5 OUTLINE OF REVISED TRANSPORT MASTER PLAN BY JUTPI

1) Overview

In the JUTPI Project, the Comprehensive Transport Master Plan for JABODETABEK was revised based on the SITRAMP Study Master Plan taking into account of the updated urban transport demand and the central and local government plans such as PTM and RTRW. The revised plan was submitted to the Indonesian government in 2011 and being evaluated for the approval of the President. This revised plan is the basis of the planning for road-based public transport system in JAPTraPIS. In this chapter, the outline of the revised transport master plan by the JUTPI Project is outlined.

In the revision of the transport master plan, the following major issues are examined:

- Evaluation of Progress of the SITRAMP Study Master Plan
- Socio Economic Changes Between 2002 and 2010
- Future Perspectives and Travel Demand

2) Development Goals and Strategies

The JUTPI Project, after analysis of socio-economic changes from 2002-2010 trends, supports the goals set in previous Transport Master Plans which are outlined as:

(1) Efficiency in transport system to support economic activities – citing the economic loss caused by congestion and improvements to efficiency through managing supply and demand factors

(2) Equity in transport to all members in society – this relates specifically to provide affordable mobility options to vulnerable sections of society.

(3) Environmental betterment related to transport - specifically air pollution and noise are the environmental factor to be considered.

(4) Transportation safety and security – specifically raises minimizing accidents of road and rail transport.

Strategies for the development of regional trunk transportation system are also defined as follows:

- Development of Primary Transport System to Support Inter-regional Cargo and Passenger Transport Demand
- East-West Strategic Transport Corridor Development
- Strengthening Accessibility between Urban Centers in Jabodetabek

The JUTPI Project proposes four key urban transport policies and strategies to support the previously outline goals, these policies and strategies are the basis of the Master Plan.

3) Urban Transport Development Scenarios

The revised plan nominates three urban transportation system development scenarios to evaluate their efficiency and appropriateness. These include:

(1) Intensive Highway Network Development Scenario - includes six inner toll roads and non-toll elevated roads with an alternative for intra-urban tollway is East West link between Jakarta Merak Toll Road at Tomang and on the Jakarta Intraurban tollway N-S

Link at Cempak Putih.

(2) Intensive Public Transportation System Development Scenario - includes all the proposed rail-based public transportation system including three East - West MRT system, with the Monorail Green Line included with its extension to Ragnan Zoo.

(3) Intensive Highway and Public Transportation Development Scenario which accelerates both highway network development and public transportation system development, and where they overlap are built as an integrated elevated road and an underground MRT, citing a Tokyo example.

4) Future Public Transport Demand

(1) Assumption for Travel Demand Forecast

The future population framework by region was set as shown in Table 5.1. The residential area would spread to outside of DKI Jakarta and work place locations would also spread out, but the highest density would remain in the CBD area.

Table 5.1 Future Population Framework by Region

Year	2010	2015	2020	2025	2030
DKI Jakarta	9,588	9,883	10,066	10,161	10,263
Bogor	7,484	7,983	8,432	8,828	9,247
Tangerang	5,940	6,478	6,946	7,382	7,851
Bekasi	5,021	5,356	5,657	5,923	6,204
BODETABEK	18,444	19,817	21,036	22,132	23,301
JABODETABEK	28,033	29,701	31,102	32,294	33,564

Source: Population Census and JUTPI Estimate

Table 5.2 shows the projected GRDP and per capita GRDP in JABODETABEK. JUTPI assumed that GRDP growth rate of JABODETABEK is 5% from 2008 considering the recent trend of GRDP.

Table 5.2 Projected GRDP and Per Capita GRDP

Year	2005	2010	2015	2020	2025	2030
GRDP (bill. Rupiah)	419,611	548,232	699,698	893,011	1,139,734	1,454,621
Per Capita GRDP (mil. Rupiah)	17.7	21.7	26.1	31.9	39.2	48.2

Source: JUTPI

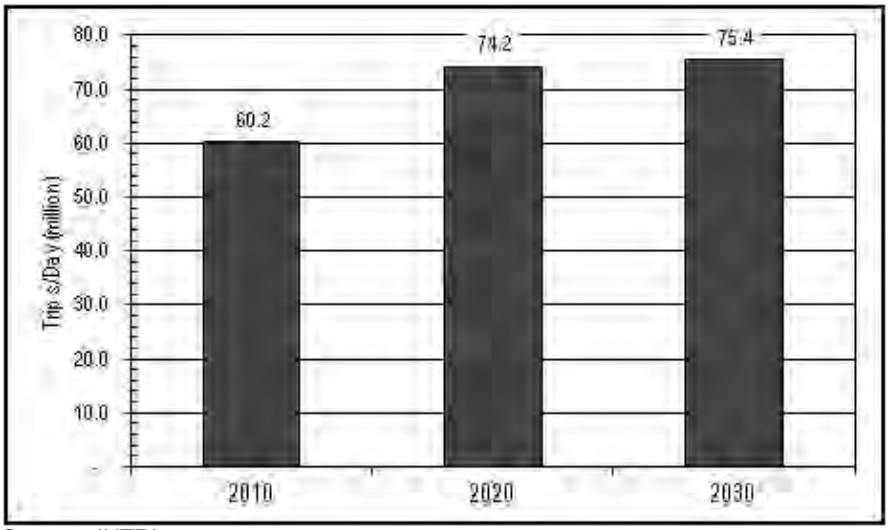
(2) Demand Forecasting Methodology

JUTPI used conventional 4-step method to develop demand forecasting model for JABODETABEK. JUTPI model has its root from SITRAMP model. Since the 2004 SITRAMP study, there has been a considerable number of changes in trip making and trip pattern in the study area. To capture these changes, JUTPI conducted several surveys such as commuter survey 2010 and person tracking survey 2010 based on which a comprehensive JUTPI model is developed using state-of-the-art software CUBE.

(3) Travel Demand Forecast

Trip Production and Attraction: Figure 5.1 shows total trip production/attraction forecasted for years 2020 and 2030 and that of year 2010.

Figure 5.1 Present and FutureTrips in JABODETABEK

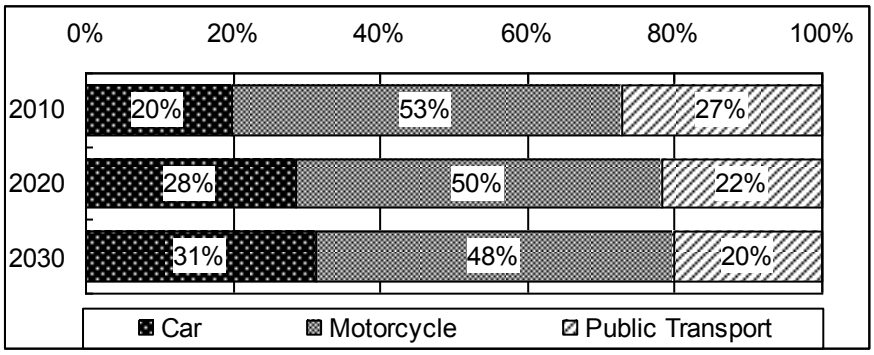


Source: JUTPI

Trip Distribution: Trip OD matrices of JABODETABEK for the base year 2010 and forecast years 2020 and 2030 are developed.

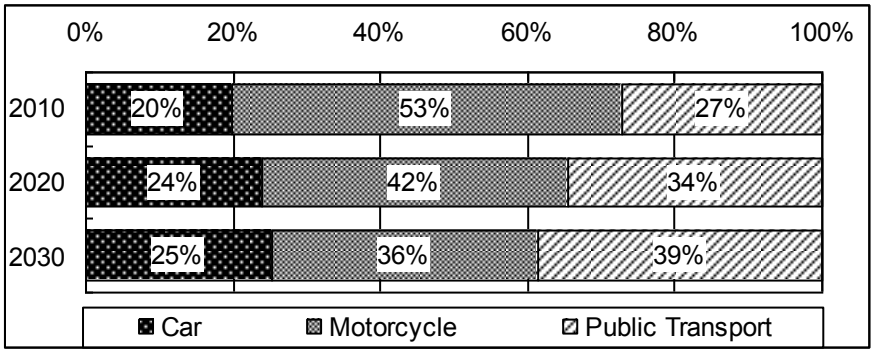
Modal Choice: The modal share for each of the analysis case (scenario) in the study area is estimated. The trips by non-motorized modes are excluded. The modal share for the Case 0 (Do Nothing Scenario) and Case 2 (Highway Moderate and Public Transport Intensive Development Scenario) is show in Figure 5.2 and Figure 5.3, respectively. In JAPTraPIS, estimated demand of Case 2 was used for the planning of road-based public transport master plan. The modal share of public transport increases from 27% in 2010 to 34% in 2020.

Figure 5.2 Modal Choice for Case 0 (Do Nothing)



Source: JUTPI

Figure 5.3 Modal Choice for Case 2 (Highway Moderate and Public Transport Intensive)



Source: JUTPI

5) Revised Urban Transport Master Plan

(1) Key Project Components

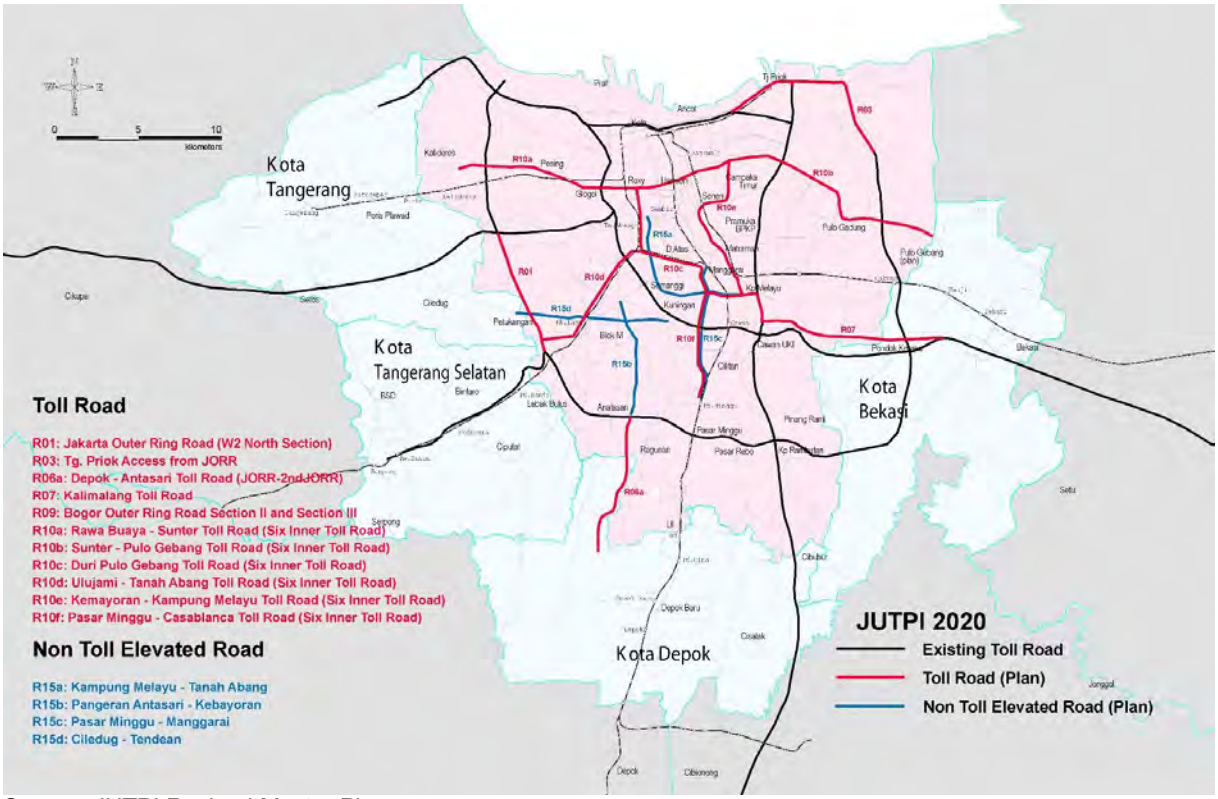
The revised master plan lists a total of 120 projects. It covers entire area of urban transport system categorized as follows:

- Road Network Development
- Improvement of Traffic Control System and Demand Management
- Bus Transport System and Interchange Facility Development
- Railway System Development
- Access to International and Inter-regional Transportation
- Improvement of Transport Safety and Security
- Environment Betterment
- Measure in Urban Planning
- Institutional Setup and Reform
- Financial Arrangement

(2) Revised Urban Transport Network

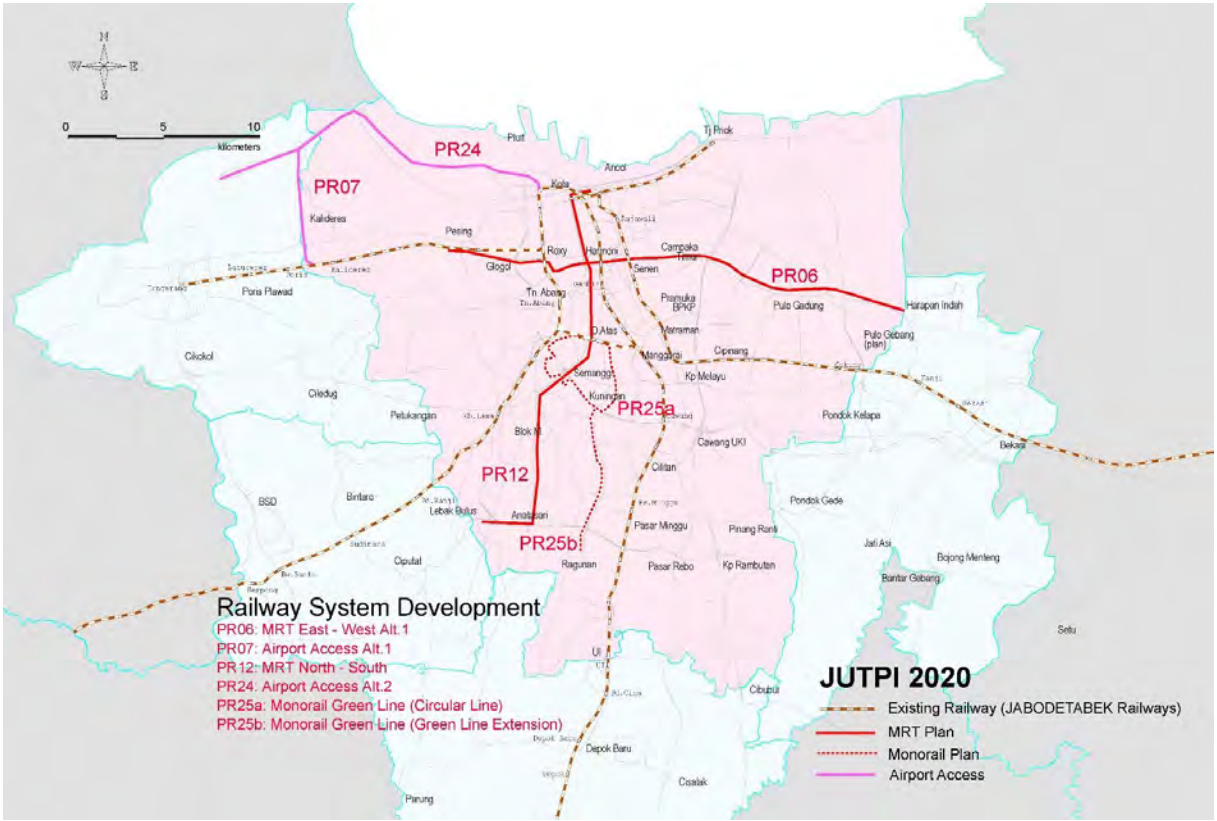
The revised master plan proposed backbone network of urban transport system up to target year of 2020 (refer to Figure 5.4 and Figure 5.5). A number of ring roads and radial roads, inner toll roads, non-toll elevated roads, road widening and access roads to station also were proposed in the master plan. As for public transportation network, a number of busway developments, MRT, airport access and monorail were proposed.

Figure 5.4 2020 Road Network by JUTPI Revised Master Plan



Source: JUTPI Revised Master Plan

Figure 5.5 2020 Public Transport Network by JUTPI Revised Master Plan



Source: JUTPI Revised Master Plan

6 DEVELOPMENT GOALS AND STRATEGIES

1) Core Issues

In order to deliver a relevant and appropriate Master Plan and associated recommendations the study identified core issues facing the study area including:

- The challenges of traffic congestion and decreasing mobility
- A transport network approach
- Public transport sustainability
- Specific issues of TransJakarta: including i) performance of the busway system, ii) management and customer service delivery, iii) system speed and iv) system control.
- Development of a city transport system

These included assessment and analysis of the issues to be able to develop a strategic planning framework (how to approach the project planning).

2) Goals and Supporting Strategies for Urban Mobility

A Strategic Planning Framework must 1) identify goals supported by objectives that are sufficiently tangible and realistic to enable all stakeholders to understand clearly what needs to be achieved; and 2) develop strategies and actions and to be able to declare success when goals are reached.

This JAPTraPIS study makes a preliminary list of goals and objectives as follows:

(1) To make JABODETABEK a prosperous and livable city

(2) To create a highly efficient transport network

(3) To reduce car use through supply and demand measures

(4) To create efficient urban transport systems: including i) efficiency in infrastructure, ii) efficiency in transport management and operation, and iii) efficiency delivers sustainability and equity.

(5) To improve system management supported by a sustainable business model

3) Project Approach

Based on the assessment and analysis of the core issues, the strategic project approach was developed describing the areas of project work and outcomes. It was evident that a comprehensive approach was needed, encompassing planning and infrastructure, systems and operations design and effective business and management frameworks. A number of approaches were evaluated and tested which informed the final plan.

Clearly the evaluation showed that the planned MRT is a vital part of the future network but on its own would not deliver the wide network necessary to provide alternative public transport options. Consequently, how to make BRT a mass transit network became a major thrust of the project work.

The project approach was defined to develop the following component:

- BRT Improvement Program
- Jabodetabek Integrated BRT Network up to 2020

- Operational Design Scenarios
- The Business Model and Management Framework
- Institutional Development: developing an effective and sustainable business model and management framework
- Short-term projects

4) BRT Operational Design Standards

The elements of what is need to improve and develop BRT as a mass transit mode including planning failures and common misconceptions was determined. A set of planning principles was identified to guide the planning and design process. The main design principles and elements for a BRT were identified and discussed, including:

- Shelter capacity and performance
- Traffic priority management options and intersection design
- Busway design and accommodating BRT on standard road lane layouts
- BRT stations and passenger infrastructure
- Control Centre and its operation
- Fare collection and E-ticketing
- System branding and image
- Bus fleet design
- Bus vehicle emission and fuel propulsion systems






7 INTEGRATED PUBLIC TRANSPORT NETWORK AND SERVICES

1) Network and Service Design

In order to offer seamless travel for passengers and deliver a high level of access, coverage and connectivity, specific service types forming future integrated network including bus types and supporting mobility are determined as follows:

Type 1 - Median BRT: Full BRT along exclusive bus lanes along the road median

Type 2 - Modified BRT: Full BRT but along service roads or curbside lanes, where a median design is not possible (e.g. Corridor 9)

Intermediate bus route: integrated with full BRT lines and operate on standard roadways with priority. They act as feeders to the BRT and also provide cross suburb services (fare integrated)

Area-wide bus route: Line-haul routes may run parallel but offer different service (non-fare integrated)

Neighborhood area service: Short distance feeder services (neighborhood services) operating smaller buses to either the BRT or to the Intermediate bus priority routes (not fare integrated)

Para-transit services: as part of the local neighborhood services to offer feeder services to the trunk route under a local area arrangement

Supporting mobility networks/facilities: Park & Ride facility, integrated/multimodal terminal, safe cycling, walking access and access for disabled and special needs

2) Proposed 2020 BRT Network

A corridor analysis was made to determine suitability and placement of major routes and what service type applied. BRT offers a strong trunk/ feeder type design which is easy for passengers to understand, but because a network serves more than just trunk and feeder, cross suburb travel needs to be catered for. Intermediate bus priority routes that travel cross suburb (perpendicular to BRT) were designed to both feed the BRT and provide O-D links in their own right.

