
CHAPTER 10 IMPLEMENTATION PLAN

10.1 Overall Implementation Plan for Major Road Development in Mamminasata Metropolitan Area

Figure 10.1.1 shows major on-going and future road developments in the Mamminasata Metropolitan area including four F/S roads and one Pre-F/S road undertaken by the JICA Study Team. These are part of the secondary arterial road network system in the Mamminasata Metropolitan Area.

Of these, the ongoing road projects and plans to be completed or recommended to be completed by 2010 are:

- Jl. Hertasning (on-going)
- Jl. Ir.Sutami, Toll and Frontage Roads (on-going)
- Jl. A.D.Pettarani (Jl.Tol Reformasi) - Jl.Urip Sumoharjo Flyover (on-going)
- Jl. Urip Sumoharjo / Jl. Perintis Kemerdekaan, widening from the existing 4 lanes to 6 lanes (on-going)
- Maros - Pangkep Road, widening from the existing 2 lanes to 4 lanes (on-going)
- Jl.Malino, widening from the existing 2 lanes to 4 lanes (planned)
- KIMA/Jl.Ir.Sutami Access Road, widening from the existing 2 lanes to 4 lanes (proposed)

As the budget being allocated for the road infrastructure development would be limited as outlined in Section 3.3 of this Report, the implementation schedule of those road infrastructures should be carefully planned to attain the maximum benefits for the nation, region, local communities and people. Stage implementation approach should be applied in principle.

Figure 10.1.2 shows a preliminary implementation schedule drawn taking the road network, traffic demand and yearly budget balance into consideration. It shows approximate road length, construction costs, classification of development/improvement, number of lanes, expected financial source (tentative) and timing/period of construction. **Figure 10.1.3** shows a five-year sequence of road development/improvement for those listed roads and forecast traffic flows on the Mamminasata road network. The upper figures are the traffic in pcu in the “without project” case at a five-year interval. The lower figures indicate the projects, based on the traffic flow in the “with project” case, to be completed at every five-year period with a list of road link names on the bottom. Most of the road sections of which volume capacity ratio (VCR) is over 1.00 are solved by the planned road projects in the next five-year term. There would be no road links which may constrain the efficient traffic flow by 2023 (F/S target year)¹ except two road links: the Airport Access Road and Jl. Urip Sumoharjo.

¹ The target year of the Sulawesi Island arterial roads for MP was changed from year 2023 to 2024 at the 2nd workshop on 10th September 2007 at Makassar. The target year of the F/S remains to be 2023 as defined in the original Scope of Work agreed by GOJ and GOI

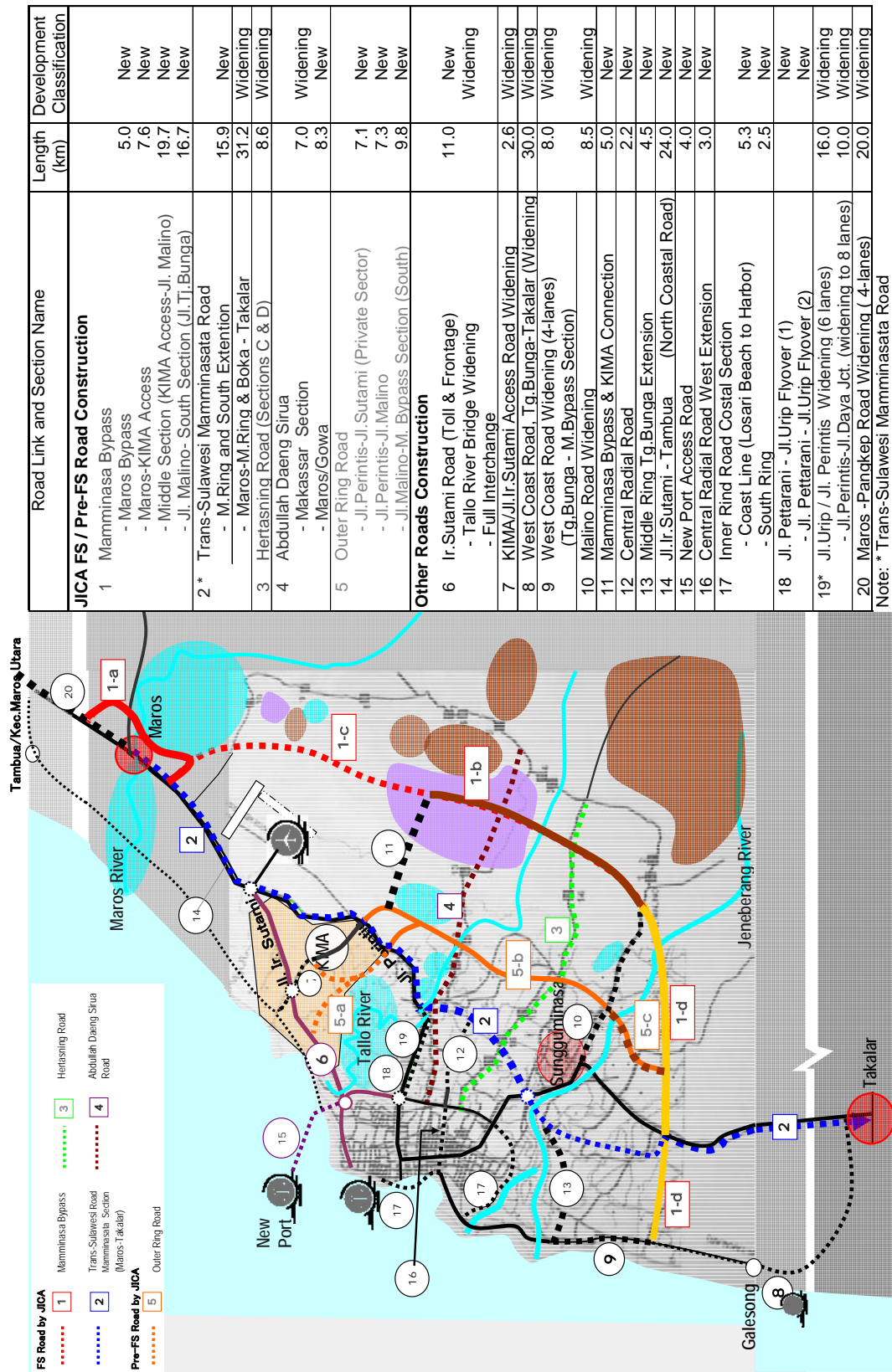


Figure 10.1.1 Overall Road Development Plan for Mamminasata Metropolitan Area

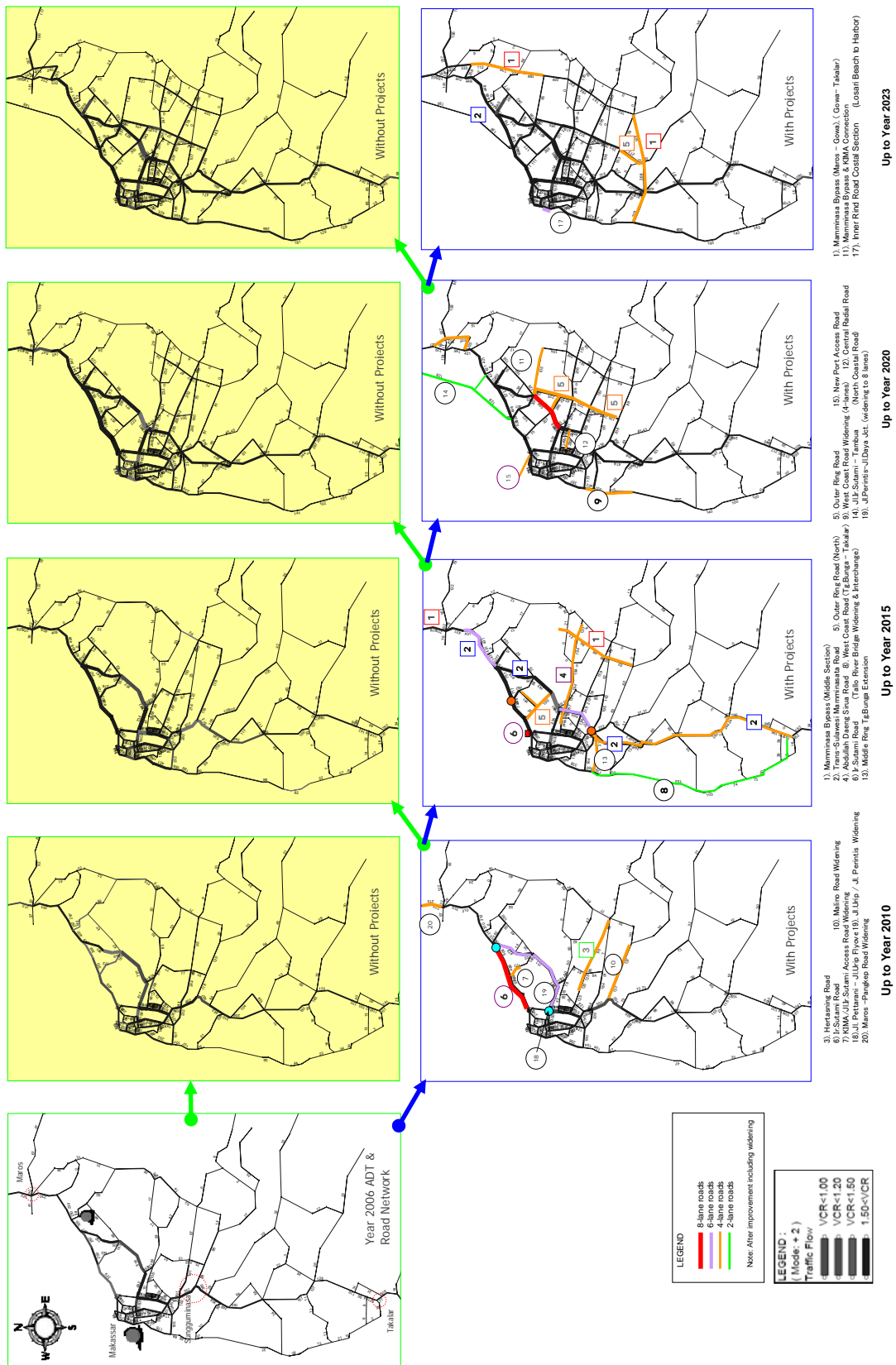
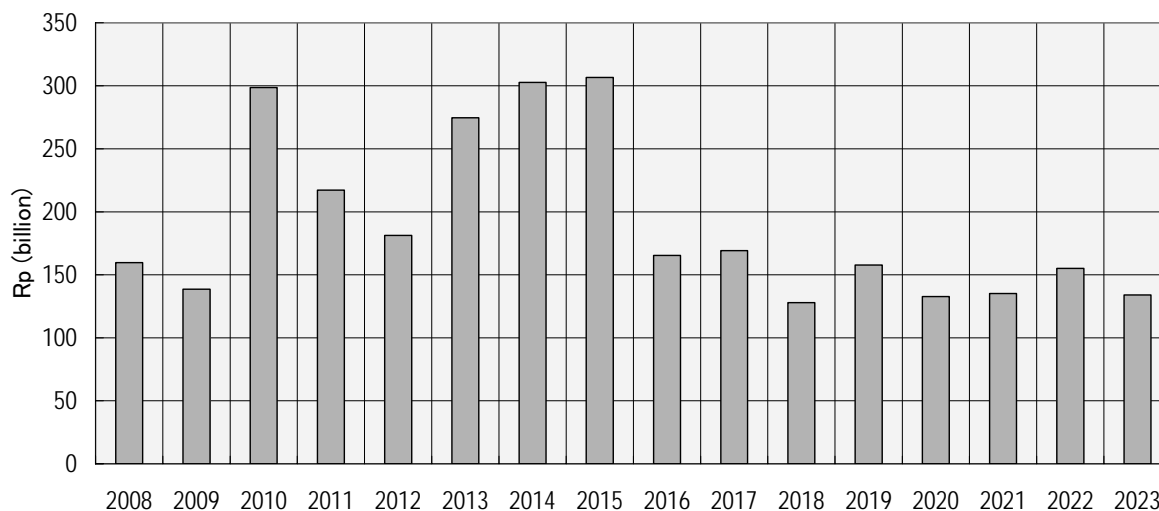


Figure 10.1.3 Traffic Condition in Mamminasata Metropolitan Area With- and Without-Project Cases at Each Five-Year Period

Figure 10.1.4 presents an estimate of public investments required for the on-going and new major road development projects in the Mamminasata Metropolitan Area in 2008-2023. An amount of Rp 190 billion will be required on an average.



