
PUBLIC TRANSPORTATION DEVELOPMENT

10. PUBLIC TRANSPORTATION DEVELOPMENT

10.1 Rail-Based Transport Improvement

1) Potential for Improving the Existing Railway Network

The growth of urbanization tends to change urban lifestyles and people's values for goods and services. In this context, public transportation services should satisfy various types of demands in the city. This Study proposes the improvement of the existing railway network to attract people who currently use private modes of transportation. The improvement of existing railway lines and the construction of new MRT lines will significantly increase passenger capacity and service coverage.

Service coverage was partly analyzed by measuring the distances of train stations to the commuting population. Populations covered by existing railway stations within 350m (i.e. preferred walking distance), 650m (i.e. average walking distance), and 2,000m (i.e. difficult walking distance) from a train station is summarized in Table 10.1.1 and illustrated in Figure 10.1.1. The analysis revealed that populations covered within a generally accepted walking distances (i.e. 350m to 650m) was quite small, while the coverage ratio of population covered within 2,000m was much greater, or about 40% in Surabaya, 29% in SMA, and 22% in GKS, excluding Kabupaten Bangkalan.

Furthermore, if the rail-based network system is developed as proposed later in this section, the ratio of population covered within 2,000m is expected to be even greater, or about 53% in Surabaya, 37% in SMA, and 28% in GKS, as shown in Table 10.1.1 and Figure 10.1.2. Coverage within 350m and 650m is expected to increase double or even more. The analysis implies that the railway will have greater potential to attract more passengers. The coverage of the rail-based transport network will expand further if people living as far as 2,000m from a station can be served by some kind of feeder transport.

Table 10.1.1 Population Coverage by Rail-Based Transport

[Existing: 2008]

(Unit: 1,000)

Area	Total Pop.	350 m		650 m		2000 m	
SURABAYA	2,764	56	2.02%	138	4.99%	1,088	39.38%
SMA 1)	5,854	99	1.69%	236	4.03%	1,692	28.91%
GKS 2)	8,355	107	1.28%	258	3.09%	1,874	22.43%

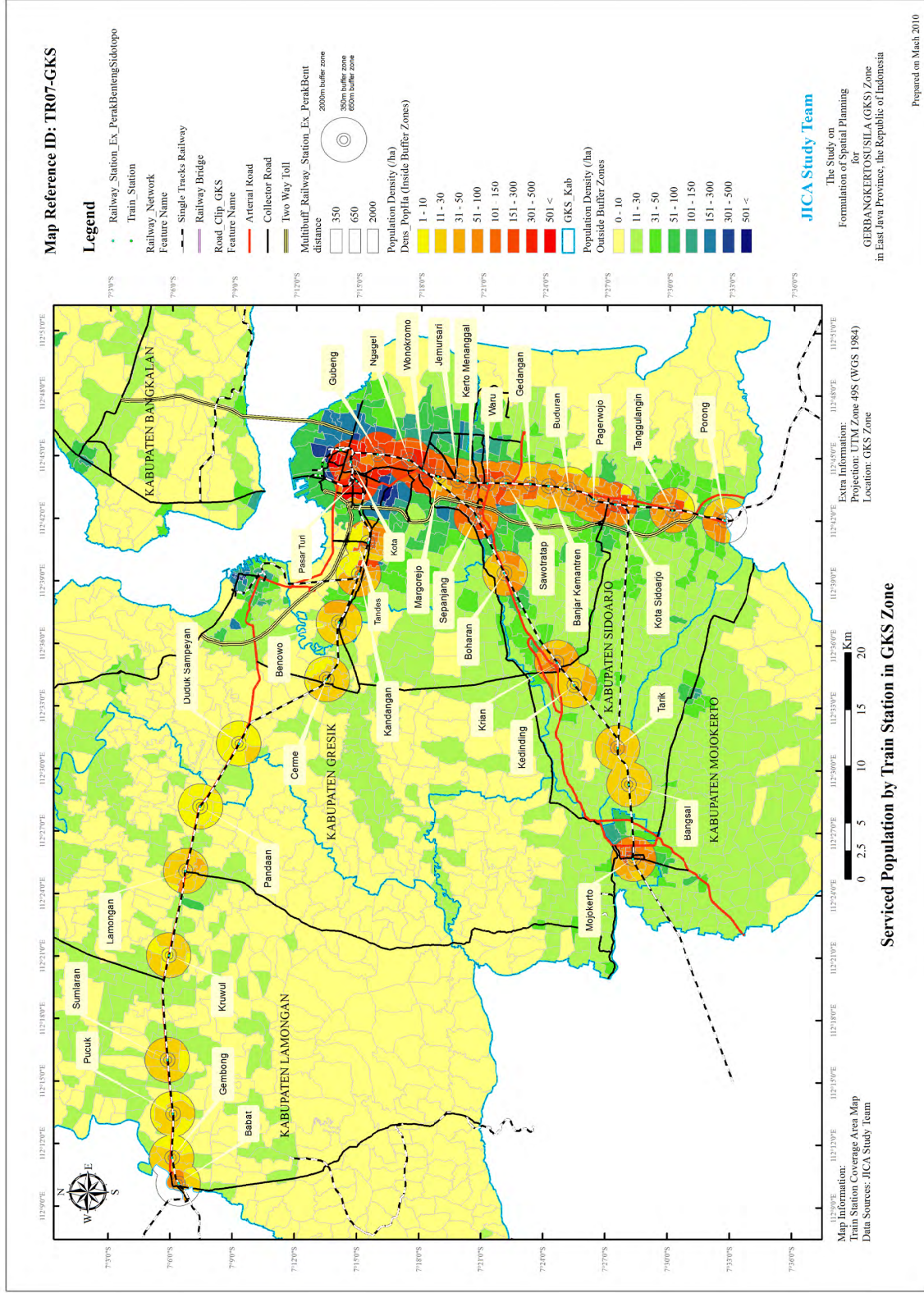
[Future: 2030]

Area	Total Pop.	350 m		650 m		2000 m	
SURABAYA	3,574	266	7.43%	577	16.14%	1,881	52.61%
SMA 1)	8,880	364	4.10%	807	9.08%	3,271	36.84%
GKS 2)	12,618	373	2.96%	829	6.57%	3,518	27.88%

Source: JICA Study Team

Notes: 1) SMA includes Kota Surabaya, Kab. Sidoarjo, and SWP II and SWP III of Kab. Gresik.

2) Kab. Bangkalan is not included in GKS total because there is no railway at present.