As a planning tool an O-D matrix was developed for every O-D pair with the aim of designing routes to reduce physical transfers. The design of routes is based specifically on reducing unnecessary transfers, and creating more direct travel; fleet efficiency, where multiple routes are designed to travel on more high demand sectors, and area coverage so that the network provide the necessary access to a wide area of the study area.

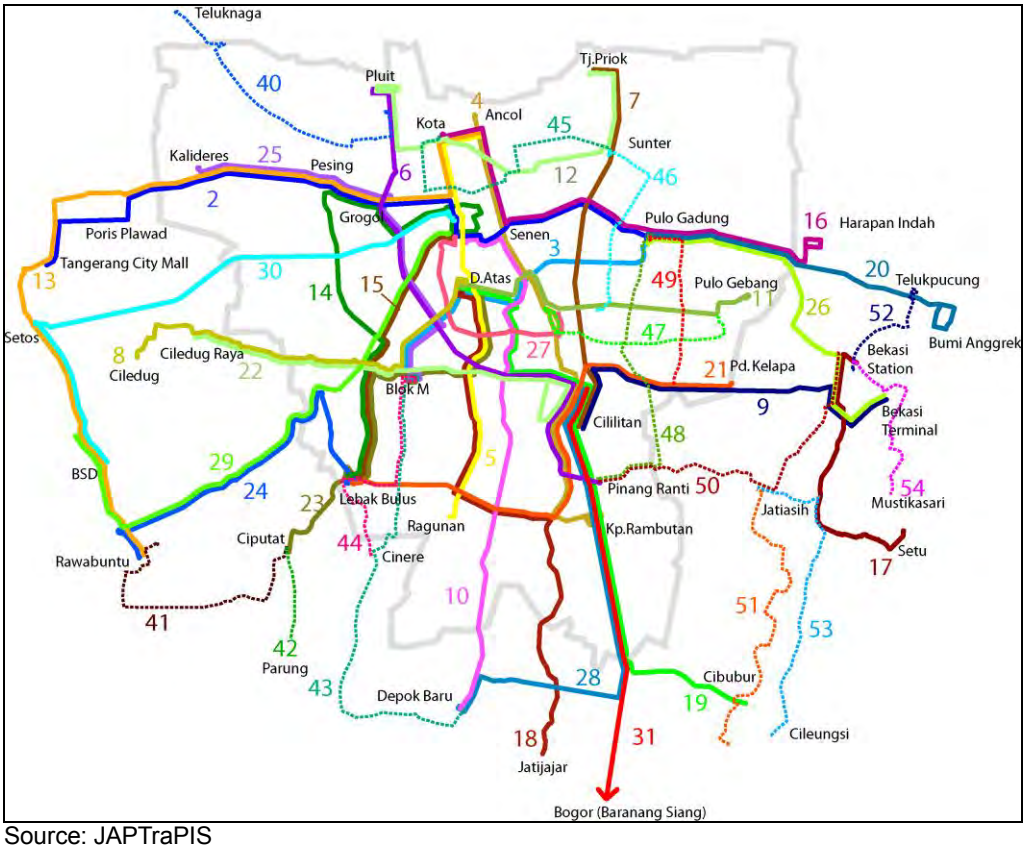
The proposed 2020 BRT network design is presented in Table 7.1 and Figure 7.1.

Table 7.1 Proposed 2020 BRT Network

	No. of routes	Route km	Corridor km
Full BRT route	30	683	429
Intermediate route	15	193	188

Source: JAPTraPIS

Figure 7.1 Proposed 2020 BRT Route Network

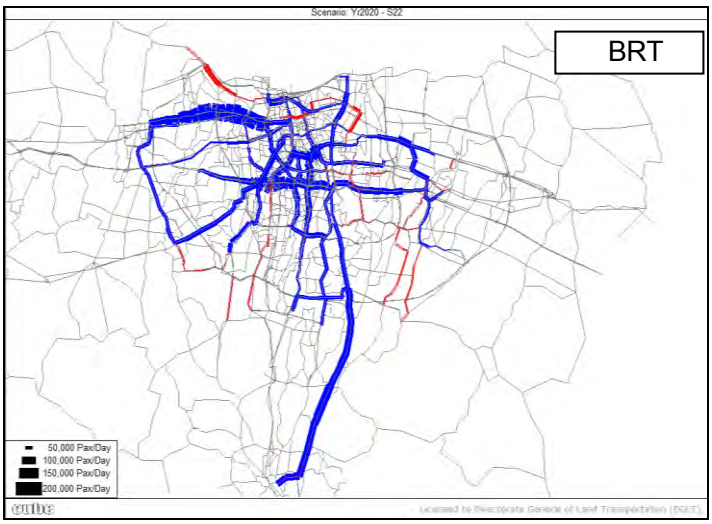


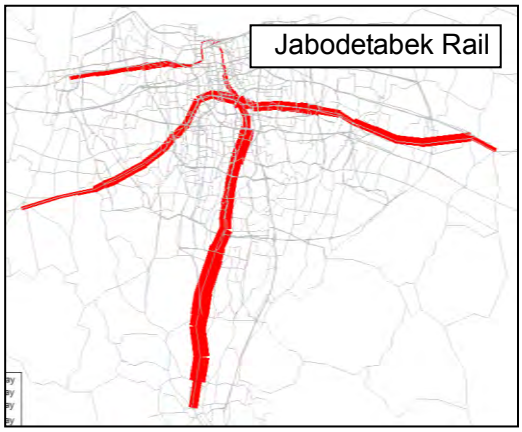
Source: JAPTraPIS

3) Future Traffic Demand on 2020 Network

Figure 7.2 shows the result of traffic demand forecast and assignment on the proposed 2020 public transport network. The proposed BRT network will transport about daily 2.7 million passengers (2.3 million for full BRT and 0.4 million for intermediate route).

Figure 7.2 Traffic Demand and Traffic Volume on 2020 Public Transport Network





Ridership (million pax)	2020
Full BRT (30 routes)	2.3
Intermediate BRT (15 routes)	0.4
Jabodetabek Rail	1.2
MRT	0.9

Source: JAPTraPIS

Traffic Performance of 2020 Master Plan Network: Traffic demand of the Jabodetabek Area will increase from 66 million trips in 2010 to 74 million trips in 2020. If there is no improvement of urban transport network and services by 2020 (Do-Nothing Case), the modal share of public transport will decrease and traffic situations will be aggravated. However, in the case transport network and services of the proposed master plan is implemented properly, modal share of public transport will increased to 34% by 2020 and traffic situation will be improved.

Table 7.2 Traffic Performance of Master Plan Network

Indicators		2010 (Existing)	2020 (Do Nothing)	2020 (Master Plan)
Traffic Demand (trips)		66 mil.	74 mil.	74 mil.
Modal Share	Car	20%	28%	24%
	M/C	53%	50%	42%
	Public Transport	27%	22%	34%
Traffic Load	PCU-km	150 mil.	210 mil.	179 mil.
	PCU-hour	10 mil.	27 mil.	15 mil.
Travel Feature	V/C (daily)	0.85	1.15	0.88
	Travel Speed	23.6 kph	15.2 kph	24.0 kph
Public Transport	Pax-km/trip	9.3 km	9.2 km	9.2 km
	Pax-hour/trip	0.41 hr	0.45 hr	0.40 hr

Source: JAPTraPIS

4) Prioritization of BRT Network Development

The priority evaluation highlighted projects that provide early and significant impact particularly in being implementable, realistic and makes a significant addition to the network (the benefit of each project addition having an effect greater than itself).

As a result of examination, route implementation schedule was identified as shown in Table 7.3 to Table 7.5 by phase.

Table 7.3 BRT Route Implementation Schedule (2012-2013)

Existing Corridor No.	New Route No.	Route	Description	Comment
1	1	**Kota – Blok M**	Implement as route 1	On-going Service Improvement Project and Infrastructure Upgrading
2	2a	**Pulo Gadung – Kalideres via Harmoni**	Combined route 2&3 operating East –West	Can be achieved quickly with minimal changes and reduces transfers at Harmoni
3				
4	3	**Pulo Gadung – Blok M via Dukuh Atas**	Former corridor 4 extended to Blok M as route 3	Reduces transfers at Dukuh Atas and more direct travel
5	4	**Kp. Rambutan – Ancol via Kp. Melayu**	Combined corridor 5&7 operating as new route 4	Eliminates the compulsory transfers at Kp. Melayu
7				
6	5	**Ragunun – Ancol via Dukuh Atas**	Former corridor 6 extended to Kota/Ancol as Route 5	Reduces transfers at Dukuh Atas and more direct travel to Kota/Ancol
8	14	**Lebak Bulus – Bank Ind. Via Grogol**	Former corridor 8	Change of corridor number to route number
9	6	**Pluit – Pinang Ranti**	Former corridor 9	Change of corridor number to route number
10	7	**Tj. Priok – Cililitan**	Former corridor 10	Change of corridor number to route number
11	11	**Pulo Gebang – Dukuh Atas**	Extend route to Dukuh Atas	Extend from Kp Melayu to Dukuh Atas with more direct connection opportunities
	16a	**Kota – Pulo Gadung**	New BRT route	Becomes Route 16 later when extended to Harapan Indah
	2b	**Kalideres – Tangerang**	New Intermediate route	Commences as intermediate bus but later a

		City Mall via Poris Plawad		full BRT as route 2
	25	**Kalideres – Blok M**	New BRT route	Operates via route 6 alongside Tol Jen Gatot Subrato
	26a	**Bekasi Bus Terminal – Pulo Gadung**	New Intermediate route	Commences as intermediate bus but later a full BRT as route 26

Source: JAPTraPIS

Table 7.4 BRT Route Implementation Schedule (2013-2014)

Route Number	Route	Description
12	**Pluit – Tj Priok**	New full BRT route
40	**Pluit – Teluknaga**	New Intermediate routes
44	**Cinere - Blok M**	
45	**Tambora – Gaya Motor**	
46	**Gaya Motor - Cipinang**	
48	**Pulo Gadung – Pinang Ranti**	
16	**Kota – Harapan Indah via Ancol**	Extend from P/ Gadung to Harapan Indah (replaces 16a)
26	**Bekasi Bus Terminal – Pulo Gadung**	Replace 26a to full BRT
47	**Kp. Mulayu – Klender Baru**	New Intermediate routes
52	**Bekasi Station – Teluk Pucung**	
54	**Mustikasari – Bekasi Station**	
13a & 13b	**Ancol – Kalideres (13a) – Tangerang City Mall (13b)**	New full BRT route (13a) and intermediate route (13b) -later extended to BSD as route 13
15	**Lebak Bulus – Bank Ind. via Tentarapelajar**	New full BRT route to provide more direct route from Lebak Bulus

Source: JAPTraPIS

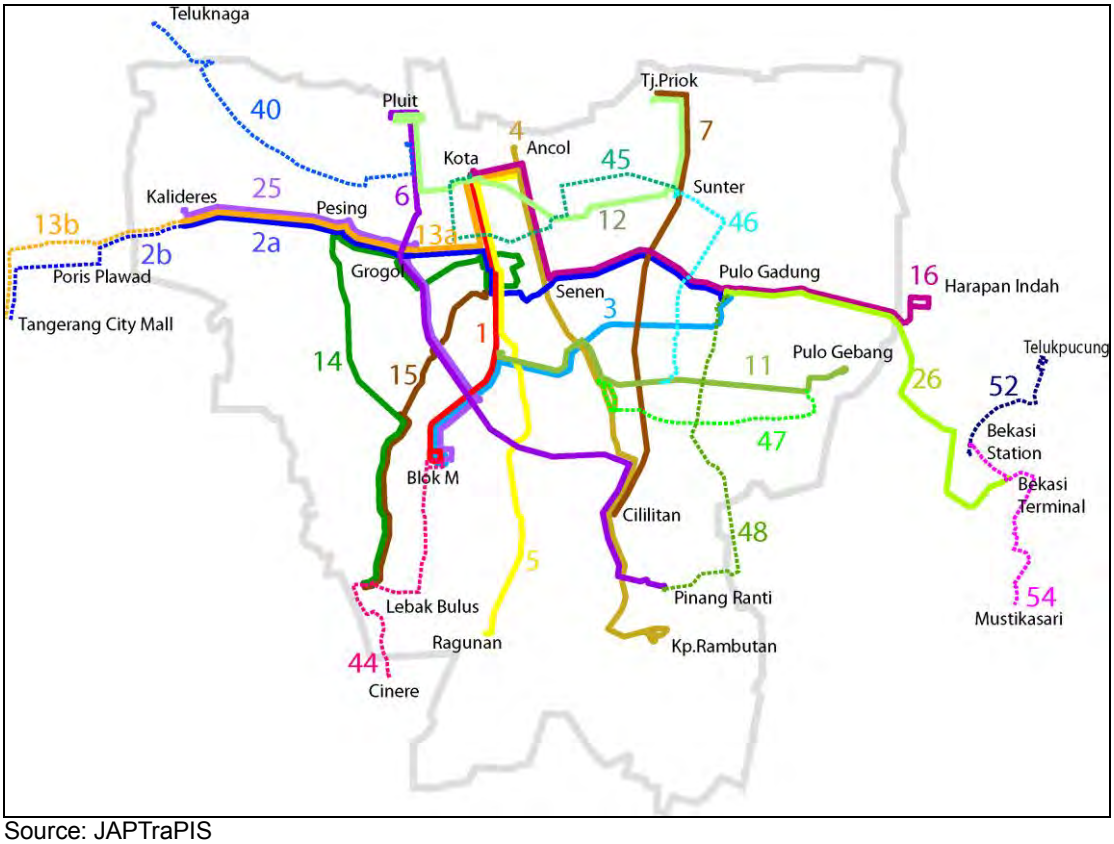
Table 7.5 BRT Route Implementation Schedule (2015-2020)

Route Number	Route	Description
2	**Pulo Gadung – Tangerang City Mall via Harmoni**	Replaces 2a and 2b with full BRT
27	**Kp. Mulayu – Bank Ind. via Inner Toll Road**	New full BRT Route
23	**Dukuh Atas – Ciputat via Kuningan**	New full BRT Route
41	**BSD – Ciputat**	New Intermediate routes
42	**Parung – Ciputat**	
24	**BSD – Lebak Bulus via Tol Serpong**	New full BRT Route
22	**Ciledug – Cililitan via Blok M**	New full BRT Route
8	**Ciledug - Dukuh Atas via Blok M**	New full BRT Route
9	**Bekasi Bus Terminal - Cililitan**	New full BRT Route
49	**Kalimalang – Pulo Gadung**	New Intermediate route
19	**Dukuh Atas – Cibibur via Cililitan**	New full BRT Route
28	**Depok Baru - Cawang UKI via Tol Jagorawi**	New full BRT Route
43	**Blok M – Depok Baru**	New Intermediate routes
50	**Pinang Ranti – Bekasi Station**	
51	**Cibibur - Jatiasih**	
21	**Pondok Kelapa – Lebak Bulus via Cililitan**	New full BRT Route
18	**Dukuh Atas - Jatijajar via Fatmawati**	New full BRT Route
10	**Depok Baru – Bank Ind. via Mangerrai**	New full BRT Route
13	**Ancol – BSD via Tangerang City Mall**	Replaces 13a and 13b with full BRT
30	**BSD – Harmoni via Tol Kbn.Jeruk**	New full BRT Route
29	**BSD – Bank Ind via Tol Serpong**	New full BRT Route
17	**Bekasi Station – Setu**	New full BRT Route
53	**Cileungsi – Jatiasih**	New Intermediate route
20	**Pulo Gadung – Bumi Anggrek**	New full BRT Route
31	**Bogor (Baranang Siang) – Cililitan via Tol Jagorawi**	New full BRT Route

Source: JAPTraPIS

Proposed 2014 BRT Network: Based on the proposed implementation schedule, BRT route network by 2014 is shown in Figure 7.3. There are 15 full BRT (including 2b and 13b operated as intermediate BRT) routes with route length of 303km on corridor of 227km and 8 intermediate routes with 93 km length of routes and corridors.

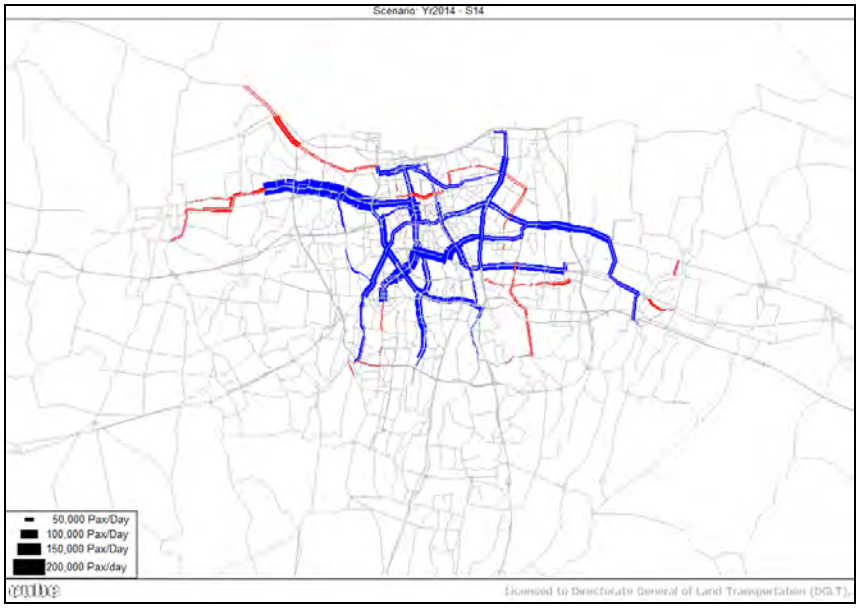
Figure 7.3 2014 BRT Route Network



Source: JAPTraPIS

The traffic demand forecast and assignment on the proposed 2014 public transport network resulted that BRT transports about daily 1.4 million passengers (1.2 million for full BRT and 0.2 million for intermediate route).

Figure 7.4 Traffic Demand and Traffic Volume on 2014 Public Transport Network



Ridership (million pax)	2014
Full BRT (16 routes)	1.2
Intermediate BRT (8 routes)	0.2
Jabodetabek Rail	1.0

Source: JAPTraPIS

5) BRT Fleet Development

Table 7.6 shows the BRT fleet procurement plan in accordance with the implementation of proposed BRT route network. The number of BRT fleets to be procured in each year is estimated in considering the retirement schedule of the existing bus way fleets. The procurement plan required $ 635.2 million to procure 1,687 articulated buses and 277 single buses during the period of 2012-2020.

Table 7.6 Fleet Procurement Plan for the Propsoed BRT Network Implememtation

Phase	Articulated Bus		Single Bus	
2012-2014	574	$192.3 mil.	0	-
2015-2020	1,107	$370.8 mil.	277	$72.0 mil.
Total	1,681	$563.1 mil.	277	$72.0 mil.

Source: JAPTraPIS
Note: 1) Bus life time is set for 7 years, 2) assumed fleet capacity of 70 passengers for single bus and 120 passengers for articulated bus, 3) Assumed fleet price of $ 260,000 for single bus and $335,000 for articulated bus.