Source: JICA Study Team

**Figure 10.1.4 Estimate of Public Investment (Construction Cost)
for Major Road Development for 2008-2023 Period**

10.2 Implementation Plan for the F/S Roads

10.2.1 Trans-Sulawesi Mamminasata Road

(1) Priority and Recommendation of Earliest Project Implementation

Among the F/S and other roads, the Trans-Sulawesi Road Mamminasata Section (the Trans-Sulawesi Mamminasata Road) was identified as the most viable on economic, technical and regional development aspects, and its earliest implementation was envisaged. The JICA Study Team completed the feasibility study for the Trans-Sulawesi Mamminasata Road and incorporated its implementation plan in the Interim Report submitted in June 2007. The JICA Study Team also assisted in preparing the Implementation Program and Project Digest for the Trans-Sulawesi Mamminasata Road Project (the TSMR Project).

(2) Implementation of Jl.Perintis Kemerdekaan 6-Lane Widening

The DGH has commenced the construction of a flyover and intersection for Jl.A.P.Pettarani (Jl.Tol Reformasi) - Jl.Urip Sumoharjo IC. The DGH also commenced the road widening from 4 lanes to 6 lanes for Jl.Perintis Kemerdekaan. The latter is a part of the Trans-Sulawesi Road Mamminasata section, and will be completed up to Jl.Ir.Sutami IC (new Airport Access Road IC) by 2010. As the commencement of the Trans-Sulawesi Mamminasata Road Project is scheduled to be in 2010, the TSMR Project does not include the DGH's APBN section, except overpass pedestrian bridges required for safety of pedestrian crossings. Moreover, as the Jl.Perintis

Kemerdekaan / Jl.Ir.Sutami IC flyover at the new airport terminal access will be completed under the ongoing BOT scheme by 2009, this is also excluded from the Trans-Sulawesi Mamminasata Road Project.

(3) Expressway/Toll Road Scheme

The DGH has conducted an expressway/toll road study in 2006 for Sulawesi Island (Trans-Sulawesi Road). The study recommended that the Maros-Mandai-Makassar, Middle Ring Road (Makassar - Sungguminasa) and Sungguminasa - Takalar section of the Trans-Sulawesi road should be included as priority roads in the expressway/tollway development programs to be implemented in the period of 2006 - 2020. However, a joint investment by the Government and private sector (Public-Private Partnership) is required to attain the marginal FIIR of 16% (or 20%).

The express/toll roads in the DGH's study followed the routes suggested in the Mamminasata Spatial Plan Study. The JICA Study Team changed the Trans-Sulawesi route from the Mamminasata Plan to the existing national road as described in Section 7.3. As a result, both the Maros - Mandai - Makassar and Sungguminasa (Boka IC) - Takalar sections are not recommended for toll road development but recommended for national road development (public investment).

The Study Team reviewed the toll road plan and PPP scheme for the Middle Ring Road (Makassar - Sungguminasa) as described in Section 7.3.3 on technical aspects and Section 9.3 on financial aspects, as one of the alternative implementation plans and recommended an **ordinal** public investment scheme with an external soft loan. The JICA Study Team also prepared a cost recovery plan required for operation and maintenance of the roads after their construction.

(4) Alternative Implementation Plans

The investment required for the Trans-Sulawesi Road Project was estimated at approximately Rp 1,651-1,757 billion in total including civil works, consultancy services, ROW acquisition, administration and tax (VAT). If Japanese ODA facility (JBIC Loan) is used, 100% of civil works and consultancy service costs can be covered by a soft loan. However, GOI needs to provide own finance for land acquisition, resettlement, administration and tax (VAT), which are not eligible for external loan. Land acquisition and resettlement costs for the Trans-Sulawesi Mamminasata Road were estimated at Rp 310 billion including inflation. The central and regional governments will share the cost, allocate budget and complete the land acquisition and resettlement in the years 2008 - 2010.

As allocation of sufficient budget for the land acquisition and resettlement in this short period seems to be difficult, the Study Team prepared alternative implementation schedules. Alternative A is implementation of the full length in one time and Alternative B is implementation in two phases. Phase 1 covers the Middle Ring Road and its south extension as these two sections are more urgently required in terms of traffic demand while less settlement is required. Phase 2 covers the Maros-Jl.Ir.Sutami IC and Sungguminasa (Boka IC) - Takalar sections. **Table 10.1.1** shows

the concept of the alternative plans.

Table 10.2.1 Alternative Implementation Plans

Alternative Plans	Concept	Section	Length	Construction Period	Estimated Construction Cost
A	Non-phased Implementation	Sections A, B, C and D	47.1 km	36 months (2010-2012)	Rp 1,651 billion
B	Phased Implementation	Phase 1: Sections B and C	16.0 km	36 months (2010-2012)	Rp 888 billion
		Phase 2: Sections A and D	31.1 km	36 months (2013-2015)	Rp 869 billion

Approximately Rp 99 billion will be required from 2008 to 2010 for the land acquisition and resettlement in the case of Alternative A. Annual budget requirement could be reduced to approximately Rp 55 billion from 2008 to 2013. It seems that Alternative B is more practicable and, therefore, it is recommended to be selected.

Land Acquisition & Resettlement Expenditures

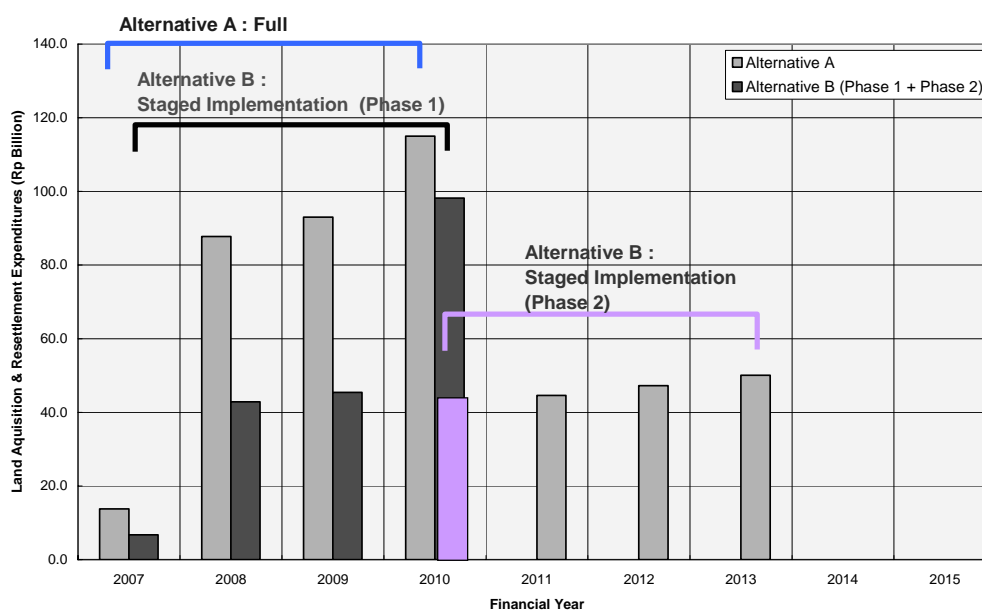


Figure 10.2.1 Land Acquisition and Resettlement Expenditures for Alternative Implementation Plans

There are many houses to be moved for the existing road widening, along the project road, especially at Mandai in Kab.Maros (Section A) and Limbung in Kab.Gowa (Section D) and it needs considerable time for resettlement negotiations and arrangements. On the other hand, the ROW acquisition is in progress for the Middle Ring Road (Section B) and there are not so many houses to be moved for Section C. It is expected that land acquisition and resettlement for Sections

A and D can be carried out and completed during the construction of Sections B and C.

10.2.2 Mamminasa Bypass, Hertasning Road and Abdullah Daeng Sirua Road

The following implementation plans are recommended for the Mamminasa Bypass, Hertasning Road and Abdullah Daeng Sirua Road in the F/S.

(1) Mamminasa Bypass

Four ring roads were planned for the Mamminasata Metropolitan Area namely the inner ring (Jl A.P.Pettarani/ Jl Tol Reformasi), middle ring, outer ring and outer-outer ring (Mamminasa Bypass). A general order of development requirement is from the inner ring to outside. According to the results of traffic survey and analysis, there would be no large through traffic on the Mamminasa Bypass from the south to the north bypassing Makassar City. However, as the anticipated role and function of the Mamminasa Bypass are to induce/promote the creation of a new satellite town at the foot of Mt. Moncongloe (approximately 15 km east of the Makassar City center), the middle part of the bypass road, which is an arterial road for the new town, should be constructed earlier than the northern and southern parts.

(2) Hertasning Road

The Hertasning Road (4-lane road) is under construction by the South Sulawesi Provincial Government. It is anticipated that the Provincial Government will continue the construction and complete this road by the end of 2010 using APBD I (provincial budget). After completion of the on-going sections (sections A-C), if budget availability is tight, staged implementation could be applied for Section D, 4.5 km long from the new campus of the State Islamic University to the intersection of the Kabupaten road. The 1st stage consists of widening the existing 4.5 m road to 7 m road, and the 2nd stage consists of further widening it to 4-lane road in the future.

(3) Abdullah Daeng Sirua Road

A part of the Abdullah Daeng Sirua Road (Section B) is under construction by Makassar City (APBD II). This road will have two functions: One is to serve as a radial road for transportation of residents around this road within the Makassar City territory (up to the Tallo River). The other is to provide a direct access from the Makassar City center to a planned new satellite town at the foot of Mt. Moncongloe (approximately 15 km east of the Makassar City center) and KIWA.

10.3 Executing Agency

(1) Trans-Sulawesi Mamminasata Road

The Tran-Sulawesi Road Project should be implemented as a strategic road development

contributing to the regional economy, both for Sulawesi and the eastern part of Indonesia. The status of the Middle Ring and its extension is expected to be changed to national road after their completion. The Directorate General of Highways (DGH) of the Ministry of Public Works will be the executing agency responsible for the construction and operation/maintenance of the Project. In the detailed design and construction stage, a Project Management Unit (PMU) will be established in Bina Marga. The PMU will represent DGH and act as the Employer of the Project.

The JICA Study Team suggests that user charges should be collected at the two new bridges, one at the Tallo River Bridge and the other at the Jeneberang River Bridge, to cover the operation and maintenance costs of the whole Trans-Sulawesi Mamminasata Road. The operation and maintenance works can be contracted out to the private sector. The Balai Besar VI of Bina Marga will be responsible for controlling the operation and maintenance works to be carried out by the management and operation contractor.

(2) Mamminasa Bypass

The Mamminasata Bypass should be designated as a strategic provincial road since it is part of the secondary arterial road network system for the Mamminasata Metropolitan Area that connects the capital of Maros, Gowa and Takalar passing through a new satellite town. The Public Infrastructure Agency (Dinas Praswil) of South Sulawesi Province will be the executing agency responsible for the construction and maintenance of the Project. For the implementation, “Officers for Technical Activities Implementation” will be appointed and they will represent Dinas Praswil and act as the Employer of the Project.

Note: The Maros Town Section (Maros bypass) might be changed to national road after its completion. In this case, the executing agency will be DGH.