Source: JICA Study Team

Figure 10.1.1 Serviced Population by Train Station in GKS Zone (Existing: 2008)

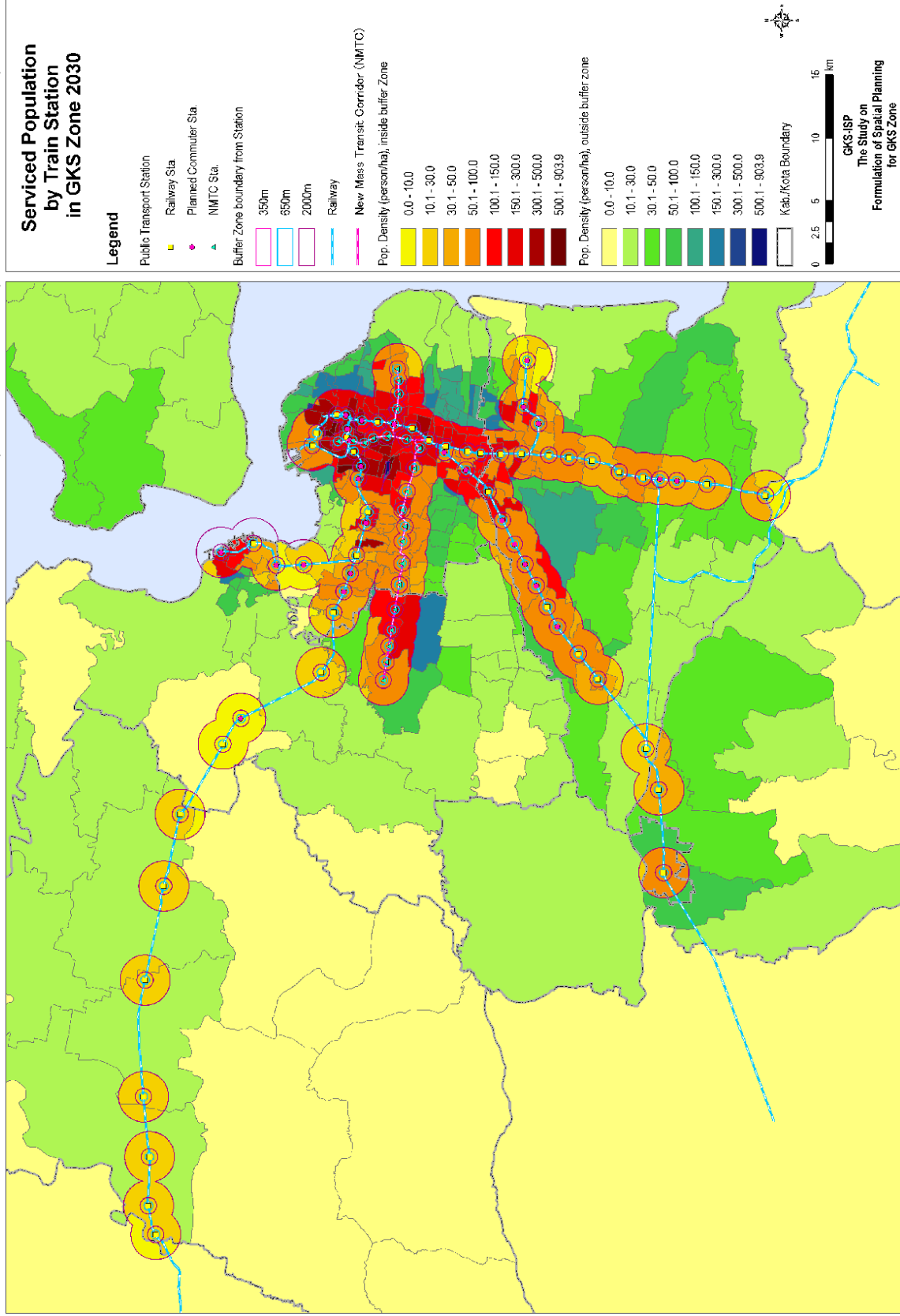


Figure 10.1.2 Serviced Population by Train Station in GKS Zone (Future: 2030)

(2) Improvement of the Commuter Rail

High service frequency, punctuality, speed, comfort, affordability, consistent fare system, and intermodality are the other essential elements that attract commuters, especially those who use private modes of transportation. New, comfortable, safe, and air-conditioned commuter trains should be ideally operated at intervals of at least 30 minutes to avoid excessive, or long, waiting periods. Improvement of the existing railway lines and construction of new MRT lines, as shown in the staged development (Figure 10.1.3, Figure 10.1.4, and Table 10.1.2), will substantially increase passenger capacity and service coverage.

Stage I (up to 2018): The existing PT. KA railway network and system should be improved to enhance traffic capacity and convenience of commuters, especially on the Surabaya–Sidoarjo corridor. In this stage, the following projects should be implemented:

- Track elevation (and double-tracking and electrification), to remove grade crossings on the most frequently used lines, i.e., between Kota/Sidotopo and Sidoarjo (and up to Tanggulangin) (W1). Renovation of Sidotopo as an elevated commuter station and placement of the train depot at-grade. Major stations, such as Gubeng and Wonokromo will remain at-grade due to the physical constraints posed by the railway tracks and the existing roads;
- Reactivation of the Tarik and Sidoarjo line, which is being constructed as an at-grade single track for long-haul railway service;
- Relocation of the Sidoarjo – Porong line to Sidoarjo – Tulangan – New Porong line (single track of which alignment is shown in W9) to skirt around the mud flow area. While the existing Porong station will be relocated, the line from Sidoarjo to Tanggulangin will be retained; Tanggulangin station will be renovated and remain as a commuter terminal station with two additional commuter shelters between Sidoarjo and Tanggulangin, i.e., Larangan (located close to the bus terminal) and Candi;
- Increase of the maximum running speed to 120 km/h by replacing manual spacing of trains with an automatic block system and signaling system that can space the trains three minutes apart with a better level of safety for New Kota/Sidotopo – Tanggulangin (W1). In particular, a centralized signal substation will be developed in Gubeng to manage all the lines in SMA, including Stages II and III;
- Modernization of the New Kota/Sidotopo–Sidoarjo–Tanggulangin (W1) train stations, as part of intermodality consisting of more appropriate track layouts and improvements of station facilities for better passenger services (e.g., information system, length, width and height of platforms, and track crossings).
- Construction of the elevated railway link between Waru and Juanda Airport (W2) which will enable the direct operation from Gubeng/Kota/Sidotopo stations using the renovated existing line (W1); and
- Purchase of a high-performance electrified self-propelled unit (EMU) for the regular “commuter” services on the New Kota/Sidotopo–Sidoarjo–Tanggulangin (W1) and Waru–Juanda (W2) lines.

The modernization of the infrastructure, improvement of operational conditions, along with

investments in modern, high-performance trains will improve regular “commuter” services in central SMA, especially between Surabaya and Sidoarjo/Juanda Airport. Significant travel time can be saved for passengers on this corridor. It should also be noted that, even after elevating the tracks between New Kota/Sidotopo – Tanggulangin (W1), the existing railway tracks will remain at-grade for freight train services. Though the impact of the freight train operation on the crossing road traffic may be minor, the existing freight railway track should also be elevated if it is concluded to be economically viable in a further study.