8 INFRASTRUCTURE DEVELOPMENT

1) BRT Infrastructure and Facility

To develop the proposed 2020 BRT route network, new infrastructure and facilities are required. The infrastructure building program includes 31 separate project packages. The reason for grouping number of projects into a package is because in many instances the projects are interdependent with each other and need to be collectively completed to implement the nominated bus routes. With each completed project package, a set of routes can be implemented. Table 8.1 summarizes these project packages and lists the routes which can be implemented at each stage.

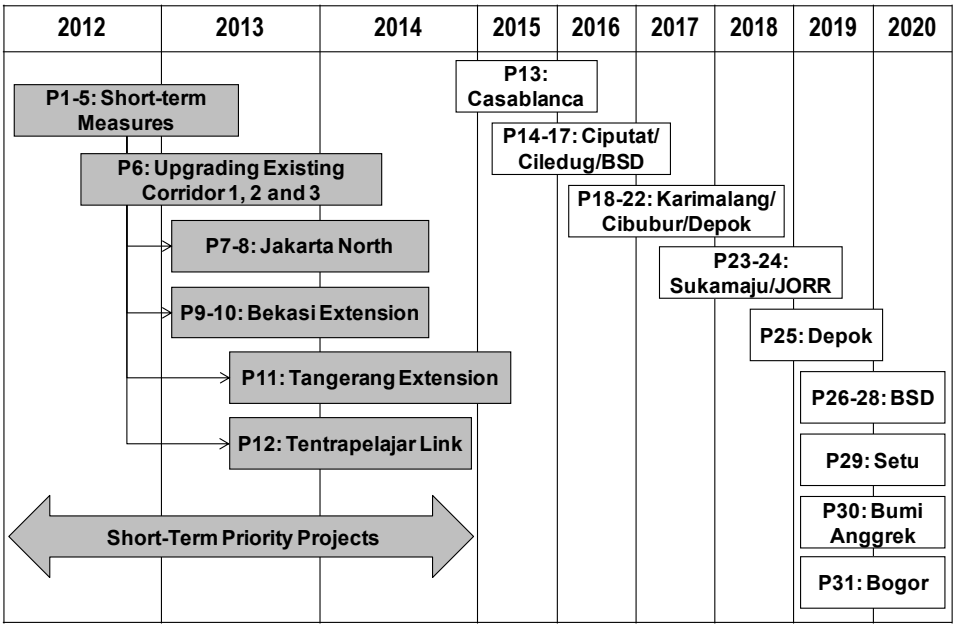
Table 8.1 Project Packaging for BRT Route Implementation

Project No.	Project / Site	Implement Route
P1	A. Traffic Operation around Monas B. Bank Indonesia Shelter Expansion C. Gambir Shelter Modification to Integrate with Rail	1, 2a, 6, 7, 14
P2	A. New Pessing Shelter B. New Dukuh Atas Shelter C. Cawan Shelter Pedestrian Bridge Extension	
P3	A. Mangga Dua Shelter Construction B. Kp.Melayu Road Redesign C. Blok M Terminal Modification	3, 5, 11, 16a
P4	Kalideres Terminal Improvement	2b, 25
P5	Kp.Melayu Shelter Modification	4
P6	Corridor 1,2&3 Upgrading	
P7	Route12 (Pluit to Tj. Priok)	12
P8	(IR: Intermediate Routes)	(40, 44, 45, 46, 48)
P9	Harapan Indah Extension	16
P10	Bekasi Extension to Bekasi Terminal (IR)	26 (47, 52, 54)
P11	Tangerang Extension	2, 13a, 13b, 2 (after 2015)
P12	Tentrapelajar Link	15
P13	Casablanca (T.A.-Kp.Melayu)	27
P14	Kyai Maja Link and Wolter Monginsidi to Kuningan	
P15	Ciputat/Pamulang Extension (IR)	23 (41, 42)
P16	BRT Tol Serpong	24
P17	Ciledug Corridor and Cililitan Link	22, 8
P18	Cawang UKI Transfer Station	
P19	Kalimarang Corridor (IR)	9 (49)
P20	Jl. Tol Letnan Haryono to Manggarai	
P21	Cibubur to Cawang UKI via Tol	19
P22	Depok Baru to Tol Link (IR)	28 (43, 50, 51)
P23	Jl. Raden Ajeng Kartini	21
P24	Sukamaju to Gedong	18
P25	Depok Baru to Jl. Tol Letnan Haryono	10
P26	Tangerang to BSD	13
P27	BSD to Harmoni via Kbn. Jeruk	30
P28	BSD to Bank Ind. via T/Abang new Toll road	29
P29	Bekasi Station to Setu (IR)	17 (53)
P30	Pulo Gadung to Bumi Anggrek	20
P31	Bogor (Baranang Siang) to Cililitan	31

Source: Study Team

The projects are also prioritized according to a schedule of implementation as show in the Figure 8.1. It is possible to rearrange project packages in a different order of implementation but then project packages themselves should remain intact.

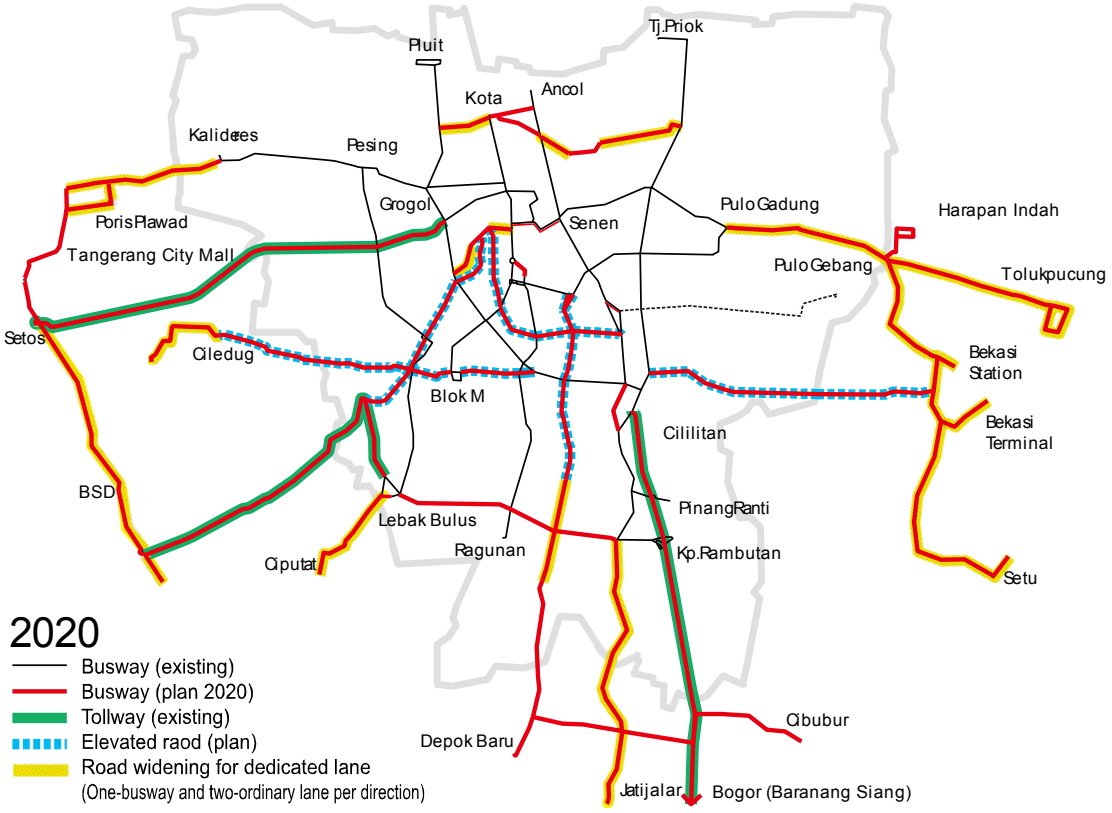
Figure 8.1 BRT Project Package and Implementation Schedule



Source: Study Team

Figure 8.2 shows the identified road section for new BRT corridors by 2020 based on the proposed implementation schedule.

Figure 8.2 BRT Corridor Development by 2020



Source: Study Team

The scale of the proposed BRT network development is summarized by project as show in Table 8.2. The proposed network with 30 full BRT routes requires 257 km busway corridor with 233 shelters. In order to develop new full BRT corridor with dedicated bus lane, 92km (36%) of the new busway corridor needs to be widened to accommodate at least one dedicated bus lane and two lanes for private vehicle by direction.

Table 8.2 Scale of BRT Corridor Development by Phase

BRT Route Development Project

	Project No.	New corridor (km)	New shelter (unit)	Km Road widening (km)	Cost (mil.Rp.)	Land aquisiton (ha)
2012	1	2.4	2	0.0	13,524	0.0
	2	0.0	0	0.0	0	0.0
	3	2.6	1	0.0	25,921	0.0
	4	0.0	0	0.0	0	0.0
	5	0.0	0	0.0	0	0.0
	6	0.0	0	0.0	0	0.0
2013-14	7	11.3	11	6.6	127,351	3.4
	8	0.0	0	0.0	0	0.0
	9	10.4	11	7.2	117,208	1.4
	10	12.0	10	10.6	135,240	3.4
	11	10.6	11	5.2	119,462	1.4
	12	5.3	4	1.3	43,329	0.8
2015-20	13	9.6	10	0.0	65,088	0.0
	14	4.6	3	0.0	25,086	0.0
	15	5.9	6	4.9	66,493	2.1
	16	17.5	10	0.0	75,950	0.0
	17	17.6	18	3.2	148,513	4.5
	18	0.0	0	0.0	0	0.0
	19	13.0	13	0.0	88,140	0.0
	20	4.0	4	0.0	27,120	0.0
	21	19.8	14	0.3	127,596	0.3
	22	5.3	5	0.0	59,731	0.0
	23	7.2	7	0.0	81,144	0.0
	24	12.9	14	12.9	145,383	10.3
	25	15.8	17	8.3	157,412	2.5
	26	18.9	19	9.7	213,003	7.2
	27	16.0	9	0.0	62,720	0.0
	28	10.0	6	0.0	39,200	0.0
	29	10.9	12	10.9	122,843	11.2
	30	11.3	12	11.3	127,351	13.9
	31	2.5	5	0.0	28,175	0.0
	Total	257.4	233	92.4	2,242,983	62.3

Intermediate Route Development Project

	Project No.	Km Route (km)	New shelter	Cost (mil.Rp)
2012	1			
	2			
	3			
	4			
	5			
	6			
2013-14	7			
	8	66.8	105	27,300
	9			
	10	26.5	40	10,400
	11			
	12			
2015-20	13			
	14			
	15	19.5	30	7,800
	16			
	17			
	18			
	19	9.3	14	3,640
	20			
	21			
	22	51.6	82	21,320
	23			
	24			
	25			
	26			
	27			
	28			
	29	14.5	23	5,980
	30			
	31			
	TOTAL	**188.2**	**294**	**76,440**

Source: Study Team
Note: Cost for land acquisition is not included.

Based on the identified scale of the project, each implementation cost are estimated and summarized by Phase. In order to develop the proposed BRT corridors, the total cost of Rp.2,558 billion (or US$ 284 million) are required by 2020.

Table 8.3 Estimated Cost for BRT Corridor Development by Project and by Phase

Estimated Cost by Project

Project no.	Cost (mil.Rp)
P1	19,024
P2	9,930
P3	50,201
P4	1,600
P5	2,000
P6	164,078
P7	127,351
P8	27,300
P9	117,208
P10	145,640
P11	119,462
P12	43,329
P13	65,088
P14	25,086
P15	74,293
P16	75,950
P17	148,513
P18	31,500
P19	91,780
P20	27,120
P21	127,596
P22	81,051
P23	81,144
P24	145,383
P25	157,412
P26	213,003
P27	62,720
P28	39,200
P29	128,823
P30	127,351
P31	28,175
Total	2,558,311

Estimated Cost by Project Group

	Project Group	Cost (mil.Rp)
2012	Project 1-5	82,755
	Project 6	164,078
2013-14	Project 7&8	154,651
	Project 9&10	262,848
	Project 11	119,462
	Project 12	43,329
2015-20	Project 13	65,088
	Project 14-17	323,842
	Project 18-22	359,047
	Project 23-24	226,527
	Project 25	157,412
	Project 26&27	275,723
	Project 28	39,200
	Project 29	128,823
	Project 30	127,351
	Project 31	28,175
Total		2,558,311

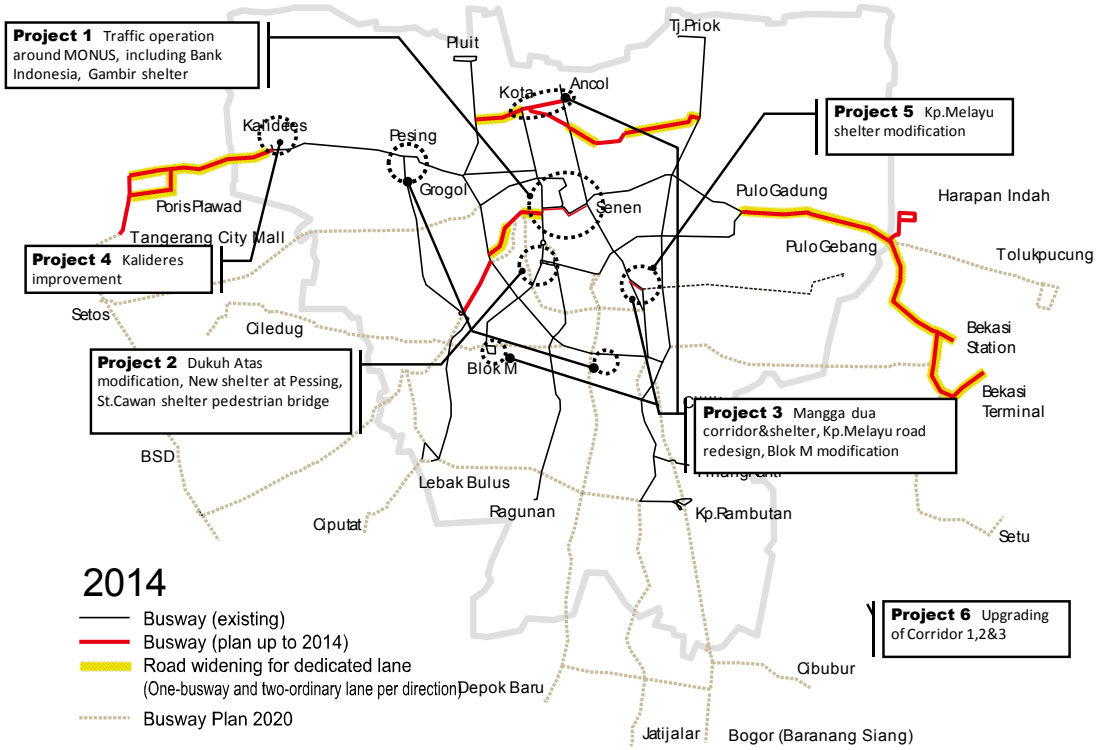
Estimated Cost by Phase

	Total budget	Ave.annual budget
2012	148,386	148,386
2013-14	678,737	339,368
2015-20	1,731,188	288,531
Total	2,558,311	284,257

Source: Study Team
Note: Cost for land acquisition is not included.

Proposed Plan and Design for the Short-term Projects: Contents of short-term projects (Project 1-6 to be conducted by 2012-2013) are further examined and identified as described in Figure 8.3 and Table 8.4. The alternative designs to improve the corridor are proposed by project as shown in the following figures.

Figure 8.3 Short-term BRT Corridor Development Projects



Source: Study Team

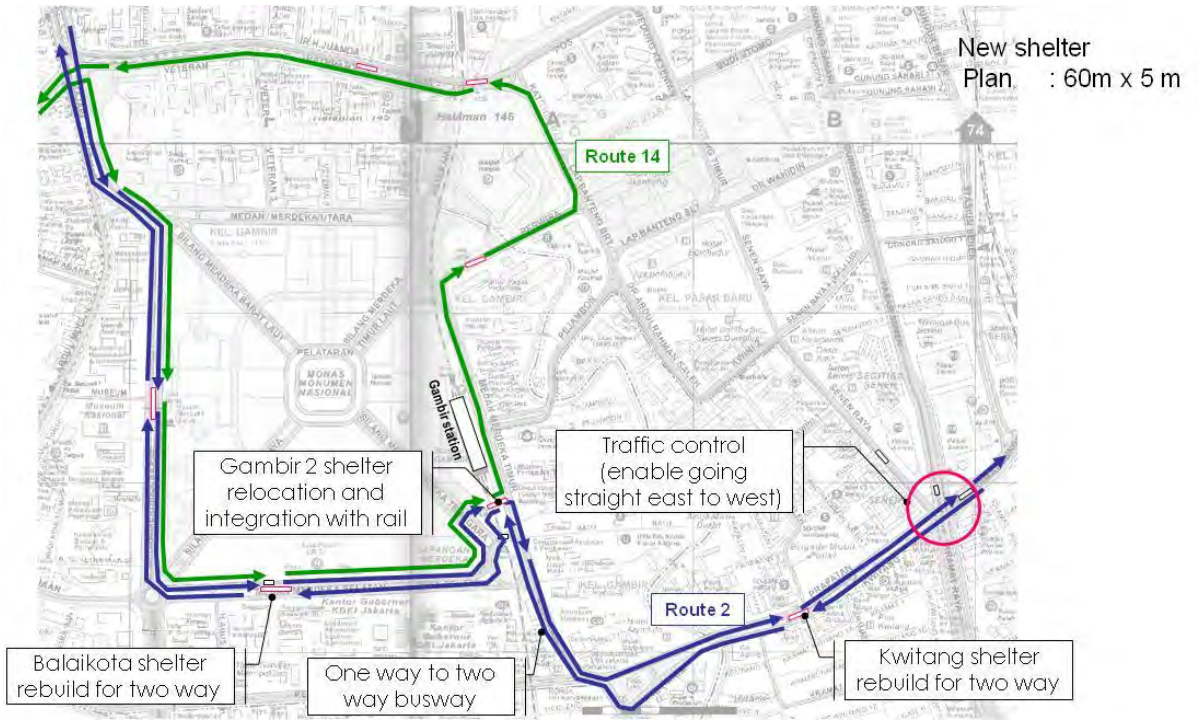
Table 8.4 Short-term BRT Corridor Development Projects

	Project / Site	Plan	Related Busway
P1	A. Traffic Operation around Monus	Bank Indonesia to Senen two way BRT, Relocate Balaikota shelter	BRT 2, 10, 14
	B. Bank Indonesia Shelter Expansion	Bank Indonesia as major transfer station	Terminus: BRT 10,14,15,27,29 Through: BRT 1,5
	C. Gambir Shelter Modification to Integrate with Rail	Relocate Gambir 2 shelter	BRT 2, 10, 14
P2	A. New Pessing Shelter	Pessing shelter	Through BRT 2,13,14,25
	B. New Dukuh Atas Shelter	New shelter Dukuh Atas 1 closer to Surdiman station., pedestrian underpath and escalator, Dukuh Atas 2 extention	D.Atas 1: Through BRT 1 D.Atas 2: Terminus BRT 8, 11,18,19,23, Through BRT 3
	C. Cawan Shelter Pedestrian Bridge Extension	St. Cawan pedestrian improvement	Through BRT 6, 9, 22
P3	A. Mangga dua Shelter Construction	Busway track, Two new shelters for new corridors	BRT 5,13,16
	B. Kp.Melayu Road Redesign	Redesign to dual direction on Jl.Bekasi Barat Raya, Kebon Pala shelter modification as a transfer station	BRT Route 4,11,27 Intermediate 47
	C. Blok M Terminal Modification	Increase Blok M busway capacity , Blok M pedestrian deck	Terminus: BRT 1,3,25, Intermediate 43, 44, Through BRT 8,22,23
P4	Kalideres Terminal Improvement	Increase boarding space for Transjakarta and Tangerang	Terminus: BRT 25 Through: BRT 2,13
P5	Kp.Melayu Shelter Modification	Build new shelters to north-south alignment	Terminus: BRT 27, Intermediate 47 Through BRT 4,11
P6	Corridor 1,2&3 Upgrading	Track, shelter for articulated and bridge	Corridor 1,2&3

