

## Appendix 2 Technical Considerations

### (1) Selection of Railway System

This section discusses required and possible rail systems, and a preliminary thought on a likely mass transport system development idea for Central Java Region. For the purpose of selecting suitable system for each project, general features of various solutions have been studied and compared.

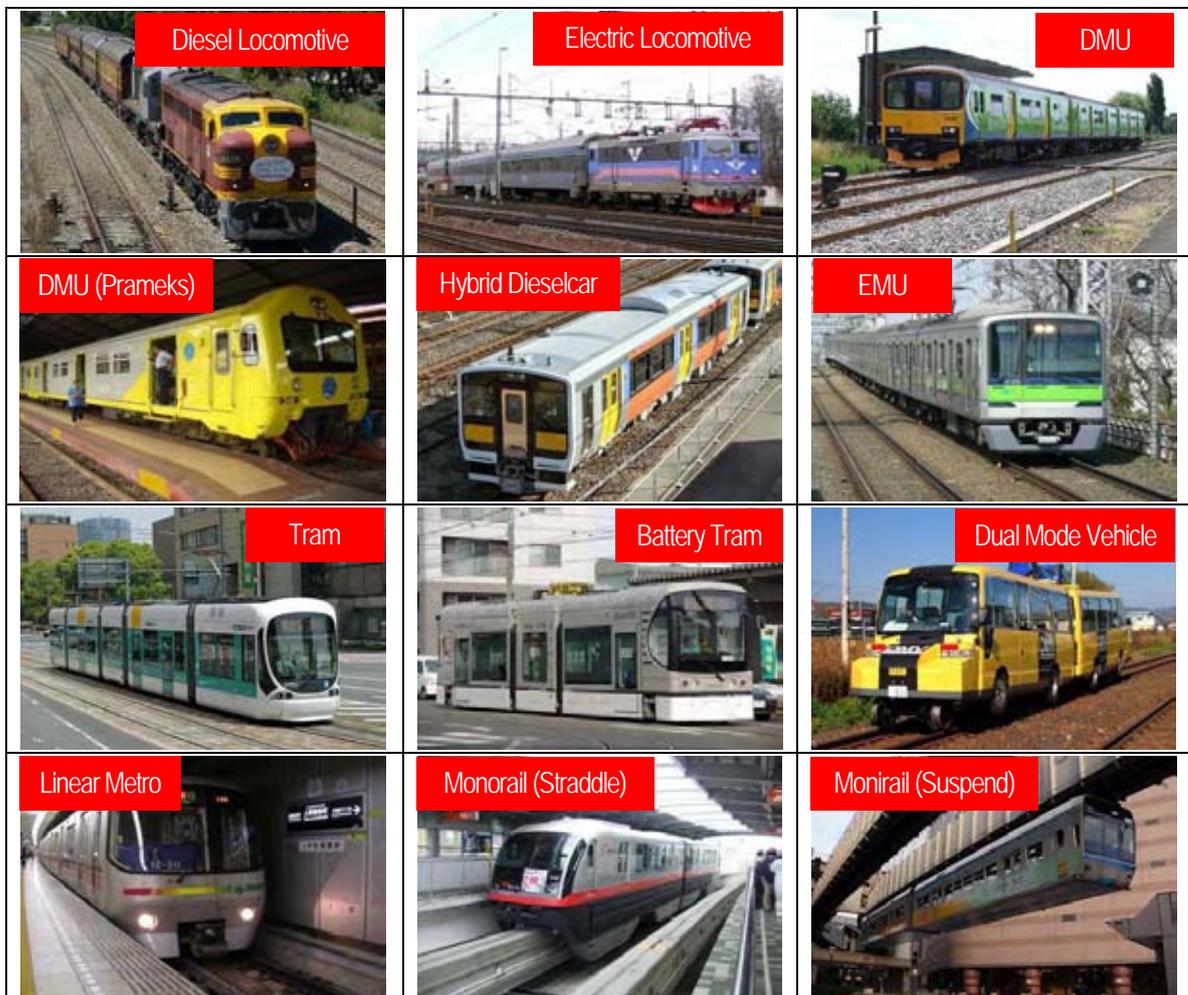


Figure 1 Examples of Mass Transport Systems

After review of these characteristics and projected demand, Study Team preliminarily selected following options for passenger train services. (Also see following (2) Comparison between EMU and DMU)

- Commuter Trains – EMU
- Intercity Trains – DMU (Standard type or Prameks type)
- Airport Rail Link – EMU
- Urban Railways – Straddled Monorail (Semarang), Tram or Battery Tram (Solo, Yogya)

**Table 1 Comparison of Railway System**

Type	Features		Remarks
	Advantage	Disadvantage	
Diesel Locomotive + Passenger Cars	Better riding comfort than DMU	Shunting works required Low acceleration	Shunting works are carried out at each terminal station.
Electric Locomotive + Passenger Cars	Lowest energy consumption Better riding comfort than EMU	System electrification required Shunting works required	System electrification includes substations, catenary and depot
Diesel Multiple Unit (DMU)	Service proven (e.g. KRD)	Low acceleration Bigger noise and vibration	Standard DMU train is composed of all motorcars
DMU (PRAMEKS type)	Service proven (e.g. PRAMEKS) Limited noise and vibration	Low acceleration	PRAMEKS train is composed of 1M4T
DMU (hybrid diesel car)	Lower energy consumption	Higher procurement cost	
Electric Multiple Unit (EMU)	Lower energy consumption High running performance	System electrification required	2 <sup>nd</sup> hand cars with AC available at low price in overseas market
Battery Car (Battery Tram)	Catenary system not necessary (operable with or w/o catenary)	Limited travel distance w/o catenary operation	System has recently started operation.
Dual Mode Vehicle (DMV)	Operable either on rail or road	Limited loading capacity	System is in final testing stage
Linear Motor Train (Linear Metro)	High acceleration, Operable in sharp curve and steep gradient	Installation & good maintenance of reaction plates required	Different from Maglev system
Monorail (Straddle-beam)	Constructable in limited space, Operable in sharp curve and steep gradient	Installation of specially-designed turnouts required	Energy consumption is higher than EMU but lower than DMU.
Monorail (Suspended type)			

**(2) Comparison between EMU and DMU**

Selection of EMU or DMU system in Central Java is a sensitive choice. It is generally understood that DMU has an advantage in capital investment cost but EMU has an advantage in running performance and O&M cost in a long run. To decide which system to go, Study Team analyzed and made comparisons in several ways.

**1) Advantages and Disadvantages of Each System**

When the demand is modest, DMU has an advantage due to initial investment cost. However EMU is strongly recommended if the project needs large number of cars to serve high passenger demand. One reason is that secondhand EMU is available in international market (i.e. from Japan) with very economic price. Saving from that may be able to cover the cost for system electrification. Another benefit of secondhand EMU is that spare parts for those trains will be handed over from the previous owner. Maintenance cost is, therefore, expected to go down greatly.

**Table 2 Comparison of EMU and DMU**

	EMU	DMU
Operation efficiency	Efficient	Fair
Energy consumption	Economic (Regenerating brake)	Fair
Traction power supply system	Required	Not required
Additional maintenance facility	Required	Not required
Procurement cost of rolling stock	Economic (New) Very economic (2 <sup>nd</sup> hand)	Fair
Total investment cost	High (New) Fair (2 <sup>nd</sup> hand)	Fair
Maintenance cost	Lower	Higher
Local production	Future option	Possible
Riding comfort	Good	Fair
Environment	Good	Fair
Preliminary evaluation	Recommended	Fair

**2) Technical Issues of Import EMU**

EMU clearly shows advantages if budgetary permitted. On the other hand, there are a few technical matters to concern for adopting secondhand EMU.

### a. Rolling Stock Gauge

When comparing rolling stock gauge in Japan and Indonesia, low portion of Japanese gauge is wider than Indonesian gauge. It means that import cars may hit structure on the ground when running in the local condition. In reality, actual manufacture of rolling stock varies from rail companies, and from type of cars. Therefore further investigation will be required when rolling stock is specified in subsequent stage.

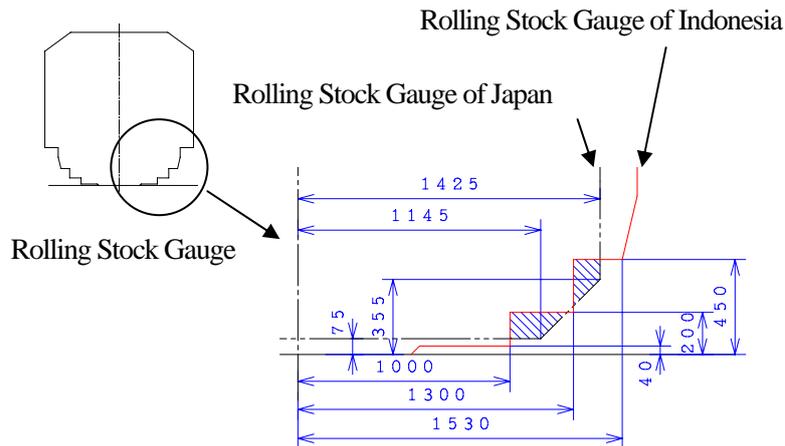


Figure 2 Rolling Stock Gauge

### b. Steps and Grab Rails for Loading

Floor height of import car is approximately 1.2 m, but no steps are installed outside the doors. If platforms of the stations remain low, these cars require installation of step and grab rail at their doors.

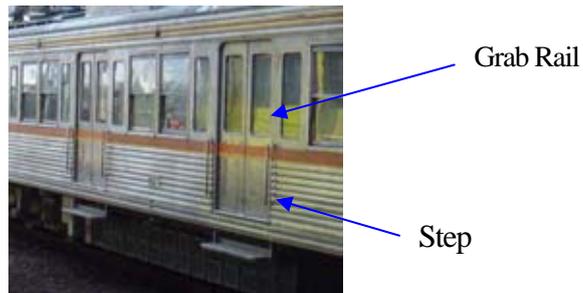


Figure 3 Steps and Grab Rail for Loading

### c. Coupler Height

Standard coupler height in Indonesia is 770 mm, whereas that of Japan is 880 mm. If there is any chance to couple import car with existing car, height of the couplers need adjustment using special adopter.