(3) Hertasning Road

Sections A, B and C) of the Hertasning Road were implemented by the Public Infrastructure Agency (Dinas Praswil) of South Sulawesi Province. Therefore, Section D of this road under the F/S will also be executed by the same agency.

(4) Abdullah Daeng Sirua Road

The Abdullah Daeng Sirua Road will not have the status of provincial road as it is not a connecting road between the Provincial capital and Kabupaten/Kota capitals or between Kabupaten capitals. Therefore, the project within the territory of Kota Makassar should be implemented as a city road. Dinas PU of Kota Makassar should be the executing agency responsible for the construction and maintenance of the project within the Makassar City territory. As for the project road passing through the territories of Kabupaten Maros and Gowa, Dinas Praswil of South Sulawesi Province should be the executing agency as this road section should be designated as a strategic road for a new satellite town development.

Note: As the Kabupaten Maros and Gowa section provides direct access to a planned new satellite town, it might be constructed by a private investor who is participating in the new satellite town development.

10.4 Contract Packaging

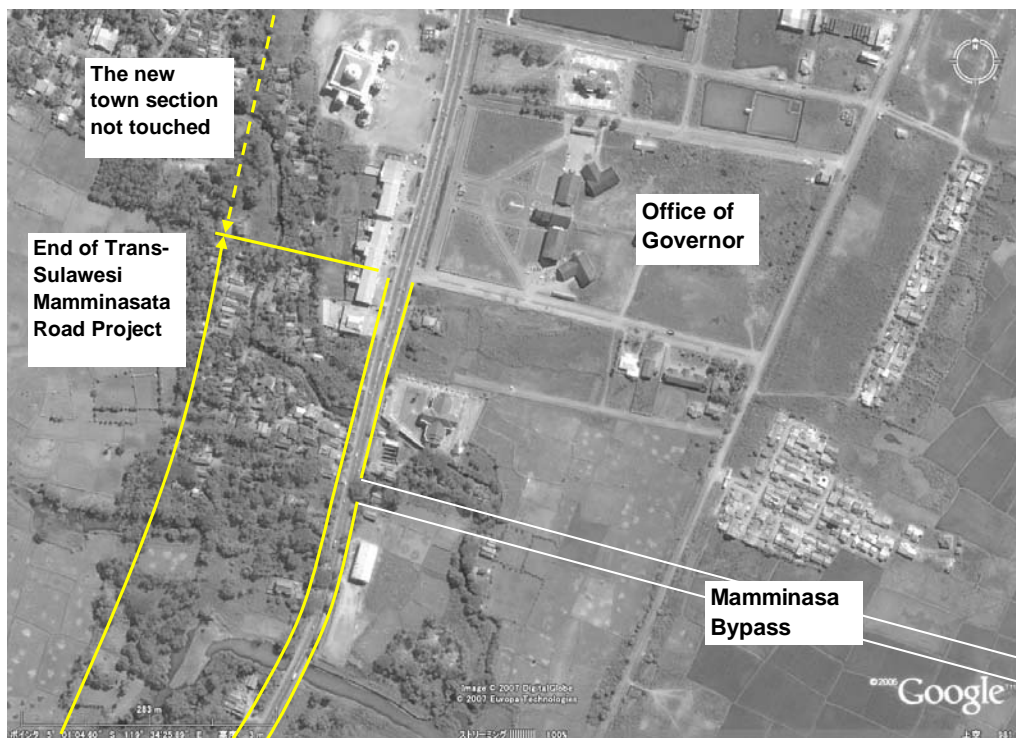
10.4.1 Trans-Sulawesi Mamminasata Road

The project should be implemented with appropriate contract packages to be determined taking into consideration the size of contracts (amount and quantity), characteristics of the section, technical difficulty, construction period, funding source, and competition in bidding. **Figure 10.3.1** shows the packaging and scope of work for alternative implementation plans A and B.

(1) Alternative A

The Study Team recommends to implement the project in four (4) packages if Alternative A of the above implementation plan is adopted.

Package 1 is the road section from the junction beside the office of Maros Regency Governor to Jl.Tol.Ir.Sutami IC (refer to **Figure 10.4.1**). The new Maros town and the divided 4-lane road completed in 2003-2004 shall not be disturbed. The construction works are to widen the existing 4-lane road to a divided 6-lane road.



Source: Drawn on Google Earth Map

Figure 10.4.1 End of Trans-Sulawesi Mamminasata Road at Maros (Package 1)

The construction length is 8.7 km and no long bridges exist. The scope of works includes the pedestrian bridges on the Jl.Perintis Kemerdekaan (length 10.3 km) to be widened to 6 lanes under the national budget (APBN) by 2010.

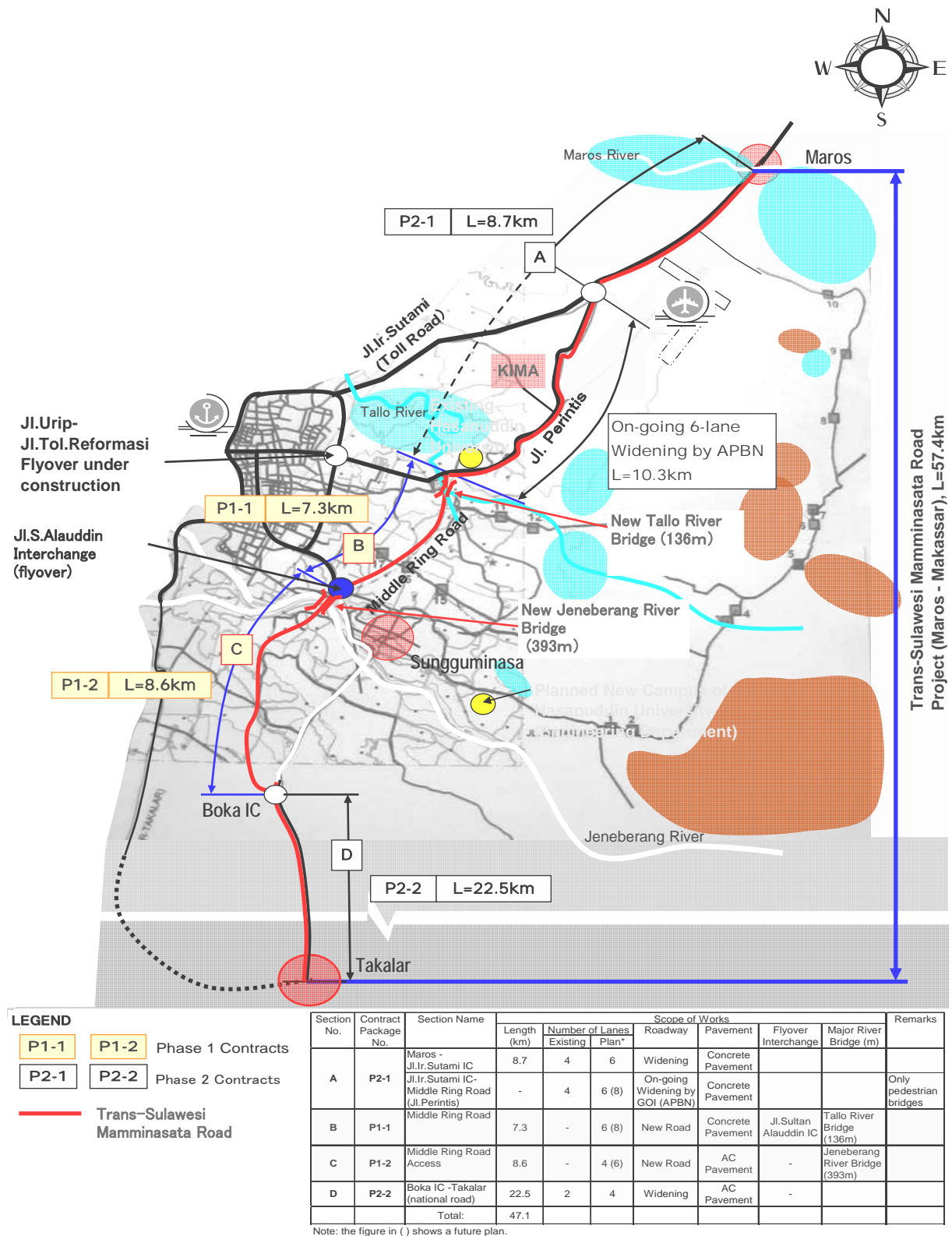
Package 2 consists of the construction of a new 7.3 km long road from Jl.Perintis Kemerdekaan/Middle Ring Road intersection to Jl.Sultan Alauddin IC in Makassar City. The road will have 6 lanes and a wide median for keeping space for its future widening to 8 lanes. The Tallo River bridge (L=136 m) and a flyover on Jl.Sultan Alauddin are included in this section. Pile slabs will be used for the weak soil section located in the Tallo River basin, at the entrance to the Middle Ring Road from Jl.Perintis Kemerdekaan. The Middle Ring Road will cross Jl.Abdullah Daeng Sirua, Central Radial Road from Pannakukang, Jl.Borong Raya, Jl.Hertasning and some other minor roads.

Package 3 consists of the construction of the Middle Ring Access (new road) from the Jl.Sultan Alauddin IC to the intersection with the national road at Boka in Kabupaten Gowa. The section is 8.7 km long and includes a new Jeneberang River bridge (L=393 m). The road will have 4 lanes and a wide median for keeping space for its future widening to 6 lanes.

Package 4 consists of widening the existing 22.4 long road from Boka IC in Kabupaten Gowa to the center of Takalar town, from a 2-lane road to a divided 4-lane road. Widening will be made mostly on the west side as an irrigation canal runs along the east side of the existing road. No long bridges exist in this section.

(2) Alternative B

The Study Team recommends to implement the project in two packages in each phase as illustrated in **Figure 10.4.2** if Alternative B of the above implementation plan is adopted. The outline of each package is the same as that described for Alternative A.



Source: JICA Study Team

Figure 10.4.2 Implementation Plan B for Trans-Sulawesi Mamminasata Road

10.4.2 Mamminasa Bypass, Hertasning Road, A.D. Sirua Road

(1) Mamminasa Bypass

The Mamminasa Bypass was divided into four (4) sections as indicated in **Table 10.4.1** taking the appropriate construction timing into consideration.

Table 10.4.1 Implementation Section of Mamminasa Bypass

Section No.*	Section Name	Road Length	Major Bridge Length	Construction Period	Estimated Construction Cost
1-A	Maros Bypass Section	5.7 km	Maros Bridge (126m)	24 months (2016-2017)	Rp 88 billion
1-C	Middle Section (KIMA Access - Jl Malino)	6.9 km		36 months (2013-2015)	Rp 280 billion
1-B	Maros-KIMA Access	19.7 km	Jeneberang Bridge (154m)	36 months (2021-2023)	Rp 90 billion
1-D	Jl Malino - South Section (Jl Tj Bunga)	16.7 km		60 months 2019-2023	Rp 250 billion
Total		49.1 km	280m		Rp 708 billion

Note: Order of sections from the north (Matos) to the south

Source: JICA Study Team

Of the above, it is assumed that an external soft loan would be applied for Section C, Middle Section (KIMA Access – Jl Malino), as this section should be constructed earlier than other sections according to the strategy of inducing the creation of a new satellite town along this road section. The construction should be carried out in one or two contract packages taking the estimated project cost and work characteristics into account.

(2) Hertasning Road

The JICA Study Team studied only Section D (4.9 km) of the Hertasning Road. Application of a single contract package would be appropriate for the construction of this road section..

(3) Abdullah Daeng Sirua Road

Section B of the Abdullah Daeng Sirua Road is under construction and, therefore, Sections C and D within the territory of Makassar City should be implemented with appropriate contract packaging determined by Dinas PU. For the construction of Sections E and F in the territories of Kabupaten Maros and Gowa, it is recommended to use an external soft loan as these sections should be connected to the Mamminasa Bypass to induce the new satellite town. Considering the estimated project cost, application of one or two contract packages would be appropriate for the construction of these sections.