Source: Study Team

Figure 8.4 Project 1-A: Traffic Operation around Monas

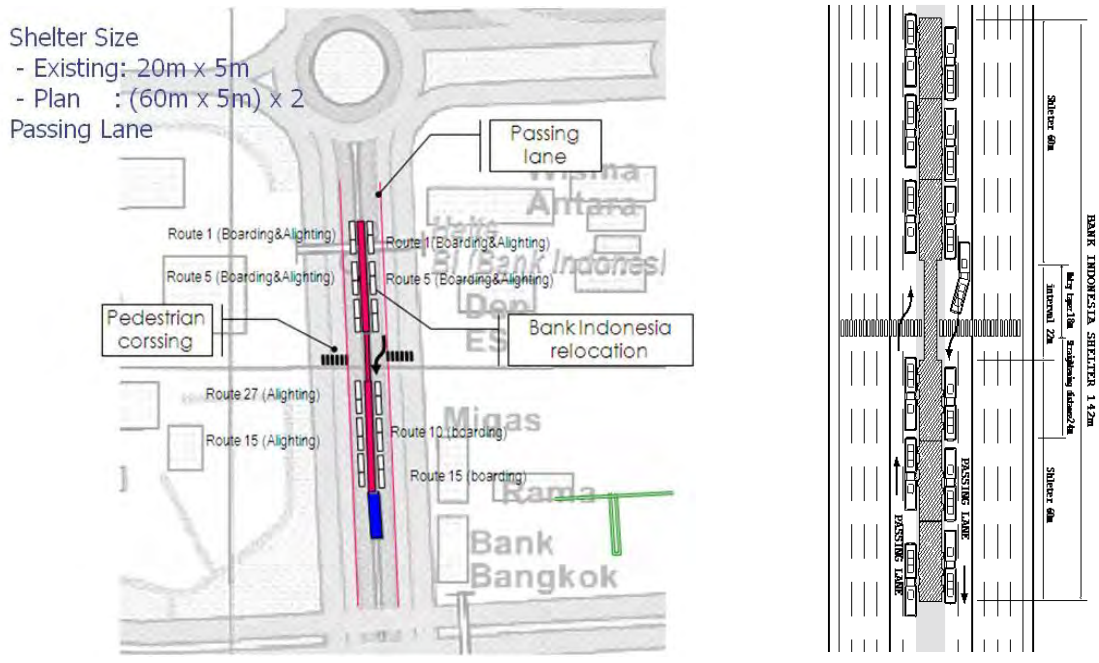
Project / Site	Plan	Related Routes
Traffic Operation around Monus	Bank Indonesia to Senen two way BRT, Relocate Balaikota shelter	BRT 2, 10, 14



Source: Study Team

Figure 8.5 Project 1-B: Bank Indonesia Shelter Expansion

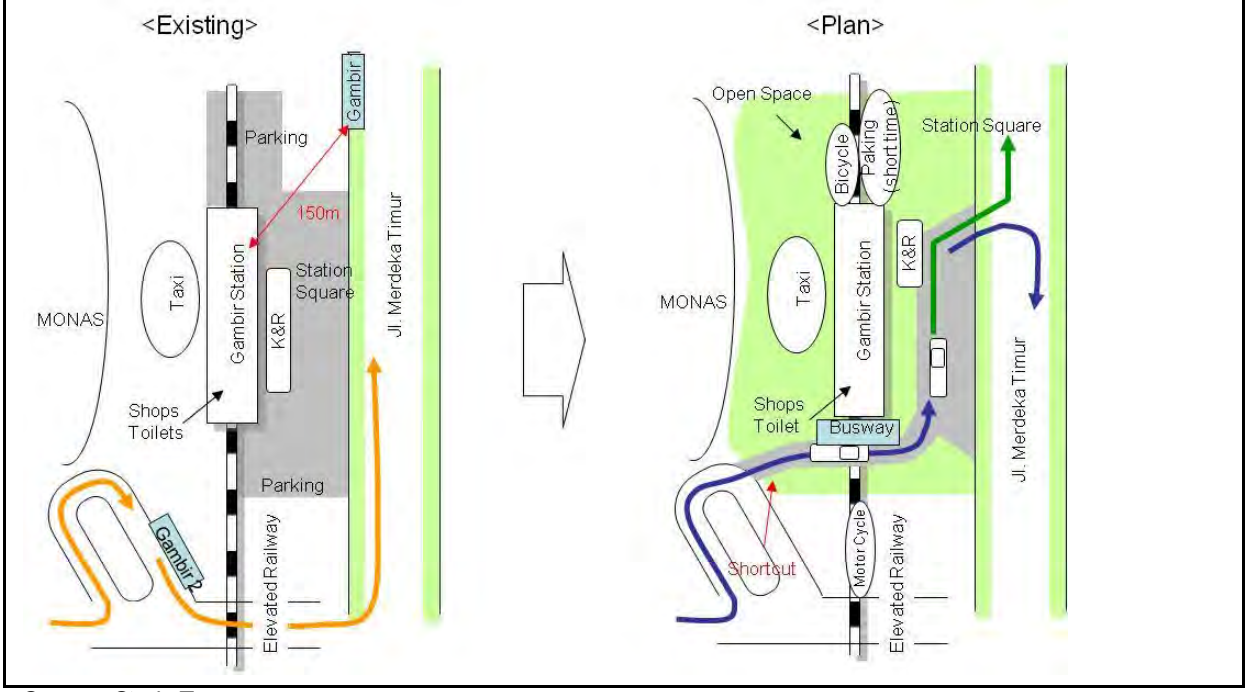
Project / Site	Plan	Related Routes
Bank Indonesia Shelter Expansion	Bank Indonesia as major transfer station	Terminus: BRT 10,14,15,27,29 Through: BRT 1,5



Source: Study Team

Figure 8.6 Project 1-C: Gambir Shelter Modification to Integrate with Rail

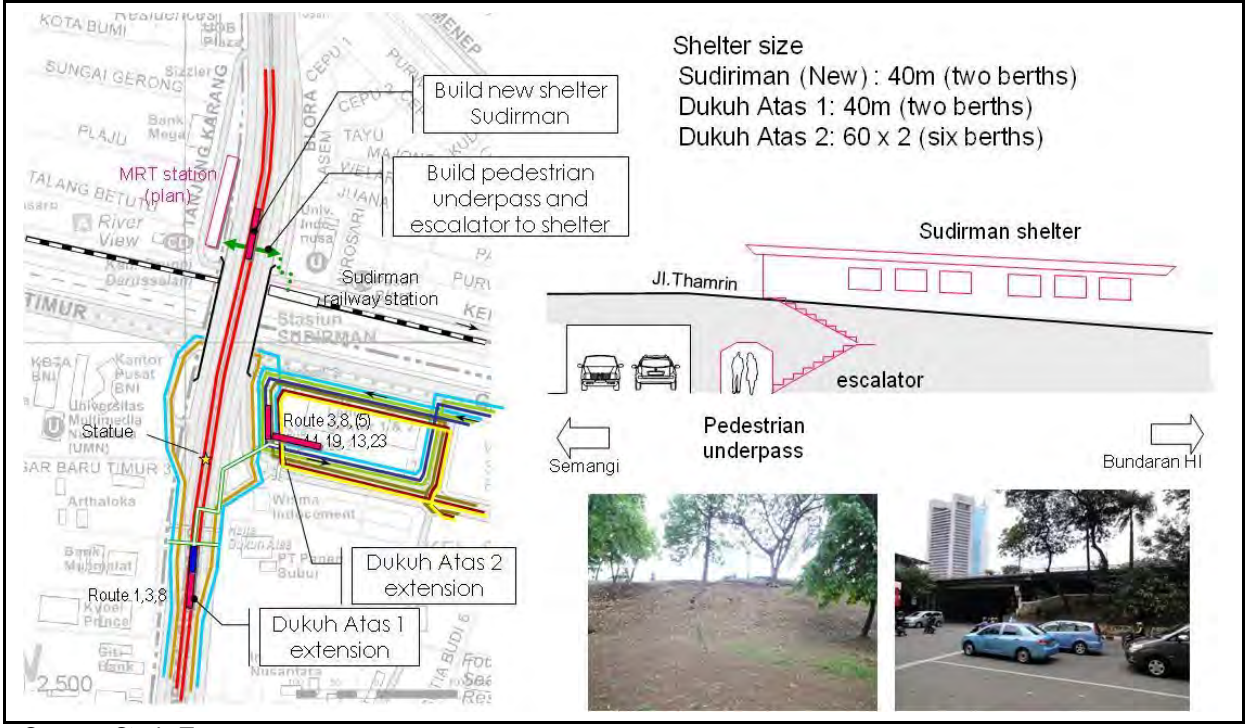
Project / Site	Plan	Related Routes
Gambir Shelter Modification to Integrate with Rail	Relocate Gambir 2 shelter	BRT 2, 10, 14



Source: Study Team

Figure 8.7 Project 2-B: New Dukhu Atas Shelter

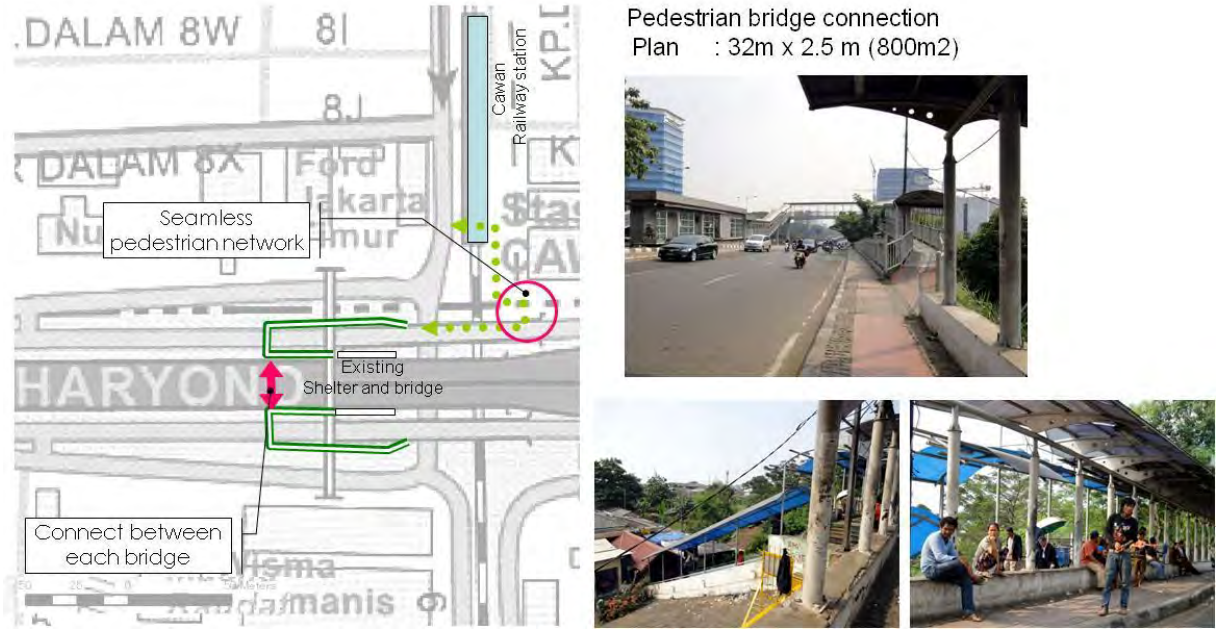
Project / Site	Plan	Related Routes
New Dukuh Atas Shelter	New shelter Dukuh Atas 1 closer to Surdiman station., pedestrian underpath and escalator, Dukuh Atas 2 extention	D.Atas 1: Through BRT 1 D.Atas 2: Terminus BRT 8,11,18,19,23 Through BRT 3



Source: Study Team

Figure 8.8 Project 2-C: Cawang Shelter Pedestrian Bridge Extension

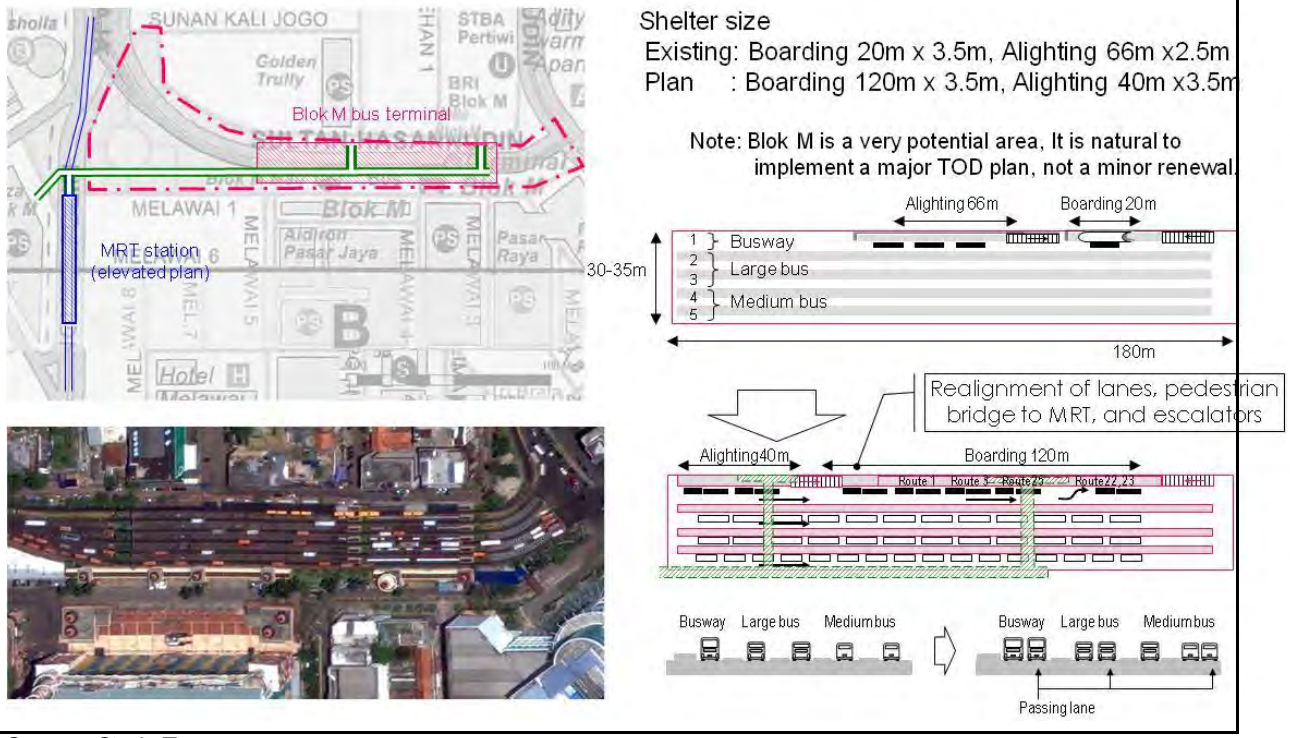
Project / Site	Plan	Related Routes
Cawan Shelter Pedestrian Bridge Extension	Stasiun Cawan pedestrian improvement	Through BRT 6, 9, 22



Source: Study Team

Figure 8.9 Project 3-C: Blok M Terminal Modification

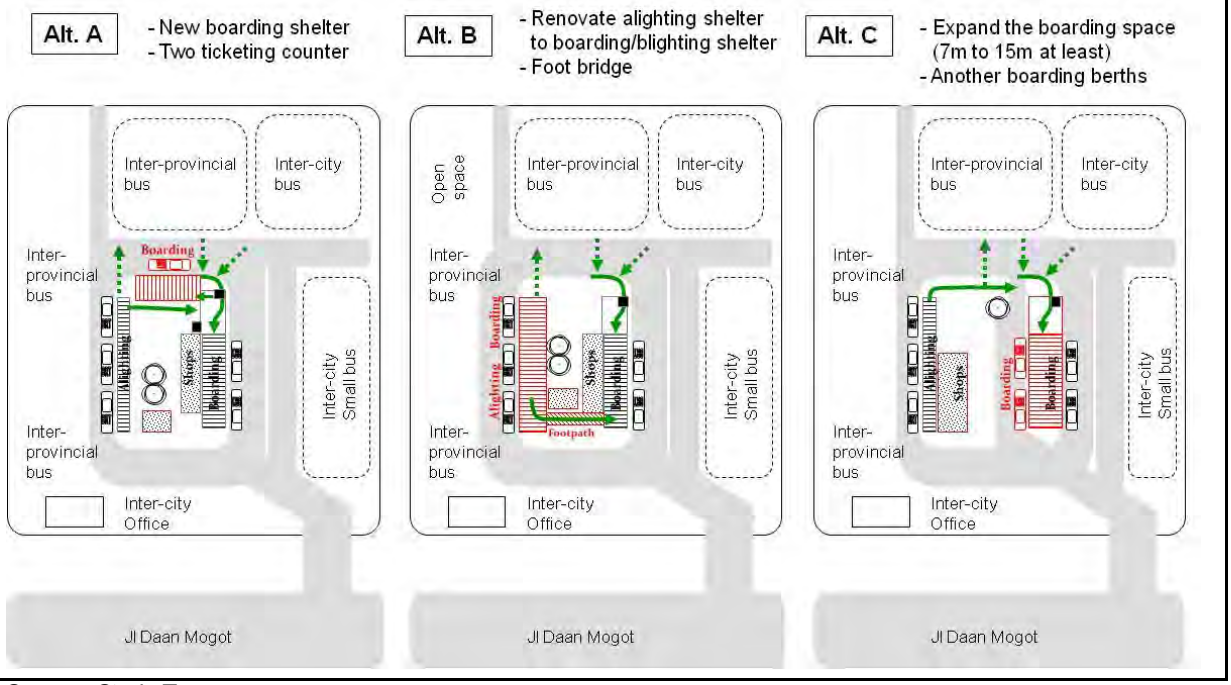
Project / Site	Plan	Related Routes
Blok M Terminal Modification	Increase Blok M busway capacity , Blok M pedestrian deck to MRT station	Terminus: BRT 1,3,25 Intermediate 43,44 Through BRT 8,22,23



Source: Study Team

Figure 8.10 Project 4: Kalideres Terminal Improvement

Project / Site	Plan	Related Routes
Kalideres Terminal Improvement	Increase boarding space for Transjakarta and Tangerang	Terminus: BRT 25 Through: BRT 2,13



Source: Study Team

1) Bus Location System and Control Center

In order to improve the operational efficiency of BRT system by strengthening the function of control center, effective bus location system is to be introduced.

Mounted GPS equipment will send the location information to base station with every few minutes. This data would be utilized at Bus Location System to calculate estimate time of arrival (ETA) to each bus stops and destinations, and inform it to customers by PC, Mobile phone or on top monitors at bus stations.

It can help to identify the real time location of all buses and delayed information. If system sends this information to customers, it can avoid customers' irritation and complains about "When my bus will be arrived?". The customers can check the real time information by PC or mobile phone at any time anywhere, and we can put real time monitor at each bus station to show the information.

On the other hand, BRT Agency (including real operators) would be able to receive not only same data, but also all operational data such as Operation mileage, operational time, operational frequency, etc. through the system.