## 3) Running Performance

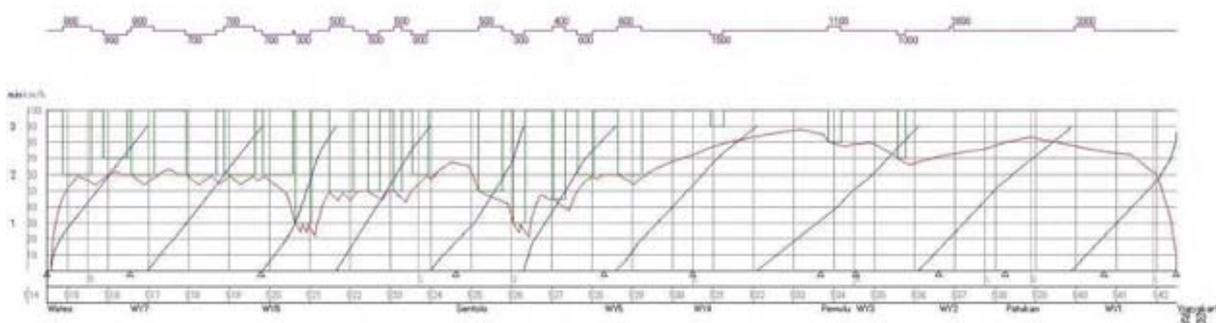
To understand the running performance of each system, Study Team carried out driving simulation based

on the available data and prepared “run-curve” for Wates – Yogyakarta section (12 stations in 28 km route corridor, 1 minute dwell time is assumed at each station).

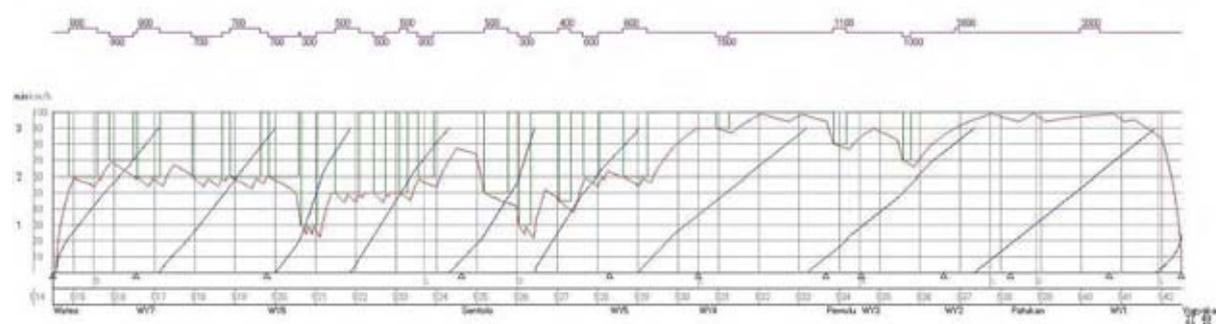
**Table 3 Running Performance of DMU and EMU**

Operation Type	Train type	Wates to Yogya (28 km)	Yogya to Wates (28 km)
Non - Stop	DMU	29min 53sec (56.2kph)	28min 14sec (59.5kph)
	EMU	27min 49sec (60.4kph)	27min 16sec (61.6kph)
Rapid	DMU	37min 04sec (45.3kph)	35min 41sec (47.1kph)
	EMU	33min 49sec (49.7kph)	33min 14sec (50.6kph)
Local	DMU	53min 00sec (31.7kph)	51min 01sec (32.9kph)
	EMU	47min 56sec (35.1kph)	46min 24sec (36.2kph)