Table 10.4.2 Implementation Section of Abdullah Daeng Sirua Road

Section No.	Section Name	Road Length	Long Bridge Length	Construction Period	Estimated Construction Cost
4-A, 4-C and 4-D	Makassar City Section	7.0km		48 months (2010-2013)	Rp 91 billion
4-E and 4-F	Kabupaten Maros & Gowa Section	8.3km	Tallo Bridge (60m)	36 months (2013-2015)	Rp 124 billion
Total		15.3km			Rp 315 billion

Source: JICA Study Team

10.5 Implementation Schedule

10.5.1 Trans-Sulawesi Mamminasata Road

(1) Pre-construction Schedule and Action Plan

As the feasibility study for the Trans-Sulawesi Mamminasata Road Project was completed by the end of June 2007, a series of procedures are required for financial arrangement for implementation of the project. It should also be noted that land acquisition and compensation are required for the project.

The JICA Study Team understands that joint financing by GOI and an external source (either Japanese ODA scheme or other donor agency) will be appropriate for implementation of the project. **Figure 10.5.1** shows a draft schedule (implementation plan for phase 1 project) and action plan for the use of the Japanese ODA facility for earliest project implementation. Similar procedures will be required in the case of using other external funding. The phase 2 project also should be implemented in the same way as the phase 1.

The DGH needs to make internal project screening and submit the project proposal to Bappenas through MOW for Blue Book listing. As to the application for JBIC loan in the fiscal year 2008, a project proposal shall be submitted to Bappenas by the end of December 2007. Financial arrangements of GOI (APBN/ABPD) are also necessary for the cost not covered by the external loan like land acquisition, resettlement and administration costs.

AMDAL (EIA) for the project was approved by the Governor of South Sulawesi Province in September 2007. The LARAP policy frame required for project appraisal was also prepared by the JICA Study Team.

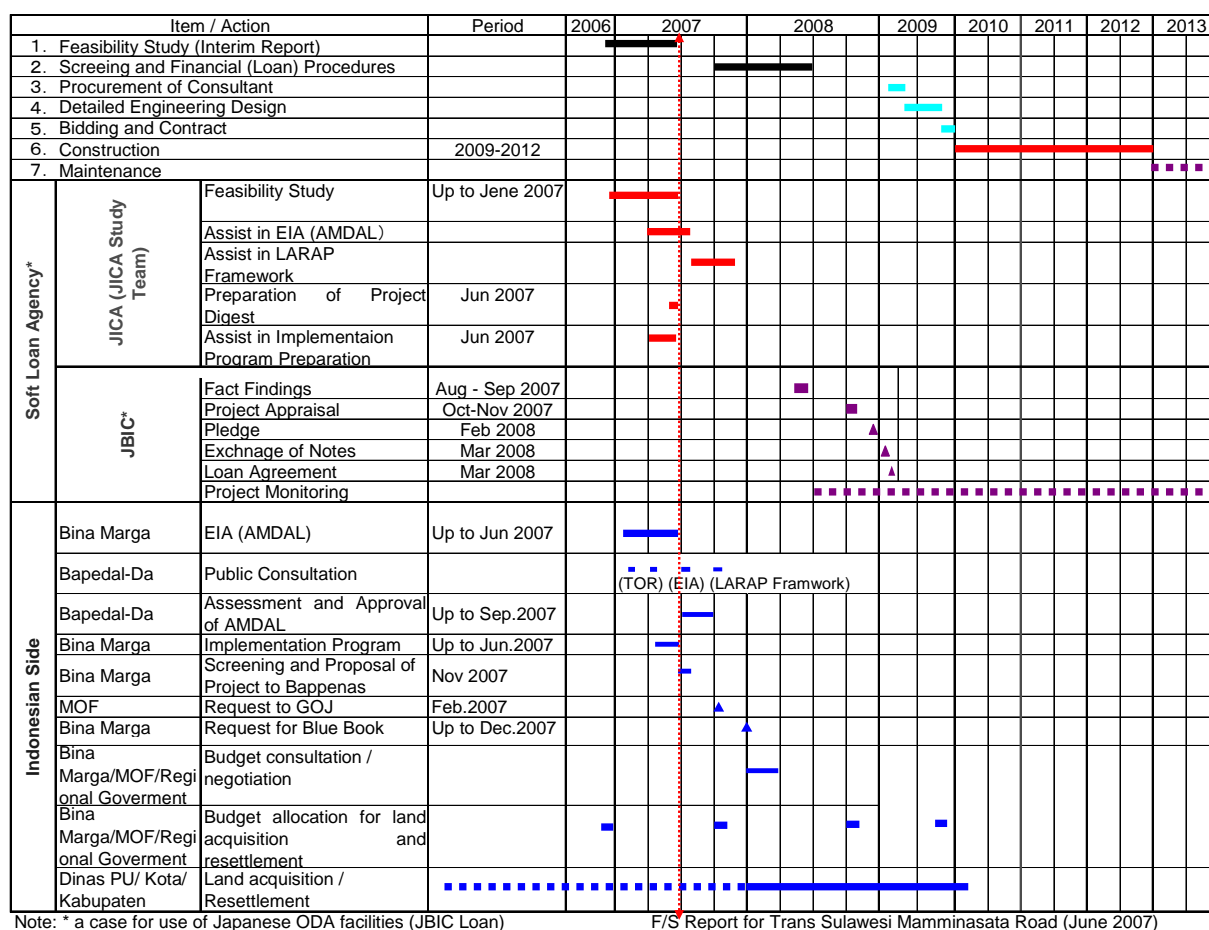


Figure 10.5.1 Implementation Schedule and Action Plan for Trans-Sulawesi Mamminasata Road Project (Case of Japanese ODA Facility)

A consultant will be employed in accordance with the guidelines of the financing agency and the executing agency for detailed engineering design, contractor procurement assistance and construction supervision.

Construction contractors will be procured through international competitive bidding in accordance with the guidelines of the loan agency. For the project of this type and scale, the selection will be made through separate pre-qualification and bidding among the pre-qualified contractors.

(2) Construction Stage

After the contract signing, the construction will be started. The construction period is estimated to be 30 - 36 months as shown in **Figure 10.5.2**. The required period for the roadway and bridge construction is estimated based on the work quantities in Section 9.1, daily productivity, number of work-units, and seasonal working days.

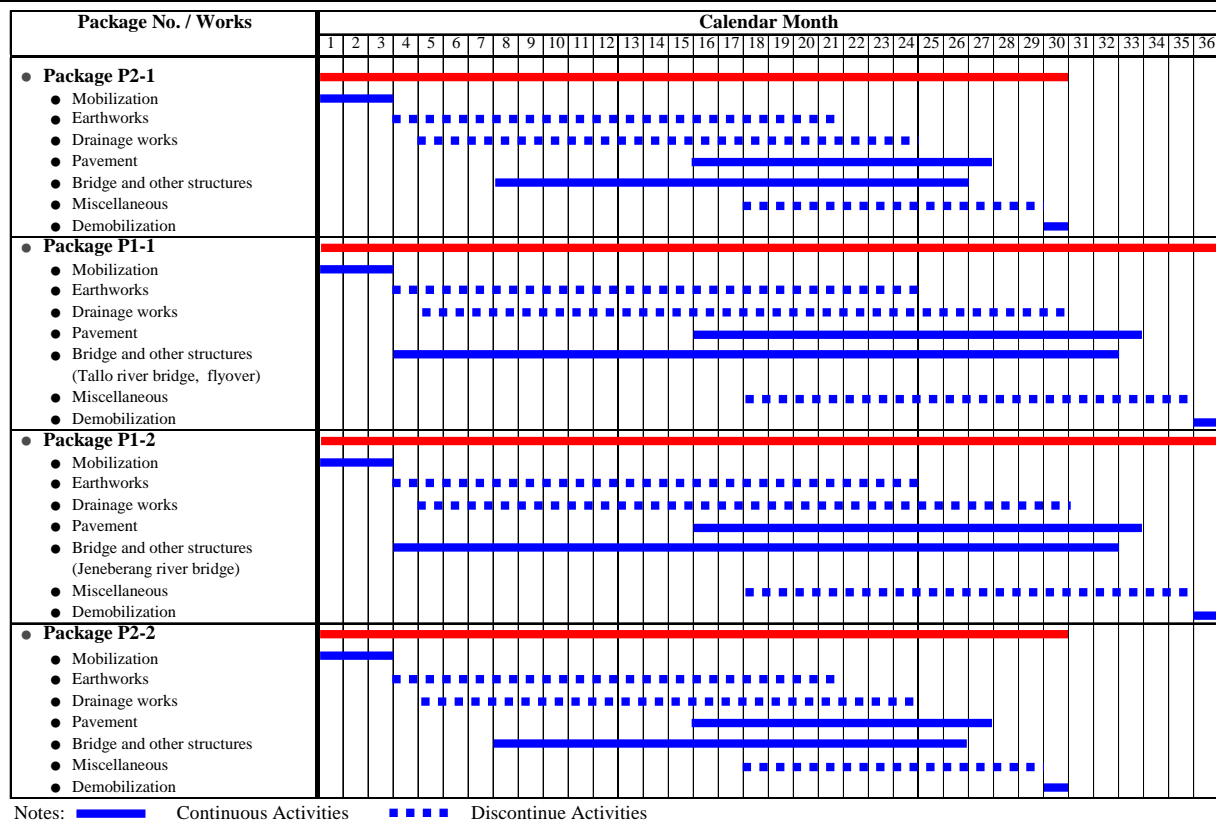


Figure 10.5.2 Construction Schedule by Contract Package for Trans-Sulawesi Mamminasata Road

(3) Post-construction Stage

Maintenance of the works and structures throughout the construction period and maintenance period is the responsibility of the contractors. After that, the project road will be maintained by DGH. If operation and maintenance works are contracted out, they are under the responsibility of contractors. The project execution will be continually monitored by the executing agency.

10.5.2 Mamminasa Bypass, Hertasing Road, A.D. Sirua Road

The implementation schedule of the Mamminasa Bypass, Hertasing Road and Abdullah Daeng Sirua Road would differ by financing source and availability. The anticipated or assumed source and plans are as shown in **Figure 10.5.3**.

The key issue for maintenance is the lack of financial and budgetary sustainability and/or insufficient budget allocation. A stable funding source should be established for maintenance financing. There are two approaches: budget approach and road fund approach. In the first approach, the road costs are considered as public expenditures to be covered by national or provincial budget. The revenue from fuel taxes, vehicle registration fees and others levies is used to cover such road costs. In the second approach, road users pay for the road costs. The former is the current practice in Indonesia and the establishment of road fund is one of the future challenges.

The road fund is an instrument that generally becomes the main financing source for road maintenance and other road expenditures. This approach has been used in the USA, Japan, New Zealand since the mid 1950s. Road users pay charges mainly in the form of gasoline levy. This is the most economical and efficient collection method as the charges can be collected at oil refineries or at ports of import. The road fund is free from budget fluctuation as it is generally managed and distributed by an independent board. In recent years, the road fund approach has been applied in many developing countries (more than 30 countries), including Ethiopia, Ghana, Benin, Kenya, Uganda, Honduras, Laos, etc. The first target is to collect the fund sufficiently to cover the road maintenance cost. Several countries have succeeded in collecting 90% of the required fund for maintenance at present. Some of the road fund could be used for securing road safety, overload control and other road asset management activities

A study was made in Indonesia on appropriateness of establishing a road fund with the World Bank's financial cooperation. However, as its application has not yet started, it is necessary to strengthen the current approach for a while to secure the maintenance cost.