The development of bus location system will be in accordance with the development of BRT route network. The table below shows the component of the system development, phasing and estimated cost. The development of system requires about US$13.8 million to cover entire BRT network by 2020.

Table 8.5 Bus Location System Development

Item	Unit Price (US$)	Qty	Phase	Cost (US$) (2012-2014)	Cost (US$) (2015-2020)
1. Equipment in Bus	@2,000	1,100 1,400	2012-2014 2015-2020	2,200,000 -	- 2,800,000
2. LED Indicator inside Bus	@1,000	1,100 1,400	2012-2014 2015-2020	1,100,000 -	- 1,400,000
3. Radio system	@1,000	1,100 1,400	2012-2014 2015-2020	1,100,000 -	- 1,400,000
4. Information Monitor at Bus Station	@5,000	260 180	2012-2014 2015-2020	1,300,000 -	- 900,000
5. Monitor at Control Center	@2,500	20	2012-2014	50,000	-
6. PC sets	@1,300	30	2012-2014	39,000	-
7. System Development and Server				1,500,000	-
Total				7,289,000	6,500,000
					13,789,000

Source: Study Team
Note: Excluding cost of the space for control center and required LAN establishment.

2) Bus Ticketing System

Usage of the Rechargeable Contactless IC Card involves passing it over a card reader on auto gate or touching devices. The card is passed over the card reader when the passenger enter the origin station, which is not deducted the fare at that time. A travel record is stored on the card, then on exit, the card is again passed over the card reader. At this time, the fare is deducted from the remaining balance from the card.

The information about revenue, card usage will be transferred to center system for their data management. Center system also sends master data such as fare information, bus stop information to all sales terminals to synchronize the system network.

The development of the system will be in accordance with the development of BRT route network. The table below shows the component of the system development, phasing and estimated cost. The development of system requires at least US$20.5 million (excluding optional functions) to cover entire BRT network by 2020.

Table 8.6 Bus Ticketing System Development

Item	Unit Price (US$)	Qty	Phase	Cost (US$) (2012-2014)	Cost (US$) (2015-2020)
1. Automatic Gate at shelter (2 gates/ shelter)	@7,500	520 360	2012-2014 2015-2020	3,900,000 -	- 2,700,000
2. Sales Terminal at Shelter	@5,000	260 180	2012-2014 2015-2020	1,300,000 -	- 900,000
3. System Development and Server			2012-2014	10,000,000	-
4. Handy Terminal in Intermediate Bus	@4,000	160 120	2012-2014 2015-2020	800,000 -	- 600,000
5. Software Dev't for intermediate bus			2012-2014	250,000	
6. Wireless LAN Equipment and Server for Intermediate Bus			2012-2014	30,000	-
Option 1: Auto Recharging Machine	@35,000				
Option 2: Auto Issuing Machine 1/	@13,000				
Option 3: Simplified Touching Device 2/	@15,000				
Total 3/				16,280,000	4,200,000
					20,480,000 + optional

Source: Study Team
Note: 1/ selling encoded IC card with fixed price, 2/ require minimum 2 devises per shelter for entrance/exit, 3/ excluding the cost of required LAN establishment

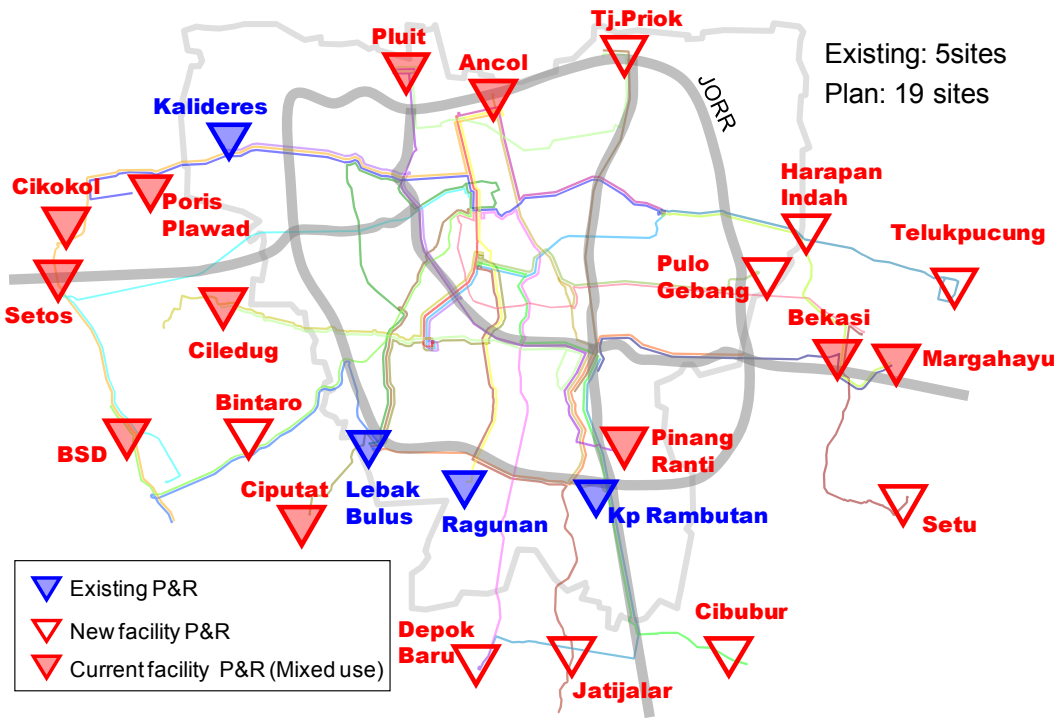
3) Park & Ride Facility

Park and Ride system is one of the supporting measures to promote people to use more public transportation and reduce private vehicle traffic, which helps to alleviate traffic congestion. The following criteria should be used as general guidelines to help where to locate the facilities.

- Outside/around of JORR
- Good public transport service (BRT)
- Easy access to/from residential areas
- Utilization of existing facilities
- Available space adjacent to the shelter
- Consideration of catchment area

Based on the proposed BRT network and criteria set above, 19 site locations as show in Figure 8.11 are identified for the development of park & ride facility.

Figure 8.11 Proposed Location of Park & Ride Facilities



Source: JAPTraPIS
Note: At Poris Plawad and Kalideres terminals the P&R facility is available but not utilized yet.

The implementation schedule of park and ride should be synchronized with the implementation of the mass transportation, particularly with BRT network development as shown in Figure 8.12. Also, consultations with owners of current facilities and review of existing development plans (bus terminal, residential development etc.) needs to be conducted.

Park and ride facilities can be implemented by government, private and under the scheme of public-private partnership depending on the characteristics of the site conditions. The options for management and operation by implementing body are examined as shown in Table 8.7.

Figure 8.12 Implementation Schedule of Park & Ride Facility Development

	Park&Ride site	Existing	2012	2013-14	2015-20	P&R type	Candidates for the parking lots
1	Kalideres	Existing	90			Bus terminal	not utilized, need good access road
2	Lebak Bulus	Existing	25			Bus terminal	Integration with MRT terminal is needed
3	Ragunan	Existing	280			Bus terminal	Highly utilized
4	Kp.Rambutan	Existing	30			Bus terminal	
5	Poris Plawad	Existing	75			Bus terminal	not utilized, Busway is not operated yet
6	Pluit			200		Mixed use	Parkings of Pluit village
7	Tj.Priok			200		Bus terminal	New development adjacent to bus terminal
8	Ancol			200		Mixed use	Parkings of current activities
9	Pinang Ranti		100			Bus terminal	Inside Pinang Ranti terminal and depo
10	Pulo Gebang		100			Bus terminal	Bus terminal is under construction
11	Bekasi			300~		Bus terminal	New development adjacent to bus terminal
12	Margahayu			300~		Mixed use	Parkings of Metropolitan mall
13	Telukpucung				300~	Suburban	New development along the corridor
14	Harapan Indah		300~			Suburban	New development along the corridor
15	Setu				300~	Suburban	New development along the corridor
16	Setos				300~	Mixed use	Parkings of building complex
17	Cikokol			200		Mixed use	Parkings of Tang City Mall
18	Ciledug				300~	Mixed use	Parkings of Ciledug plaza
19	BSD				300~	Mixed use	Parkings of ITC BSD and others
20	Bintaro				300~	Suburban	New development along the corridor
21	Ciputat				200	Mixed use	Parkings of Ps.Ciputat
22	Cibubur				300~	Suburban	New development along the corridor
23	Jatijajar				200	Suburban	New development along the corridor
24	Depok Baru				300~	Bus terminal	New development adjacent to bus terminal

Source: Study Team

Note: pcu: passenger car unit, Required space is set: 500 pcu (Existing), 2,500 pcu (2014), 5,000 pcu or more (2020)

Table 8.7 Options for the P&R Facility Management and Operation

Item	Government	Private	PP Partnership
Site Characteristic	• Bus Terminals • Gov't Parkings (Off-/On-street) • Public Vacant Lands, Public Parks, Gov't Buildings, Public Facilities,	• Commercial Complexes • Private Lands/Buildings • Private Facilities • Private Residential Area	• Public and private lands and buildings
Planning	• Transport Agency plan the site, capacity, and type of service • BAPPEDA prepare DED (in some cases handled by Dinas PU	• Private company in coordination with the public transport/local transport agency	•Gov't plan the site, and private company construct the parking •Company plan the site and construct and Gov't support the land and permit. •Gov't plan the site and construct, but involve company to do O&M
Construction	• Transportation Agency construct the buildings and supporting facilities	• Company	
Operation/ Maintenance	• Parking Management Unit under Transportation Agency	• Company	• Company
Investment	• Gov't Revenue and Expenditure Budget (APBD)	• Private Investment	• Private Investment
Gov't Revenue	• To City/District Gov't Cash as a Parking Levy Revenue	• Indirectly via tax from business Revenue, land ownership and land utilization	• Using contract agreement between Gov't and Private Company
Parking Charge	• Gov't decide using Local Regulation	• Company and following the provision provided by Gov't	• Company and following the provision provided by Gov't
Suggested Site Type	• Bus Terminal P&R • Where there's gov't land/building	• Mixed-use P&R • Suburban P&R • High demand area	• Mixed-use P&R • Suburban P&R

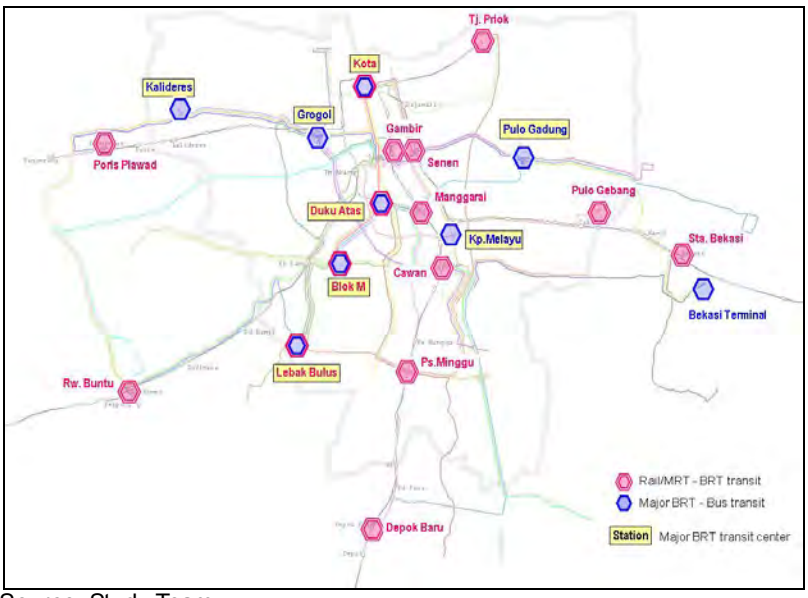
Source: Study Team

4) Integrated/Multimodal Terminals

Integrated/Multimodal Terminal is the place where transfer/transit between deferent transport mode (e.g. train to bus). Terminals with traffic functions and urban functions can also be integrated terminals. Terminals integrated with MRT/railway and busway is the highest potential in terms of urban development/Transit Oriented Development (TOD).

Based on the proposed BRT network and other public transport network such as MRT and Jabodetabek Railway, 20 site locations are identified for the development of future integrated / multimodal terminal.

Figure 8.13 Proposed Location of Integrated/Multimodal Termminals



Source: Study Team

Table 8.8 Scale of Proposed Integrated/Multimodal Terminal Development

Integrated/Multimodal Terminals

Bus Shelter		Existing			Plan				Ordinary Bus Frequency / day				Ordinary Bus Pax (assumption)	remarks
		Railway (station)	BRT (shelter)	Bus Terminal	MRT	BRT Route (# of route)	BRT Route (# of T'ml route)	Intermediate (# of route)	Patas	Reg. Med.	Small	total		
1	**Kota**	✔	✔	✔	NW (2020)	**1 → 5**	**1 → 2**	-	0	349	3,531	3,880	24,635	BRT 'n railway station: neighboring
2	**Dukuh Atas 1&2**	✔	✔		NW (2016)	**3 → 7**	**2 → 5**	-	-	-	-	0		BRT 'n Surirman station: 300m PPP proposal, Airport link is planned
3	**Blok M**		✔	✔	NW (2016)	**1 → 5**	**1 → 3**	3	479	3,845	64	4,388	91,590	Many medium+small buses stop on the road
4	**Lebak Bulus**	✔	✔	✔	NW (2016)	**1 → 5**	**1 → 4**	1	73 (88)	1,003 (113)	2,427 (468)	4,172	41,625	*( ) number is outside of BT, along the street.
5	Tj. Priok	✔	✔	✔		1 → 2	1 → 2	3	579	1,090	2,710	4,379	52,720	BRT 'n railway station: neighboring
6	Gambir	✔	✔			3 → 4	0 → 0	-	-	-	-	0		BRT 'n railway station: 150m
7	Senen	✔	✔	✔		3 → 3	0 → 0	-	242	1,683	1,721	3,646	49,525	BRT 'n railway station: neighboring
8	Manggarai	✔	✔	✔		3 → 4	0 → 0	-	-	-	-	0		BRT 'n railway station: 350m Airport link railway is planned
9	Pasar Minggu	✔	✔	✔		0 → 1	0 → 0	-	49 (22)	68 (1,574)	4,025 (3,702)	9,440	73,605	*( ) number is outside of BT, along the street.
10	Pulo Gebang		under construction		EW (2020)	0 → 1	0 → 1	-	-	-	-	0		1km to planned Cakung station
11	Kp.Melayu		✔	✔		1 → 3	2 → 1	1	24	1,412	4,207	5,643	49,995	
12	Sta.Bekasi	✔				0 → 3	0 → 3	2	-	-	-	0		
13	Terminal Bekasi			✔		0 → 2	0 → 2	2	440	91 (39)	2,923 (1,032)	4,525	35,575	*( ) number is outside of BT, along the street.
14	**Pulo Gadung**	✔	✔	✔		2 → 5	2 → 4	1	164	901	4,156	5,221	43,720	
15	**Grogol**	✔	✔	✔		3 → 5	0 → 0	-	133 (88)	244 (1,278)	358 (878)	2,979	43,250	BRT 'n railway station: 800m *( ) number is outside of BT, along the street.
16	Cawan	✔	✔			3 → 5		-	-	-	-			BRT is on the flyover
17	Poris Plawad	✔		✔	EW (2020)	0 → 1	0 → 1	-	430	170	1,710	2,310	24,850	BRT is opposite side of the road (200m) Shelter Installation completed at P.Plawad
18	Rw.Buntu	✔				0 → 3	0 → 0	2	-	-	-	0		
19	Depok Baru	✔		✔		0 → 2	0 → 2	2	128	201	8,715	9,044	51,435	BRT 'n railway station: 250m
20	**Kalideres**		✔	✔		2 → 3	1 → 1	-	238	1,016	1,390	2,644	34,410	BRT 'n railway station: 250m

Source: Study Team

9 INSTITUTIONAL DEVELOPMENT

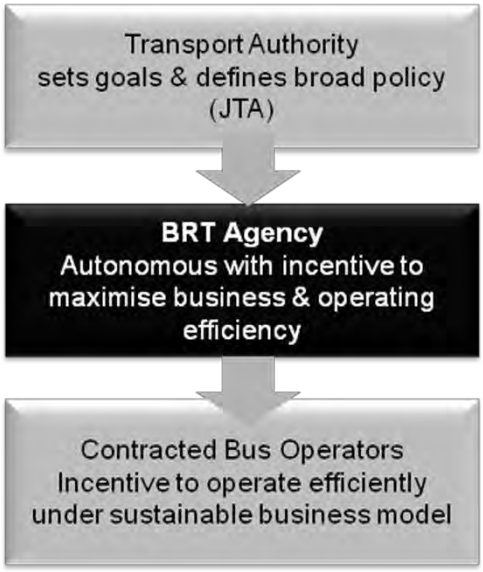
1) Establishment of TransJabodetabek (Regional BRT Agency)

(1) Proposed Functions and Organizations

A regional BRT agency, TransJabodetabek, is a vital factor to expedite and improve public bus transport services across the Jabodetabek region. The BRT agency will be under the structure of the JTA, yet it will be established as autonomous statutory agency to plan, manage and control the delivery of bus services across the Jabodetabek BRT network.

The JTA sets the Strategic Urban Transport Policy (SUTP) across the region and execute programs and projects in the Jabodetabek Transportation Master Plan. The strategic policy guides TransJabodetabek in it operation and to determine "strategic network development plan" and business operation plan. TransJabodetabek will manage and enforce bus operator contracts and contracted bus operators will hire drivers and run buses, so TransJabodetabek itself will not directly carry out bus operations.

Figure 9.1 Conceptual Framework of BRT Management and Operation



Source: JAPTraPIS

TransJabodetabek as the system manager of the BRT system (including intermediate and connected feeder routes) functions as a business with the following responsibilities:

The Outline of TransJabodetabek:

- As BRT agency, it is to plan, manage, control and deliver services, including intermediate and connected feeder bus routes
- major stakes are owned by the central and/or local governments in the framework of BUMD or BUMN
- Commercially operated in a business-like manner. (Business oriented but not exclusively profit oriented)
- Operating across district/city and provincial boundaries
- Autonomous agency with incentive to maximize business and operating efficiency
- No operation loss-compensating subsidy, while a "user-subsidy" can exist in a commercial operation as it recognizes the commercial cost of carrying the passenger[1]

The Role of TransJabodetabek:

- Plan route network development
- Generate patronage and build revenue
- Ensure financial performance

[1] A "user-subsidy" where the difference between a commercial fare (the total cost of operating the service / number of passengers) and the fare determined by social policy shall be compensated.

- Manage system efficiency and costs
- Manage fare collection and fare policy
- Manage and enforce bus operator contracts

Table 9.1 summarizes the functions of the JTA, TransJabodetabek and the central and local governments.