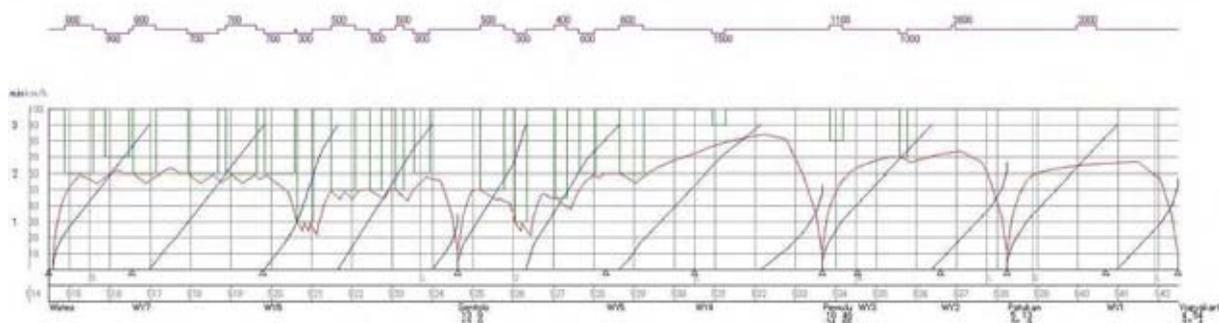
**a. Non-Stop / DMU / Wates to Yogya**



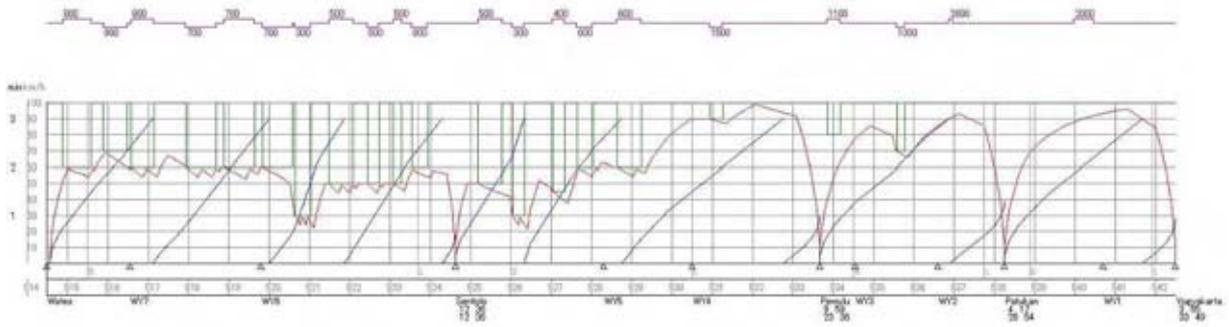
**b. Non-Stop / EMU / Wates to Yogya**



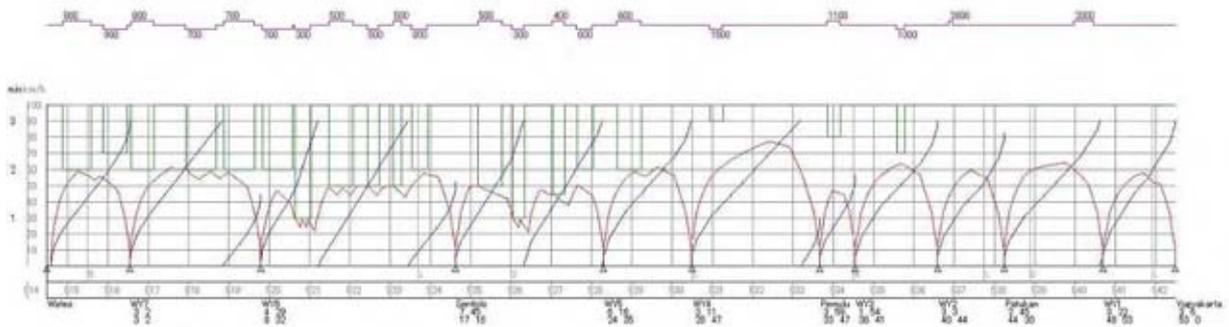
**c. Rapid / DMU / Wates to Yogya**



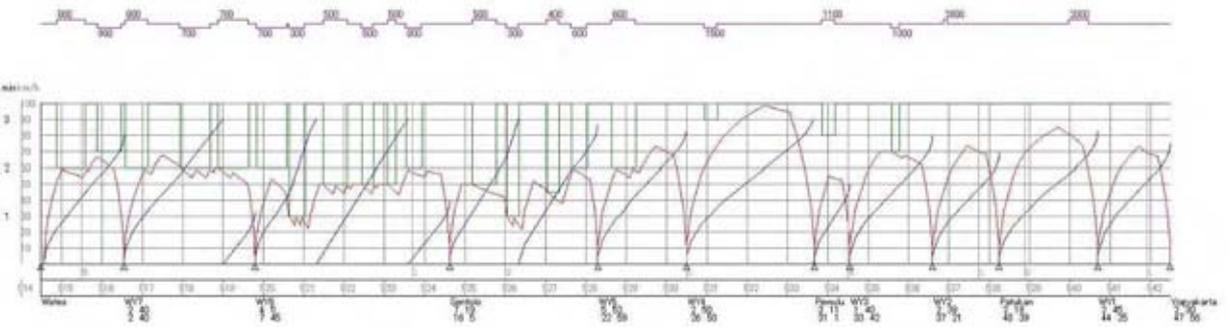
**d. Rapid / EMU / Wates to Yogya**



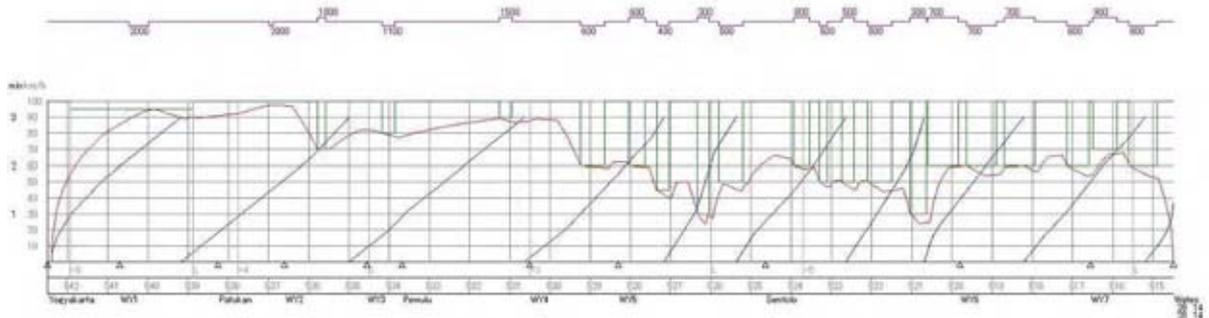
**e. Local / DMU / Wates to Yogya**



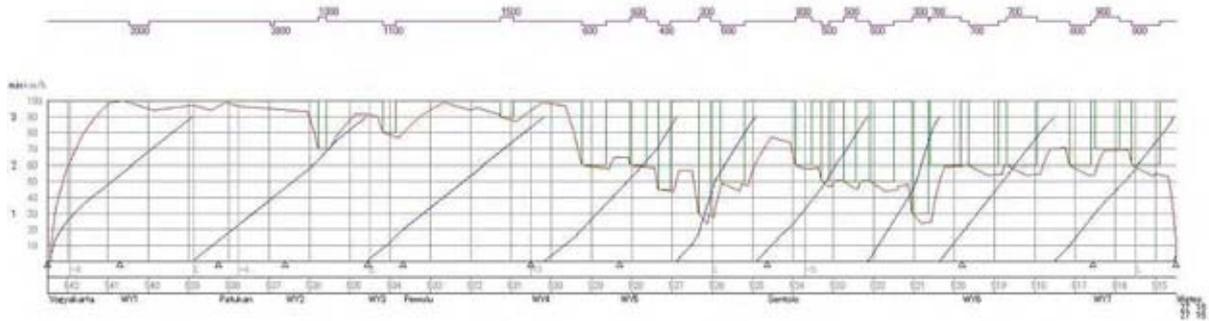
**f. Local / EMU / Wates to Yogya**



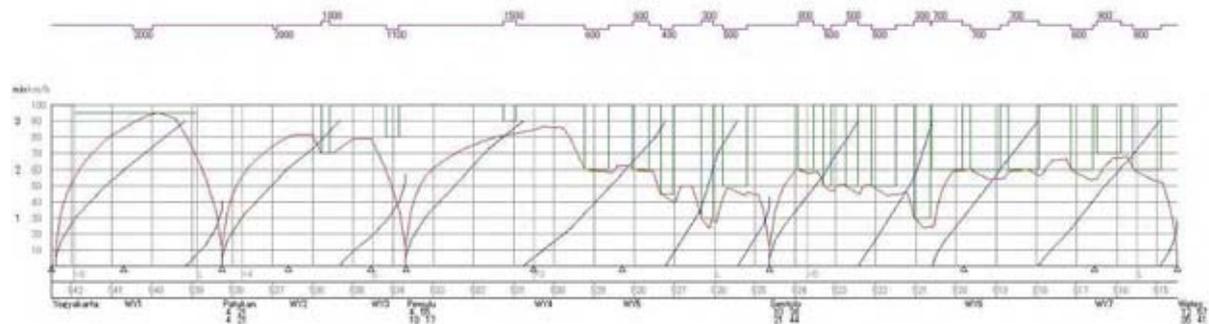
**g. Non-Stop / DMU / Yogya to Wates**



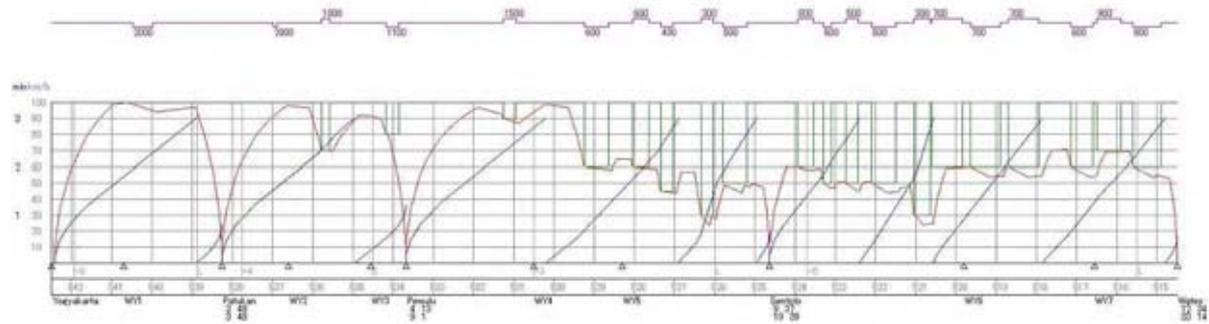
**h. Non-Stop / EMU / Yogya to Wates**



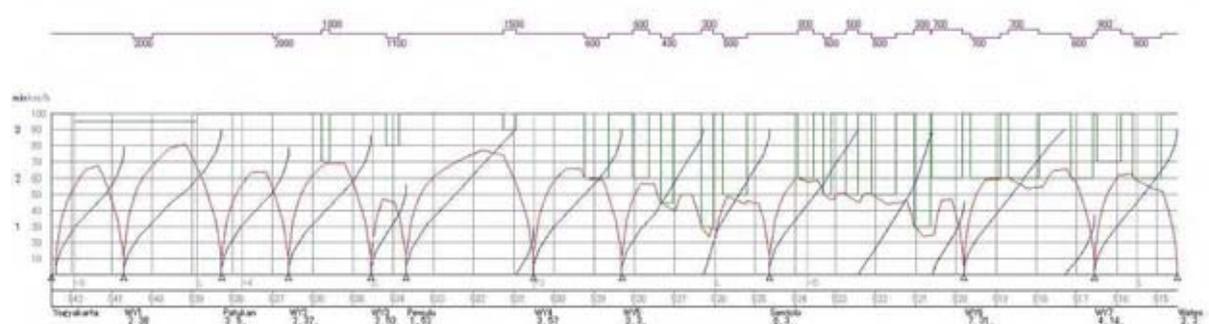
**i. Rapid / DMU / Yogya to Wates**



**j. Rapid / EMU / Yogya to Wates**



**k. Local / DMU / Yogya to Wates**



### I. Local / EMU / Yogya to Wates

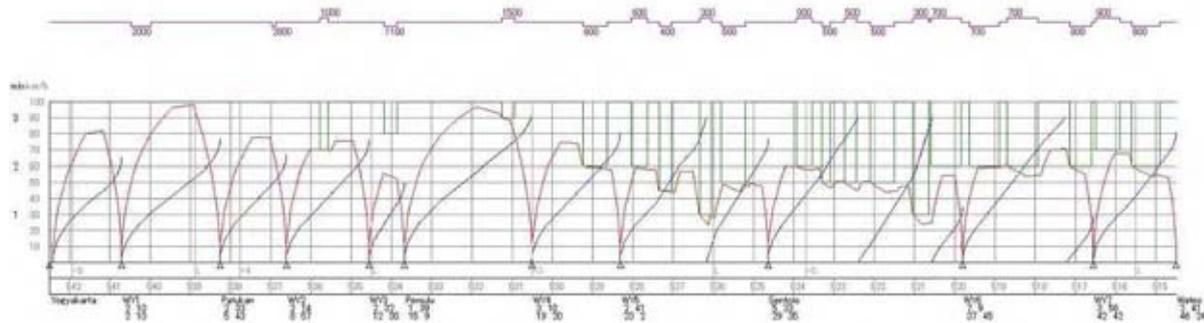


Figure 4 Run Curve

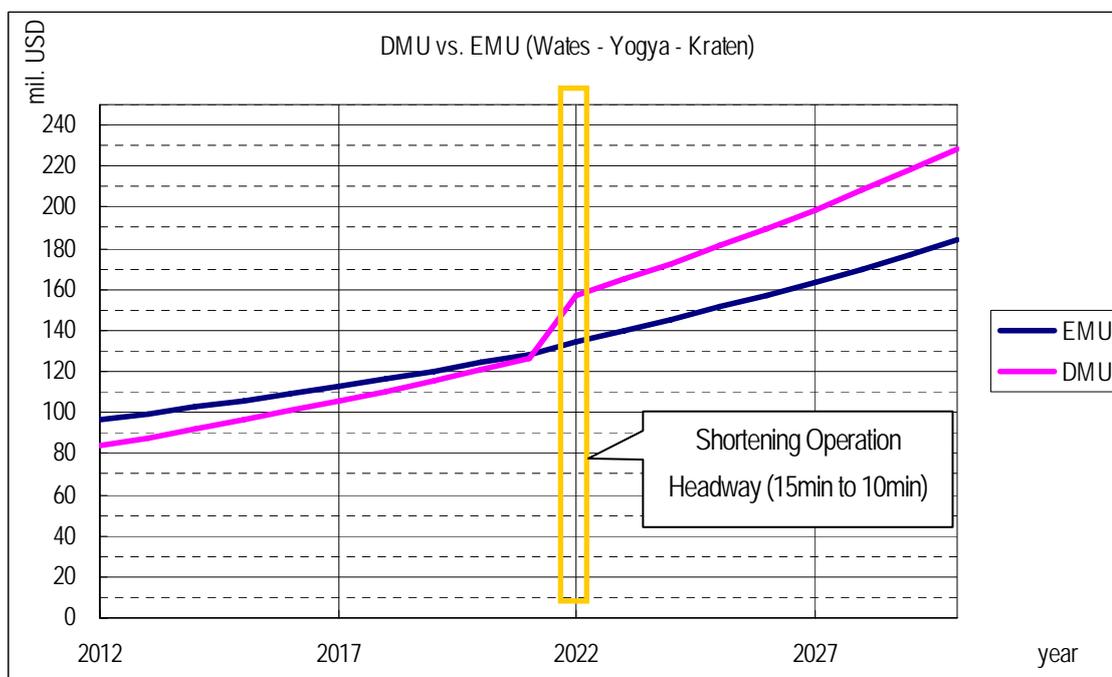
#### 4) Investment Simulation

To understand which system is more viable from the financial standpoint, Study Team conducted investment simulation of commuter rail under each technology. Base assumptions are summarized in the following table.

