, while a conservative line-by-line fare system may curb the popular use of RBCS. The optimal selection of systems are required. (Refer to Appendix 13-4-2).

5) Cost sharing rules;

Construction of station-front plazas and grade separation should be further encouraged. The required cost should be shared among the benefactors (road, rail and local authorities) according to new rules. Ministerial agreements on these rules will be promoted by the Agency.

Considering all the above, during Preparatory Stage, the organigram of the governmental bodies related to RBCS will be as shown in Fig. 14-1-1.

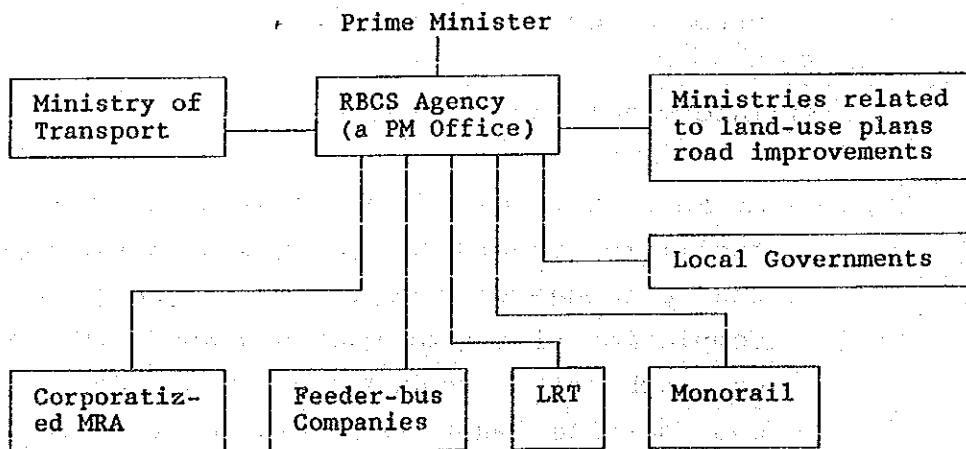


Fig. 14-1-1 Governmental Organization during Preparatory Stage

14-1-2 Ownership, grouping and supervision after the inauguration

Theoretically, RBCS carriers' legal status can be four typed, according to the ownership and operating responsibility;

- 1) Publicly owned and publicly operated
- 2) Publicly owned and privately operated  
(entrusted to private entities)
- 3) Privately owned and privately operated
- 4) Privately owned and publicly operated  
(entrusted to public entities)

(1) Ownership:

The MRA portion of RBCS will be type 3) , when the Government stops holding MRA shares. The role MRA will play in the RBCS network is almost decisive. It will be inconsistent if other RBCS carriers are publicly owned and operated. The profit-making mind alone ensures the cost-effectiveness of a business. All the RBCS carriers should be planned as private enterprises although in the world's large cities, the type 1) is prevailing.

(2) Grouping:

Should each of these private RBCS carriers be independent, or should they be integrated? Grouping can be various. The followings are a few examples (Independent entities are put between parentheses):

- 1) (MRA) (LRT) (Monorail) (Feeder-bus)  
= 4 member grouping
- 2) (MRA + Monorail) ( LRT ) (Feeder-bus)  
= 3 member grouping



- 3) (LRT + Monorail) ( MRA ) (Feeder-bus)  
= 3 member grouping
- 4) (MRA+Feeder-bus)(LRT+Feeder-bus)( Monorail )  
= 3 member grouping
- 5) (MRA + LRT + Monorail ) (Feeder-bus)  
= 2 member grouping
- 6) (MRA + LRT + Monorail + Feeder-bus)  
= 1 member grouping etc.

The profit-making mind will be lost in a monopoly (Grouping 6) ). Competition will not be meaningful eg. between MRA and Monorail, (hence, Grouping 1) may not be meaningful). When a feeder-bus is owned by a company which also runs stage-bus, the bus company could set a parallel route with RBCS' and get into city centers. This competition is harmful to the RBCS development (Grouping 2) , 3) , 5) ). Consequently, grouping of type 4) should be considered. The ownership of the carriers should not be unified anyhow.

### (3) Government intervention:

Regarding how to manage the urban mass transport, three philosophies have been controversial world-wide ..... without conclusion:

- Let RBCS carriers play in the free market, with profit-making mind as their leading principle.
- Let RBCS play under the government's total control. RBCS is a tool of the government to preserve good urban environment and to protect the socially weak.
- Regardless the ownership of the RBCS carriers, private or public, unite them against individual car users. Government assistance is necessary.

This Report stays neutral from any of them. Team considers that RBCS should be placed in free markets, but Government should put hand in the RBCS management in four ways, even under the free market principle, considering the graveness of the incidence it has on citizen life, when it fails, and considering the immaturity observed in technological level of current carriers and in commuting behaviors of current citizens of the area. The four ways are:

1) Regulatory supervision;

- Organigram;