Stage II (up to 2020): After Stage I has been implemented, the commuter railway service development should be applied as soon as possible to other existing railway lines within 20km of Surabaya (i.e., SMA). Particularly, the direct railway line through Pasar Turi, New Kota, and Gubeng stations should be implemented by connecting the railway tracks near Kota station, to improve frequency and travel time. The following projects should be implemented at this stage:

- Double-track connection between Pasar Turi-New Kota-Gubeng, and Sidotopo–Gubeng stations (W4), to enable direct train operations between the northwest and south parts of Surabaya;
- Relocation of the existing Kota station to a New Kota station as a commuter shelter, and the operation of long-distance trains to/from Gubeng station. The Kota station area will be redeveloped, as illustrated in Figure 10.1.5;
- Double-tracking (and electrification and partial track elevation) of the existing railway in SMA, namely, between Surabaya and Krian (W3), Sumari (W5, to which the existing Bunder bus terminal is planned to be relocated), and Indoro (W6). For W6, in particular, the railway from Indro to Gresik, which is now used only for freight transport, will be revitalized for commuter train services;
- Modernization of the methods of managing train operations by replacing old signal substations with a centralized signal substation in Gubeng to manage all the lines in SMA, thereby improving performance and safety;
- Electrification of all lines (except for the Sidoarjo–Tarik section), to reduce route time, improve performance, reduce energy consumption, and improve equipment availability; and
- Enhancement of intermodality, continued modernization of existing train stations and train operation in the same manner as in Stage I.

With the completion of these projects, other railway services in East Java can also be improved including long-distance passenger and freight services in Java Island. On the other hand, the double-tracking project for the Java north trunk line connecting Semarang and Surabaya is soon to be implemented. For the double tracking of the Sumari (Duduksampeyan)–Pasar Turi section (W5), coordination between relevant agencies is required to ascertain which section should be elevated.

Stage III (up to 2030): In the final stage, the commuter railway service development should be extended to cover transportation requirements between major cities in GKS (i.e. within 40km of Surabaya). In addition, since the current railway runs peripheral to the CBD, a mass

rapid transit (MRT) system would be ideal to serve central Surabaya, running in a north-south direction. The MRT line will mitigate traffic congestion of the north-south flow between Jl. Raya Darmo and Jl. Pahlawan. Also, from an SMA viewpoint, the most “blank” area not currently served by railway is the area from West Surabaya to South Gresik. The area has large-scale residential and industrial developments as planned in GKS spatial plan. Hence, this corridor should also be served by a new mass transit system, such as an MRT, which could also serve as core of the transit-oriented development (TOD). The following projects should be implemented:

- Extension of double-tracking and electrification up to Lamongan (W7), Mojokerto (W8), and Bangil (W9) and increasing of the maximum running speed to 120km/h through an automatic block and signaling system;
- Development of an MRT system in a north-south direction (W10) to support the business and commercial activities in the CBD. The MRT should be connected at Wonokromo station to the existing South trunk line and operated continuously to Sidoarjo/Juanda Airport, to enhance overall transport capacity as well as passenger convenience. The line will run from Wonokromo to Old Kota via Jl. Raya Darmo, Jl. Basuki Rahmad, Jl. Tunjungan and Jl. Pahlawan up to Jembatan Merah. Avoiding at-grade crossing with roads, this line will be constructed as an underground railway.
- Another east-west MRT line (W11) will be developed between ITS and Menganti in Kabupaten Gresik through Jl. Kertajaya, Jl. HR Muhammad and along the new planned development corridor toward south Kabupaten Gresik, and it will be connected to the existing railway line at Kertajaya station. Large-scale residential developments will be planned in GKS spatial plan, and this corridor also matches with the additional road development corridors mentioned earlier. This MRT line will be constructed as an underground railway between the ITS and end of the Jl. HR. Muhammad, for about 13km, after which it will continue on an elevated structure for about 11km along the new arterial road, serving as the core of the transit-oriented development (TOD).