Table 4 Base Assumptions for Investment Simulation

	EMU (secondhand)	DMU
Section	Wates – Yogya – Klaten (60 km)	
Number of stations	22	
First year of operation	2012	
Travel speed (Express)	60 km/h	55 km/h
Travel speed (Local)	45 km/h	40 km/h
Operation Headway	15 min (- 2021) 10 min (2022 -)	15 min (- 2021) 10 min (2022 -)
Required Facilities (Estimated cost)	Substations, Catenary system, and EMU depot (88.4 million USD)	DMU depot and fuel supply equipment (10.0 million USD)
Energy consumption (Energy cost per unit)	2.5 kWh/km per car (INR 612/kWh)	0.6 litter/km per car (INR 4,950/litter)
Number of coaches required	52 (- 2021), 72 (2022-)	70 (-2021), 95 (2022-)

The estimate aims to compare economies of EMU and DMU system in the same section. To simplify the comparison, the estimate didn't include civil work, trackwork, signaling, telecommunications, traffic control, project management cost and any other provisions since these should be almost equal regardless of the selected system.



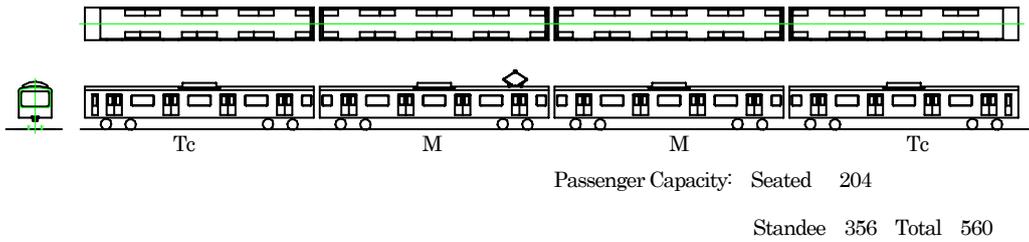
**Figure 5 Result of Investment Simulation**

Simulation result indicates that EMU will incur more capital cost, yet becomes more economic in a long term due to the advantage in O&M cost over DMU. Cost advantage is remarkable especially when increase the number of rolling stock to improve service headways.

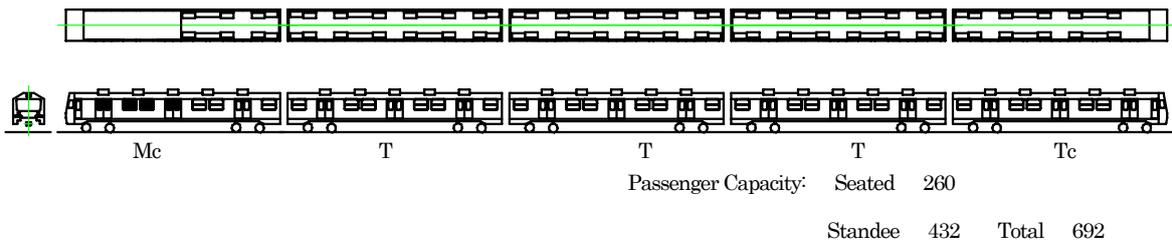
**(3) Fleet Layout**

To precisely understand the loading capacity, Study Team prepared fleet layouts of each system as depicted below.

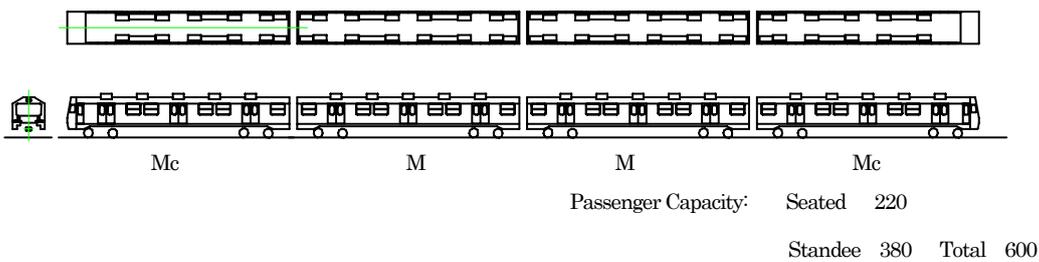
**1) EMU for Commuter Train**



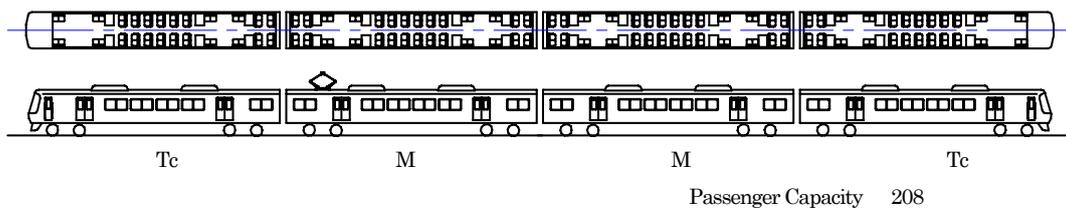
**2) DMU for Inter City (Prameks type)**



**3) DMU for Inter City (for high gradient)**



**4) EMU for Airport Link**



## 5) DMU for Airport Link

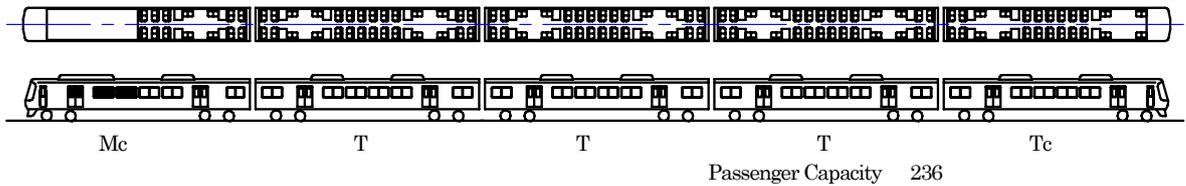


Figure 6 Fleet Layout

## (4) Vertical Arrangements

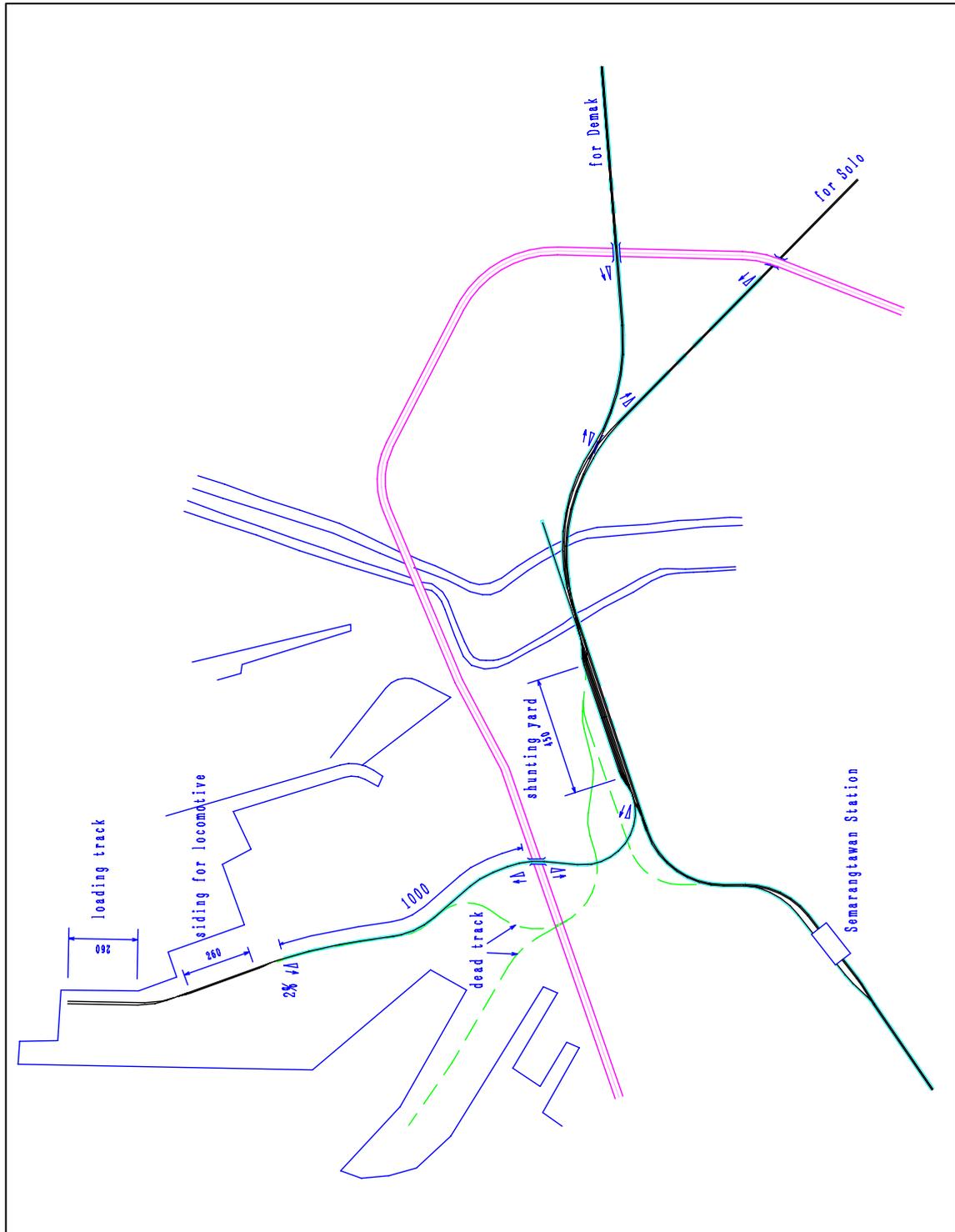
### 1) Elevated Tracks in Semarang

Rail network in the center of Semarang City premises elevated tracks to avoid water invasion, level crossing and to minimize the impact of land acquisition for double tracking of the north main line. This will also involve the vertical arrangements of Semarang Port Access and Demak Commuters. Keeping sufficient clearance from the existing radial and ring road is the primary issue for these projects. Firstly, the three projects assume following.