10.6.2 Trans-Sulawesi Mamminasata Road

The operation and maintenance cost required for the Trans-Sulawesi Mamminasata Road is estimated to be Rp 9,000 million per annum for routine maintenance as detailed in Section 9.1. Periodic maintenance is also required at a certain interval. In order to secure sustainability of the Trans-Sulawesi Mamminasata Road after construction, a funding mechanism to finance operation and maintenance cost should be instituted. There will be three methods: the operation and maintenance by force account of DGH; by contractors under supervision of DGH (Balai Besar VI); and by participation of the private sector. The former two involve public financing and the last one involves financing by the private sector.

It is recommended that the following mechanism with the private sector participation be contemplated.

- i) A public service agency (Badan Layanan Umum: BLU⁴) will be established to provide independently the operation and maintenance services for the Trans-Sulawesi Mamminasata Road.

⁴ Law No.1/2004 concerning government accounting, Government Regulation No.23/2005 concerning governance of BLU

- ii) Two toll gates will be constructed at the Tallo River Bridge and the Jeneberang River Bridge as illustrated in **Figure 10.6.1**. There will be no access control for the Middle Ring Road but the users of this section will be tolled to finance the operation and maintenance of the entire section of the Trans-Sulawesi Mamminasata Road from Maros to Takalar.
- iii) BLU will conduct a tender to select a private company who provides actual operation and maintenance services for the road on a contractual basis. Payment for the services of the company will be made on the performance basis and the cost will be financed using the toll revenue and public budget, if necessary.

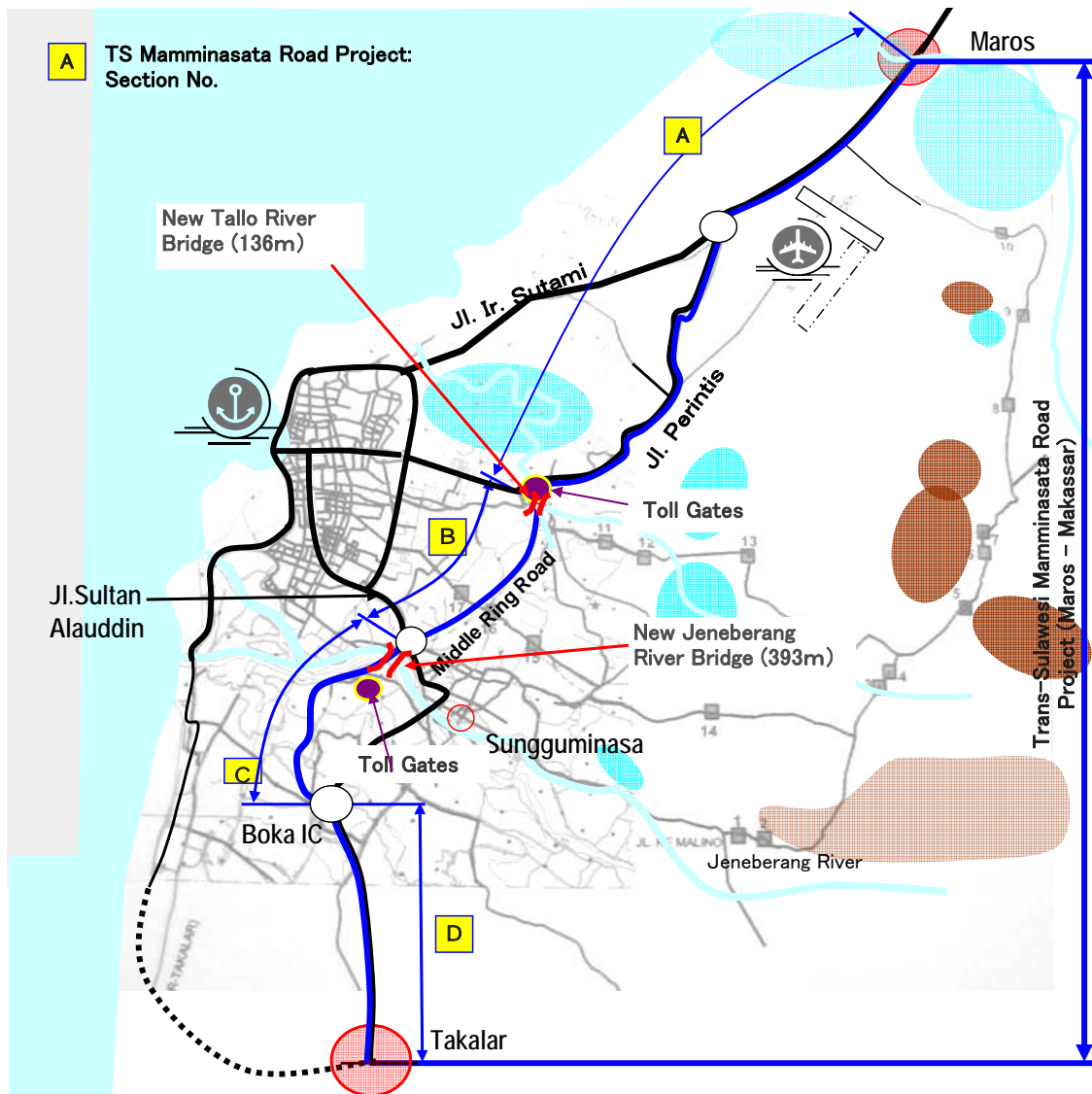


Figure 10.6.1 Location of Toll Gates for O&M Cost Recovery

10.6.3 Mamminasa Bypass, Hertasning Road and Abdullah Daeng Sirua Road

The road maintenance work for the Mamminasa Bypass, Hertasning Road, Abdullah Daeng Sirua Road consists of routine maintenance and periodic maintenance. Management, planning and execution of the maintenance work for these roads are under the responsibility of Praswil of South Sulawesi Province using APBD I or Dinas PU of Makassar City using APBD II, except part of the national road. Therefore, those regional governments are required to allocate appropriate budgets for road maintenance.

As the central section of the Mamminasa Bypass and the Maros/Gowa section of Abdullah Daeng Sirua Road are for the service of a new satellite town, the maintenance obligation might be transferred to the private investors who participate in the new town development.

10.7 Financing Plan and Annual Fund Requirements

10.7.1 Trans-Sulawesi Mamminasata Road Project

(1) Financing Methods

Figure 10.7.1 summarizes the general financing methods studied for the Trans-Sulawesi Mamminasata Road Project.

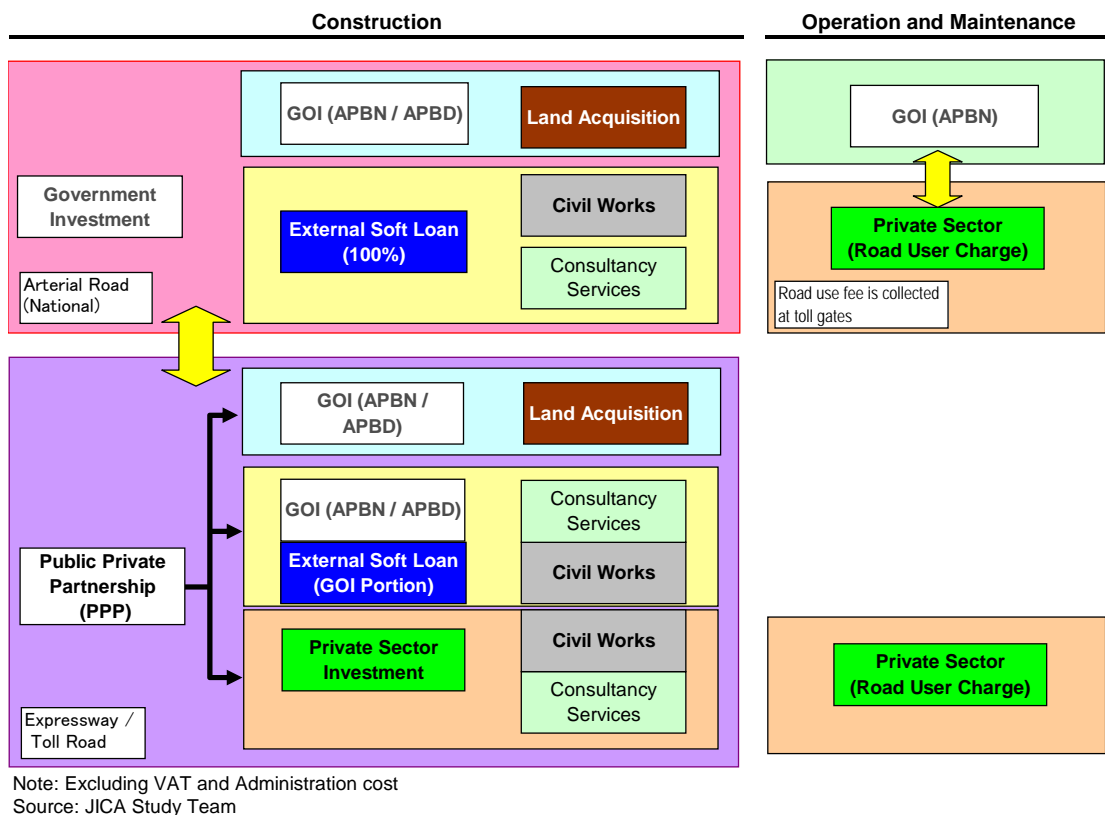


Figure 10.7.1 Financing Methods for Trans-Sulawesi Mamminasata Road Project

There will be two financing methods for implementation of the project. One is financing by the public sector and the other is co-financing with the private sector (Public-Private Partnership). In both methods it is possible to use a soft loan facility either from Japan or other sources. A Build-Operate-Transfer (BOT) scheme will not be applicable as the Project's FIRR is too low. Operation and maintenance can be financed by the public (ABBN) or covered by user charges as one of the sustainable maintenance methods.

(2) PPP System in Road Sector

1) Historical Outline of Toll Road Development

The first toll road built in Indonesia was the "Jagorawi Toll Road" with a length of 46 km linking Jakarta to the outer suburbs of Bogor and Ciawi in March 1978. The Government funded it through offshore loans and the issuance of Indonesia Highway Corporation (Jasa Marga) bonds. Having been founded to operate the toll road on March 1st, 1978 based on the Government Regulation No. 4 of 1978, later based on Presidential Decree No. 38 of 1981, PT Jasa Marga (Persero) was appointed to operate nine toll roads/bridges in Indonesia. At the end of the 1980s, the Government invited the private sector to take part in the development of the toll road network through Build-Operate-Transfer (BOT) schemes. As of the beginning of 2006, 649 km of toll roads have been in operation in Indonesia, of which 165 km are managed by private operators.

In general, toll roads form part of the road infrastructure network. They are deemed to be implemented in a self-sufficient context without straining the Government's budget. In order to give further strength to that investment concept, the regulatory status of toll roads was alerted by the Road Law No. 38/2004. The Government tends to finance future toll roads through both approaches of fully private funds and Public-Private Partnership (PPP) programs. In order to attract the private sector, there are steps that are done or being considered by the Government:

- * Strengthening the institutional and regulatory framework for toll roads
- * Establishing the Indonesian Toll Road Authority (BPJT) which will be responsible for investment regulations on toll roads to replace Jasa Marga regulatory role
- * Formulating appropriate structure for the automatic adjustment of toll rates
- * Applying transparent and competitive process
- * Addressing issues on land acquisition and rights
- * Establishing clear and sound policies to determine the proper conditions under which government support should be extended
- * Formulating a road master plan including toll road master plan

2) Regulatory Framework

Article 43(2) of the Road Law No. 38/2004 determines the new policy of the Government regarding the development of toll roads, and Article 19-23 of the Government Regulation No. 15/2005 on toll roads stipulates that for the toll road sections that indicate positive economic

viability but not financially viable, the Government will finance or construct the respective toll roads. After constructing the toll road, the Government will conduct contract management for the operation and maintenance of the facility. For toll road sections with indications of positive economic viability but marginal financial viability, they can be implemented by the Government and an enterprise in which finance and construction can be conducted through a partnership scheme. For toll roads having good economic and financial viability, they will be offered through open and transparent investment tender process.