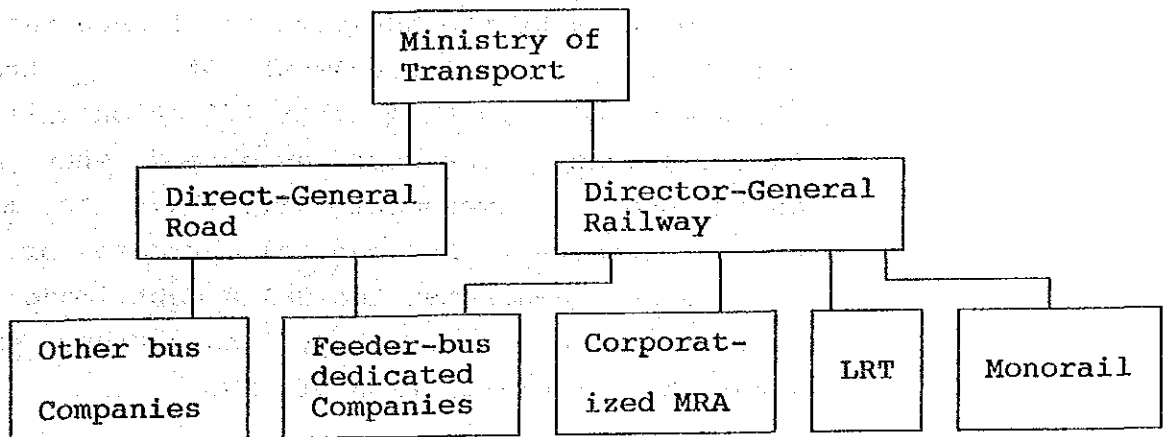


Fig. 14-1-2 Governmental Organization After the Inauguration

\* Note: All the RBCS carriers should be placed under the same regulatory body. MRA will be supervised by Director General Railway to be newly created. While the feeder-bus companies will be supervised by the existing Director-General, Roads. This exception should be adjusted.

- Items of Supervision

Supervision must not be extensive but restrictive. It should be limited to items as shown below. Explanation is given in Appendix 14-1-1.

- Continuation of service
- Safety standards
- Common Ticketing
- Arbitration
- Procedures for Cordon Pricing

2) Government investment in technology innovation;

In order to make the MRA-portion of RBCS really competitive, the improvement of the track alignment and a partial electrification will be indispensable. The cost may exceed what MRA could bear. Government will have to make timely investment (MRA capital increase) or at the least, guarantee the MRA's debt made in financing these technology innovation, even after the corporatization of MRA.

3) Park-&-Ride system, etc;

According to JICA M/P 87, individual car users comprise more than half of the commuting person-kilometrage in Klang Valley. Efforts should be focused on motivating them to use RBCS mode. Otherwise road congestion would become even worse, depending on vehicle increase. Government should take such measures as building parking lots along the Cordon line, beyond which individual car users will transfer to track- or bus-typed mass transport modes.

(4) Compensation, etc:

Private initiatives of the RBCS carriers are to be respected. But this does not mean that the Government can stay away from the obligations to encourage them to get financially independent. Not much to say about its obligations of compensating RBCS carriers what Government owes to them. Refer to subsequent 14-1-3.

14-1-3 Government assistance

The spirit of the European Economic Community Regulation No. 1191-69 should be respected world-wide. More concretely, it is desirable that Government could accord the RBCS carriers such assistance and compensations as given to German short distance passenger carriers. They are as shown below:

(1) Detaxation:

- Sales Tax ..... Detaxation by 6.5% of the normal 13%
- Automobil Purchase Tax ... Exempted for the purchase of bus
- Entity Income Tax ..... Exempted
- Exploitation Tax ..... Exempted
- Fixed Assets Tax ..... Alleviated

(2) Compensation of fare reduction requested by the governments:

- Student Pass ..... 50% of the difference between the revenue and the standard cost is compensated

- Handicapped Pass ..... DM 120/year x ratio of handicapped against the regional population x 1.2 x revenue, is compensated

(3) Special compensation:

In case when local government requests creation of a new route, or it opposes the abolition of an existing route, the local government compensates the deficit arising from these requests.

(4) Investment assistance:

The "Urban Transport Financing Law" stipulates that 10% of the federal petroleum tax revenue shall be appropriated for the construction of Metro, S-Bahn,\* bus-terminals, parking facilities which will encourage Park & Ride system, local roads/lanes dedicated for bus use, grade crossings of local road with railway tracks or inland waterway, etc. It is up to 60% of the total construction cost that the assistance is accorded.

\* Note: Refer to Appendix 14-3-1(2) Note.

Also refer to Appendix 14-3-4 for the grants they are accorded.

#### 14-2 Business Management of RBCS Carriers

The management of a private business, if all the RBCS carriers are to be privatized, should respect the managers' originality and initiatives fully deployed within the clearly defined scopes of work. Assessment should be made only by the results of their ways. There

can be therefore no general formula of good management. Suffice it to quote a U.S. theory (Appendix 14-2-1). To add, special attentions are invited to the following issues:

(1) Safety training:

High density train operation characterizing a commuter railway, demands a series of new work methods of train operation. Their application is not limited to the commuter service but it demands new rules to be applied also to long distance passenger and freight services. The slightest mistreatment of a train could, at best, paralyze the whole traffic for hours, even for days. Re-education of the staff for the high density train operation is the most important issue in building up new RBCS that really works. Without the safety rules being strictly observed, a passenger transport cannot be a business. It is advisable that MRA, LRT, Monorail would set up detailed programs for RBCS staff training, which, in case of MRA, should be incorporated with its manpower redistributing program.

(2) Cooperation among the RBCS carriers:

It is advisable that regular meetings will be held regularly among certain echelons of managers of all the RBCS carriers. This would do good not only to smoothen their daily business, but also to pave way to building up the structural solidarity of the Integrated RBCS.