- Track Elevation in Semarang City – extent of the project will be within the existing ring road.
- Semarang Port Access – the access will be constructed in elevated level except freight handling yard at the port since serious sedimentation and associated water invasion is widely observed over the whole project area.
- Demak Commuter – the project will construct elevated structure in the road median over the entire route to minimize land acquisition.

To arrange as above, Study Team preliminary proposes vertical arrangements as follows:

- Semarang Port Access will overpass the elevated ring road and come down to surface with 2% gradient. To allow such vertical arrangements, another yard is proposed at elevated level to change the composition of freight trains and make them into reasonable length.
- Alignment to Demak direction will remain elevated and overpass the existing ring road, whereas alignment to Brumbung direction will go down to surface level to underpass the same road.



**Figure 7 Track Arrangement in Semarang**

**2) Intercity Railways (Magelang – Ambarawa – Kedungjati)**

Among proposed intercity lines between Yogyakarta and Semarang, particularly steep gradients are

observed in Magelang – Ambarawa – Kedungjati section. Maximum gradient of that exceeds 6 %, where standard diesel system is not operable. To provide the mass transit system in mountainous area, following solutions have been overviewed.

- Rack railway system – the solution, allowing the gradient as much as 8 – 9%, has been used for the same area. This requires specially designed fleets, tracks, and turnouts. Availability of these system components is therefore still in need of further study and applicability remains unclear.
- Electrified system (EMU) – This will gives better running performance in gradient section compared to DMU, but allowable maximum gradient should be around 3.5% - 4.0%. Also electrification in low traffic area may become a heavy burden for intercity lines.
- Monorail or linear metro – such system allows over 6% gradient but generally incurs high capital investment and O&M cost that can normally be met by the large-scale demand in city, and not suitable for the area with low traffic.
- Tunneling – NATM tunneling is simplest yet the most assured solution as long as financially viable, which is fully depending on the length of critical gradient section in the route corridor.
- Switchback operation – this is popularly used for the rail systems in mountainous area. Trains climb the steep section with changing the direction of travel at the switchback track.

Preliminary Study Team recommends NATM tunneling (or a combination with switchback operation) as an actual and reasonable solution. Further clarification will be made in subsequent stages.

## **(5) Implications for Signalling, Telecommunication & Train Control System**

Improvement of signaling, telecommunication & train control system is of extreme importance in terms of shortening headways, ensuring operational safety, and avoiding delay of train schedule. To allow the frequent operation as defined by proposed projects, Study Team overviewed the requirements of these systems:

### **1) Traffic Conditions**

Commuter trains assume that travel speed will be 45 km/h for local and 60 km/h for express, design headway is 10 minutes, distance between stations will be within the range of 2 to 4 km. Under the assumption, the traffic can be controlled by blocking at each station. This means that the system will allow only one train running between the stations.

Intercity trains assume that travel speed will be 60 km/h for ordinary condition and 45 km/h in the section with steep gradient, design headway is 30 minutes, distance between stations will be around 10 km. Under the assumption, the traffic can be controlled by blocking at each station.

Freight trains assume that travel speed will be 60 km/h, design headway is depending on the freight demand but less than hourly, distance between stations will be around 10 km. Under the assumption, the traffic can be controlled by blocking at each station.

Based on the above thoughts, no traffic control system is proposed at intermediate points between stations. Each system component required in this condition is given below.

## **2) System Components Required**

### **a. Signalling System Required**

One (1) Block Section between Two (2) Stations, either automatic blocking system with computerized interlocking system or COMBAT type of block system (See the article of the system below) will be recommended. System components include Interlocking Equipment, Power Supply, Colour Light Signal, Electric Point Machine, Track Circuits or Axle Counters, and Level Crossing Protection (if required).

Study Team preliminarily recommends automatic blocking system for commuter trains, and COMBAT type blocking system for freight and intercity trains.

### **b. Telecommunication System Required**

The system components include Optic Fibre Cable (SDH) system at every station and telephone system at every station & Level Crossing Telephone with Metallic Cable.

### **c. Train Control System Required**

Train Control System will not be required in case of COMBAT system, while ordinary blocking system requires following components:

Train Control System (CTC System, Circuit between stations is included in OFC)

1. Train Movement Monitoring Screen & LCD Console for Train Dispatches
2. Train Graph and Maintenance Information System

It should be noted that renewal of existing CTC system may be required in case the development timing will be after a decade (this is mainly due to upgrading of computer system). In this sense, COMBAT system will be reasonable for unifying the traffic control system over the region.

## **(6) Applicability of New Technologies**

### **1) COMBAT System**

Signalling system component includes traffic signals, switching, interlocking and blocking devices to

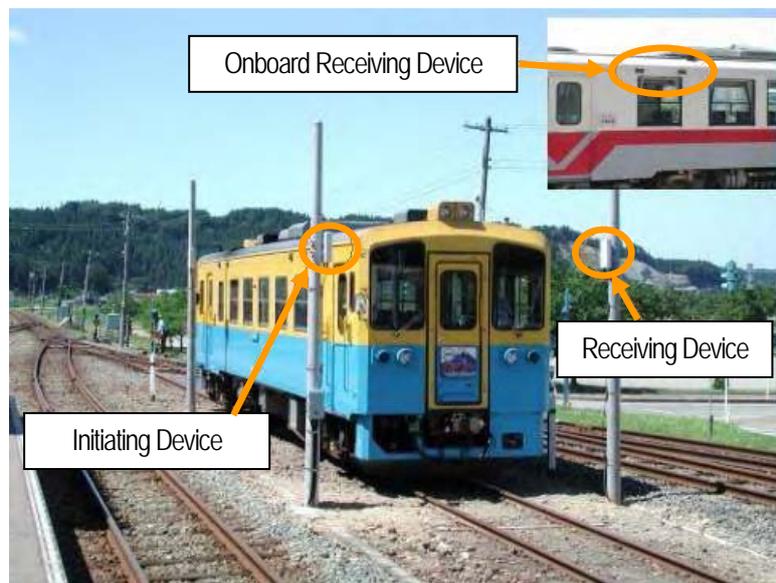
secure the safety of train operation. Capital investment cost of these is not bearable for the lines with small traffic, especially in rural railways. To reduce the financial burden for these lines, RTRI (Railway Technical Research Institute) developed COMBAT System (Computer and Microwave Balise Aided Train Control System).

Key advantages of this system are:

- Reliable train detection – traditional train detection is made by the track circuit composed of rail and car (wheels and axles). In the meantime COMBAT uses radio transmissions, and therefore can provide reliable detection regardless of the track conditions.
- Centralized control – traditional signaling system control the signaling system in each station, and needs installation of CTC when administrating the whole systems in one location. COMBAT system can easily accomplish the centralized control without heavy investment.

To propose the system to Indonesia, following issues must be confirmed:

- Weather conditions, especially heavy raining and thunderstorms, are acceptable for the system durability.
- Rail companies can secure the system equipments and devices from thefts and stealers.



**Figure 8 COMBAT System Image**

## 2) Battery Tram

Standard electric railcars are driven by the electricity collected from overhead catenary. Meanwhile battery tram has built-in batteries inside the fleet and can run without catenary system. When the tram runs in catenary section, built-in battery will be charged and used for driving in the non-electrified section.

Benefits of catenary-less system are:

- Better landscape – catenary-less system will not depreciate the city’s landscape, especially suitable for those cities having historic properties.
- Reduction in capital cost investment / maintenance expense – battery tram will not require piers and catenary wires in construction, and will be free from maintenance of wires.
- Small impact on existing facilities above the corridor – providing catenary system sometimes faces spacing problem, i.e. such as underpasses, street trees, flyovers encroach within structure gauge. In this sense, catenary-less system can minimize the impact on existing facilities.



**Figure 9 Battery Tram Images**

Typical specifications of such batter cars are listed in the following table.

**Figure 10 Battery Tram Specifications**

	(In the case of SWIMO-X by Kawasaki)
Type of car	Low-floor battery driven tram (LRV)
Train composition	3 car consist or 5 car consist
Traction power	Overhead catenary (DC 600V) or built-in battery
Loading capacity	62 (3 car consist), 164 (5 car consist)
Train size	15,000 mm x 2,230 mm x 3,780 mm (3 car consist)
Floor height	330 mm (loading point), 360 mm (passenger space)
Maximum speed	40 km/h (commercial) 50 km/h (design)
Battery	600 V, 200Ah nickel-hydride cell
Driving distance	Over 10 km (full charge)

## **Appendix 3 Public Hearing Results**

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Public Hearings were conducted in Semarang, Solo and Yogyakarta. The results are summarized below.

### **3.1 Minutes of Public Hearing**

### **3.2 Attendants List of Public Hearing**

## **Minutes of Meeting Public Hearing**

The Development of Regional Railway System in Central Java Region

### **A. Public Hearing 1: 3 November 2008, Balai Kelurahan Sosromenduran, Yogyakarta**

#### Schedule of Meeting

1. Opening
2. Opening Speech
3. Presentation on the Plan of Development of Regional Railway System in Central Java
4. Participant's Responses and Opinions
5. Closing

Opening speech by Lurah (Head of Kelurahan) Sosromenduran, Yogyakarta

- a. Welcome to all participants
- b. He asked all participants, especially to residents to support the plan on development of regional railway system
- c. He also asked to participants to be active by articulating their opinions during the meeting

Presentation- The Plan on Development of Regional Railway System in Central Java by PSLH UGM and JICA.