The Road Law No. 38/2004 encompasses the following regulations:

Indonesian Toll Road Authority (BPJT)

- * Indonesian Toll Road Authority (BPJT) established by, and is responsible to the Minister of Public Works.
- * The Authority includes participants from the Government, stakeholders and the public.
- * BPJT's basic responsibilities encompass the implementation of regulations and the supervision of toll road operators in accordance with the policies and regulations specified in Law No. 38 of 2004 and Government Regulation No. 15 of 2005.
- * Major tasks to be carried out by the Government/BPJT include: project preparation, invitation to pre-qualification (PQ) and bidding, pre-bid conference, evaluation of bids, appointment of successful bidder, contract signing and contract implementation.

Toll Rates

- * Initial toll rates and subsequent toll rate adjustments are proposed by the investor through BPJT and approved by the Minister of Public Works.
- * The rates are calculated by taking into consideration the willingness-to-pay of toll road users, savings in vehicle operating cost and the feasibility of the investment.
- * Tariffs are regulated under a toll road authorization agreement; however, their application is subject to the official announcement of the toll road operator.
- * Tariffs are subject to be reviewed and adjusted every two years with a coefficient based on the inflation rate.

Land Acquisition

- * The Government is responsible for the acquisition of land through the Ministry of Public Works.
- * Land Acquisition is funded either by the Government, State Owned Company or the private sector.

-
- * The budget for land acquisition is determined by the Government.
 - * The toll road and the land on which it is built are the property of the Government.
 - * In case of land acquisition funds emanating from private parties, if the cost exceeds the approved budget, the shortfall will be compensated by an adjustment of the concession or through other acceptable methods.

To cope with the problem of land speculation that has caused project-cost inflation and uncertainty, it is expected that the Government will issue a regulation banning the use of land designated for turnpike projects for other purposes. With this regulation, land that has been earmarked for turnpike projects cannot be sold except to the local government at a price that is slightly higher than the market value. This will be a part of the Government's efforts to encourage investors to participate in future toll road projects and to reduce the length of the land acquisition process.

3) Issues

PPP projects in the road sector are being offered to the private sector through KKPPI (Komite Kebijakan Percepatan Penyediaan Infrastruktur: The National Committee for the Acceleration of Infrastructure Provision). As described in the last section, a PPP project is offered when the project has a marginal financial viability. As of now only two PPP projects in the road sector have been under the tender process, which are the Solo - Kertosono Toll Road and Medan - Kualanamu Toll Road. The criteria for selecting a winning bidder is the least viability gap funding provided by the Government.

There are following issues in the current PPP system in the road sector:

- i. When traffic demand is marginal, although the viability gap is filled by the Government in the initial construction cost, there is always a tendency for the private sector to become cautious in taking such risk, thus hinders its participation.
- ii. There may be a risk for the Government to end up providing a large subsidy in the form of viability gap funding to a PPP concessionaire on the basis of its request for the viability gap funding.
- iii. On the other hand, there is also an inherent risk that competition in tender tends to drive the private sector to overestimate future traffic demand so as to minimize the viability gap funding in order to come up with competitive pricing for the financial proposal. However, this overestimation of the future traffic demand may negatively affect the sustainability of the Project in the future.
- iv. There is no adjustment mechanism for the profit which the private sector will make in the future, therefore the Government may always face the criticism that it gives away excessive profit to the private sector when the traffic demand grows beyond the original forecast level.

- v. It is difficult for the line ministry to estimate the amount of viability gap funding with a great degree of certainty, therefore there may always be a risk involved for the line ministry in budgeting such viability gap funding with the Ministry of Finance.

4) Application for the Trans-Sulawesi Mamminasata Road Project

Public-Private Partnership (PPP) is one of the methods for financing the Trans-Sulawesi Mamminasata Road Project. However, financial viability (FIRR) analyzed in Section 9.3 was very low and together with the issues raised in the preceding section and Section 7.3.3, it is not recommended to apply Public-Private Partnership (PPP).

(3) Financing Plan

Table 10.7.1 and **Figure 10.7.2** indicate the financing plan for the project in the case of amplification of Japanese ODA facility (JBIC soft loan) by alternative implementation plan with assumptions that:

- * 100% of the costs of civil works, consulting services and contingencies are financed by an external soft loan
- * GOI finances the land acquisition/resettlement, administration cost and tax (VAT), which are not eligible for the JBIC loan
- * The assumed currency exchange rate is US\$ 1.00=¥120=Rp.9,322 (as of May 2007).

The project cost is estimated at Rp 1,651 billion for Alternative A including VAT and inflation. The total project cost for Alternative B is estimated at Rp 1,757 billion (Rp 888 billion for Phase 1 and Rp 869 billion for Phase 2). The loan amount for the project, which is the total of the civil works, consulting services and contingencies, is estimated to be US\$ 132.3 million, 72.7 million and 67.7 million by alternative plan, respectively. The rest of the project cost, namely the land acquisition cost, administration cost and tax cost, estimated to be Rp 448 billion, Rp 227 billion and Rp 254 billion respectively, is needed to be financed by the local budget (APBN and APBD). The loan can cover 71% - 75% of the project cost.

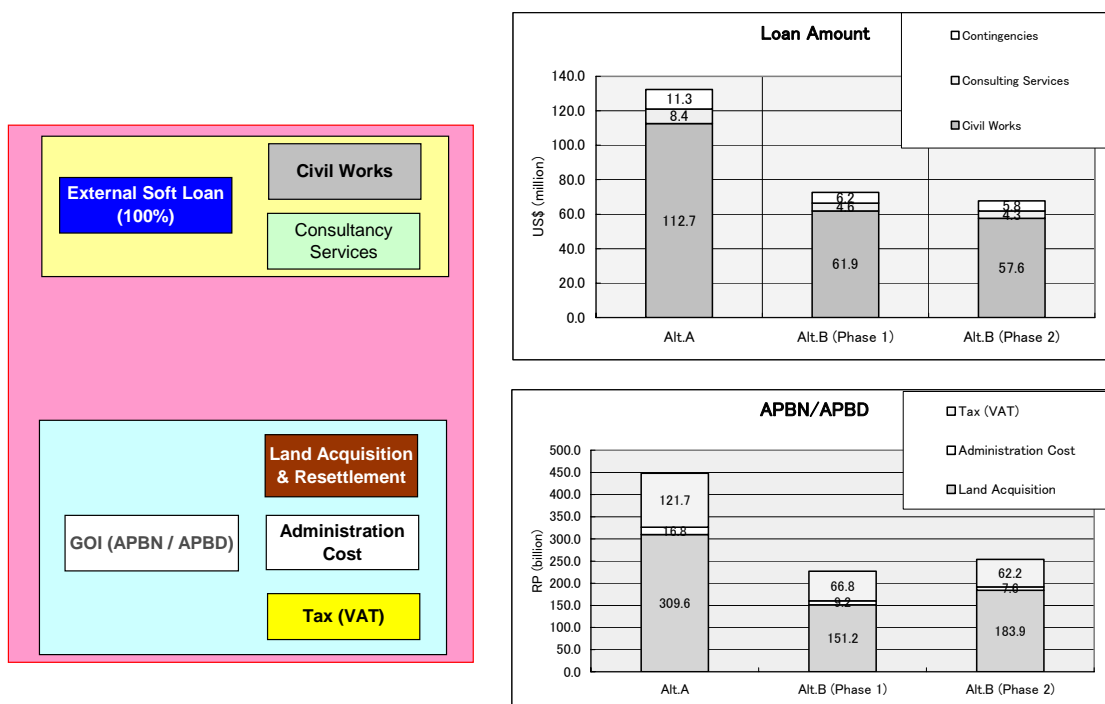
Table 10.7.1 Project Cost and Loan Amount by Alternative Implementation Plan

	Alternative A	Alternative B			Actual Implementaion for Phase 1*
		Phase 1	Phase 2	Total	
External Soft Loan (US \$ million)					
- Civil Works	112.7	61.9	57.6	119.5	61.9
- Consulting Services	8.4	4.6	4.3	8.9	5.7
- Contingencies	11.3	6.2	5.8	11.9	6.2
Total	132.3	72.7	67.7	140.4	73.8
GOI APBN / APBD (Rp billion)					
- Land Acquisition	309.6	151.2	183.9	335.1	151.2
- Administration Cost	16.8	9.2	7.6	16.8	9.2
- Tax (VAT)	121.7	66.8	62.2	129.0	67.8
Total	448.1	227.2	253.7	480.9	228.2
Grand Total (Rp billion)	1,651.2	888.0	868.9	1,756.9	899.0

Note: * The detailed design for Phase 2 will be carried out during the Phase 1 work.

Source: JICA Study Team

For the earliest start of the land acquisition for the Phase 2 project, the detailed design for the Phase 1 and Phase 2 should be carried out at the same time.



Source: JICA Study Team

Figure 10.7.2 Financing Plan for Trans-Sulawesi Mamminasata Road Project

(4) Annual Fund Requirements

The financing plan is further broken down by annual fund requirements based on the implementation schedule as indicated in **Tables 10.7.2, 10.7.3 and 10.7.4** for the implementation plan Alternative A, Alternative B (Phase 1) and Alternative B (Phase 2), respectively. In the

schedule, the foreign currency component is assumed to be 50% of the civil works and consultancy service costs and the rest is the local currency component. Price escalation is assumed to be 2% and 6% per year for the foreign and local components, respectively.

Note: The detailed design for Phase 1 and Phase 2 should be carried out at the same time in order to commence the ROW acquisition (see the table below) for Phase 2 as soon as possible.

Table 10.7.2 Disbursement Schedule for Implementation Plan Alternative A

Category	Total	2007	2008	2009	2010	2011	2012	2013
(I) Foreign Currency Portion (Mil US\$)								
Civil Works (Base Cost)	46.19	0.00	0.00	0.00	16.17	16.17	13.86	0.00
Price Escalation 2.0%	4.76	0.00	0.00	0.00	1.33	1.68	1.75	0.00
Physical Contingency 10.0%	5.10	0.00	0.00	0.00	1.75	1.78	1.56	0.00
Sub-Total	56.05	0.00	0.00	0.00	19.25	19.63	17.17	0.00
Consulting Services (Base Cost)	3.23	0.00	0.00	1.29	0.65	0.65	0.65	0.00
Price Escalation 2.0%	0.28	0.00	0.00	0.08	0.05	0.07	0.08	0.00
Physical Contingency 10.0%	0.35	0.00	0.00	0.14	0.07	0.07	0.07	0.00
Sub-Total	3.87	0.00	0.00	1.51	0.77	0.79	0.80	0.00
Total	59.92	0.00	0.00	1.51	20.02	20.42	17.97	0.00
(II) Local Currency Portion (Bil Rp.)								
Civil Works (Base Cost)	419.92	0.00	0.00	0.00	146.97	146.97	125.98	0.00
Price Escalation 6.0%	141.01	0.00	0.00	0.00	38.58	49.71	52.72	0.00
Physical Contingency 10.0%	56.09	0.00	0.00	0.00	18.55	19.67	17.87	0.00
Sub-Total	617.02	0.00	0.00	0.00	204.10	216.35	196.57	0.00
Consulting Services (Base Cost)	29.40	0.00	0.00	11.76	5.88	5.88	5.88	0.00
Price Escalation 6.0%	8.24	0.00	0.00	2.25	1.54	1.99	2.46	0.00
Physical Contingency 10.0%	3.76	0.00	0.00	1.40	0.74	0.79	0.83	0.00
Sub-Total	41.40	0.00	0.00	15.40	8.16	8.65	9.17	0.00
Land Acquisition and Resettlement	260.34	13.02	78.10	78.10	91.12	0.00	0.00	0.00
Price Escalation 6.0%	49.27	0.78	9.65	14.92	23.92	0.00	0.00	0.00
Sub-Total	309.61	13.80	87.76	93.02	115.04	0.00	0.00	0.00
Administration Cost	16.80	0.00	0.00	4.20	4.20	4.20	4.20	0.00
Total	984.83	13.80	87.76	112.63	331.50	229.20	209.94	0.00
(III) VAT Tax Portion (Bil Rp.)								
Civil Works (Base Cost)	85.05	0.00	0.00	0.00	29.77	29.77	25.52	0.00
Price Escalation	18.54	0.00	0.00	0.00	5.10	6.54	6.90	0.00
Physical Contingency	10.36	0.00	0.00	0.00	3.49	3.63	3.24	0.00
Sub-Total	113.95	0.00	0.00	0.00	38.35	39.94	35.66	0.00
Consulting Services (Base Cost)	5.95	0.00	0.00	2.38	1.19	1.19	1.19	0.00
Price Escalation	1.09	0.00	0.00	0.30	0.20	0.26	0.32	0.00
Physical Contingency	0.70	0.00	0.00	0.27	0.14	0.15	0.15	0.00
Sub-Total	7.74	0.00	0.00	2.95	1.53	1.60	1.66	0.00
Total	121.70	0.00	0.00	2.95	39.89	41.54	37.32	0.00
(IV) Total Project Cost (Bil Rp.)								
	1,665.07	13.80	87.76	129.65	558.01	461.09	414.76	0.00
Eligible Portion (Loan Amount)	1,216.96	0.00	0.00	29.48	398.89	415.36	373.23	0.00
	73.1%							