14-3 Co-working of RBCS carriers

RBCS must be competitive first with autos, secondly with

stage-buses, thirdly with other RBCS carriers. Normally, in matured stage, the fare and travel-time will not be decisive factors in these competitions, since the varying road and parking conditions in city centers always make the economic comparison incoherent. Consequently, the factor of comfort will have the last word. Comfort depends on load factor, privacy, riding comfort and the easiness of transfer. The first three elements can be somehow manageable, depending on the improvement cost. The last element, the need of transfer, is the intrinsic weak point of RBCS vis-a-vis road modes.

#### 14-3-1 Problem identification

Mode transfer gives pains to passengers: confirming their new train to ride, walking over to another place of boarding, waiting for train coming; getting a new ticket, etc. The first three elements can be technically manageable depending on the improvement cost. The last element, the need of issuing a new ticket at every transfer is the problem.

Problem-1 Too many tickets to buy;

In an example given in Fig. 5-3-1, Mr X who makes a trip indicated by a line ( → ) will have to buy five tickets (for sections; A-B, B-C, C-D, D-C and C-E). To spare Mr X buying so many tickets, the "Ride-in" (\*) agreement among the related carriers will be concluded. But it is not good enough. Because a ride-in ticket is too complicated for a conductor to issue on board. Mr X has to go to a station to buy it.

Desired: ONE TICKET FOR ONE ITINERARY.

TICKET ISSUED ON BOARD.

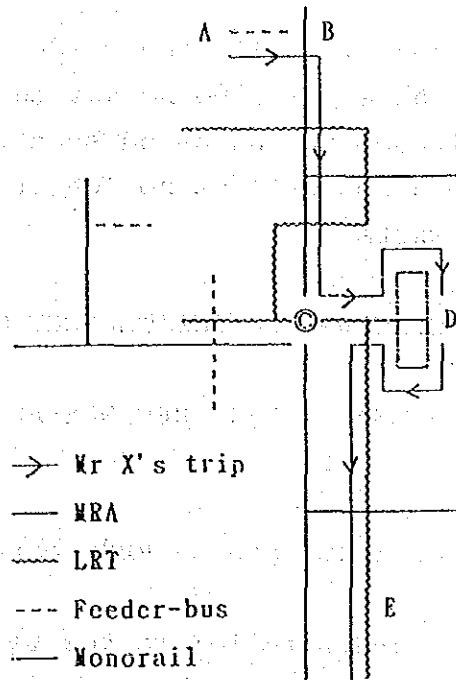


Fig. 14-3-1 Transfer of Modes

Note: "Ride-in" is a reciprocal issuing of a ticket for a ride on two carriers, based on an agreement made in full respect of each other's fare system and rates. The ticketing becomes therefore complicated, compared with the zone-fare system.

Problem-2 Ticketing for carrier's account settlement;

Two modes would agree in reciprocal issuing of ride-in tickets only when they could be paid, based on the person-kms each has carried and on the unit rate each has fixed. Consequently, all the tickets must be collected at the end station (i.e. "E" above). Millions of them must be classified according to trip lengths in each mode. This work is costly and time consuming. Furthermore, until the accounts are settled, the other mode has to be kept unpaid. A new system is desired where a ticket is not considered as certifying the amount one carrier owes to another (This is not the customers' business), but just certifying the holder being entitled to the ride. But this system will not be possible without introduction of a zone-fare system. When a zone-fare system is



adopted, even if all the ride-in tickets are collected, there will be no way to learn how many passengers rode on such-and-such line of a zone. Revenue allocation will be no longer possible based on collected tickets.

Desired: TICKETING FOR ENTITLEMENT ONLY

for passengers.

REASONABLE FARE REVENUE ALLOCATION

for carriers.

### Problem-3 Conflict between RBCS carriers

MRA and LRT have parallel routes between C and E in Fig. 14-3-1. They might keep their rates low at C-E and high on non-paralleling B-C. Availing of this fare distortion, the bus company (A-B) may extend the route up to C (A-B→A-C). This would give a damage to RBCS. Furthermore the road congestion in city center would be worsened. Passengers should be able to choose any mode or route he likes, at the same price. They should not be bothered by a distorted fare system.

Desired: NO FARE-SYSTEM DISTORTION

### 14-3-2 Orientation of solutions

Without sparing passengers the trouble of Mr X, a popular use of the integrated RBCS cannot be expected. To cope with it, a European type of zone-fare system could be a solution. A Japanese type of season ticket issue and ride-in agreement system could be another. In the former, the ticket is valid for any trip within a zone. But the system will deprive a carrier of more than half of his initiatives in train scheduling, fare level setting, etc. It might hence kill half of the merits intended by the privatization policy.

While, in the latter, the use of ticket is restricted for one specified itinerary, but the carriers' initiatives are kept intact.