After greeting to the participants, representative of JICA (Mr Kuramoto) and PSLH UGM (Mr Suharko) explained the objectives of the meeting that is to socialize the plan on development of regional railway system in Central Java especially in Yogyakarta, and to collect perceptions and opinions from the participants.

PSLH UGM explained the general plan on the projects in Central Java region. The development of railway system in Yogyakarta city is presented in detail. This included the development of intercity trains and commuter trains (see materials of presentation).

Closing the presentation, PSLH UGM asked the participants to articulate freely their opinions regarding the plan on the development of regional railway system in central Java and its consequences.

Participant's responses and opinions

1. Y. Sukamto – a government official, sub district of Gedong Tengen, Yogyakarta

It is necessary to make detail the plan on the development of railway system in Yogyakarta city. This is very important for further socialization of the plan to the people. The plan should include and consider Yogyakarta as a tourist city. In this context, he suggested that the plan should be supported by another related studies.

2. Sutarto - BKM (local organization) Kelurahan Sosromenduran

It is very important to deeply study the plan to develop the intercity trains that especially connecting between Yogyakarta city – district of Bantul, and also Yogyakarta city - Magelang - Ambarawa.

Beside the development of regional railway system, he recommended that it is also important to build a highway connecting Yogyakarta – Solo – Semarang.

3. Hari Purwanto - Dinas Perhubungan (office of public transportation), Yogyakarta city

He supported the plan because it will improve mass rapid transportation. People tend to use private transportation, and it is the main reason for underutilization of public transportation. In relation to the plan, he also underlined the importance of intermode system in Yogyakarta city.

Regarding the implementation of the plan, he reminded that the initiator must be concern with the potential negative social economic impacts that will arise from the project.

4. Supriyanto – resident, Kelurahan Sosromenduran

The development of railway system in Yogyakarta, according to him, was similar to railway system developing during colonial period of Dutch. He perceived that if the train lines can be built, it actually revitalize the similar system in the past, and he will be able to make a nostalgic journey. It is also a reason that the plan can support the development of tourism in Yogyakarta.

5. Datuk Nan Tongga – a bussinessman, resident of kelurahan Sosromenduran

He reminded that although he fully supported the plan, the implementation of the project must prevent the process of land acquisition. The project should also prevent any actions that will force the people to move to other locations without a fair compensation.

6. Wahyuana - PT KAI, Tugu Station of Yogyakarta

He stated that the development of railway system has an explicit legal basis (the law no. 23/2007). Therefore, there is no reason to reject the plan. The implementation of the plan will support the growth of cities in Central Java. But, its implementation will depend on the policy of local government, because almost all areas that is planned to build the train lines has been occupied by the local people.

In regard to develop intermode system, it is necessary to avoid its negative impacts. He pointed out specifically the impact on noisy.

7. Suyoto – staff of Bapedalda, Province of Yogyakarta

Information presented in this forum was limited and it is necessary to provide the plan on development of regional railway system in detail in the future.

In order to minimize the potential impacts, he reminded two important things: (1) an environmental friendly train should be selected as a part of railway system; and (2) the construction of new train line must seriously consider the potential social economic impacts.

As part of the railway system, he also recommended that issue of safety and comfort for both the passengers and the people must be put as a highest priority.

Finally, he asked that the initiator of the project need to cooperate with various stakeholders.

8. Yudi Sumarno – a police man, Police office of Gedong Tengen subdistrict

He stated that it will be better to develop the existing railway system than to build a new railway system. Building new railway system means that the old train lines (that were built during colonial period) will be reopened and this will be followed by the process of land acquisition. The land acquisition usually comes to end with a fact that not all the people will get benefit.

As part of railway system development, according to him, it is necessary to use a new mode of train (not used mode of train) that is friendly environment.

9. Ipung Ruwandari – a house wife, resident of kampong Sosrowijayan

Although fully supporting the plan, she reminded that all environmental impacts must be carefully considered, such as noisy, vibration and water pollution. In regard to social economic impacts, she asked that the implementation of the plan will be benefited the local people, such as an increasing acces to job opportunities, supporting business of hotel and tourism, etc.

10. Suroso Abdullah – resident, Kelurahan Sosromenduran

He observed that up to now there is no serious action taken by PT KAI to increase safety in the locations of level crossing. The development of railway system should prioritize issue of safety and accountable management.

11. Antok – resident, Kelurahan Sosromenduran

He asked PT KAI to pay serious attention on the locations of level crossing. As part of the railway system development, he even suggested to build an underpass in the locations of level crossing.

12. Eko – a business man in kampong of Sosrowijayan

Information that was already presented in this forum still limited, and more detail information was needed to socialize the plan to the people.

According to him, other related studies may be needed to make sure that the implementation of the plan will have positive socio economic impacts for the local people that live in surrounding areas of the station.

In order to support the development of regional railway system, he suggested that PT KAI must develop a new managerial system that will improve its public services.

## **Minutes of Meeting Public Hearing**

The Development of Regional Railway System in Central Java Region

### **B. Public Hearing 2: 6 November 2008, Balai Pertemuan, Balapan Station, Solo**

#### Schedule of Meeting

- a. Opening
- b. Opening Speech
- c. Presentation on the Plan of Development of Regional Railway System in Central Java
- d. Participant's Responses and Opinions
- e. Closing

Opening speech by Lurah (Head of Kelurahan) Kestalan, Solo

After saying greeting and welcome to all participants, he asked all participants to support the plan on development of regional railway system. Regarding this meeting, he asked to participants to be active by articulating their opinions.

Presentation - the Plan on Development of Regional Railway System in Central Java by PSLH UGM

After greeting to the participants, representative of JICA (Mr Kuramoto) and PSLH UGM (Mr Suharko) explained the objectives of the meeting that is to socialize the plan on development of regional railway system in Central Java especially in Solo, and to collect perceptions and opinions from the participants.

PSLH UGM explained the general plan on the projects in Central Java region. The development of railway system in Solo city is presented in detail. This included the development of intercity trains and commuter trains (see materials of presentation).

Closing the presentation, PSLH UGM asked the participants to articulate freely their opinions regarding the plan on the development of regional railway system in central Java and its potential impacts.

#### Participant's Responses and Opinions

1. Hartoyo – resident, RW 05 Margorejo Kulon, Kalurahan Kestalan

He supported the plan because the train is an alternative mode of public transportation that will connect cities in Central Java. By using the train, public transportation will be cheap, safe, and friendly environment. Therefore, it is necessary to intensify socialization of the plan to the various levels of society.

According to his observation, he stated that ROW of PT KAI is actually used by the people. It is a serious problem when the plan will be implemented.

In regard to intercity train and development of tourism, he suggested to build train lines that can connects objects of tourism in Solo city, for instance Purwosari station – Sangkrah station.

2. Bimo Harmanto – resident, Kandang Doro, kelurahan Kestalan

He stated that since long time ago the local people have used areas of PT KAI as settlement. He asked that this fact should be carefully considered when the plan will be implemented.

According to his experience, the area of parking in Balapan station is too narrow, and it is necessary to expand it.

He also stated that quality of water in surrounding the Balapan station is not so good. He guessed that the water has been polluted by oil waste.

3. Supriyadi – resident, Kandang Doro, kelurahan Kestalan

He was concern with issue of congestion. He suggested that this problem must be included in the plan, especially in locations of level crossing.

4. Mrs Bambang – a house wife, kampong of Margorejo Kulon

Regarding the implementation of the plan, she proposed some recommendations: (1) it is necessary to prevent relocation of the people living surrounding the station; (2) PT KAI must improve its public services, such cheaper ticket, on time schedule, etc; and (3) there is a need to increase the standard of safety in locations of level crossing

5. Medi Sugita – resident, kampong of Margorejo Kulon

The plan is helpful for the people, but it is necessary to prevent 'short term project oriented' (it means that there is no sustainability). Issues of safety and comfort must be included in the plan.

If land acquisition and relocation cannot be prevented, there must be a fair and benefited compensation. In relation to these issues, the initiator should use a human approach.

6. Yok - BAPPEDA office, Solo city

The development of regional railway system is actually part of efforts to enforce the people to shift from mode of private transportation to mode of public transportation. In relation to the efforts, the government should provide public transportation that is cheap, safe and comfort, so that it can gradually decrease use of private vehicles.

He recommended that the plan should integrate with another mode of public transportation. For instance, it is necessary to build integrative station between Balapan (train) station and Tirtanadi (bus) station. Off course, to realize the plan, we need a big amount of money, and this is a main reason that a systematic design of the plan must be practiced.

In relation to the implementation of the plan, he reminded that it is necessary to maximize many valuable assets of PT KAI that has been neglected.

7. Taufik – Dinas Perhubungan, Solo city

The plan is actually pararell with the plan of the local government that will develop a mass rapid transportation in Solo city, especially the development of busway. The improvement in public transportation, he believed, will enforce the people to shift from private transportation to public transportation. The shifting from private to public transportation is only taken place, if the government can provide a good public transportation.

8. Usmar – resident, kampong of Kandangdoro

He reminded that issue of safety and comfort in the locations of level crossing must be an inherent part of the plan. It is caused by a high number of accidents in the location.

He also asked that the plan should be expand to include district of Boyolali.

9. H. Abdul Wakhid – a parking officer in the Balapan station

The area of parking in the station needs to be expanded. There are no enough space for parking numerous cars during the busy time.

10. Umar Wiyandri – a retired man and head of RW 05, Kalurahan Kestalan

He suggested that in order to increase the standard of safety, it is very necessary to build fly over in some locations of level crossing.