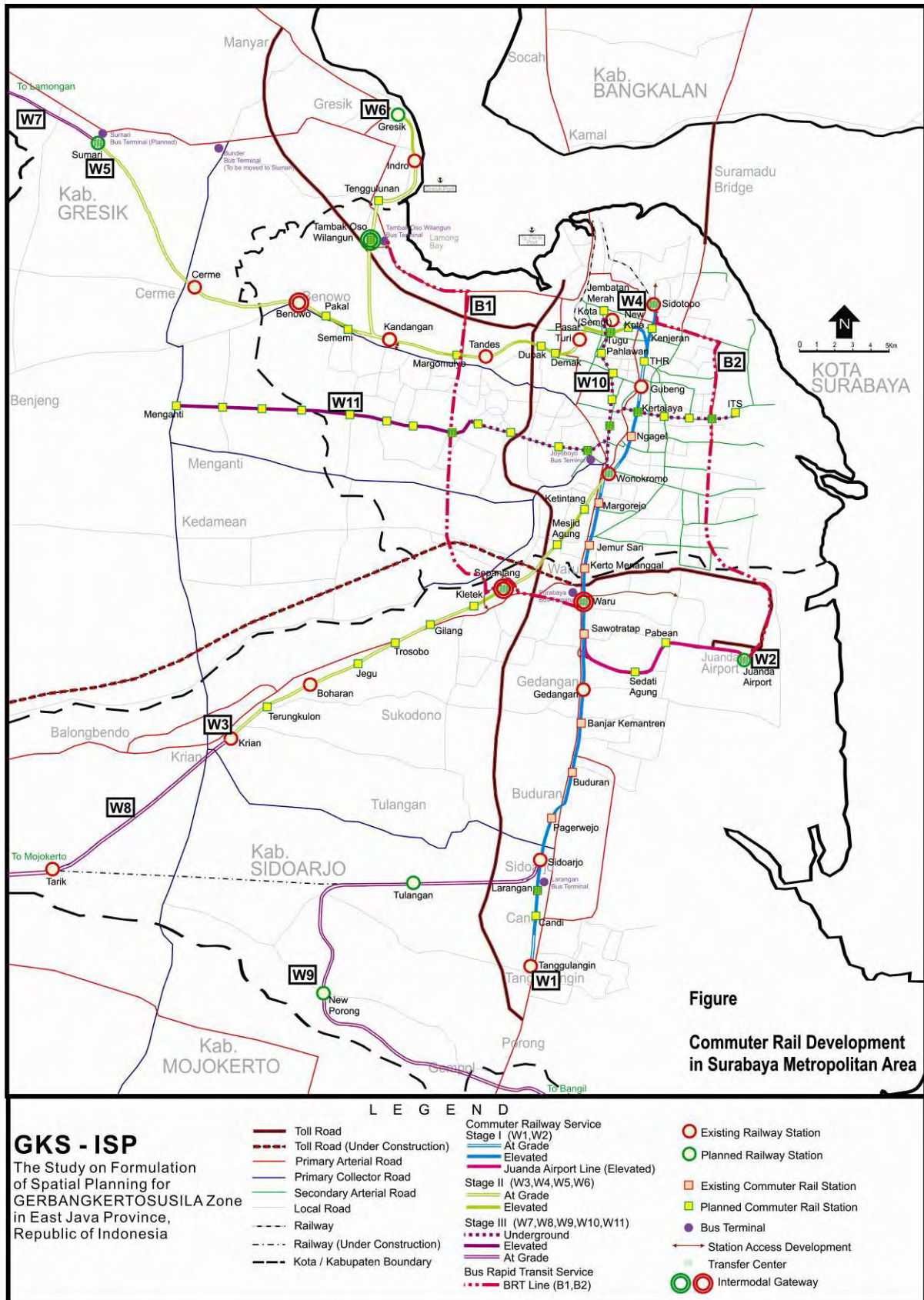
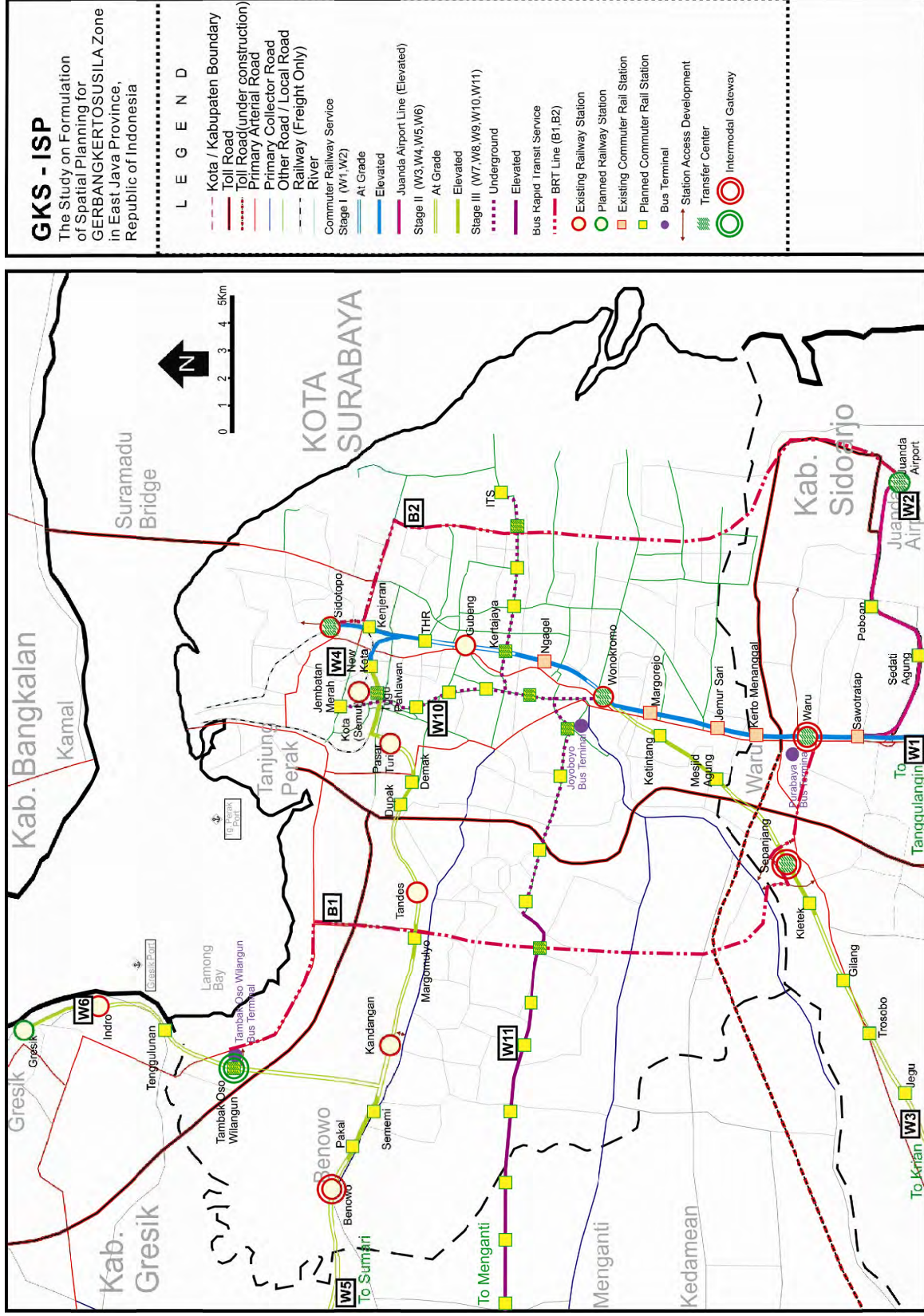


Figure 10.1.3 Public Transport Development in SMA



Source: JICA Study Team

Figure 10.1.4 Public Transport Development in Surabaya

Table 10.1.2 List of Railway Development Projects

Project ID	Section	Length (km)				Stage	Total Cost (mil. Yen)	Annual O&M Cost (mil. Yen)
		At Grade	Elevated	Under Ground	Total			
W1	Sidotopo/New Kota -Tanggulangin	3.16	29.9	-	33.16	I	90,548	195
W2	Sawotratap-Juanda	0.0	7.5	-	7.5	I	27,547	195
W3	Wonokromo - Krian	16.7	4.3	-	21.0	II	29,949	188
W4	New Kota – Ps. Turi	0.5	0.9	-	1.4	II	7,908	188
W5	Ps. Turi - Kandangan - Sumari	19.2	7.3	-	26.6	II	40,228	188
W6	Kandangan - Gresik	9.7	3.0	-	12.6	II	20,773	188
W7	Lamongan-Sumari	14.4	0.0	-	14.4	III	17,557	220
W8	Krian-Mojokerto	19.2	0.0	-	19.2	III	21,399	220
W9	Sidoarjo-Bangil	33.4	0.0	-	33.4	III	32,841	220
W10	Wonokromo-Jembatan Merah	0.0	0.0	8.0	8.0	III	101,910	432
W11	ITS-Menganti	0.0	11.0	13.0	24.0	III	193,930	756

Source: JICA Study Team



Figure 10.1.5 Example: Redevelopment Plan of Old Kota Station

10.2 Bus Transport Improvement

1) Intra-City Bus Transportation

Due to its decreasing ridership, the improvement of the current level of bus services is urgently needed, especially in the following aspects:

- In Surabaya, minibuses, or angkot, which number more than 5,000, have taken on the role as city bus service, instead of the conventional larger buses, which only number around 400 units. Though the capacity of the minibuses are smaller they offer

frequency and flexibility. In the future, while keeping the current frequent services, it will be more practical to gradually shift to new, larger, air-conditioned buses. The existing minibuses could be deployed to new feeder bus routes serving train stations and their vicinities.

- Current dedicated lanes for public transport vehicles and motorcycles should be maintained, or implemented in continuous sections of other trunk roads, which is one method of maintaining stable bus speeds during heavy traffic. Although completely dedicated lanes for buses may not be feasible except in some new trunk roads, the current dedicated lane system that allows motorcycles could be implemented more easily and efficiently.
- In addition to the new feeder bus routes serving train stations, it is recommended that new types of bus services should be introduced including a commuter express and CBD circular bus services. The commuter express bus provides speedy, comfortable transport services with limited stops especially for corridors that are not served by rail-based transport.
- Bus rapid transit (BRT), which takes the centermost lane of the road, as a dedicated bus lane just like Transjakarta (Figure 10.2.1), is an ideal mode of transport if the right-of-way (ROW) is wide enough. The Study Team proposes two BRT lines: one connecting Tambak Oso Wilangun bus terminal, Sepanjang station, Purabaya bus terminal, and Waru station, through Middle West Ring Road (MWRR) (B1); the other connecting Juanda Airport, Jl. Kenjeran, and Sidotopo station, via Middle East Ring Road (MERR) (B2). The current CBD circular buses could serve as feeder buses.