(1) Two types:

Hereunder are compared the German and Japanese systems:

German system	Japanese system
<p>Europeans have been long trying to overcome the problems arising from transfer, that is, RBCS' weak point: In Britain, the TRAVEKCARD system, in France the CARTE D' orange system and in Germany the CARRIERS' SYNDICATE system. European commuter transport has been showing a large shift to individual cars. These ticketing systems aimed at the recovery. The Commuting fare is principally shouldered by the employees. Among them all, the German's makes the problems clear-cut.</p>	<p>In Japan the commuter transport has always been RBCS, even today after the motarization, JR and private railways have never feared loss of commuters due to transfer troubles. People have been accustomed to them.</p>
<p>The core notion of the system can be summarized as follows:</p>	<p>It is a general custom that employers pay the commuting fares of the employees. One may say that this discourages commuters mentally to claim that their "given" tickets should be additionally usable for other trips than the shortest RBCS trip linking home and working place.</p>
<p>1) RBCS carriers organize a Syndicate and entrust to it their decision making on transport planning and fare system (Refer to <u>Appendix 14-3-1</u>).</p>	<p>The core notion of the system can be summarized as follows.</p>
<p>2) Carriers entrusts the route setting and train/bus scheduling to the syndicate.</p>	<p>1) Ride-in agreements are concluded widely among RBCS carriers (But bus companies often stay out of the agreements).</p> <p>2) Carriers are independent and self-deciding.</p>

German system	Japanese system
<p>3) RBCS travellers are not always considered as commuters. Their trips are considered to be various, not uniform. Season-tickets are sold for 1/4-, 1/2-, 1-months.</p>	<p>3) Most of the RBCS travellers are considered as commuters. The commuters are considered to make the same shortest RBCS trip every day. Season-ticket are sold for 1-, 3- and 6-months.</p>
<p>4) Single ticket is valid for whole trip, by any mode within a zone during certain hours of the day. (Refer to <u>Appendix 14-3-2</u>).</p>	<p>4) Single ticket is valid for whole trip, but the itinerary is specified. It is valid all the time of the day.</p>
<p>5) Tickets are sold at stations and on board and checked on board in principle.</p>	<p>5) Ride-in season ticket is sold only at stations. Ride-in ordinary ticket are available also on board. They are checked at wicket of every carrier.</p>
<p>6) Fare revenues are allocated to the carriers according to the standard unit cost and planned traffic. Ticket issuing record and collected tickets are no longer the basis of the payment. (Refer to <u>Appendix 14-3-3</u>)</p>	<p>6) Fare revenues are allocated to the carriers according to the person-kilometrage based on the rate of each carrier. Ticket issuing record and collected tickets are the basis of settlement of account.</p>
<p>7) Government subsidizes the Syndicates of the carriers. (Refer to <u>Appendix 14-3-4</u>)</p>	<p>7) Government is not supposed to subsidize the carriers.</p>

Remarks: Courtesy to Unyu-Chosa-Kyoku (Transport Research Institute) of Tokyo, Japan, for the data provided in Appendix 14-3.

(2) Suggestions:

It is considered appropriate in Klang Valley/Seremban RBCS to adopt a Japanese typed ride-in system. In this system, one-ticket-for-one-itinerary ticketing is possible. But on-board

ticket issuing is difficult, ticket collection at wickets remains indispensable, fare system could be distorted, and a unilateral route-setting is impossible. While in European typed zoning system, all these are possible. Why then Japanese type? Because it will keep intact each carrier's independence in operation planning and fare setting, while the European system would cripple them all. Japanese system is considered, therefore, more adapted to the Government policy to privatize the public services of this country. The degree of ensuring the carrier's entrepreneurial initiatives will have almost decisive impact particularly to the success of off-rail business the carriers will have to venture into.

#### 14-4 Planning of Off-rail Business

##### 14-4-1 Introduction

The privatization of public utilities is a policy to entrust them to the self-developing tendency of a capital in free market. The self-development of the capital becomes possible only when the needs in the society and the seeds in the company do meet. In railway business, in Klang Valley, one may say that the need is the alleviation of road congestion (or conversion of road-mode passengers to RBCS) and the seed is RBCS. But it cannot be true. Because RBCS fares will stay under government control (The business is not placed in a free market). The converted traffic from road brings only limited profit to MRA. It must be presupposed at least in planning that the railway transport itself can no longer be a profit-making business. Different needs must be sought for in another free market. The new needs lie in the comfortable urban life people desire. The seeds lie

in the extensive capabilities of joint-ventures specially organized to provide it. RBCS itself is just an element of the capabilities. RBCS carriers must mobilize all that they have, not limited to their transport capabilities. Namely the power of their RBCS stations to gather consumers, what little land they have along the Corridor, their disciplined manpower, etc., all should be put into numerous wings of non-transport activities so that they might build up a new business complex. This section describes the outline and the staged development of this business complex which could be planned in the framework of the RBCS Project.

Some examples of off-rail business of Eastern Japanese Railway and of Kinki Nihon Railway, together with their business scales are given in Appendix 14-4-1. A schematic historical developments of the off-rail business of world's railways is given in Appendix 14-4-2.

#### 14-4-2 Objective and approach

Objective of the off-rail business is, therefore, to diversify the railway activities and keep the railway capital self-developing, without relying solely on the weakening profitability of rail transport. Increase in railway ridership or alleviation of road congestion, etc., are the possible results but not the objectives of the off-rail business.

Two approaches are conceivable for meeting the said new needs and seeds; (A) Stress the governmental initiatives in creating the business which will meet them, (B) Stress the private initiatives in it. The first approach (A) is described in Chapter 13. The core notions of the second approach (B), namely, the MRA off-rail business, can be briefed as follows (More

detailed explanation is given in Appendix 14-4-3):

- (1) Endow the RBCS carriers with sufficient assets at its foundation stage. Particularly land space.
- (2) Give them free hand in exploiting the assets. As to the result, they will be responsible only to their Boards.
- (3) Encourage co-investment by financial institutions and developers, making them participate in the joint-ventures to promote the business.
- (4) The carriers may entrust the project/business execution to their subsidiary companies. The companies may further farm it out.