Table 9.1 Functions of the JTA, TransJabodetabek and Governments

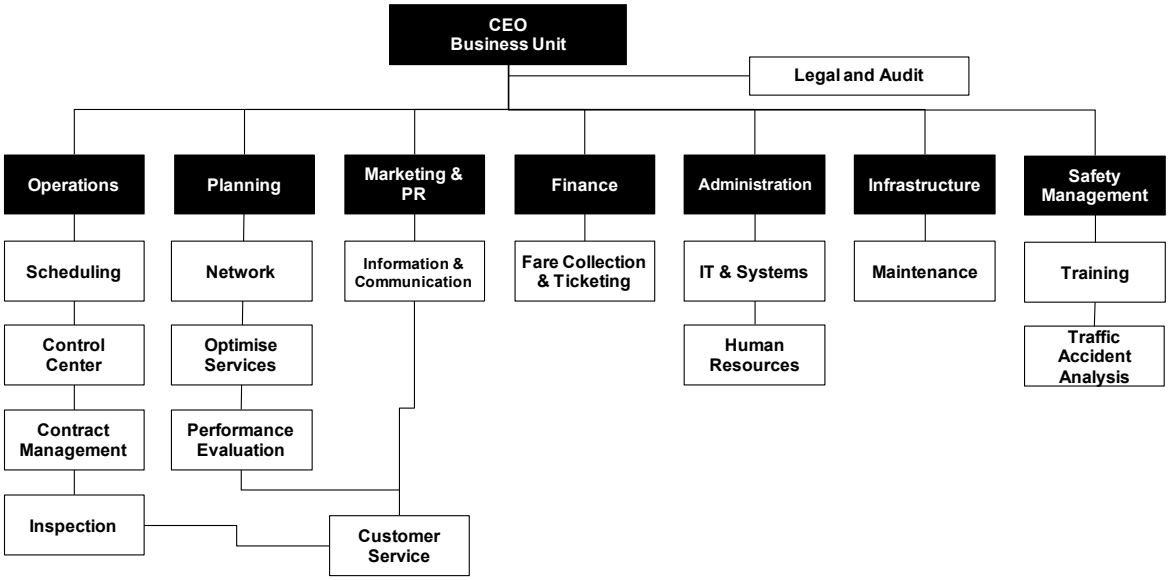
Sector	Sub-sector	Bus Rapid Transit (BRT)		General Bus Transport		
		T/J Busway	Intermediate Bus connecting Busway	Inter-city between Provinces Bus Service in Jabodetabek	Inter-city Bus Service in Province	Intra-city Bus Service (General)
Planning	Strategic transport & urban development planning	JTA	JTA	JTA	JTA	JTA
	Planning route networks and development services	**T/J**	**T/J**	**T/J**	L/G	L/G
	Strategic service planning, bus/railway integration	JTA	JTA	JTA	JTA	L/G
	Planning Public Transport Infrastructure Development	JTA	JTA	JTA	JTA	L/G
Regulation	License and permit approval	JTA	JTA	DGLT	L/G	L/G
	Administrative & Technical Standards, Norms, Minimum Service Standards and Guidelines	**T/J**	**T/J**	**T/J**	DGLT	DGLT
	Fare policy	JTA	JTA	JTA	JTA	JTA
Finance	Financial Arrangement for Business Operation (facilitate loan, subsidy)	JTA	-	-	-	-
	Financing bus fleet procurement	JTA	OPR	L/G	L/G	L/G
Fare/ Marketing	Development of Fare Collection System (ticketing system)	JTA	JTA	DGLT	L/G (Provincial Govt)	L/G (District/City)
	Marketing/Promoting Public Transportation Services	**T/J**	**T/J**	OPR	OPR	OPR
Infrastructure Development	Financial planning, budgeting and procurement (Procurement can be delegated to L/G and/or T/J)	JTA	JTA	JTA	JTA	L/G
	Infrastructure Development (Construction) (Construction can be delegated to L/G and/or T/J)	C/G L/G	C/G L/G	L/G	L/G	L/G
	Construction Supervision & Technical Inspection (Supervision and inspection can be delegated to L/G and/or T/J)	C/G L/G	C/G L/G	L/G	L/G	L/G
Asset Management	Land	L/G	L/G	L/G	L/G	L/G
	Base Infrastructure	L/G	L/G	L/G	L/G	L/G
	Upper Infrastructure (Facility) (bus terminal, bus station, etc)	**T/J**	**T/J**	L/G	L/G	L/G
	Fleets and Equipments	**T/J**	OPR	OPR	OPR	OPR
Contract	Procurement (contract with bus operator)	**T/J**	**T/J**	-	-	-
O&M	Operation and Maintenance of the Infrastructure constructed by JTA			L/G	L/G	L/G
	- truck (routine/periodic maintenance, rehabilitation), barrier, marking	**T/J**	-	-	-	-
	- bus station (access pedestrian bridge)	**T/J**	-	-	-	-
	- control center (intelligent transportation system)	**T/J**	-	-	-	-
	Operation and Maintenance/Management of Facilities and Equipments			L/G	L/G	L/G
	- Fleet maintenance	**T/J**	OPR	OPR	OPR	OPR
	- ITS (intelligent transportation system; bus location system, etc)	**T/J**	-	-	-	-
Business Operation	Business Operation	**T/J**	**T/J**	OPR	OPR	OPR
	- Fare collection	**T/J**	**T/J**	OPR	OPR	OPR
	- Revenue management (revenue reallocation)	**T/J**	**T/J**	-	-	-
	Fleet Operation: operating bus	OPR	OPR	OPR	OPR	OPR
Evaluation	Business Operation Performance Evaluation	JTA	**T/J**	DGLT	L/G (Provincial Govt)	L/G (District/City)
Law	Law Enforcement	Police	Police	Police	Police L/G	Police L/G

Source: JAPTraPIS
Note: TJ = TransJabodetabek = BRT Agency, C/G = Central Government, L/G = Local Government

Physical infrastructure development included in the Jabodetabek Transportation Master Plan will be financed through the JTA; yet, detailed engineering design, procurement of contractors, construction supervision will remain under the responsibilities of respective central and local government agencies, i.e. the JTA limits its function to planning and budget, budget allocation, monitoring and evaluation of public transport projects and operations. The JTA sets the strategic policy direction for TransJabodetabek through the development of the Operation Plan which in turn essentially becomes the business model.

A proposing structure of TransJabodetabek is similar to that of Transjakarta, but more emphases on corporate management and customer oriented operational management based on concrete and tangible business and management model of the BRT system.

Figure 9.2 Proposed Organizational Structure of TransJabodetabek



Source: JAPTraPIS

The business and management model of the BRT system, TransJabodetabek, underlines the sustainability and performance of the entire BRT operation and influences many of its design features. The business and management model includes 1) business-like approach to BRT management and operation, and 2) operational plan, and deeply interrelated to fair policy, user subsidy and general subsidy.

Commercially-oriented management defines a business-like operation that will survive by winning market share, growing revenue and managing costs efficiently. While the JTA develops the Operational Plan as part of the strategic urban transport policy, TransJabodetabek develops 1) operational efficiency, 2) revenue and marketing development plan, and 3) results-driven campaigns.

(2) Implementation Schedule

The schedule for establishing TransJabodetabek depends largely on the JTA establishment schedule expected in 2012. Once the JTA is established, it is expected to design the institutional structure and prepare necessary budget for 2013, so that TransJabodetabek will be established at the beginning of 2013.

Figure 9.3 Implementation Schedule of Establishing TransJabodetabek

Benchmark	Agency	2012	2013	2014	2015-20
Jabodetabek Transportation Authority (JTA) is established		▼			
PerPres of Jabodetabek Transportation M/P is ratified		▼			
PP for "Vehicles" and "Vehicle Inspection" are ratified		▼ Transition Period - 2016			
Other PP scheduled by the MOT are ratified		▼			
GHG Emission Action Plan Target					(2020)▼
TransJabodetabek (T/J)					
- Institutional Design of T/J	JTA	■■■			
- TransJakarta expansion/Bodetabek BRT service starts		■			
- TransJabodetabek established	T/J		▼		
- BRT with Feeder Bus Service starts	T/J	▼			
- Fare Integration (BRT Trunk & Feeder and Railway)	JTA	▼			

Source: JAPTraPIS

2) Reforming General Bus Management System

(1) Classified Contract System Concept

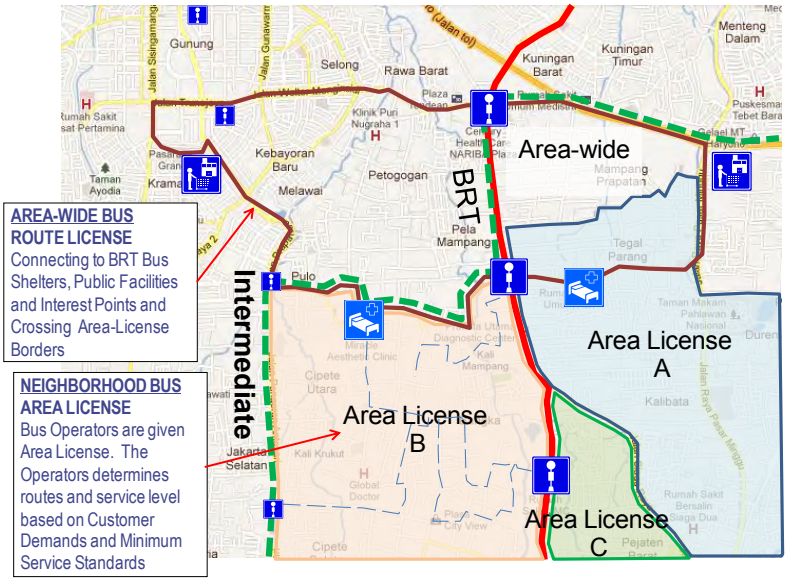
General bus services have largely lost their patronage due to poor service quality, of which some are attributable to their operation and management system. Four variable instruments for improving public transport service are 1) standardizing and enforcing minimum service standards, 2) rejuvenating bus fleet, 3) restructuring general bus license system, and 4) capacity development. Some considerable instruments to realize bus fleet rejuvenation are 1) to reform a periodic motor vehicle inspection along with workshop and automobile mechanic accreditation systems, 2) fleet-age restriction measure, 3) financial supports and incentives and improvements to the business model, and 4) strengthening law enforcement.

General bus operators, typically, are governed under a license or route permit system; however, this is a poor mechanism for the regulators to control bus operators since bus operators must carry the business risks. Presumable approaches in incorporating incumbent operators into the system network with services designated are:

- BRT trunk operations being the trunk route operation, with a high level of infrastructure;
- Intermediate bus routes, acting as cross-suburb routes and feeder to the BRT and fully integrated with BRT through fare integration, and connecting to BRT shelter platforms. Intermediate routes always overlap a section of BRT to allow a shelter transfer;
- Area routes operating under local government additional to the BRT network and not fare integrated (but can serve BRT); and
- Local feeder and community services also not fare integrated but serving local communities to provide local services and access to the BRT.

Figure 9.4 illustrates the service types on a map and Table 9.2 shows the comparison between the BRT/Intermediate routes along major routes, to local area wide service types designed to serve local communities. For the local area services, it may be possible to contract angkot services as feeders to the BRT service.

Figure 9.4 Concept of Bus Lisencing System for General Bus Services



Source: JAPTraPIS

Table 9.2 Concept of "Mixed Lisence" to "Classified Contract System"

	BRT	Intermediate	Area-wide	Neighborhood
Strategic Network Planning	JTA	JTA	L/G	L/G
Contract and Permit Approval	JTA	JTA	L/G	L/G
Performance-based Contract	√	√	No	No
- Form of License	-	-	Route	Area
Regulatory Authority	JTA	JTA	L/G	L/G
Fare Setting and Approval	JTA	JTA	L/G	L/G
Integrated Fare System (smart card, etc)	√	√	No	No
Infrastructure Development (Base)	JTA	JTA	L/G	L/G
Fleet Size	Large	Large	Mid	Small

Source: JAPTraPIS

(2) Managing Transition Process

The major focus during an operator rationalization program is the issue of compensation. Expectations of a "golden handshake" can distract from meaningful negotiations for a role of current operators in a new system Compensation should be the last area of discussions as the objective is to focus on industry reform and transitioning bus operators to a more viable business model, and set a more positive environment for change.

(3) Contracting Angkot as Feeder to the BRT System

There is a scope for local government to engage more closely with the TransJabodetabek, i.e. TransJabodetabek is to contract with Angkot to provide feeder services to the BRT. Instead of migrating operators into formal business, Angkot can be organized as formal feeder services to the BRT, thereby creating a business for displaced operators. Such a partnership utilizes the natural abilities of paratransit, Angkot, Ojek and Bajaj, to serve local communities Effectively, the smaller feeder operators will be organized at the 'macro' level of a defined scope of business and minimum standards to keep. Figure 9.5 shows the comparison between the traditional method of engaging with operators and this cooperative approach.

Figure 9.5 Comparison between Traditional Method and Cooperative Approach

Traditional / accepted methodology	Feeder bus partnership
▪ Migration /formalisation/ capacity building ▪ Similar to resettlement issue ▪ Forced/ heavy hand of regulation ▪ Lack of choice ▪ Compensation / entitlement ▪ Suspicion /Resistance ▪ Shareholding does not provide daily income	▪ Voluntary/ easy to adapt/ familiar ground ▪ Business opportunity (spreads benefit of BRT operation) ▪ Industry can organise itself ▪ Daily income ▪ More efficient routes ▪ Joint objective with BRT for successful outcome ▪ Equal partnership

Source: JAPTraPIS

(4) Implementation Schedule

Figure 9.6 shows the implementation schedule of bus service improvement instruments.

Figure 9.6 Implementation Schedule of Reforming General Bus Management System

Benchmark	Agency	2012	2013	2014	2015-20
Jabodetabek Transportation Authority (JTA) is established		▼			
PerPres of Jabodetabek Transportation M/P is ratified		▼			
PP for "Vehicles" and "Vehicle Inspection" are ratified		▼ Transition Period - 2016			
Other PP scheduled by the MOT are ratified		▼			
GHG Emission Action Plan Target					(2020)▼
Minimum Service Standards (SPM)					
- Formulation of SPM for BRT and General Bus Services	DGLT	■■			
- Transitional Period			Transition		
- Full Application of SPM	JTA/LG			▼	
Bus Fleets Rejuvenation					
- Institutional Design for Periodic Vehicle Inspection (PVI)	DGLT	■■			
- Fleet-age Restriction Measure	DGLT/LG	■■			
- Amendment of Relevant Traffic Regulations	DGLT/LG	■■			
- Transitional Period				Transition Period - 2018	
- Full Application of Rejuvenation Instrument	JTA/LG				(2019)▼
Restructure of General Bus Licensing System					
- Lay out New Bus Hierarchy System	JTA	■■			
- Reform Business Permit & Bus Route License System	JTA/DGLT	■	■		
- Amendment of Relevant Traffic Regulations	DGLT		■■		
- Transitional Period				Transition Period - 2018	
- Full Application of New Bus Service Structure	JTA/LG				(2019)▼
Capacity Development Program					
1. Capacity Building for JTA's Staff	JTA				
- Needs Assessment and Training Program Designing	JTA		■		
- Capacity Building Training Implementation	JTA		■		
2. Capacity Building for DisHubs' Staff	DGLT				
- Needs Assessment and Training Program Designing	DGLT		■		
- Capacity Building Training Implementation	DGLT/LG		■		

Source: JAPTraPIS

3) Regional Measures and Impact

The proposed BRT network traverses city boundaries improving transport links and spreading the benefits of greater access and connectivity across the region. The institutional regime of JTA and TransJabodetabek resolves the cross-border and political issues of operating the network across the regional boundaries.

The discussion below outlines the relationship of the network to each region in Bodetabek; and discusses Bogor as a specific case as it is geographically separated and more autonomous in planning its own transport within the city of Bogor.

Short term projects (2012) have concentrated on improvements to the BRT in DKI Jakarta to improve capacity. Route 2b is the only cross-border route in 2012 as an intermediate route from Kalideres to Poris Plawad and Tangerang City Mall. This route will initially not be fare integrated but serve as a feeder route to Kalideres.

It is necessary to have in place the JTA, TransJabodetabek and integrated ticketing, a distance-based fare, and e-ticketing before the longer cross border routes can operate. Prioritization of this institutional issue should be at the forefront of development. From 2014 additional routes are developed to the adjoining regions.

(1) Tangerang

In the 2014 network route 2b, 13a and 13b will operate into Tangerang with further routes established 2015 – 2020. While the integrated network operates only to east of the river at Tangerang, the opportunity exists for Kota Tangerang to develop local and intermediate routes to western suburbs to provide good access to the BRT trunk network.

(2) Bekasi

In 2014 Route 16 will operate cross-border to Harapan Indah linked directly to Ancol and Kota. Following this, BRT will be extended to Bekasi Central and Bekasi Bus Terminal, and to St. Klender Baru. Route 26 will be implemented as well as two intermediate routes (52 &54). By 2020 Route 9, 19 and 17 will operate with Intermediate Routes 51 and 53.

(3) Depok

Depok has a rail connection to Jakarta DKI, but after 2015 three BRT routes will be established, being BRT Route 28, 10, 18 to Jakarta and Intermediate Route 43 travelling west from Depok to Lebak Bulus.

(4) Bogor

Kota Bogor has made concerted efforts to upgrade public transport operating the TransPakuan bus service. It currently operates 30 buses on 3 bus routes, but suffers a range of problems through what is essentially a failure of the business model. A current plan is underway to upgrade bus services and reduce the number of Angkots by migrating them into formal bus services, however unless a sustainable business model exists, it is unlikely to gain the confidence of operators to agree to change the status quo.

The bus operators are contracted under a sustainable business model (that covers cost and profit) to provide services that meet set quality standards. The agency has a strong hand to control quality under the contract arrangement, and all services are financially supported. The strategy for Kota Bogor should be to develop BRT as a high quality mass transit option, capable of attracting passengers with a ‘more efficient and convenient than car’ service level.

Reforming and Rationalizing Angkot Operators: The rationalization and reduction of angkot in Bogor is a major concern, as to how to manage this undertaking. The options are to incorporate angkot operators into a more formal network, both as route operators and as feeders to the BRT trunk system.

Contracting Angkot as Feeders to the BRT System: This would be developed along the lines of a formal partnership with the agency where the angkot cooperatives are contracted to provide services that comply with minimum standards. It utilizes the natural abilities of angkot to serve local communities.

Transport Connection to Jakarta DKI: The private bus and coach services to Jakarta are not well connected to the Jakarta network because of regulation constraints and many operate illegally to meet demand. This issue should be formally addressed, so that connections to the wider network are improved. These private services although operated under commercial arrangements, are a vital part of the network.

10 EVALUATION OF MASTER PLAN

1) Impact on Fleet and Operation Subsidy

JAPTraPIS has developed a comprehensive Bus Operations Model (BOM) to forecast operational performance for 2014 and 2020 networks under different scenarios such as travel speed and fare setting.

The results show that the improved efficiency of a BRT system, particularly increasing average bus speeds, pays dividends in reducing operational costs. The passenger benefits of reducing travel time have not been factored into the model but could also contribute to improvements in patronage and revenue.

More specifically, the results imply the following:

- The proposed BRT system would improve financial performance to a great deal in comparison with the present TransJakarta business model. Even travel speed and fare sets at the present level, i.e. 20 kph and IDR 3,500, the aggregated financial deficits amount to $ 506.8 million. If bus fleet could be granted from the government like the TransJakarta business model, operation subsidy would not be required.
- To balance revenue and fleet and operation costs in 2014 at the present fare level, it is suggested to increase average travel speed on the full BRT routes from current 20 kph to over 25 kph.
- Since the year 2020 network is longer and wider and inclusive of less profitable routes rather than the year 2014 network, it is more difficult to keep financial balance without subsidy. To do it, it is suggested to run at 27 kph on the average with an increased fare level of IDR 4,250.

It is a big challenge to provide BRT service without subsidy. The scenario evaluation reveals that average bus speed is a critical factor in the sustainability of the TransJabodetabek business model and should mandate the design features of the busway and traffic priority system. Any loss of system speed will need to be directly compensated by government support (or fares will need to increase).

2) Impact on Road Space Utilization

Since DKI Jakarta started the BRT system in 2004, many disputes have occurred in relation to road space priority. The main point to criticize the BRT system in Jakarta from private car users is that TransJakarta exaggerated road traffic congestion due to its dedicated lanes although its road space utilization in terms of vehicular traffic is low.