Source: JICA Study Team

Figure 10.2.1 Example of BRT: Transjakarta

2) Intercity Bus Transportation

While interprovincial, intercity (AKDP: *antar kota antar propinsi*) bus services are for interprovincial travel only, intra-provincial intercity (AKDP: *antar kota dalam propinsi*) bus services are used for travel within GKS, or throughout East Java. Each kabupaten/kota has intercity bus terminal(s) from which bus services connect the major cities in and outside

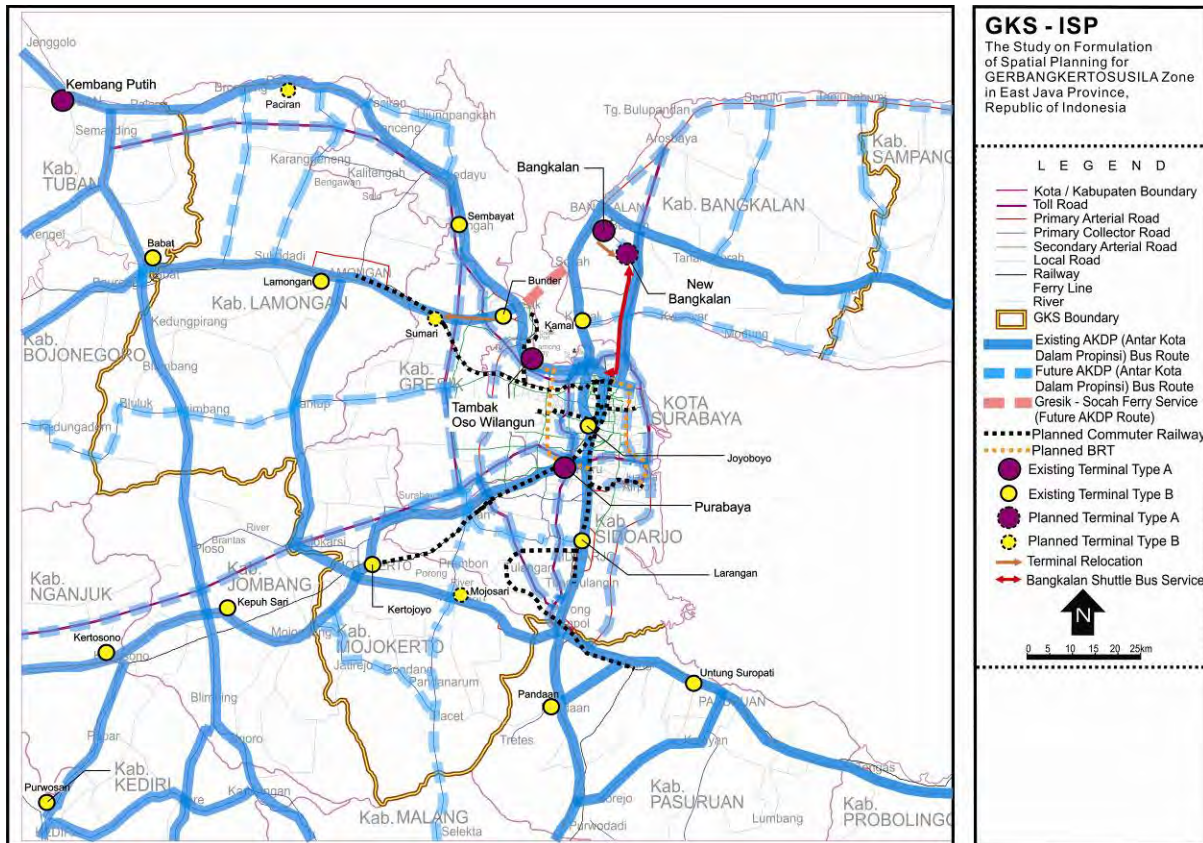
GKS. Existing intercity bus terminals in GKS, by type of terminal, are listed in Table 10.2.1. Type A terminals are for both inter- and intra-provincial intercity bus services, while Type B terminals are mainly for intra-provincial intercity bus services, as well as local transport services.

Table 10.2.1 Intercity Bus Terminals in GKS

Kota/Kabupaten	Terminal Name	Type	Remarks
Kota Surabaya	Purabaya (Bungur Asih)	A	
	Tambak Oso Wilangun	A	
	Joyoboyo	B	
Kabupaten Sidoarjo	Larangan	B	
Kabupaten Mojokerto Kota Mojokerto	Kertojoyo	B	
Kabupaten Mojokerto	Mojosari	B	Newly constructed terminal
Kabupaten Lamongan	Lamongan	B	
	Babat	B	
Kabupaten Gresik	Bundetr	B	To be relocated to Sumari (Kec. Duduksampeyan)
	Sembayat	B	
Kabupaten Bangkalan	Bangkalan	B	To be relocated to Masaran (Kec. Tragah)
	Kamal	B	

Source: Transportation Agency (Dinas Perhubungan), East Java Province

In GKS, most intra-provincial intercity (AKDP) bus routes connect Surabaya with its surrounding cities. Although the above-mentioned rail-based transport improvement is proposed by the Study Team, the existing AKDP network is essentially larger and more comprehensive than the planned commuter railway network, as seen in Figure 10.2.2. Intercity bus services should be maintained in the future to complement public transport in GKS. Roads for intra-provincial intercity bus services in GKS are the national and provincial roads, as presented in Figure 10.2.2. Both of the two Type A terminals in Surabaya, namely Purabaya and Tambak Oso Wilangun, are located close to the toll road, so most of the intercity buses, as well as inter-provincial buses, go through the toll road network and through the planned national (i.e., primary arterial) or provincial (i.e., primary collector) roads. Also, since there is no commuter railway development planned for Bangkalan, the Study Team proposes an intensive shuttle bus service to connect the center of Surabaya with Bangkalan. Furthermore, new ferry, and AKDP services, that will connect Gresik-Socah should also be studied, or developed, to secure another access to Kabupaten Bangkalan, as explained in the ferry development.



Source: JICA Study Team

Figure 10.2.2 Proposed Intercity Bus Transport Network

3) Ferry Transport Improvement

Table 10.2.2 shows the existing and planned ferry lines in GKS Zone. The Study Team proposes a new ferry line connecting Gresik and Socah (Kabupaten Bangkalan) in addition to the existing Ujung–Kamal ferry service. This new ferry line will solve the long term congestion problem forecasted on the Suramadu Bridge. However, a further study might be needed to examine its feasibility since the ferry service will run through the busy Madura Strait. Additional ferry lines may be necessary in the long term, while the existing ferry lines, including Paciran–Bawean, also need to be improved and maintained.

Table 10.2.2 Ferry Lines in GKS

No	Development	Function	Remarks
1.	Paciran - Bawean	Inter-Kabupaten	Existing Ferry Service (for freight only)
2.	Ujung - Kamal	Inter-Kabupaten	Existing
3.	Gresik - Bawean	Intra-Kabupaten	Existing
4.	Gresik - Socah	Inter-Kabupaten	Plan

Source: Regional Transportation Plan (Tatrawil) East Java Province 2009-2029 and JICA Study Team

Table 10.2.3 shows the ferry port development. Serving both inter-kabupaten and

intra-kabupaten ferry services, the development of the Bawean Port will be crucial in supporting the economic activities in Bawean Island. The planned Socah Port will help with the development of the industrial estate, as well as the proposed ferry line connecting Gresik and Socah. The planned port in Paciran will also serve the inter-island ferry lines.