The development is planned in this study to be three-staged, according to the needs of RBCS passengers and the carriers preparedness for the business.

#### 14-4-3 First stage (1990 ~ 1993, preparatory stage)

Preparation for all the off-rail business must be started right now. Four issues described between parentheses in Table 14-4-3 are important to found the basis.

Table 14-4-3 Preparation of Off-rail Business

Preparation for Off-Rail Business Activities	1st Stage 1990-1992	2nd Stage 1993-1996	3rd Stage 1997-2005	To be implemented by:	Description in:
(Lines —, — denote the duration of preparatory works. At the end of each line, real business must get started)	Preparation	20 min. headway operation	10 min. headway operation	G=Government * M=MRA	
(Land Reserve/Aquisition/Sevurement)				G M	14-4-3(1)
(Diversification Dept./Pilot companies)				M	(2)
(Clarification of Supervision by Regulatory Bodies)				G M	(3)
(PR on MRA's new Corporate Identity)				M	(4)
Amenity/Information Services				M	(5)
Park-&-Ride System				G M	14-4-4(1)
Feeder-Bus System				G M	(2)
Housing Development				G M	(3)
Estate Deal Services				M	(4)
Other Off-rail Businesses				M	(5)
Shops/Restaurant				M	14-4-5(1)
Advertizing Service				M	(2)
City-center Redevelopment				G M	(3)

\* Note: Government should actively participate in off-rail business, holding a share of the company.

(1) Land reserve/aquisition:

1) New reserve land;

The existing MRA land along the corridor is not sufficient for RBCS use. It is desirable that Treasury take steps to create a new category of reserve land "For RBCS use", and put more land space under the availability of RBCS carriers. The land space is preferably in one piece and of a scale of ten thousand square meters or more per station in the suburbs. It should be adjacent to the existing MRA reserve-/title-land (which should be kept as they are). Their primary uses are such as:

- For station plazas;

Station-front plaza is an important link connecting RBCS and the passengers, a seed of the regional development in future.

- For housing development areas;

Refer to 14-4-4 (3)

- For parking lots inviting individual car users;

Needed at stations near the Cordon line; Refer to 14-4-4 (1).

- 2) MRA's own purchase;

All along the Corridor the land inventory must be much more widened. MRA should pay every effort to acquire land for future off-rail business use. When MRA makes decision on purchasing a piece of land for railway use, for example, additional purchase should always be considered of all the available space adjacent to it. For any piece of them, practical plan for off-rail use will become possible sooner or later. Detailed plans are not necessary at this stage.

- 3) Securing of existing land;

The existing title-land of MRA should be maintained by all means.

- 4) Acquisition timing;

This land acquisition must be made, as soon as MRA is corporatized and it has freer hand in business, and before the land cost may rise.



Along the railway lines which will be improved by DTP, speculative nature of land purchase might be made and the prices may soar.

(2) Setting up diversification department and pilot firms:

1) Diversification department;

It is advisable to set up a department in the MRA Headquarters which will be specialized for preparing and executing the business diversification of the railway activities.

MRA's reinforced Property Division deals mainly with the development of the existing properties. While, the Diversification Department will deal with not only the development of existing properties but also it will acquire new properties and develop them. It will also venture into wings of business which are not related to land development (a financing/insurance for MRA/RBCS employees is just an example of the kind). It is purposed for diversification itself of the railway activities, a key staff for the RBCS Project.

2) Pilot firms;

It is advisable to set up several small local firms "on site" whose foundation capital should be invested dominantly by MRA. They will assist the Diversification Department in execution of the business. Their main jobs are described in Appendix 14-4-4.

(3) Clarification of supervision by regulatory bodies:

If Director-General Railway supervises MRA as a

railway and MRA as a developer, based on the same criteria, it will give rise to a lot of complications. Both the Government and MRA should conduct in-depth study regarding the supervisory procedures in this context. The study outputs must be such that MRA might be guaranteed of maximal rights of the most favored civilian firm and imposed minimal obligations of a public carrier.

(4) New corporate identity:

It will be long before the meaning of MRA reorganization is generally understood by the public. It is necessary and advantageous for MRA to make repeated PR activities through various media, for its new corporate identity. Economic leaders and the people at large must be impressed by what MRA is going to do, to create a new way of life in the suburbs with visual images of new RBCS trains, parkings, houses and all other conveniences and comforts.

(5) Amenity/information services:

At main RBCS stations including the new Halts, amenity service of conventional types, such as news/coffee stands must be provided by the pilot companies. Also refer to Appendix 14-4-5 for information services at stations.

14-4-4 Second stage (1994 ~ 1996, development stage)

The following business should be prepared during the First and Second stages and got ready for ten minutes' headway operation by 1997.

(1) Park-and-ride:

- 1) Parking lot as an off-rail business of MRA;

It is conceivable that MRA provides parking service near the station as an off-rail business. Individual car users are targeted as customers. For reference sake, a viability checking is made in Appendix 14-4-6.

2) Test parking;

Parking facilities cost comparatively small; When a piece of land is available near Kepong, Ampang, Serdan, etc. (stations on Cordon line), it is advisable to build parking lots there, and collect test data on the convertibility of individual car users to RBCS riders.