With a wider and denser BRT network proposed in the master plan, increased ridership is anticipated under the year 2020 projection. For instance, 12 corridor sections are selected on the existing and future BRT corridors for a comparison of 2020 BRT ridership and car traffic volume between the “do-nothing” case and master plan case. As a result, in the master plan case all the corridor sections are anticipated more BRT ridership and less car traffic volume than those of the “do-nothing” case. V/C (volume/capacity) ratios of all sections decreased in master plan case. This is significant effect of the anticipated modal shift from private modes to public transport modes to be caused by the intensive development of MRT/BRT network and services.

In conclusion, the proposed BRT network expansion will not only serve for the public

transport demand but also enhance space utilization of both lanes for BRT and cars. Therefore, it is strongly suggested that central and local transport administrations be confident to promote the MRT/BRT development strategy in order to realize more efficient road space utilization towards a sustainable and balanced urban transport system.

3) Environmental and Social Considerations

(1) Major Environmental Considerations

Regarding the process of the Environmental Impact Assessment (EIA) for infrastructure projects, it is considered that the master plan projects are not exceeds the condition of EIA implementation. Because most of the master plan projects require road space adjustment for BRT corridors and park and ride facilities which utilize existing facilities, or, in case some terminal development projects need land acquisition, those necessary areas are almost 1 ha, that is less than the condition for EIA process of 2.5ha.

Besides, the most critical environmental impacts of the master plan projects is emission of Greenhouse Gas (GHG) mainly CO_2 and a number of noxious gases dangerous to human health and considered a cause of global warming and consequently climate change.

The Government of Indonesia has committed to reduce GHG emissions to 26% in 2020[1]. They estimate the target volume of emission reduction by transport sector to 38 Mt CO_2-equivalent. Of which emission reduction by public transport is estimated to 2.77 Mt CO_2-equivalent per year by construction of Mass Rapid Transport (MRT) in Jakarta. However, it doesn't include emission reduction by road-based public transport sector. Therefore, emission reduction of the master plan projects can be additional to the governmental commitment. As the result of estimation, emission reduction by the master plan projects are assumed more than 1Mt CO_2-equivalent from existing condition by master plan with propulsion system by diesel, CNG or electricity which are compliant with EURO standard.

(2) Major Social Considerations

The most critical considerations in social aspect are focused on the employment, and gender and disabled issues.

The master plan projects is expected to reduce the employment for restructured bus system, however, in parallel, it is expected to increase the employment for new BRT system. According to the estimation, the number of drivers and conductors in the master plan projects is estimated to be increased in 2020 because of increase of number of bus routes including BRT/general buses and increase of employment of security guards, fleet maintenance engineers, cleaning crews, and so on which are required to keep the security and comfort of the bus services.

In parallel, the drivers should be trained periodically to improve and keep high level of the driving manner, service and security mind and operation efficiency. And their contract system should be changed from piece work system to fixed salary according to the experience and no accident condition to increase their incentives.

Females and disabled persons are more vulnerable users of public space in general and this affects how they use public transport, because they are easy to be targeted for petty theft or sexual harassment, or faces physical constraints. A survey[2] results proved that

[1] Presidential Regulation No. 61, 2011 on Action Plan for National Greenhouse Gas Emission Reduction
[2] Public Transportation Passenger Interview Survey conducted by JAPTraPIS

females concern about security and comfort in vehicles and bus stop facilities, and males concern about service level of operation and terminal facilities. Therefore, the facilities should be designed considering the universal design for both females and disabled persons. In addition, security and comfort of the facilities should be kept in good condition.

4) External Assistance for Smooth Master Plan Implementation

The JAPTraPIS Master Plan intends to upgrade the existing BRT system in terms of service quality and network. External assistance need such as technical assistance and financial assistance is examined by the sub-components. As results, three (3) technical assistance sub-components and three (3) financial assistance sub-components are identified.

Table 10.1 Sub-Components of the BRT System Development

Sub-Component	Estimated Budget	Assistance Need		Organizational Relation with TransJabodetabek
		Technical	Financial	
Control Center and Bus Location System	$ 13.8 Million	✓	✓	Traffic Police for safety and enforcement
BRT Prioritized Traffic Management	(Negligible)	✓		LG Transportation Unit and Traffic Police
Ticketing System	$ 20.5 Million	✓	✓	Participating Bank(s)
BRT Fleet	$ 635.2 Million inclusive of Bodetabek fleet ($ 154.5 Million)		✓	JTA for budgeting
BRT Infrastructure	$ 284 Million			LG Public Works Unit

Source: JAPTraPIS

Provided packaging them into one project, the following implementation arrangement is proposed:

Project Title: ***Jabodetabek BRT System Development Project***

Project Objective: As part of an integrated metropolitan public transport system, the existing Jakarta BRT will be upgraded and expanded. It will be done by two new metropolitan organizations of JTA as a regulator-cum-financer and TransJabodetabek as an operator. The project aims at supporting an advanced BRT system development in the Jabodetabek region.

Executing Agency: JTA or TransJabodetabek

In the case of TransJabodetabek, it must be a state-owned enterprise. When considering internal loan repayment arrangement in Indonesia, JTA seems more suitable to act as EA.

Loan Amount: $ 192.8 million inclusive of project loan ($188.8 million) and associated technical service loan ($4.0 million). The project loan includes control center and bus location system ($ 13.8 million), ticketing system ($ 20.5 million) and BRT fleet ($ 154.5 million for serving Jakarta-Bodetabek connection and within the Bodetabek area only).

Combination of Project Loan (Foreign Loan) and Local Fund: The total project cost of the proposed BRT system development is $ 953.5 million. Local counter fund amounting to $ 764.7 million will be used for BRT infrastructure and part of BRT fleet. Thus, the project loan ($ 188.8 million) accounts for 20% in the overall project cost. The project loan

is not a dominant source but it is allocated for technology advancement and service expansion to the Bodetabek area.

Project Period: 5 years between 2014 and 2018

Project Risk: Both JTA and TransJabodetabek have not been established as of February 2012. DGLT/MOT may request this external assistance project. In that case, a project implementation mechanism must be duly scrutinized in the process of project appraisal prior to a loan agreement.

11 PREFEASIBILITY OF BRT EXTENSION TO TANGERANG CITY

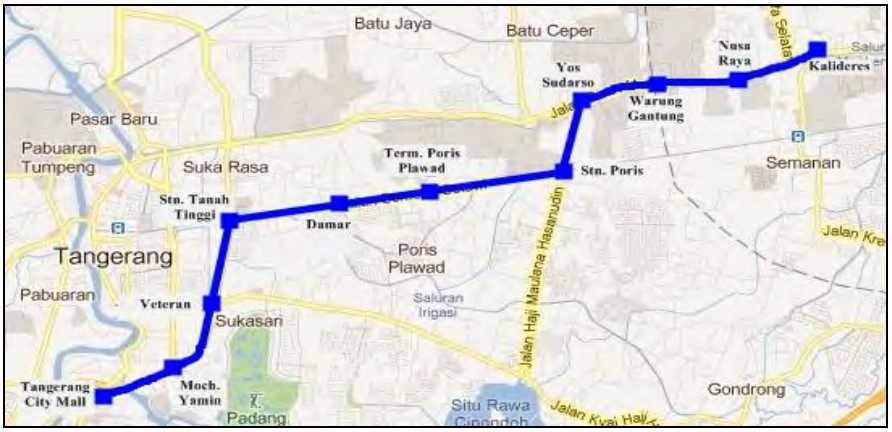
1) Introduction

The JAPTraPIS study has developed a comprehensive 2020 Full BRT network, supported by 'Intermediate BRT' routes and feeder bus service for JABODETABEK. The BRT network development is based on the JUTPI 2020 Transport Master Plan. The travel demand for the master plan showed high growth in the west of Jakarta. The existing public transport services in the west Jakarta and the existing BRT Corridor 3 terminate at Kalideres. Therefore, there is gap in the continuity of public transport in the north-west corridor of JABODETABEK. This limits the accessibility to the north-west of JABODETABEK due to inadequate public transport services to Kota Tangerang area. This high demand corridor from Kalideres to Kota Tangerang has been identified as the corridor for immediate action plan, and selected for the pre-feasibility study as a key component of JAPTraPIS 2020 Master Plan.

2) Corridor Alignment and Station Locations

The pre-feasibility study (PFS) corridor area is depicted below. Alternative alignments were initially considered and taking into account the 'Full BRT' JAPTraPIS 2020 Master Plan network were rejected in favour of the selected route. The proposed route is 10.6km long with 11 proposed stations, including two existing bus terminals (Kalideres & Poris Plawad), eight new stops/ stations and a final stop/ station at Tangerang City Mall.

Figure 11.1 Corridor Alignment and Station Locations



Source: JAPTraPIS

The key objective of the PFS was to prepare an assessment for a stepwise/ direct implementation of a 'Full BRT' system in the corridor as part of JAPTraPIS Action Plan. This involved review of existing work, analysis of JAPTraPIS recent survey data, travel demand forecasts, assessment of route suitability, proposals for station locations & terminal facilities, timing of its integration into the JABODETABEK BRT network, and its operational & financial performance. This has been detailed in the JAPTraPIS Master Plan.

3) Review of Studies, Survey Data Analysis and Scenario Developments

A review of existing and available studies showed that work to date to develop a road-based mass transit system in the corridor had been taken up, but the outcome is now outdated, and these studies had limited scope to be of use to this PFS. Analysis of JAPTraPIS survey (conducted at Kalideres and Poris Plawad Bus terminals in 2011) data, and travel demand forecast from JUTPI demand model for the corridor showed that a

trunk route bus operation is sustainable between Kalideres and Kota Tangerang. For detailed assessment of the corridor travel demand estimates were prepared for three scenarios. The scenarios under assessment provided the details of travel demand required for the 'full' integration of Kalideres-Kota Tangerang corridor into the JAPTraPIS Master Plan BRT network. The Scenarios studied are summarized next:

Scenario 1, 2014 Non-Integrated: 2014 demand forecast for the alignment from Tangerang City to Kalideres - Route 2b; as an 'Intermediate BRT' operating as a non-integrated service between the two stops, and passengers transfer to Route 2a (a new integrated route formed by integrating Jakarta BRT Routes 2 & 3 to operate as a continuous single route form Pulo Gadung to Kalideres via Harmoni) or other routes at Kalideres.

Scenario 2, 2014 Integrated: 2014 demand forecast – Alignment Tangerang City to Pulo Gadung, via Terminal Poris Plawad, Kalideres, Harmoni. Operated as a 'Full BRT' integrated service Route 2, formed by merging Route 2b(Kota Tangerang-Kalideres) and Route 2a (Kalideres-Harmoni-Pulo Gadung). It is also assumed that the remainder of the JAPTraPIS proposed 2014 network is in operation, with full fare integration.

Scenario 3, 2020 Integrated (Full Network): 2020 demand forecast – Corridor served by a 'Full BRT' Route 2, between Tangerang City Mall and Pulo Gadung via, Terminal Poris Plawad, Kalideres, Harmoni. It is also assumed that by then 2020 'Full BRT' network as proposed by JAPTraPIS would operational, with full fare integration and feeder services.

4) Corridor Demand Analysis and Operational Assessment

The demand estimates under Scenario-1, and assessment of existing infra-structure (availability of ten (10) buses with Kota Tangerang City Council for immediate deployment, available bus lane along Benteng Banten & Banten Betawi, terminal facilities and spare capacity at Poris Plawad Terminal) showed that an 'Intermediate BRT' system may start operation in the corridor, after some preliminary preparation as early as mid-2012. This required assessment of two additional scenarios: Scenario-1a & 1b for operational purposes. The full results of travel demand, operational requirements, and financial & operational assessment are summarized in the table below.

Table 11.1 Financial and Oprational Assessment

Description	Scn-1a 2012	Scn-1b 2013	Scn-1 2014	Scn-2 2015 20	Scn-3 2020 >
Total Daily Boardings - Passengers	**28,000**	**49,000**	**70,000**	**200,200**	**260,000**
Daily Maximum Line Load 1-way, Pax/Day/Direction	**8,960**	**15,680**	**22,400**	**61,000**	**79,500**
Peak Demand Pax/Hr/Direction; ***Maximum*** Peak Factor **10%**	**896**	**1,568**	**2,240**	**6,100**	**7,950**
Fleet Size (No of Buses) - Operated Including (**5%**) Contingency	**10**	**18**	**26**	**41**	**54**
Bus Capacity – Peak Crush Load ***(Change to Artic Bus after 2014)***	**85**	**85**	**85**	**150**	**150**
Max Peak Headways ~ Minutes	**5.7**	**3.3**	**2.3**	**1.5**	**1.1**
Inter-Peak Period Headways @ **1.5x** of Peak **Headways (mins)**	**8.5**	**4.9**	**3.4**	**2.2**	**1.7**
Daily Bus*km 2-Way Operated **18 Hours, 72% Load Factor**	**3,423**	**5,990**	**8,557**	**13,210**	**17,213**
Total Operating Cost & Fix Annual Operational Costs (IDR mill/pa)	12,691	22,695	32,699	89,805	117,997
Fleet Investment Cost per Year - **(IDR mill/ pa)**	-	2,297	4,594	36,049	47,479
Annual Revenue @ Fare = 2,500 IDR/Trip (IDR mill/pa)	19,250	33,688	48,125	137,638	178,750
Profit / Loss per Year - US$ ('000/pa)	**730**	**1,000**	**1,200**	**1,300**	**1,500**

Source: JAPTraPIS

The patronage forecast shows a strong demand in the corridor, with maximum demand at terminal stations, and at Poris Plawad Terminus. In the earlier years (before integrated operation) about 10-13 thousand pax are expected to transfer at Kalideres to other routes. Patronage estimate on the opening of service is based on the 2014 demand forecast, and

initial build of demand. It is expected to be 28,000 pax boardings (2-way) per day. The peak line volume is expected to be between Poris Plawad and Poris station, requiring peak headway of about six minutes, or about 11 buses per hour. The demand in the off-peak periods is also considerable, and would require headways to be 9 & 18 minutes respectively. The patronage would build up rapidly, and prior to the corridor integration into the full network, by end-2014/early 2015 the route operation would require peak and inter-peak frequencies to be 26 & 18 buses per hour.

The initial fleet of 10 buses would need to be augmented by eight buses per year after the start of the service, requiring a fleet of 26 buses to operate between Kalideres and Tangerang City Mall. After the integration of Rote 2a and 2b into Route 2, for through operation to Pulo Gadung, the high volume of patronage would require route to be served by large articulated buses operating at about 40 Artic-buses an hour in the peak periods.

The two (AM & PM) peak periods are estimated to last 7 of the 18 hours of daily operation, with inter peak demand (about 65% of peak) would also last for 7 hours. The remaining 4 hours of off-peak operation would need to operate at about ½ the frequency of peak period. This would achieve 72% daily load factor for comfortable operation (about 60% of all pax would get a seat for their journey). The average operating speed is assumed be not below 25kph for both fully integrated BRT and also during intermediate BRT operation initially in mix traffic with bus lane markings.

5) Financial Assessment and Sustainability

The financial analysis is based on operating cost, which includes: all fix costs of operation (identified and detailed on the Kota Tangerang Mass Transit Study), current fuel costs, including all taxes, and future fleet investment costs. Infrastructure costs are NOT included in the financial analysis. The fare is set at a flat rate of Rp. 2,500 per trip between Kalideres and Tangerang City Mall. In later years, during integrated operation the fare is assumed to be Rp. 500/km. The analysis shows revenue surplus form the opening year operation, could be as much as US$ 730 thousand per annum excluding investment costs for future bus fleet. The profit is estimated to increase with time as the patronage builds up.

6) Conclusion and Recommendations

The proposed Kota Tangerang – Kalideres corridor is a financially viable BRT corridor, and should be implemented without delay. The analysis shows that route profits are considerable and could sustain future investment costs of the required bus fleet for this corridor section only. However, the financial success of the system is dependent on patronage build up, which would require considerable planning for smooth operation, convenient and safe passenger boarding/alighting and cross platform transfer at Kalideres.

The operation of current mostly small buses (Angkot) need to be rationalized, and these should provide feeder services for the neighborhood to the trunk route BRT operation. In later years the high demand is completely dependent on fully integrated (fares, seamless & convenient transfer between routes, coordinate timetable etc) of JABODETABEK BRT network operation. The patronage estimates are robust and could only be realized if the bus headways are maintained (no delays), operating speed does not fall below 25kph, and the BRT buses have total priority in bus lane and Busway.

Longer term profitability is linked to the implementation of JAPTraPIS fully integrated network in its entirety, supported by intermediate BRT and feeder services.

12 CONCLUSION AND RECOMMENDATIONS

1) Conclusion

- The study area – JABODETABEK is the greater capital region of Indonesia with population of 28 million. In order to sustain functions and roles as a capital region, the current transport system of JABODETABEK needs to be upgraded to support varied social and economic activities.
- The current transport situation in the study area shows chronic traffic congestions due to delay of transport infrastructure development in comparison to the year-by-year increasing traffic demand. Particularly, the development of key urban transport network such as arterial roads and urban rail is very slow, while increase of car and motorcycle use is significant.
- A number of transport master plans formulated by local governments show the absence of consistency between central and local, and have no legal guaranty in its implementation. Therefore, the JUTPI is providing the supports to the government in updating and legalizing the urban transport master plan, and establishing the JTA for the implementation of the master plan.
- The comprehensive urban transport master plan revised by the JUTPI deployed the intensive public transport system development scenario which network has intensive investment focused on the development of rail and BRT system. This will promote a modal shift from cars and motorcycles to public transport and realize the reduction of loss caused by traffic congestions. In the JUTPI, it is estimated that the modal share of public transport will increase from 27% in 2010 to 34% in 2020. In order to transport this increasing public transport demand efficiently, the role of road-based public transport including BRT and general buses studied in the JAPTraPIS is very important and its significant development in accordance with the railway system development is necessary.
- The current busway operation as key system of road-based public transport is partly affected by road traffic conditions and obstructed in its high-speed and punctual operation in some sections. This causes the decrease of operational frequency and long waiting time for passengers. Furthermore, the increase of operational subsidy weight on the public finance of DKI Jakarta government. In this way, the current busway operation needs to be improved to the BRT standard with high-speed and high-frequency operation. Also the extension of the network to the surrounding commutable areas in the study area is desired.
- On the other hand, it is pointed out that the issues and problems of general bus services supplementing the key transport system of busway are identified as follows: low operational service level, low quality of bus vehicles by aging and inadequate maintenance, competition between different type of buses, unbalance of demand and supply, lack of law enforcement and so on.
- As previously described, in order to meet with the issues of road-based public transport system in the study area, the hierarchical and integrated bus service network is necessary to develop and a comprehensive master plan is needed formulated.