Table 10.2.3 Ferry Port Development in GKS Area

No	Port	Location	Function	Remarks
1.	Bawean	Kab. Gresik	Inter-Kabupaten	Existing (Planned to be improved)
2.	Paciran	Kab. Lamongan	Inter-Kabupaten & Inter-Province	Plan
3.	Gresik	Kab. Gresik	Intra-Kabupaten & Inter-Kabupaten	Existing
4.	Socah	Kab. Bangkalan	Inter-Kabupaten	Plan
5.	Ujung	Kota Surabaya	Inter-Kabupaten	Existing
6.	Kamal	Kab. Bangkalan	Inter-Kabupaten	Existing

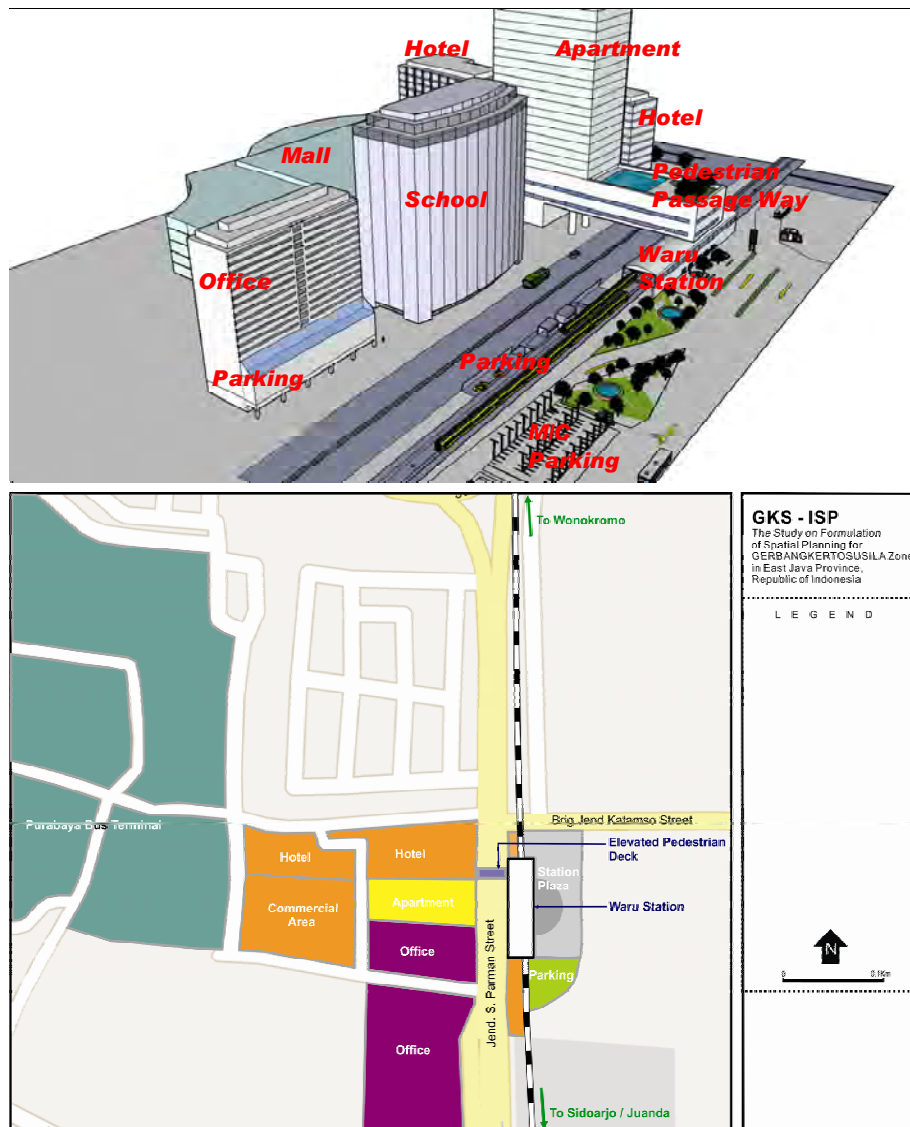
Source: Regional Transportation Plan (Tatrawil) East Java Province 2009-2029 and JICA Study Team

4) Intermodal Development

Attention should also be paid to intermodal transfer functions between different rail-based transport modes, between feeder bus and railway, and between private transport modes and railway. Since a railway is a network utility, intermodal transfer functions at railway stations should be improved to enhance transfer convenience for passengers from one public transport mode to another. The following measures deserve to be implemented for this purpose:

- Improve the user-friendliness of transport facilities by providing pedestrian walks, vehicle parking lots, and other transport services;
- Enhance transfer convenience levels by improving physical conditions, such as shortening walking distances from railway to another mode, provision of information on timetables and operational conditions, and provision of station plazas; and
- Create safe and comfortable waiting spaces for transferring passengers.

As an alternative to the feeder bus system, a car and motorcycle park and ride system could be used for station access. This is important especially where feeder bus services are not available due to distance or in thinly populated areas. This underscores the necessity of providing parking facilities near railway stations, especially in the outskirts of the CBD. The major candidate stations with large-scale parking facilities are: Tambak Oso Wilangun (Surabaya – Gresik line), Benowo (Surabaya – Lamongan line), Sepanjang (Surabaya – Mojokerto Line), and Waru (Surabaya – Sidoarjo Line), as indicated in Figure 10.1.4. These stations will serve as gateway stations to the CBD, in which private vehicle users can park their vehicles and take the commuter train to go to work, or for other trip purposes to the city center. A sketch of intermodal gateway development around Waru Station is shown in Figure 10.2.3.



Source: JICA Study Team

Figure 10.2.3 Example: Intermodal Gateway Development around Waru Station

(1) Transit Oriented Development

Using public transportation to combat urban traffic problems entails not only improving the railway system but also ensuring that the surrounding land is used in such a way as to encourage railway use. Both land use and transport infrastructures should be integrated under the Transit Oriented Development (TOD) concept, and the promotion of high-density commercial land use around stations will benefit both urban economy and business of the operator.

(2) Public Transport Fare System Development

One aspect in mass transport that discourages commuters from using the public transport system is the cumulative cost of the aggregate transfers, such as train and bus fares and

parking fees, which often negatively affects especially low and middle income commuters. Reduction of the total public transport cost will lead to an increase in ridership. One possible way of reducing cost is the introduction of a transfer discount ticket system between different bus and railway operators. Applying a common ticket system will greatly improve users' utility, as well.

A zone fare system is another feasible fare integration system that is worth studying. This system merely requires commuters to use the same fare even for different transport modes as long as they travel within the same zone. The fare only increases if travel is made to another zone.