(2) Feeder bus service:

1) Operating Responsibility;

The responsible feeder bus carrier could be: (a) MRA, (b) Existing bus company who extends the service network to the RBCS stations, (c) Interested developer who will "runs bus to sell houses" and (d) New off-rail company.

MOT and the regulatory body should select the best from among the applicants. In case of no applicant, MRA and LRT will have to take it.

2) Test syndication;

A zone fare and common ticketing system of German type (Refer to 14-3-2) might be tested, first involving MRA and feeder bus carriers in which MRA has dominant shares. If successful, more carriers could be involved later.

### 3) Frequency agreement;

Agreements should be reached between MRA and the bus carriers to the effect that the latter are obligated to secure the number of bus services during specified hours of the day, so that the train service frequency could be made fully available to commuters.

### 4) Participation of local governments;

The feeder bus service will require construction, rehabilitation and good maintenance of local roads. In implementing the feeder bus service it is important to get the participation of related local governments. The most desirable is that the local government holds a share of even nominal amount in the feeder bus company.

### 5) Know-hows of bus operation;

MRA has dominant shares in two bus companies (long distant service). Their participation in the feeder-bus planning may be useful, especially in provision of know-hows for bus operation.

- K.L.-Singapore Express Private Ltd.
- Syarikat Perjalanan Terus (SPT),  
K.L.-Butterworth Sdn Bhd

### (3) Housing development:

The present RBCS traffic demand forecast shows an abrupt fall in traffic in the section south of Kajang down to Seremban. The route is located

rather too remote from the existing inhabited areas. Things would be different, if demand sources such as a new residential area, college, factory, etc., were to be located nearer to the railway than at present. Demand creation is conceivable by "planning towns" along the section. The following points are to be noted in MRA's housing development;

1) Undertakers - MRA's position in joint venture;

What will support MRA's position in a housing development joint venture are as follows;

(a) MRA has a mass passenger transport capacity.

(b) MRA will keep a high rating in bank credibility, as a former governmental organization.

(c) The MRA reserve land around the stations is well located for building facilities for supporting the housing complex, since the facilities could be directly connected with transport. This will make the site attractive to the customers. Refer to subsequent 4).

(d) The feeder-bus service is useful for connecting the site and the old towns. MRA can be influential to the feeder-bus company through its dominant shares, to further improve the service.

(e) MRA may offer special fare reduction, etc. to the dwellers (reduction is justifiable because collective handling is possible).

## 2) Sites;

As to the location of the housing development, some station-areas may be candidated (Refer to Chapter 13). Around these stations MRA will have to acquire new land space, in order to get an advantageous position in the Joint Venture. The land should be adjacent to the existing right-of-way. Once acquired, all the possibilities are to be eliminated to emanate their future split in ownership. Apartments are to lease, not to sell.

## 3) Local government support;

Local authorities should give full support to the development of the housing infrastructures, such as water supply, sewage, education, etc.

## 4) Commercial facilities;

MRA should consider building shops, parking lots, gyms, pools and other commercial facilities to support the housing complex, utilizing what little land space it has adjacent to the station. Their location near to the station and feeder-bus stop is their advantages. MRA could lease them to its off-rail business companies who will run them.

## (4) Estate deals:

A private railway buys a strip of land with the width of several kilometers. It builds a commuter railway, where people come to live. The land prices rise. The railway sells out a part of the land and makes profits. It buys a new strip of land, extends a new line there and makes further

profit ... This kind of railway management jointed closely with estate transactions (or better say, realty business jointed with railway construction), had been successful even uptill 1960's in the suburbs of Tokyo. Refer to Appendix 14-4-7. It is foreseen in the long run that the RBCS Project, if successful, would result in the rise of land prices in the area along the RBCS routes. In order to make the Project successful, policies should be so engineered that the RBCS carriers could be motivated to benefit from the rise in the value of the national property they had been endowed with. Because it is they that have contributed to the rise.

It is advisable for MRA to set up an estate dealer firm or realty agent who will be engaged for the transactions of properties of RBCS carriers. The minimum merit will be its title search and land price observatory functions.

(5) Other developments:

1) Institutions/factories;

Certain entities have their staff available only in urbanized area due to their particular qualifications or skills; certain schools, laboratories, industries, etc. are the examples. These entities find more and more difficulties in expanding their facilities in K.L. area. They could evacuate to the suburbs, but the staff must commute from K.L. Government should encourage their evacuation through detaxation etc. MRA should encourage them by special fare reduction which is justifiable because their transport direction is reverse in peak hours.

2) Recreational facilities;

It is worth while referring to success enjoyed by some Japanese private railways. When they felt that the traffic was not good enough, they built recreational facilities such as theatre, zoo, baseball park, spas, etc. at the furthest tips of their network. People pressed forward to them, riding on their railways.

14-4-5 Third stage (1997 ~, matured stage)

(1) Shops/restaurants:

1) Shops/restaurants;

When ten minutes' headway train operation begins, it will then become possible to plan running shops/restaurants at RBCS stations with good prospect of viability. The customers will be residents around the stations, not necessarily the commuters. When the capacity of the corridor fully utilized, nearly a million people would pass through railway stations. This will give rise to an important change in people's shopping behaviors. More people will find it more convenient to do their shopping in the railway station area, rather than at their regular stores nearer to their homes. The brand new shops offer more comforts, cheaper prices, they save time ... Reasons can be various. Commuters grow into consumers for the off-rail business.