Note: Currency Exchange Rates US\$ 1.00= Rp. 9,322 = 120 J.Yen
Rp 1.00= US\$ 0.00011 = 0.013 J.Yen

Source: JICA Study Team

Table 10.7.3 Disbursement Schedule for Implementation Plan Alternative B (Phase 1)

Category	Total	2007	2008	2009	2010	2011	2012	2013	2014	2015
(I) Foreign Currency Portion (Mil US\$)										
Civil Works (Base Cost)	25.37	0.00	0.00	0.00	8.88	8.88	7.61	0.00	0.00	0.00
Price Escalation 2.0%	2.62	0.00	0.00	0.00	0.73	0.92	0.96	0.00	0.00	0.00
Physical Contingency 10.0%	2.80	0.00	0.00	0.00	0.96	0.98	0.86	0.00	0.00	0.00
Sub-Total	30.78	0.00	0.00	0.00	10.57	10.78	9.43	0.00	0.00	0.00
Consulting Services (Base Cost)	1.78	0.00	0.00	0.71	0.36	0.36	0.36	0.00	0.00	0.00
Price Escalation 2.0%	0.15	0.00	0.00	0.04	0.03	0.04	0.04	0.00	0.00	0.00
Physical Contingency 10.0%	0.19	0.00	0.00	0.08	0.04	0.04	0.04	0.00	0.00	0.00
Sub-Total	2.12	0.00	0.00	0.83	0.42	0.43	0.44	0.00	0.00	0.00
Total	32.91	0.00	0.00	0.83	10.99	11.21	9.87	0.00	0.00	0.00
(II) Local Currency Portion (Bil Rp.)										
Civil Works (Base Cost)	230.61	0.00	0.00	0.00	80.71	80.71	69.18	0.00	0.00	0.00
Price Escalation 6.0%	77.44	0.00	0.00	0.00	21.19	27.30	28.95	0.00	0.00	0.00
Physical Contingency 10.0%	30.80	0.00	0.00	0.00	10.19	10.80	9.81	0.00	0.00	0.00
Sub-Total	338.85	0.00	0.00	0.00	112.09	118.81	107.95	0.00	0.00	0.00
Consulting Services (Base Cost)	16.15	0.00	0.00	6.46	3.23	3.23	3.23	0.00	0.00	0.00
Price Escalation 6.0%	4.52	0.00	0.00	1.23	0.85	1.09	1.35	0.00	0.00	0.00
Physical Contingency 10.0%	2.07	0.00	0.00	0.77	0.41	0.43	0.46	0.00	0.00	0.00
Sub-Total	22.74	0.00	0.00	8.46	4.48	4.75	5.04	0.00	0.00	0.00
Land Acquisition and Resettlement	127.13	6.36	38.14	38.14	44.50	0.00	0.00	0.00	0.00	0.00
Price Escalation 6.0%	24.06	0.38	4.71	7.29	11.68	0.00	0.00	0.00	0.00	0.00
Sub-Total	151.19	6.74	42.85	45.42	56.17	0.00	0.00	0.00	0.00	0.00
Administration Cost	9.22	0.00	0.00	2.31	2.31	2.31	2.31	0.00	0.00	0.00
Total	522.00	6.74	42.85	56.19	175.05	125.87	115.29	0.00	0.00	0.00
(III) VAT Tax Portion (Bil Rp.)										
Civil Works (Base Cost)	46.71	0.00	0.00	0.00	16.35	16.35	14.01	0.00	0.00	0.00
Price Escalation	10.18	0.00	0.00	0.00	2.80	3.59	3.79	0.00	0.00	0.00
Physical Contingency	5.69	0.00	0.00	0.00	1.91	1.99	1.78	0.00	0.00	0.00
Sub-Total	62.58	0.00	0.00	0.00	21.06	21.93	19.58	0.00	0.00	0.00
Consulting Services (Base Cost)	3.27	0.00	0.00	1.31	0.65	0.65	0.65	0.00	0.00	0.00
Price Escalation	0.60	0.00	0.00	0.16	0.11	0.14	0.18	0.00	0.00	0.00
Physical Contingency	0.39	0.00	0.00	0.15	0.08	0.08	0.08	0.00	0.00	0.00
Sub-Total	4.25	0.00	0.00	1.62	0.84	0.88	0.91	0.00	0.00	0.00
Total	66.83	0.00	0.00	1.62	21.91	22.81	20.50	0.00	0.00	0.00
(IV) Total Project Cost (Bil Rp.)										
	895.57	6.74	42.85	65.54	299.45	253.22	227.77	0.00	0.00	0.00
Eligible Portion (Loan Amount)	668.33	0.00	0.00	16.19	219.06	228.11	204.97	0.00	0.00	0.00
	74.6%									

Note: Currency Exchange Rates US\$ 1.00= Rp. 9,322 = 120 J.Yen
Rp 1.00= US\$ 0.00011 = 0.013 J.Yen

Source: JICA Study Team

Table 10.7.4 Disbursement Schedule for Implementation Plan Alternative B (Phase 2)

Category	Total	2007	2008	2009	2010	2011	2012	2013	2014	2015
(I) Foreign Currency Portion (Mil US\$)										
Civil Works (Base Cost)	20.82	0.00	0.00	0.00	0.00	0.00	0.00	6.93	6.93	6.96
Price Escalation 2.0%	3.58	0.00	0.00	0.00	0.00	0.00	0.00	1.03	1.19	1.36
Physical Contingency 10.0%	2.44	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.81	0.83
Sub-Total	26.84	0.00	0.00	0.00	0.00	0.00	0.00	8.76	8.94	9.14
Consulting Services (Base Cost)	1.46	0.00	0.00	0.00	0.00	0.12	0.47	0.29	0.29	0.29
Price Escalation 2.0%	0.22	0.00	0.00	0.00	0.00	0.01	0.06	0.04	0.05	0.06
Physical Contingency 10.0%	0.17	0.00	0.00	0.00	0.00	0.01	0.05	0.03	0.03	0.03
Sub-Total	1.85	0.00	0.00	0.00	0.00	0.14	0.58	0.37	0.38	0.38
Total	28.69	0.00	0.00	0.00	0.00	0.14	0.58	9.13	9.31	9.53
(II) Local Currency Portion (Bil Rp.)										
Civil Works (Base Cost)	189.31	0.00	0.00	0.00	0.00	0.00	0.00	63.04	63.04	63.23
Price Escalation 6.0%	112.78	0.00	0.00	0.00	0.00	0.00	0.00	31.75	37.44	43.59
Physical Contingency 10.0%	30.21	0.00	0.00	0.00	0.00	0.00	0.00	9.48	10.05	10.68
Sub-Total	332.29	0.00	0.00	0.00	0.00	0.00	0.00	104.27	110.52	117.50
Consulting Services (Base Cost)	13.25	0.00	0.00	0.00	0.00	1.06	4.24	2.65	2.65	2.65
Price Escalation 6.0%	6.87	0.00	0.00	0.00	0.00	0.36	1.77	1.33	1.57	1.83
Physical Contingency 10.0%	2.01	0.00	0.00	0.00	0.00	0.14	0.60	0.40	0.42	0.45
Sub-Total	22.13	0.00	0.00	0.00	0.00	1.56	6.62	4.38	4.65	4.92
Land Acquisition and Resettlement	133.21	0.00	0.00	0.00	33.30	33.30	33.30	33.30	0.00	0.00
Price Escalation 6.0%	50.71	0.00	0.00	0.00	8.74	11.26	13.94	16.77	0.00	0.00
Sub-Total	183.92	0.00	0.00	0.00	42.04	44.57	47.24	50.07	0.00	0.00
Administration Cost	7.57	0.00	0.00	0.00	0.00	0.85	1.68	1.68	1.68	1.68
Total	545.92	0.00	0.00	0.00	42.04	46.97	55.54	160.40	116.85	124.11
(III) VAT Tax Portion (Bil Rp.)										
Civil Works (Base Cost)	38.34	0.00	0.00	0.00	0.00	0.00	0.00	12.77	12.77	12.81
Price Escalation	14.61	0.00	0.00	0.00	0.00	0.00	0.00	4.14	4.85	5.62
Physical Contingency	5.30	0.00	0.00	0.00	0.00	0.00	0.00	1.69	1.76	1.84
Sub-Total	58.25	0.00	0.00	0.00	0.00	0.00	0.00	18.59	19.38	20.27
Consulting Services (Base Cost)	2.68	0.00	0.00	0.00	0.00	0.21	0.86	0.54	0.54	0.54
Price Escalation	0.89	0.00	0.00	0.00	0.00	0.05	0.23	0.17	0.20	0.24
Physical Contingency	0.36	0.00	0.00	0.00	0.00	0.03	0.11	0.07	0.07	0.08
Sub-Total	3.93	0.00	0.00	0.00	0.00	0.29	1.20	0.78	0.81	0.85
Total	62.19	0.00	0.00	0.00	0.00	0.29	1.20	19.38	20.20	21.12
(IV) Total Project Cost (Bil Rp.)										
	875.54	0.00	0.00	0.00	42.04	48.58	62.12	264.89	223.86	234.04
Eligible Portion (Loan Amount)	621.86	0.00	0.00	0.00	0.00	2.88	12.00	193.76	201.98	211.23
	71.0%									

Note: Currency Exchange Rates US\$ 1.00= Rp. 9,322 = 120 J.Yen
Rp 1.00= US\$ 0.00011 = 0.013 J.Yen

Source: JICA Study Team

10.7.2 Mamminasa Bypass Project, Hertasning Road Project and Abdullah Daeng Sirua Road Project

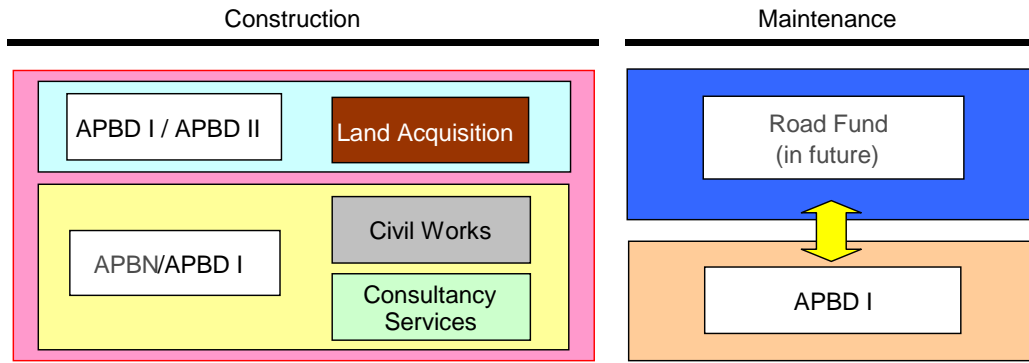
(1) Financing Methods

1) Mamminasa Bypass and Hertasning Road

Figure 10.7.3 summarizes the general financing methods studied for the Mamminasa Bypass and Hertasning Road Projects (provincial road).