PORT DEVELOPMENT

11. PORT DEVELOPMENT

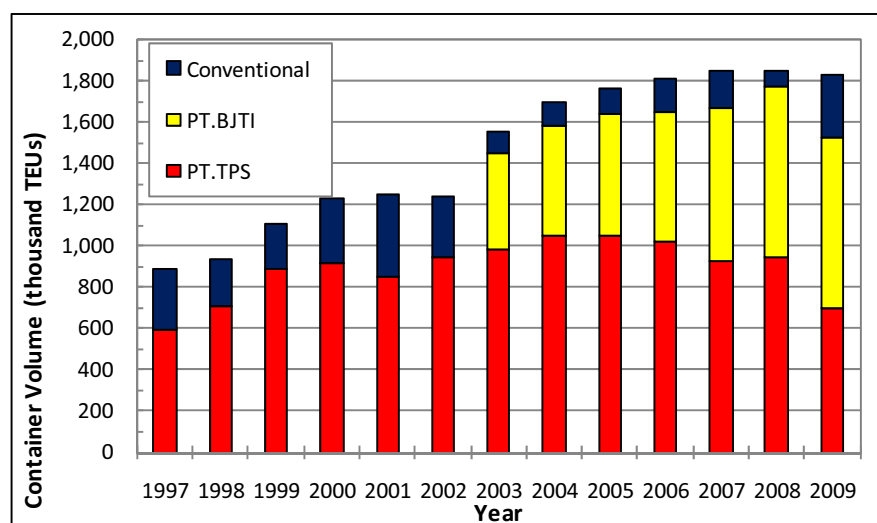
11.1 Port Functions

Among the ports in GKS Zone, Tg. Perak Port, has been designated as a first class port through governmental decision No.724/KPTS.BL.382/ PIII-92, 1992. Managed by PT. (Persero) Pelabuhan Indonesia (Pelindo), it is the second largest port in Indonesia and is the prime gateway of the economic activities in East Java and the other islands in the area.

The following are some of the attributes of Tg. Perak Port, as of 2009:

- Total annual container throughput is about 1.8 million TEUs, and the volume has recently its ceiling;
- The total volume of non-container cargos, which mainly consist of domestic inter-island cargos, is about 3.25 million tons, excluding fuel. Recently the volume has fluctuated; and
- Over 70% of its inter-island cargos are unloaded cargos including oil fuel, cement, fertilizer, plywood, and so on.

A diagram of Tg. Perak's container throughput trend is presented in Figure 11.1.1. Container handling is mostly done at TPS (Surabaya Container Terminal). However, since its opening in 2003, Berlian Jasa Terminal Indonesia (BJTI) has rapidly increased its share of container cargo handling because of its lower fees. Inter-island containers are mostly handled at BJTI, but due to the lack of space, some inter-island containers are handled at conventional terminals, reflecting that Tg. Perak has reached its container handling threshold.



Source: Indonesia Port Corporation III (Pelindo III), PT. TPS, and PT. BJTI

Figure 11.1.1 Container Throughput at Tg. Perak (1997-2009)

11.2 Existing Port Development Plans

Since Tg. Perak is operating at full capacity, a 50 hectare reclamation is being planned in Lamong Bay to handle container yard expansion. The reclamation space is equivalent to 1.5 million TEUs per year. The East Java provincial government has limited the proposed 120 hectares of Lamong Bay development by Pelindo III to only 50 hectares. Current status of the 50 hectare development is currently under strategic environmental assessment (SEA), and the assumption is that the development is vital even if it is located close to a preservation mangrove area at the mouth of Lamong River (Kali Lamong).

As shown in Figure 11.2.1, on-pile construction of a 3.5 kilometer-long bridge connecting the land and the pier is planned in order to solve the sedimentation problem. The length of the bridge is designed quite long to meet proper depth since sea level is extremely steep between shallow water (3.5m) and deep water (14m).



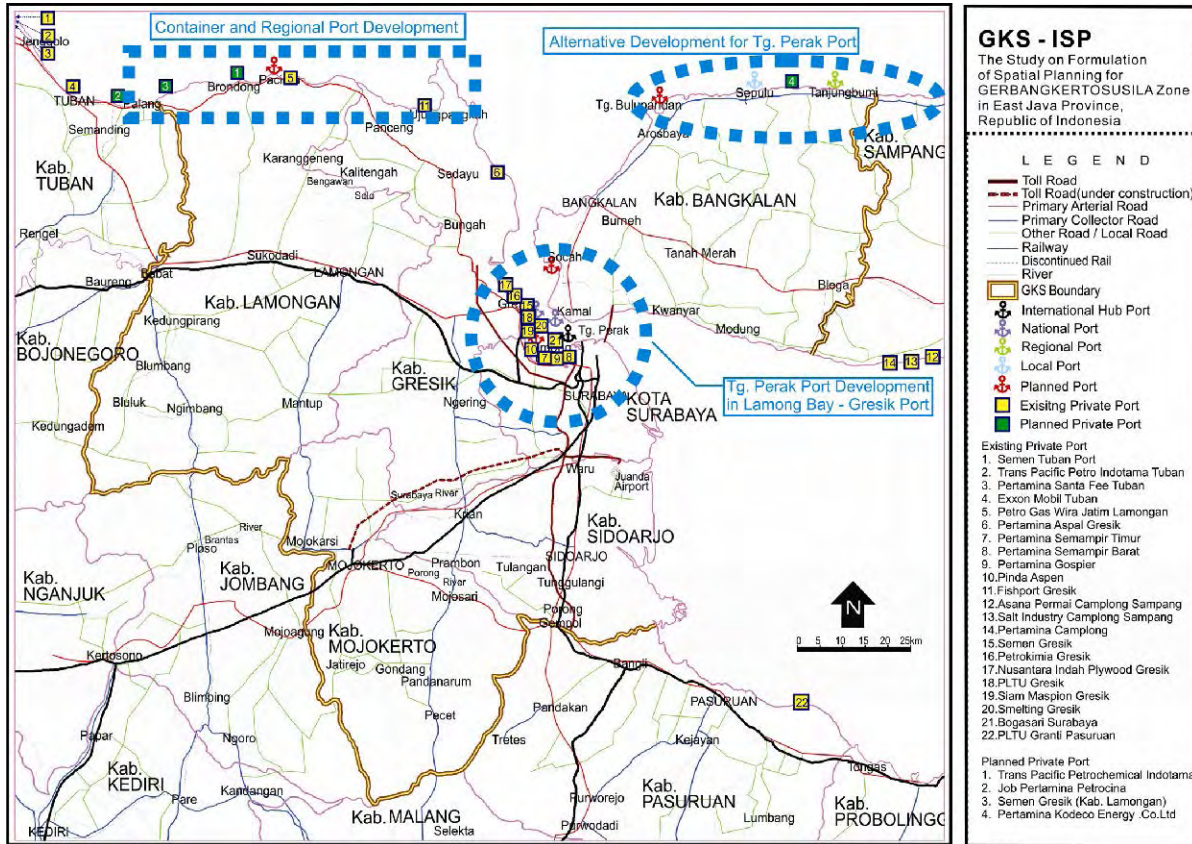
Source: Indonesia Port Corporation III (Pelindo III)

Figure 11.2.1 Map of Lamong Bay

Port development plans in GKS are presented in Figure 11.2.2. Along the north Java coast, especially in Kabupaten Lamongan, Kabupaten Gresik and up to Kabupaten Tuban, various types of ports are being developed including the Paciran Passenger Ferry Port, Sedayu Lawas Cargo Port, Brondong Fish Port, and other industrial ports which will be developed by the private sector. The number of port operators has increased as a result of new seaport regulations (No. 17, 2008 and No.61, 2010) that allowed the shift of operators from public to private.