2) Recommendations

- The JAPTraPIS formulated the road-based public transport master plan for JABODETABEK. The master plan and implementation strategy targets to the year 2020 with intermediate year of 2014. The structure and main components of the master plan is described as follows and the outline and implementation schedule is summarized in Figure 12.1. Outline of the master plan projects are listed in the Appendix 2.
- **Integrated Public Transport Network and Services:** Development of future BRT network up to 2020 including improvement of the current busway and restructure of the supporting general bus service network are proposed. By 2020, 30 full BRT routes and 15 intermediate bus routes will be developed and the BRT network will transport 2.7 million passengers per day. The proposed BRT and railway network will meet with the increasing future traffic demand projected by JUTPI. In order to implement the proposed BRT network, 1,681 articulated buses and 277 single buses are to be newly procured by 2020.
- **Infrastructure Development:** In order to develop the proposed road-based public transport network with core network of BRT, the necessary development of related infrastructure up to 2020 is proposed with project scale and implementation schedule. They include the following components: i) BRT corridor development (31 projects), ii) bus location system and control center, iii) bus ticketing system, iv) Park & Ride facility (19 locations), v) integrated/multimodal terminal (20 locations) and vi) cycling and walking facilities.
- **Establishment of TransJabodetabek:** In order to develop and manage the proposed BRT route network, an establishment of TransJabodetabek as regional BRT management agency under JTA is proposed. The organization and functions, successful business model and implementation schedule of TransJabodetabek are identified.
- **Reforming General Bus Management System:** In order to upgrade the current general bus services more efficiently and more convenient and comfort with passengers, the following institutional reform on the bus management system and implementation schedule are proposed as follows: i) minimum service standards, ii) rejuvenation of bus fleets, iii) restructuring general bus licensing system, iv) institutional development and capacity building and v) other public transport.
- **Evaluation of the Master Plan:** Since JAPTraPIS is limited to road-based public transport in its study scope, it has not a right position to evaluate its impact in the overall metropolitan transport system. Instead, the proposed JAPTraPIS master plan was evaluated from different viewpoints such as government subsidy, road space utilization and environmental aspects. Those viewpoints are all related to sustainable transport development.
- **External Assistance for Master Implementation:** the necessity and project package of external assistance is also examined for smooth implementation of the JAPTraPIS Master Plan.
- **Formalization of the Master Plan:** It is strongly recommended the proposed JAPTraPIS Master Plan shall be formalized by the government as a part of the

Comprehensive Transport Master Plan revised by JUTPI and being formalized as the presidential policy in order to ensure its implementation by various related agencies and stakeholders.

Table 12.1 JAPTraPIS Master Plan and Implementation Schedule

Components	Implementation Period		Implementing Agency	Cost ($ mil.)
	2012-2014	2015-2020		
1. Integrated PT Network and Services				
A1. Full BRT Routes	15 routes	15 routes	TJ	-
A2. Intermediate Routes	8 route	7 routes	TJ	-
B1. Articulated Bus for full BRT Routes	574 buses	1,107 buses	TJ	563
B2. Single Bus for Intermediate Routes	0 buses	247 buses	TJ	72
2. Infrastructure Development				
A. BRT Corridor Development Projects	Project 1-12	Project 13-31	LG/TJ	284
B. Bus Location System and Control Center	1,100 buses	1,400 buses	TJ	13.8
C. Bus Ticketing System	260 stations	180 stations	TJ	20.5+a
D. Park & Ride Facility	9 locations	10 locations	LG/TJ	n.a.
E. Integrated/Multimodal Terminal	8 locations	12 locations	LG/TJ	n.a.
F. Cycling and Walking Facilities	→	→	LG	n.a.
3. Establishment of TransJabodetabek				
A. Establishment of JTA	2012	-	CG	-
B. Institutional design	2012	-	JTA	-
C. Establishment and operation	2013 →	(operation)	JTA	-
4. Reforming Bus Management System				
A. Minimum Service Standards	2014 →	→	DGLT/JTA/LG	n.a.
B. Rejuvenation of Bus Fleets	2012(amendment)	2019 →	DGLT/JTA/LG	n.a.
C. Restructuring General Bus Licensing	2013(amendment)	2019 →	DGLT/JTA/LG	n.a.
D. Institutional and Capacity Building	2013	-	DGLT/JTA/LG	TA

Source: JAPTraPIS
Note: JTA: JABODETABEK Transportation Agency, TJ: TransJabodetabek (Regional BRT Agency under JTA), CG: Central Government, LG: Local Government. TA: Technical Assistance (funded by Official Development Assistance)

<Pre-F/S on BRT Extension to Tangerang City>

- **Overview:** The high demand corridor from Kalideres to Kota Tangerang has been identified as the corridor for immediate action plan, and selected for the pre-feasibility study (PFS). The key objective of the PFS is to prepare an assessment for a stepwise implementation of a BRT system. This involved review of existing work, analysis of JAPTraPIS recent survey data, travel demand forecasts, assessment of route suitability, proposals for station locations & terminal facilities, timing of its integration into the JABODETABEK BRT network, and its operational & financial performance.
- **Corridor Alignment and Station Locations:** The proposed route is 10.6km long with 11 proposed stations, including two existing bus terminals (Kalideres & Poris Plawad), eight new stops/stations and a final station at Tangerang City Mall.
- **Corridor Demand Analysis and Operational Assessment:** The demand forecast and assessment of existing infrastructure in including available 10 bases, showed that an 'Intermediate BRT' system may start operation in the corridor, after some preliminary preparation as early as mid-2012.
- **Financial Assessment and Sustainability:** The result of financial analysis shows revenue surplus form the opening year operation, and could be as much as US$730 thousand per annum, prior to the requirement of investment cost future bus fleet. The profit is estimated to increase with time as the patronage build up. The financial success of the system is dependent on considerable planning for smooth operation, convenient and safe passenger boarding/ alighting and cross platform transfer at Kalideres.

Appendices

APPENDIX 1: Study Organization

Figure A1.1 Members of the Indonesian Side

STEERING COMMITTEE:

CHAIRPERSON : Director General of Land Transportation, Ministry of Transportation (MOT)
DEPUTY CHAIRPERSON: Director of Urban Transportation System Development (BSTP), DGLT, MOT
DEPUTY CHAIRPERSON: Secretary of DGLT, MOT
DEPUTY CHAIRPERSON: Director of Road Transportation and Traffic (LLAJ), DGLT, MOT
MEMBER:

1. Deputy Assistant of Transportation Infrastructure, Coordinating Ministry for Economic Affairs (CMEA)
2. Director of Transportation, BAPPENAS
3. Director of Urban and Rural, BAPPENAS
4. Director of Urban Planning, DG of Regional Development (BANGDA), Ministry of Home Affairs
5. Director of Building Techniques (Bina Teknik), DG of Bina Marga, Ministry of Public Works (PU)
6. Director of Metropolitan Urban, DG of Spatial Planning, Ministry of Public Works (PU)
7. Director of Traffic, Polda Metro Jaya
8. Director of Traffic, Polda West Jawa
9. Head of BAPPEDA, DKI Jakarta Province
10. Head of BAPPEDA, West Java Province
11. Head of BAPPEDA, Banten Province
12. Head of Transportation Agency, DKI Jakarta Province
13. Head of Transportation Agency, West Java Province
14. Head of Transportation Agency, Banten Province

TECHNICAL WORKING GROUP:

CHAIRPERSON : Director of BSTP, DGLT, MOT
SECRETARY : Subdirector of Urban Transportation Impact, BSTP, DGLT, MOT
MEMBER:

1. Head of Transportation Agency, DKI Jakarta Province
2. Head of Transportation Agency, Kota Bogor
3. Head of Transportation Agency, Kabupaten Bogor
4. Head of Transportation Agency, Kota Depok
5. Head of Transportation Agency, Kota Tangerang
6. Head of Transportation Agency, Kota Tangerang Selatan
7. Head of Transportation Agency, Kabupaten Tangerang
8. Head of Transportation Agency, Kota Bekasi
9. Head of Transportation Agency, Kabupaten Bekasi

SECTION:

1. Road Transportation Section:
   Leader: Subdirector of Road Transportation, BSTP, DGLT, MOT
   Member: Subdirector of Road Transportation, LLAJ, DGLT, MOT
   Head of Subagency of Bina Transport Business, Transportation Agency, DKI Jakarta Province
2. Transportation Network Section:
   Leader: Subdirector of Urban Transportation Network, BSTP, DGLT, MOT
   Member: Head of Subagency of Transportation System, Transportation Agency, West Java Province
   Subdirector of Policy and Strategy, Metropolitan Urban, DG of Spatial Planning, PU
3. Transportation Mode Integration Section:
   Leader: Subdirector of Urban Transportation Mode Integration, BSTP, DGLT, MOT
   Member: Subdirector of Land Transport, BAPPENAS
   Subdirector of Policy and Strategy, Bina Program, DG of Bina Marga, PU
4. Traffic Section:
   Leader: Subdirector of Urban Traffic, BSTP, DGLT, MOT
   Member: Head of Transportation Infrastructure Sector, CMEA
   Subdirector of Urban, Directorate of Urban, BAPPENAS
5. Transportation Impact Section:
   Leader: Subdirector of Urban Transportation Impact, BSTP, DGLT, MOT
   Member: Head of Subagency of Land Transportation, Transportation Agency, Banten Province
   Subdirector, Directorate of Urban Planning, DG of BANGDA, Ministry of Home Affairs

COUNTERPART TEAM: (Coordinator and Staff of BSTP/DGLT)

1. Transportation Network
2. Transportation Mode Integration
3. Road Transportation
4. Traffic
5. Transportation Impact

Figure A1.2 Members of the Japanese Side

JICA Indonesia Office	
Mr. MATSUNAGA Akira	Senior Representative, JICA Indonesia Office
Mr. HIGUCHI Hajime	Representative, JICA Indonesia Office
JICA Study Team	
Dr. MASUJIMA Tetsuji	Team Leader/Public Transportation Planning
Mr. KUMAZAWA Ken	Transportation Planning/Financial Analysis
Mr. Mazhar IQBAL	Bus Operation Planning/Financial Planning
Mr. ABE Osamu	Institution/Management
Mr. IRIE Tetsushi	Public Transportation Facility Planning
Dr. Kov MONYRATH	Bus Demand Analysis
Ms. SAKAI Yuko	Environmental and Social Consideration
Mr. KOMORI Masaru	Transportation Survey and Analysis
Mr. Frits OLYSLAGERS	Busway Planning
Mr. IZUMI Sadatoshi	Bus Operation Information System
Dr. OKAMURA Makoto	Project Coordination/Training Program

APPENDIX 2 : List of JAPTraPIS Master Plan Projects

Table A2.1 List of JAPTraPIS Master Plan Projects

Project		Cost ('000 US$)	Schedule			Implementing Agencies
			2012-2013	2013-2014	2015-2020	
Integrated PT Network and Services						
P1. ・ Bank Indonesia to Senen two way BRT ・ Relocate Gambir 2 shelter ・ Bank Indonesia ・ Relocate Balaikota shelter	Implement Route 1, 2a, 6, 7, 14 L=30m, W=5m L=120m, W=5m, and footpath (20mx2.5m) L=60m, W=5m	2,077	○			TJ, DKI Jakarta
P2. ・ Pessing shelter ・ New shelter D. Atas 1 ・ D. Atas pedestrian underpath ・ D. Atas escalator ・ D. Atas 2 ・ Stasiun Cawan pedestrian improvement	L=60m, W=5m L=60m, W=5m L=40m, W=3.5m, H=2.5m L=60m, W=5m L=32m, W=2.5m	1,084	○			TJ, DKI Jakarta
P3. ・ Busway track (Jl.Mattraman and Bekasi) ・ Mattraman link new transfer station ・ D.Atas area traffic modification ・ Blok M terminal upgrade ・ Blok M pedestrian deck	Implement Route 3, 5, 11, 16a L=60m, W=5m L=30m, W=10m L=35m, W=180m L=400m, W=5m	5,482	○			TJ, DKI Jakarta
P4. ・ Kalideres shelter improvement	L-40m, W=8m Implement Route 2b, 25	175	○			TJ, DKI Jakarta
P5. ・ Kp. Melayu shelter modification	L=40m, W=5m (2 unit) Implement Route 4	218	○			TJ, DKI Jakarta
P6. ・ Corridor 1,2&3 upgrading (track) ・ Corridor 1,2&3 upgrading (shelter ・ Corridor 1,2&3 upgrading (bridge floor)	L=34.9km 55 shelters (L=45m, W=5m each) 40 bridged (400m^2 each)	17,917	○	○		TJ, DKI Jakarta
P7. ・ Pluit to Tj. Priok	Implement Route 12	13,907		○		TJ, DKI Jakarta
P8. ・ Implement Intermediate	Implement Intermediate Route 40, 44, 45, 46, 48	2,981		○		TJ, DKI Jakarta, Tangerang District

P9. ・ Harapan Indah extension	Implement Route 16	12,799		○		TJ, DKI Jakarta, Bekasi City
P10. ・ Corridor 11 extension to Bekasi terminal ・ Imlement Intermediate	Implement Route 26 Implement Intermediate Route 47, 52, 54	15,904		○		TJ, DKI Jakarta, Bekasi City
P11. ・ Extension Tangerang	Implement Route 13a+ 13b, 2 (after 2015)	13,045		○	○	TJ, DKI Jakarta, Tangerang City
P12. ・ Tentarapelajar link	Implement Route 15	4,731		○		TJ, DKI Jakarta
P13. ・ Casablanca, Tn.Abang to Kp.Melayu	Implement Route 27	7,108			○	TJ, DKI Jakarta
P14. ・ Kyai Maja link to Kuningan		2,739			○	TJ, DKI Jakarta
P15. ・ Ciputat extension ・ Implement Intermediate	Implement Route 23 Implement Intermediate Route 41, 42	8,113			○	TJ, DKI Jakarta, Tangerang Selatan City, Depok City
P16. ・ BRT Tol. Serpong	Implement Route 24	8,294			○	TJ, DKI Jakarta, Tangerang Selatan City
P17. ・ Ciledug link and Cililitan link	Implement Route 8, 22	16,218			○	TJ, DKI Jakarta, Tangerang City
P18. ・ Develop Cawang UKI as main Transfer shelter	L=140m, W=5m	3,440			○	TJ, DKI Jakarta
P19. ・ Kalimalang Corridor ・ Implement Intermediate	Implement Route 9 Implement Intermediate Route 49	10,022			○	TJ, DKI Jakarta, Bekasi City
P20. ・ Jl. Tol Letnan Haryono to Manggarai		2,962			○	TJ, DKI Jakarta
P21. ・ Cibubur to Cawang via Toll Road	Implement Route 19	13,933			○	TJ, DKI Jakarta, Bogor District
P22. ・ Depok Baru to Toll link ・ Implement Intermediate	Implement Route 10 Implement Intermediate Route 43, 50, 51	8,851			○	TJ, DKI Jakarta, Depok City, Bekasi City, Bogor District

P23. ・ Jl. Raden Ajeng Kartini	Implement Route 21	8,861			○	TJ, DKI Jakarta
P24. ・ Sukamajo to Gedung	Implement Route 18	15,876			○	TJ, DKI Jakarta, Depok City
P25. ・ Depok Baru to Toll. MH Haryonoto	Implement Route 10	17,189			○	TJ, DKI Jakarta, Depok City
P26. ・ Tangerang to BSD	Implement Route 13	23,260			○	TJ, Tangerang City, Tangerang Selatan City
P27. ・ BSD to Harmoni via Kbn.Jeruk Toll Link	Implement Route 30	6,849			○	TJ, DKI Jakarta, Tangerang City, Tangerang Selatan City
P28. ・ BSD to Bank Indonesia via Tn.Abang new Toll link	Implement Route 29	4,273			○	TJ, DKI Jakarta, Tangerang Selatan City
P29. ・ Bekasi station to Setu ・ Implement Intermediate	Implement Route 17 Implement Intermediate Route 53	14,067			○	TJ, Bekasi City, Bogor District
P30. ・ Pulo Gadung to Bumi Anggrek	Implement Route 20	13,907			○	TJ, Bekasi City Bekasi District
P31. ・ Bogor Extension	Implement Route 31	3,077			○	TJ, Bogor City, Bogor District
Articulated Bus for Full BRT Routes	574 Buses	192,300	○	○		TJ
Articulated Bus for Full BRT Routes	1,107 Buses	370,800			○	TJ
Single Bus for intermediate Routes	277 Buses	72,000			○	TJ

Project		Cost ('000 US$)	Schedule			Implementing Agencies
			2012-2013	2013-2014	2015-2020	
Infrastructure Development						
BRT Location System and Control Center ・ Equipment in Bus ・ LED indicator inside Bus ・ Radio System ・ Information Monitor at Bus Station ・ Monitor at Control Center ・ PC sets ・ System Development and Server	 1,100 Sets 1,100 Sets 1,100 Sets 260 Sets 20 Sets 30 Sets	7,289	○	○		TJ
BRT Location System and Control Center ・ Equipment in Bus ・ LED indicator inside Bus ・ Radio System ・ Information Monitor at Bus Station	 1,400 Sets 1,400 Sets 1,400 Sets 180 Sets	6,500			○	TJ
Bus Ticketing System ・ Automatic Gate at Shelter (2 gates/ shelter) ・ Sales Terminal at Shelter ・ System Development and Server ・ Handy Terminal in Intermediate Bus ・ Software Development for Intermediate Bus ・ Wireless LAN Equipment and Server for Intermediate Bus	 520 sets 260 sets 160 sets	16,280	○	○		TJ
Bus Ticketing System ・ Automatic Gate at Shelter (2 gates/ shelter) ・ Sales Terminal at Shelter ・ Handy Terminal in Intermediate Bus	 360 sets 180 sets 120 sets	4,200			○	TJ
Park & Ride Facility ・ Pinang Ranti ・ Pulo Gebang ・ Harapan Indah	Space: 100 100 300~	n.a.	○			TJ, DKI Jakarta, Bekasi City

Park & Ride Facility ・ Pluit ・ Tj.Priok ・ Ancol ・ Bekasi ・ Mergahayu ・ Cikokor	Space: 200 200 200 300~ 300~ 200	n.a.		○		TJ, DKI Jakarta, Bekasi City, Tangerang City
Park & Ride Facility ・ Telukpucung ・ Setu ・ Setos ・ Ciledug ・ BSD ・ Bintaro ・ Ciputat ・ Cibubur ・ Jatijajar ・ Depok Baru	Space: 300~ 300~ 300~ 300~ 300~ 300~ 200 300~ 200 300~	n.a.			○	TJ, Bekasi District, Bekasi City, Tangerang City, Tangerang Selatang City, Bogor District, Depok City,
Integrated/ Multimodal Terminal ・ Kota ・ Dukuh Atas 1&2 ・ Blok M ・ Lebak Bulus ・ Pulo Gebang ・ Pulo Gadung ・ Grogol ・ Kalideres		n.a.	○	○		TJ, DKI Jakarta
Integrated/ Multimodal Terminal ・ Tj. Priok ・ Gambir ・ Senen ・ Manggarai ・ Pasar Minggu ・ Kp. Melayu ・ Station Bekasi ・ Terminal Bekasi ・ Cawan ・ Poris Plawad ・ Rw. Buntu ・ Depok Baru		n.a.			○	TJ, DKI Jakarta, Bekasi City, Tangerang City, Tangerang Selatang City, Depok City
Cycle and Walking Facilities		n.a.	○	○	○	All Local Governments

Project		Cost ('000 US$)	Schedule			Implementing Agencies
			2012-2013	2013-2014	2015-2020	
Establishment of Trans Jabodetabek						
Establishment of JTA		n.a.	○			Central Government
Institutional Design		n.a.	○			JTA
Establishment and Operation		n.a.		○		JTA

Project		Cost ('000 US$)	Schedule			Implementing Agencies
			2012-2013	2013-2014	2015-2020	
Reforming Bus Management System						
Minimum Service Standards		n.a.		○	○	DGLT, JTA, All Local Governments
Rejuvenation of Bus Fleets		n.a.	○	○	○	DGLT, JTA, All Local Governments
Restructuring General Bus Licensing		n.a.		○	○	DGLT, JTA, All Local Governments
Institutional and Capacity Building		TA		○		DGLT, JTA, All Local Governments

Note: JTA: JABODETABEK Transportation Agency, TJ: TransJabodetabek (Regional BRT Agency under JTA), TA: Technical Assistance (funded by Official Development Assistance)