He underlined that the plan will benefit the people, because the train is a mode of public transportation that is cheap, very low consuming energy and friendly environment.

10. Sri Istiningsih – a house wife, kampong of Kandangdoro

She stated that since long time ago the quality of water in surrounding the Balapan station is not so clean (rather colored). She guessed that it has been caused by oil waste from the station.

**C. Public Hearing 3: 11 November 2008, Balai Kelurahan Tanjung Mas, Semarang**  
**Minutes of Meeting Public Hearing**

The Development of Regional Railway System in Central Java Region

Schedule of Meeting

1. Opening
2. Opening Speech
3. Presentation on the Plan of Development of Regional Railway System in Central Java
4. Participant's Responses and Opinions
5. Closing

Opening speech by Lurah (Head of Kelurahan) Tanjung Mas:

After greeting, he asked all participants, especially to residents to support the plan on development of regional railway system. He also asked to participants to be active by articulating their opinions during the meeting

Presentation - the Plan on Development of Regional Railway System in Central Java by PSLH UGM and JICA.

After greeting to the participants, representative of JICA (Mr Kuramoto) and PSLH UGM (Mr Suharko) explained the objectives of the meeting that is to socialize the plan on development of regional railway system in Central Java especially in Semarang, and to collect perceptions and opinions from the participants.

PSLH UGM explained the general plan on the projects in Central Java region. The development of railway system in Semarang city is presented in detail. This included the development of intercity trains and commuter trains (see materials of presentation).

Closing the presentation, PSLH UGM asked the participants to articulate freely their opinions regarding the plan on the development of regional railway system in central Java and its consequences.

#### Participant's responses and opinions

1. Bambang - head of LPMK (local organization) Kelurahan Tanjung Mas
  - a. He agreed with the plan by saying that the project will have many positive impacts for the people
  - b. However, he reminded that many areas belong to PT KAI are in serious problem. Almost all areas of PT KAI have been occupied by the local people. Therefore, he recommended that it was necessary to conduct a serious study regarding the process of land acquisition
  - c. He strongly asked to the PT KAI and the government to resolve a land dispute between the local people and PT KAI in Kampong of Kebonharjo (located in back areas of Tawang station). According to him, the local people already have the land certificates, and if PT KAI wants to use the land, PT KAI must pay compensation. He asked that this case should be resolved by using an approach of win-win solution.
  - d. Regarding noisy in surrounding the station, he told that it was familiar for the local people. A higher degree of noisy was actually from the port.
  - e. He recommended to PT KAI that the company should develop a good relationship with the (local) people, such as through initiating community development
  
2. Hari Sutarto – head of KIM (local organization), kelurahan Tanjung Mas
  - a. He asked that railway system in Semarang city should be developed as in Jakarta
  - b. It is necessary for PT KAI to improving its services to the people
  - c. Regarding land acquisition, he asked that if PT KAI will use areas of land that has been occupied by the local people, the company must pay a fair compensation
  - d. He stated that air pollution in surrounding railway is low. But, he has been disturbed by vibration coming from the trains
  
3. Sugeng Yulianto - BAPPEDA office, Semarang city

- a. If the plan of railway system development will be implemented, there is a need to coordinate with the plan to build a highway road of Solo-Semarang
  - b. In order to support this study, he recommended to conduct a research regarding relationship between the increasing number of motorbikes and air pollution and congestion.
4. Sri - BAPELDADA Semarang city
- a. The plan on the development of railway system must followed Spatial Arrangement that is designed by the government.
  - b. She recommended that the initiator of the project must seriously conducted environmental impact assessment (AMDAL study)
5. Riyanto – resident of Kelurahan Tanjung Mas (RW 01)
- He recommended three points:
- (1) It was necessary to build an under pass or fly over in some location of level crossings to minimize accidents that usually took place in the location.
  - (2) PT KAI must improve its public services
  - (3) There is an urgency to solve the problem of flood that regularly took place in Tawang station during rainy season
6. Warsana – Public Relation of PT KAI Semarang
- a. He stated that this forum was not a moment to resolve the land dispute between PT KAI and the local people. But he agreed to solve the case by win-win solution approach.
  - b. Regarding the areas of land that belong to PT KAI, he reminded that all the areas have been actually properties of the state. PT KAI was only an executing agent of the state.
  - c. He also asked the participants to see carefully the accidents in the locations of level crossing. It is not only responsibility of the PT KAI but also the people.
7. Suradi – Resident of Kelurahan Tanjung Mas (RW 5)
- a. He reminded that implementation of the plan needs a good coordination between the government and the people.
  - b. He recommended that the development of railway system must prioritize an issue of safety

8. Lurah (Head of Kelurahan) Tanjung Mas

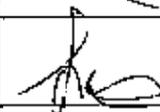
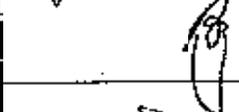
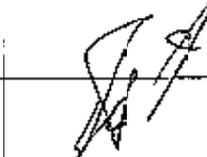
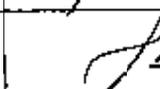
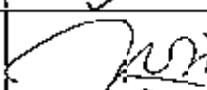
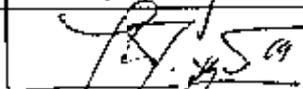
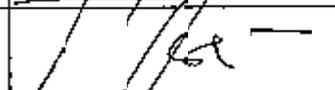
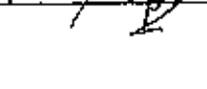
- a. He underlined that there is an urgent action plan to solve the regular flood in Tawang station during rainy season like now. It is necessary to improve the public services of PT KAI, so that the passengers feel comfort and safe.

# DAFTAR HADIR

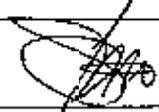
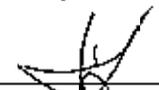
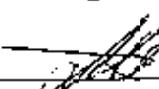
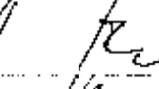
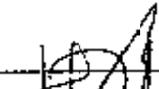
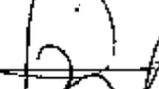
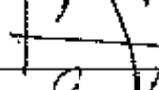
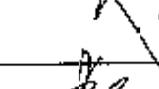
## PUBLIC HEARING STUDI PENGEMBANGAN SISTEM KERETA API REGIONAL JAWA TENGAH - YOGYAKARTA

Tempat  
Hari/Tanggal  
Waktu

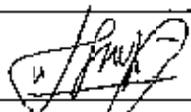
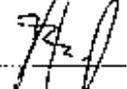
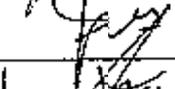
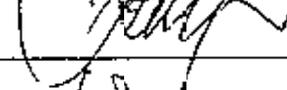
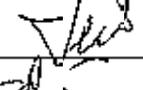
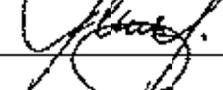
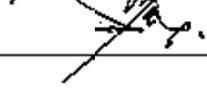
: Balai Kalurahan: Tanjung Emas - Semarang  
: Selasa, 11 November 2008  
: 19.30 s/d selesai

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1	Riyanto	RT06/II	
2	Gun Subagio	RT.08/II	
3	SARTONO	RT01/X	
4	Bambang	KA LPMK	
5	HERNY NGADMI	RW II RT01	
6	Dimpri	RT.6/II	
7	SOETONO	RT 10/IV	
8	Ichsan	RT09/II	
9	N'wanto	RT04/X	
10	SUGENO JUSTYANTO	BAPPEDA Kota Semarang	 x
11	Priyo. S.	RT 06/II	
12	Sucipto	RT.09/II	

Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
13.	SUBANDI	RW VII	
14.	Pazama	RT.10/15	
15.	Sulaima	RT 06 IX	
16	WAGIYO	RT04/06	
18	Sardjono	RT04/II	
19	Harbison	Rangkunungro	
20	SUWARDI	RT4/8	
21	Agas S	RT 06 / 15	
22	SAI MURNI	WAWASAN 101	
23	Fx Mugi Ludo	RT05 / RW X	
24	C. Suriyo	RT01 / RW X.	
25	Wandisnant	RT 03 / RW XI	
26	Arin Sutopo	KEA KIM-	
27	Agus Murni	Bahan MAS	
28	Suyoco	RT04 / XI	
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30	Suci Purwati	RT 07 / 8	

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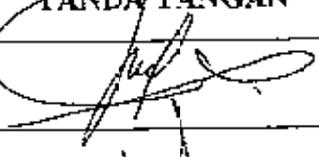
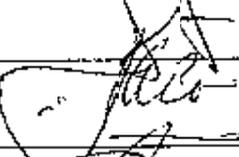
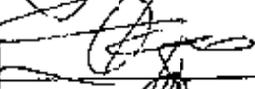
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35	CARNA	RO 3 X	
36	Rahma	Rt 3 / X	
37	MUSLIAN	RT.05 / VII	
38	SURIPTO	RT 08 / IX	
39	RUDI S	RT 06 / IX	
40	SUPRIYANTO	RT 03 / IX	
41	Indriyati	seluruh	
42	my Syafei	RT 4 Red III	
43	my PARTISI	RT 09 / XI	
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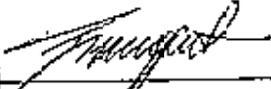
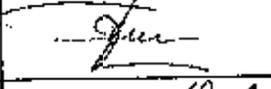
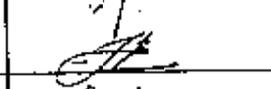
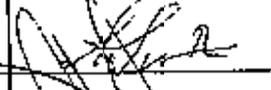
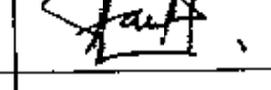
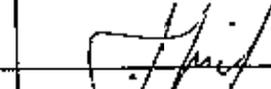
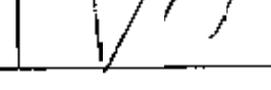
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50	Ong Suryono	RT05/IV	
51	H. Poin	Rt. 08 / 5	
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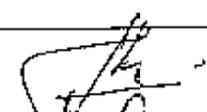
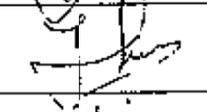
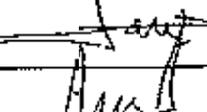
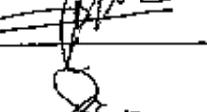
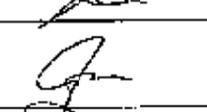
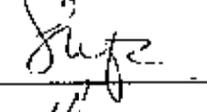
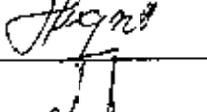
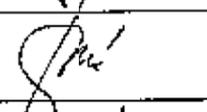
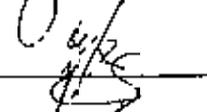
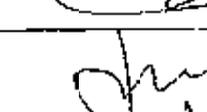
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## PUBLIC HEARING STUDI PENGEMBANGAN SISTEM KERETA API REGIONAL JAWA TENGAH - YOGYAKARTA