Likewise, in the northern coastal area of Kabupaten Bangkalan, several other ports are to be developed including an international container port at Tg. Bulu Pandan, and traditional ports like Sepulu and Tg. Bumi. Some of the planned cargo ports will be developed as an

alternative to Tg. Perak Port.



Source: Regional Transportation Plan (Tatrawil) East Java 2009-2029, Transportation Agency (Dinas Perhubungan) of East Java Province

Figure 11.2.2 Existing and Planned Port Development in GKS Zone

11.3 Long-term Metropolitan Port Development Plan (Proposed by the JICA Study)

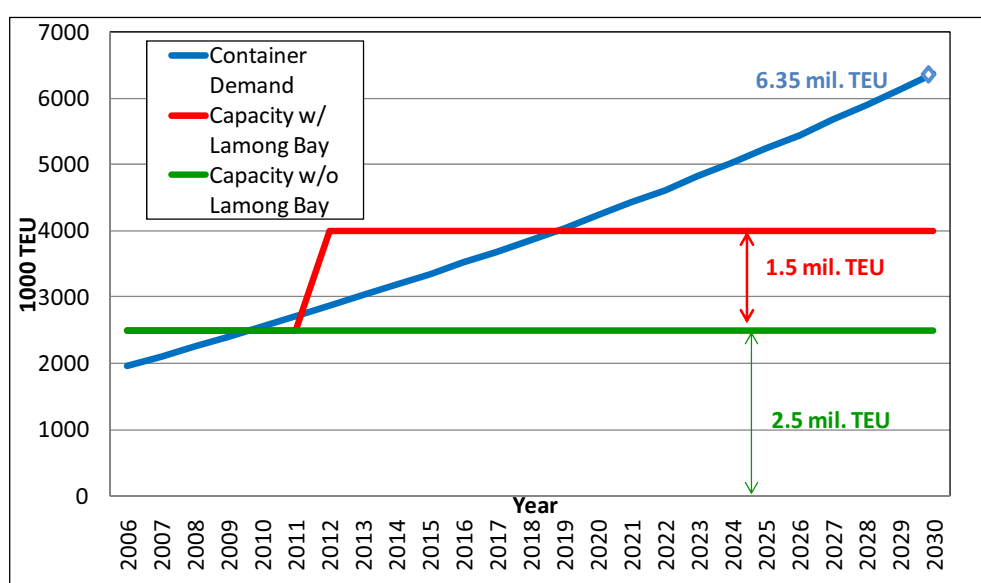
A November 2007 JICA study titled “Study for the Development of the Greater Surabaya Metropolitan Ports in the Republic of Indonesia” assessed the most appropriate long term port projects (i.e. 2030) under the premise that a new Surabaya Metropolitan Port is undoubtedly needed to cover the physical constraints of Tg. Perak, whose function, nevertheless, will remain vital to GKS economy.

11.3.1 Future Port Cargo Traffic Demand

According to the study, Tg. Perak Port’s freight traffic will increase 2.6 times its present capacity, or from 45 million tons in 2005 to 115 million tons in 2030. Based on the latest data, container traffic will substantially increase to 6.4 million TEUs in 2030, compared to about 1.8 million TEUs in 2005, or 3.6 times from 2005 to 2030, as presented in Figure 11.3.1. These increases have the following implications:

- New container berths, with a total length of 2,550 meters, should be developed by 2030 to accommodate the increasing container demand;
- The number of ships coming in/out the port will total about 29,040 vessels in 2030. Such traffic volume cannot be accommodated by Lamong Bay, which is the critical constraint in the expansion of Tg. Perak Port; and,
- The capacity of existing facilities at Tg.Perak, including Lamong Bay Port with its additional capacity of 1.5 million TEU per year can absorb demand up to 2019. However, the remaining demand should be shouldered by a new container port with a capacity of 1.2 million TEU in 2025 and 2.4 million TEU in 2030.

Eventually, a new metropolitan gateway port should be developed to functionally supplement Tg. Perak Port.



Source: JICA Study (Nov. 2007)

Figure 11.3.1 Container Traffic Demand at Tg. Perak

11.3.2 Search for Six Candidate Port Locations

Six candidate ports were identified, namely: (i) Lamong Bay, in Kota Surabaya; (ii) Gresik South and (iii) Gresik North, in Kabupaten Gresik; (iv) Socah, (v) Tg. Bulu Pandan; and (vi) Tg. Bumi, in Kabupaten Bangkalan, as shown in Figure 11.3.2.

After an evaluation based on several criteria, Tg. Bulu Pandan was selected to undergo further detailed assessments as a gateway container port. The following were its basic merits:

- A deep seaport with navigable channel and sufficient depth can be developed (more than -14~-15 meters);
- Available spacious hinterland for the development of support facilities and industries;
- Economic benefits synchronized with benefits from the Suramadu Bridge can be expected; and,

- The project will boost economic development in Madura Island and Kabupaten Bangkalan.

A long-term development plan was formulated in this JICA Study to pave the way for an effective gateway port development under the regional development context, taking into account port design, construction methods, sea and land access, connection with direct hinterland developments, initial environmental assessments, as well as economic and financial analyses.

Tg. Bulu Pandan has been added into the national spatial planning with another proposed port in Tg. Bumi. Presidential Decree 27, 2008 has given Tg. Bulu Pandan a legal cloak along with the development of a 600 hectare industrial area, and the development at the foot of the Suramadu Bridge. Meanwhile, Socah was recommended as a general cargo port in the JICA Study. PT. MISI, using the concept of the Madura Industrial Sea Port City, has proposed developing the area, which currently is undergoing strategic environmental assessment (SEA).



Source: JICA Study (Nov. 2007)

Figure 11.3.2 Six Candidate Locations for a New Regional Gateway Port

11.3.3 Infrastructure Requirements of New Port

The Study proposes the following variables for the Tg. Bulu Pandan port project:

- Container Berth: 8 berths;
- Water Depth: -14m ~ -15m;
- Container Yard: 203ha;

- Total Project Cost: US\$ 870 million (at 2007 prices);
- Economic Internal Rate of Return (EIRR): 17.2%; and,
- Financial Internal Rate of Return (FIRR): 6.9%.

Tg. Bulu Pandan is considered an expensive port project due to the superstructure of its breakwater. Though it has been given legal authority to proceed by a presidential decree, further study is still required to come up with new strategic solutions regarding other obstacles to its development. Applying the cited new seaport regulation which allows the entry of private operators, Tg. Bulu Pandan port could be operated under a public private partnership (PPP) scheme.

In order to support the development of Tg. Bulu Pandan, two toll road projects and one primary arterial road project have been proposed for the medium term (2015 – 2020), namely, the toll road connecting Perak-Suramadu (R8st), the toll road connecting the existing Suramadu Bridge to Tg. Bulu Pandan port (R6at), with arterial road (R6a) as its frontage road.