2) Non-commuting customers;

Sufficient bus services will bring the non-commuting house-wives to the station, once a



month, then twice ... Sufficient parking lots of the station plaza will sometimes invite the second-car owners to the station, not for train ride but for shopping. Hopefully the area around an RBCS station might grow into a new commercial area. This will encourage the train ridership, too (consider shop employees, etc.).

### 3) Types of shops;

There are two types of RBCS stations (K.L. and Seremban being excepted).

A - RBCS stations rather distant from the existing residential areas eg. Kepong, S. South, S. Bekasi, Kajang, Serdang, etc.

B - RBCS stations, in the city centre of K.L., eg. Mall, Menteri, etc.

The types of off-rail business will be different according to these station types. Small scaled shops and fast-food and super-market type will be viable around the A type stations to begin with. While middle scaled shops and restaurants are for B type.

According to the Japanese experience, the viable kinds of off-rail business are as shown listed in the Appendix 14-4-8 Table 1. The business is classified according to the number of passengers getting on/off at the station. When this classification is assimilated to the stations of the Corridor, it will be as shown in Appendix 14-4-8 Table 2.

#### 4) Shopkeeping business as a development;

Three types of shopkeeping business are being performed by railways:

(a) Railway keeps shops directly; recruitment of shop employees, procurement of merchandises, selling and everything.

(b) Railway builds shops and leases them to the tenants whom it selects based on a policy as a developer which is different from the conventional concession principles.

(c) Railway invests part of the foundation capital of an off-rail company, a developer, leases the land to it. The company builds shops and leases them to the tenants whom it selects based on a developer's policy.

(d) Railway leases part of its facilities which happen to be available to shopkeepers based on concession principles of national properties.

What matters in this study is the type (b) and (c).

In type (b) the railway's income comprises of the fixed rent and variable rent from the tenants. The former is proportional to the space and the latter is proportional to the tenant's sales amount.

In type (c) the railway's income comprises of the rents and return on capital from the company. The company's income comprises of the fixed rent and variable rent from the sub-

tenants. The latter variable rent ranges between 3 ~ 5%, depending on cases (The "Revenue" of the Shopping Centers given in Appendix 14-4-1 Table 1 chiefly consists of these rents from the sub-tenants).

For reference sake, the rent revenue of JR-East is shown in Appendix 14-4-9. The sales amounts per square meter of shops in Japan are shown in Appendix 14-4-10 correlated with scale categories of sales floor space. The RBCS stations and their environs are expected to offer good space for these shop keeping business.

(2) Advertizing agent:

300,000 commuters per day. It is an alluring figure for the advertizers. Furthermore, the commuters see their advertizements twice every day. Commuter trains and commuter stations can be the powerful media. Advertisement would offer sizable revenue to RBCS. A monopoly of RBCS media should be given to an off-rail business company as an advertizing agency, which will be jointly invested by all the carriers.

(3) City-centre redevelopment and off-rail business:

Off-rail business could be greatly enlarged in scope and take with the "redevelopment" of K.L. city center. MRA must be well prepared for the chance with blue prints. The day-time population at city center will grow. More RBCS trains will be demanded. When a ditch is widened, more water will flow in. More concentration of population will follow. The terminal and line capacity of MRA may reach their limits. At the end of a

vicious cycle, will come the restructuring from the scratch of the most congested part of the city. This is the <redevelopment>. All the space, including air and underground, will be reallocated among the interests according to the value system then prevailing. First, MRA whose infrastructure is involved in the redevelopment, can claim, complete modernization of their infrastructure. Secondly, MRA can claim, as the land owner of the site, his fair share in the joint venture. It is then and there that the scope and take of off-rail business have chance to get larger. MRA should be prepared for the day with concrete plans.



## **Chapter 15**

### **CONCLUSION AND RECOMMENDATION**



## Chapter 15 CONCLUSION AND RECOMMENDATION

### 15-1 Conclusion

Undertaking of the RBCS Project immediately after completing the Double Tracking Project (DTP) is highly recommended for the following reasons.

#### (1) Technical feasibility

The transport capacity and service level required to cope with the traffic demand by the year of 2005 can be attained through implementing the RBCS Plan as stated below.

Hence, from technical viewpoint, feasibility of the RBCS Project has been confirmed;

#### 1) Transport capacity

Passenger transport capacity of the Rail-Based Commuter Service (RBCS) along the Rawang - K.L. - Seremban corridor can be increased up to 300 thousand trips/day or 4.5 million passenger.km/day, corresponding to the forecasted traffic demand in 2005.

#### 2) Service level

a. DMU trains will be operated with the minimum time interval of 10 minutes, and travelling time of 44 minutes between Rawang and K.L. and 58 minutes between K.L. and Seremban.

b. Feeder-bus service is provided to all railway stations (12 stations and 10 halts) with the minimum time interval of 5 minutes.



### 3) Major improvement items of RBCS Project

After completion of the DTP by 1993, following improvements will be added during the period between 1995 and 2004.