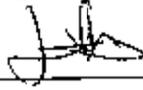
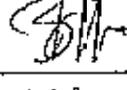
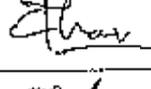
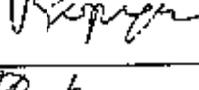
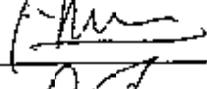
Tempat : Gedung Pertemuan PT KAI Stasiun Balapan - Solo  
Hari/Tanggal : Kamis, 05 November 2008  
Waktu : 14.00 s/d selesai

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1.	ERNANTO	RT02 RWV No 12. Kec Kuluw Bjo	
2.	A. Rizza	RT03 RWV Kestalan - KANDI	
3.	Samsud	Kandangdoro RT 03/02	
4.	Parkun	Kandangdoro RT 03/02	
5.	Suharto	Kandangdoro RT 02/02	
6.	Soemarmo	Kandangdoro RT 03/02	
7.	Wahidi	Kandangdoro	
8.	IBNU S	Kep. Kel. Kestalan	
9.	Demar Wijandic	Kel. Rio U Kestalan	
10.	Taufiq. M, S. ST	DCLAJ SKA	
11.	Suhadi	Parkur	
12.	A. wahid	~	

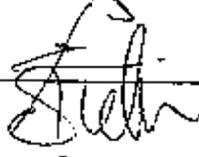
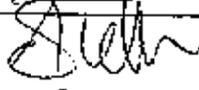
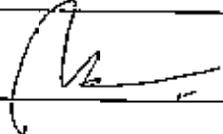
Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
13.	JURONG	Kd 03	
14.	MARUPOTO	RT 02/VI.	
15.	Sakpuri	RT 03/IV	
16.	Sukaradi	RT 03/VI	
18.	Bimo H	RT 03/VI	
19.	Murtianto	RT 03/VI	
20.	Siprudi	— —	
21.	Sri Istiningtih	- - -	
22.	Djono	- " -	
23.	Kusumono	RT-02/06	
24.	Sedarjanto	RT 02/06	
25.	Bambang	—	
26.	Sasdiyana	—	
27.	Rjastidjan	—	
28.	Gesang	- " -	
29.	Polsle BJS	2	
30.	HARYATI	KANTIN BLPW	

Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
31	Mulyani	Kantin Balaparu	
32	Pada	- " -	
33	ISHADI	MARGOREJO KULON	
34	TUTU	KANDANGREU	
35	Bu. ERNA.	MARGOREJOKUMON	
36	Gundham	"	
37	AHTO	MARGOREJO KULON	
38	Handro NS	"	
39	Mujiono.	- " - 9/V	
40	Supriya	- " - 2/V	
41	R. ANIP. D	- " - 2/V	
42	Sugito	- " -	
43	Winarma	- " -	
44	Lisnawati	- " - 2/V	
45	Handro	- " -	
46	Wuryantu	- " -	

Lanjutan.....

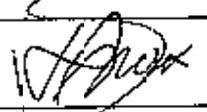
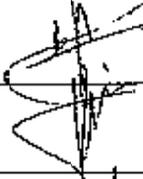
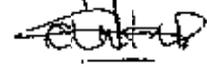
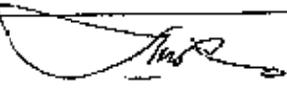
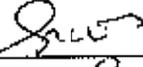
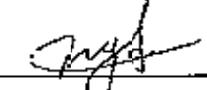
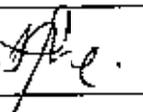
No	NAMA	ALAMAT/INSTANSI	TANDA TANGAN
47	Yab. S Nugroho	Bapeda Ska	
48	Suratmo	Ka Boro R102/ka	
49	Sultan N	KLIT	
50	Slamet	Ka Bora R102/ka	
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# DAFTAR HADIR

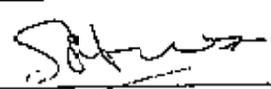
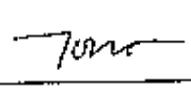
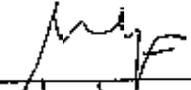
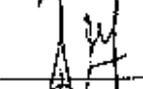
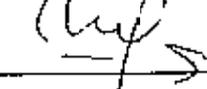
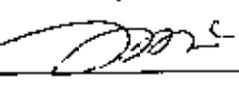
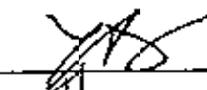
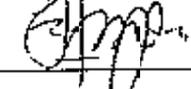
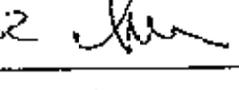
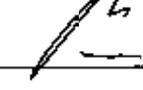
## PUBLIC HEARING STUDI PENGEMBANGAN SISTEM KERETA API REGIONAL JAWA TENGAH - YOGYAKARTA

Tempat  
Hari/Tanggal  
Waktu

Balai Kalurahan Sesromenduran - Yogyakarta  
Senin, 03 November 2008  
19.00 s/d selesai

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
1.	Bidit Suryanto	Hotel Abadi.	
2.	RIZKI, W.S.	Ps. KB. 70.	
3.	PURWU DADMOKO	Ps. KB. 69	
4.	Antik Kusdrizant	KETUA RT 12/02	
5.	AC SOENARNO	KETUWART 03/01	
6.	EKO PARTIC	PS. KB. 55	
7.	EDI SUBAETJO	KETUA RT 09/02	
8.	Supriyanto	.. RT 07/02	
9.	SUPARYO	KORAMIL / GT	
10.	Jean ...	Kel Potanendur	
11.	Melaji	Ps Limbungan	
12.	Hadri S.	Polsekta GT.	

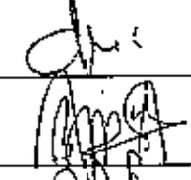
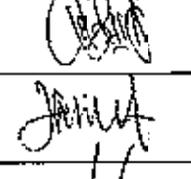
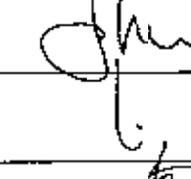
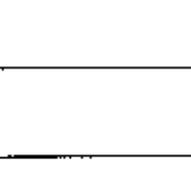
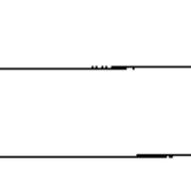
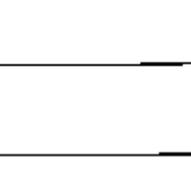
Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
13.	F. SITORUS	SH. PASAR KEMUNGES	
14.	AIDRY P	DIW HUB KOTA YIC	
15.	M. ARLOHO	ERAS	
16.	T. SUYONO	Payeksum (PT)	
18.	Wahyuno YP	Stasiun KA Yk.	
19.	BUN KSTUTI	FITISWU RT 02	
20.	SUGIHARTI	SITI SEWU RT05/KWI	
21.	A.T.	FS Kambor 1/79	
22.	SIGIT	FITISWU	
23.	ERI WIDATI	805POWijayan 4/10	
24.	ANLET SUTONO	— — 61/82	
25.	AGAWAN .	91no KL GTJ / 198	
26.	Suryata	Bogor 1/82	
27.	WARDIYONO	Kef RT C 1	
28.	SUMOMO .	7C SANDARIPAYAN 22	
29.	H. FRETARZO	BKM.	
30.	EDY UMOROS	WITUMB KOTZ	

Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
31	W. A. K. W. P.	PAKSONGT 1/301	
32	W. O. M. O. D.	SOPRONJAYAN 51/10X	
33	G. U. T. I. A. N. A.	Jude pa, fasa kudu	
34	A. R. O. N.	Sosromenduran	
35	A. E. S. W. I. U.	Kel. Jorromand	
36	K. A. R. E. J. I.	Pol 827 C-1	
37	B. P. U. T. I. A. N. T. O.	SOSRONJAYAN	
38	ABDULGANI	Sagoro	
39	L. O. D. A. K.	Sagoro	
40	H. A. D. I. S.	Sos. 91/140	
41	J. B. E. K. A. M. H.	Kee C-1	
42	M. E. V. I. A. N. I. M.	Sosromenduran	
43	J. S. O. R. T. I.	S. C. U. L. L. A.	
44	B. U. S. P. R. I. H. A. T. I. N.	SOGRO KUNCI	
45	E. L. I. N. G.	SOPRO WETAN	
46	A. N. T. A. R.	— 0 —	

Lanjutan.....

No	NAMA	ALAMAT / INSTANSI	TANDA TANGAN
47	Mahendra	Sonowijayan Wajan	
48	Bu Murni	Kud RW 02	
49	Dika	Sosro	
50	Brian	Sosro	
51	Aditya	SOSRO	
52	Tony	SOSRO	
53	Rama	7C Sahasawijayan	
54	Hetty	Sosro RT. 16	
55	AGUS ISWATHYUSI	RW. 12 JOBORESARI	
56	Valentino	SOSRO	
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