- a. Rail Car: 139 DMU
- b. Track capacity: Automatic block system
- c. New halt: 3
- d. Train handling capacity at terminal station:
  - Track layout modification
  - Exclusive use of K.L. station by DMU trains during morning peak hours
  - Transfer of parcel/postal handling works from K.L. st. to Brickfield yard
- e. Safety: Automatic train protection
- f. Communication/information:
  - Train/yard radio
  - Passenger information
- g. Passenger facilities:
  - Platform modification
  - Automatic vending machine (81)
  - Over-the-track station/halt (3)
  - Rear gate (9)
  - Free passageway (5)
  - Passenger information device
- h. Maintenance facilities:
  - Workshop/depot improvement
  - Stabling track addition
- i. Feeder-bus: bus 451  
minibus 410

### (2) Economic/financial feasibility

Estimated total investment cost of the RBCS Project is 616 million M\$, and annual operating cost is 109 million M\$ (including depreciation cost of 31 million M\$) as of 2005.

Besides the above project costs, 44 million M\$ must be invested for the related infrastructure and public utilities such as feeder roads and station plazas by the Government.

EIRR of the project calculated based on the project life of 30 years turned out to be 28.81%, thus proving the economic feasibility of the Project.

On the other hand, FIRR for the Base Case was calculated to be 2.84%. In view of the prevailing interest rate of commercial banks exceeding 8 %, it must be said that the Project is not viable for the privatized MRA, although the minimum ridership is secured. Hence, in order to make the Project financially feasible, some governmental measures have to be taken such as;

**Alternative 1:** Raise the DMU fare level to the same level of the stage-bus, and also the feeder-bus fare from 30 cent to 35 cent. (FIRR: 8.37%)

**Alternative 2:** Exempt MRA from such costs required in 1995 and 1996 as investment costs for the ground facilities, engineering fee, and 30% of the DMUs, as well as the import tax for the rest of the DMUs (FIRR: 8.33%)

**Alternative 3-A:** Raise the DMU and feeder-bus fares as in Alternative 1, exempt MRA from investment costs for ground facilities and from import taxes during the whole project life. (FIRR: 14.16%)

**Alternative 3-B:** Raise the feeder-bus fare as in Alternative 1, exempt MRA from investment costs for ground

facilities and from import taxes during the whole project life, and sustain the DMU fare raise to the minimum, maintaining the FIRR nearest to 8.37.

(FIRR: 8.37%. The DMU fare level will be reduced by 24.4%)

(3) Other benefit

Implementation of this Project will produce various unquantifiable benefits such as mitigation of air pollution caused by road vehicles, development of satellite cities/towns along the railway corridor, promotion of related industries/job opportunity.

15-2 Recommendation

(1) Consistency with the double tracking project

Railway system of the RBCS is planned to upgrade the commuter transport capacity of the DTP system which will have been established by 1993.

In this context, it is recommended that system planned in this Study such as feeder-bus, station building and track layout would be positively adopted in the DTP as pilot projects so far as it's construction schedule and resources permit.

(2) A powerful steering authority to lead the integrated RBCS project

The RBCS Plan has been prepared presuming that related railway commuter lines such as Port Klang line and Sentul line, and Monorail/LRT network will also be developed by the year of 2005.

Hence, it is recommendable to establish an powerful

steering organization in the Government for planning and promoting such key issues of the Integrated RBCS as a total network, roles/interface of each mode, construction schedule, management, coordination with land development plan, etc, so that each project could be materialized with maximal integration and cost-efficiency.

(3) Policies to encourage railway commuter ridership

Governmental actions to encourage the RBCS ridership are recommended, such as;

- Development of housing complex, schools, in particular, close to railway station
- Disapproval of new stage-bus routes parallel with the railway corridor
- Development of feeder road to railway stations
- Promotion of park-and-ride system
- Introduction of common ticket/season ticket system which ensures independent management of each RBCS carrier and sound competition among them

(4) Measures for upgrading RBCS service level

- a. Electrification to shorten travel time and to eliminate hazards due to exhaust gas
- b. Track realignment/rehabilitation to minimize speed restriction
- c. Remodelling to over-the-track type station, and provision of public passageway/rear-gate
- d. Broader station plaza to enable constructing feeder-bus terminal, car-park, access road, shopping complex, etc.

(5) Off-Rail activities related with the RBCS passengers

Prompt land acquisition for off-rail business is recommended. It should be started with the space

adjacent to the station-front plaza.

Step-by-step development of off-rail business according to the increase in RBCS commuters will improve financial viability of RBCS operation.

(6) Training

It is recommended that in line with the progress of the project, training be systematically provided to the related employees on not only knowledge and skill but also on practices required to properly operate/maintain the heavily densed commuter railway system.

(7) Maintenance

To cope with the sharp increase in traffic density on the upgraded railway section, it is recommended to further develop the efficiency of maintenance work through mechanization and better maintenance control system.

(8) Measures to cope with further traffic demand increase after 2005

Commuter trains of the Rawang - Seremban line and the Port Klang - Batu Cave line are jointly operated on the section between Batu Cave Jct. (383 km) and Port Klang Jct. (390 km). Hence this section forms the bottleneck of the whole line.

Transport capacity of 4.5 million passenger-trips/day planned in the RBCS Project could be increased by lengthning a DMU train consist from 7 car/train to 10 car/train.

To cope with further increase in RBCS traffic demand in the future, however, some of the following measures would have to be taken;

- a. Grade-separating the said two junctions
- b. Quadrupling the track
- c. Diverting some of the K.L. - Seremban trains into the Ampang line via S.South Jct.
- d. Constructing detour line so that freight trains can be operated by-passing K.L.







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