Note: As the Maros bypass section could be changed to a national road after construction, its financial method would be similar to that of the Trans-Sulawesi Mamminasata Road Project.

Since both the Mamminasata Bypass and the Hertasning Road will be developed as provincial roads, the construction and consultancy services will be financed by APBD I (the provincial budget) and possibly by APBN as these are arterial road links in the Mamminasata Metropolitan Area. External soft loan may be used for the development of the Mamminasa Bypass Project possibly covering a substantial part on a granting basis from the central government. Maintenance will be financed by APBD I since the roads are provincial roads, but there may be a possible option in the future that the maintenance of the roads may be financed through the Road Fund which will be established for the maintenance of public roads throughout the country.



Source: JICA Study Team

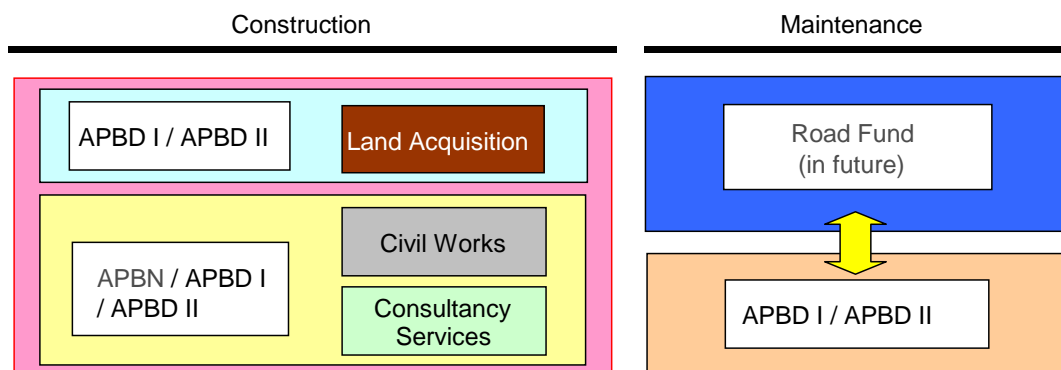
Figure 10.7.3 General Financing Method for Mamminasa Bypass and Hertasning Road Projects

As the middle part of the Mamminasa Bypass is an arterial road planned for a new satellite town, it might be possible to be constructed by a private investor who will participate in the new satellite town development.

2) Abdullah Daeng Sirua Road

Figure 10.7.4 summarizes the general financing methods studied for the Abdullah Daeng Sirua Road Project.

Since the Abdullah Daeng Sirua Road will not be categorized as a provincial road, the Makassar portion of the road will be developed by the Makassar City using its own APBD II (Kota Budget) and possibly with the support of APBN and APBD I. The road section in Kabupaten Maros and Kabupaten Gowa is recommended to be developed as a strategic road of South Sulawesi Province as this is a direct access to the new satellite town, by financing from APBD I and support from APBN. As for the maintenance, APBD I will be used and at the same time the Road Fund may also be used in the same manner as planned for the Mamminasa Bypass and Hertasning Road Projects in future.



Source: JICA Study Team

Figure 10.7.4 General Financing Method for Abdullah Daeng Sirua Road Project

As the Kabupaten Gowa/Maros section is an arterial road directly accessing to a satellite town, it might be possible to be constructed by a private investor who participates in the new satellite town development.

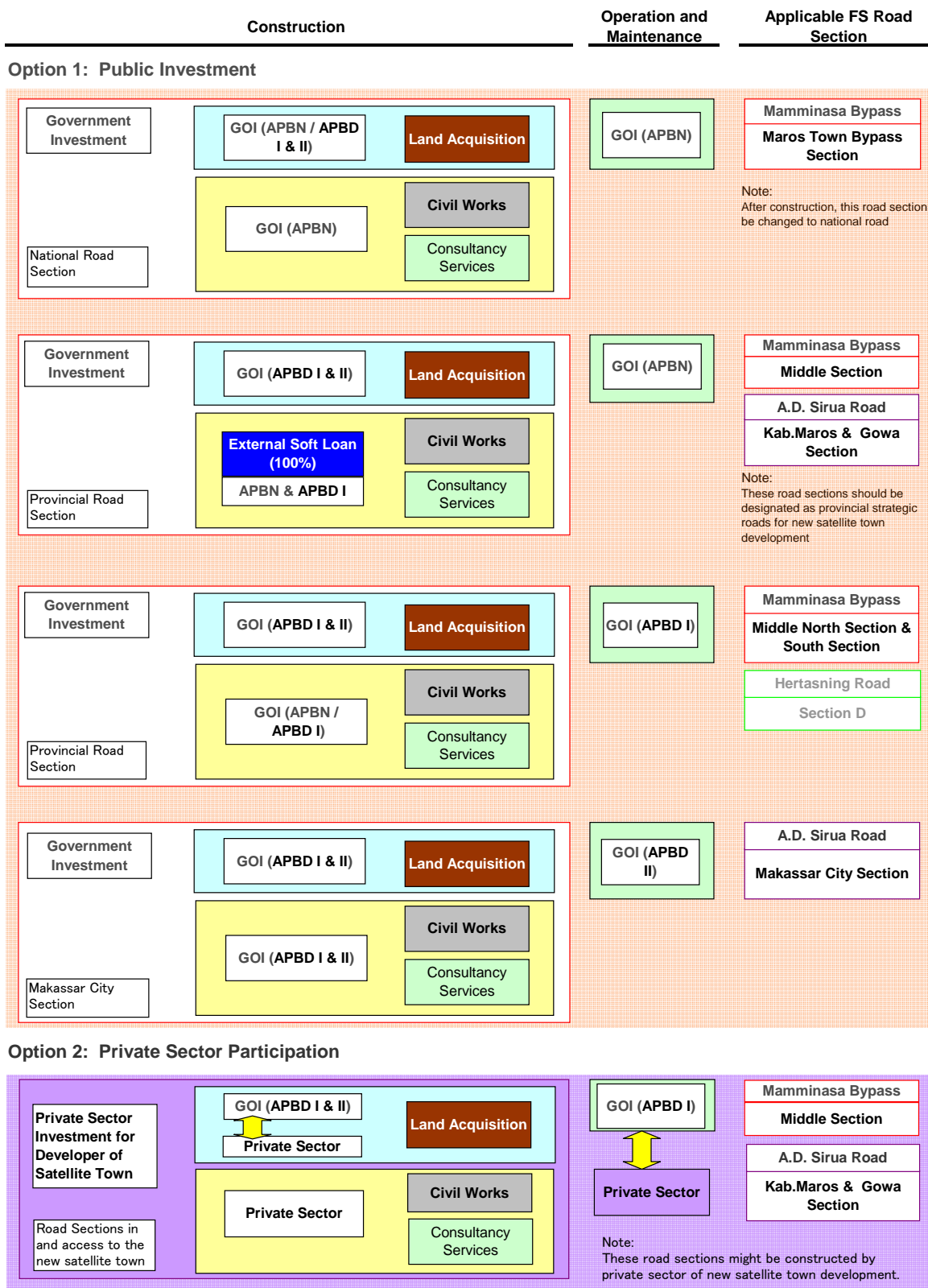
(2) Potential Funding Sources for the Development of Regional Roads

There are following potential funding sources which could be utilized for the development of regional roads:

- 1) **Funding from the Line Ministry (APBN):** The national budget of Bina Marga for the road sector (APBN) is allocated mainly for the development of national roads, but sometimes it is allocated for the development of provincial roads.
- 2) **External Loan/Grant via the same route as above (APBN):** The Ministry of Finance has already prepared the decrees on both cases of granting external loan from GOI to regional governments (PMK 52 /2006: Peraturan Menteri Keuangan, Nomor 52/PMK 010 /2006) and lending external loan (PMK 53 /2006). However, due to the limited financial capacity of the regional governments, only the external loan granting practice has been adopted so far. External loan granting may be extended to both provincial and Kabupaten/Kota governments. The ERITP II project is implemented on the granting basis with 30% - 90% of the project cost being provided by the central government.
- 3) **DAK (Special Allocation Fund: APBD):** DAK is one category of balancing fund from GOI to regional governments. DAK has been allocated to cover the road sector expenditures of Kabupaten/Kota governments in the last two years based on the proposal from these governments. However, DAK allocated to the road sector should be used in accordance with PU's instruction (Peraturan Menteri Pekerjaan Umum Nomor: 39 /PRT/M/2006), that is 70% for the maintenance and 30% for the improvement/construction.
- 4) **General Regional Budget (APBD I: Province and APBD II: Kabupaten/Kota):** The General Regional Budget (APBD I and APBD II) is, although limited, the major funding source for both the development/improvement and maintenance of regional roads. APBD I and APBD II are financed by own regional tax/levy revenue and the balancing fund from GOI such as the Revenue Sharing, the General Allocation Fund (DAU) and the Special Allocation Fund (DAK).
- 5) **Mamminasata Metropolitan Area:** Strategic and priority infrastructures in the Mamminasata Metropolitan Area might be financed by the national budget in future.

(3) Financing Methods for the F/S Roads except the TSMR Project

Figure 10.7.5 shows the optional financing methods applicable for the Mamminasa Bypass, Hertasing Road and Abdullah Daeng Sirua Road projects. If preferable incentives and conditions are given and secured, private investors may participate in some part of the road development.



Note: Excluding VAT and Administration cost
Source: JICA Study Team

Figure 10.7.5 Optional Financing Methods for Mamminasa Bypass, Hertasing Road and Abdullah Daeng Sirua Road Projects

(4) Financing Plan for Mamminasa Bypass

There may be two possible funding options for the development and maintenance of the Mamminasa Bypass Project as illustrated in **Table 10.7.5**. Option A is to finance the project based on the use of as much local funding as possible, where the project will be developed and maintained as a provincial road. On the other hand Option B utilizes the funding from GOI as much as possible.

In Option A, the provincial budget of South Sulawesi Province (APBD I) will be used for the construction and maintenance of the project whereas the land acquisition cost will be covered by both APBD I and APBD II (Maros, Gowa and Takalar) and the administration cost also will be covered by both APBD I and APBD II.

Table 10.7.5 Base Project Cost and Funding Options – Mamminasa Bypass

	Funding Option		Base Cost
	Option A	Option B	B Rp.
1. Civil Works	APBD I	APBN/External Loan	707.7
2. Consulting Services	APBD I	APBN/External Loan	49.5
3. Land Acquisition	APBD I/APBD II	APBD I/APBD II	83.1
4. Administration Cost	APBD I/APBD II	APBD I/APBD II	14.2
Total			854.5
5. Routine Maintenance/yr	APBD I	APBD I	2.0
6. Periodic Maintenance /5yrs	APBD I	APBD I	40.4

Note: VAT, Price Escalation and Contingency are not included.

Source: JICA Study Team

However, the annual size of the road development budget for South Sulawesi Province has been Rp. 50 to Rp. 70 billion in recent years. As indicated in **Table 10.7.6**, the annual requirement of civil works cost alone for several years will exceed that budget level. The funding requirement of Rp 40 billion will also be heavy for South Sulawesi Province. Therefore, South Sulawesi Province seems to be in difficulty to finance the project by itself. The annual requirement of the land acquisition cost of Rp. 10 billion will also be very high for Kabupaten Maros, Gowa and Takalar since their total road sector budget has been at the Rp. 30 to Rp. 50 billion level.

Table 10.7.6 Annual Distribution of Base Project Cost – Mamminasa Bypass

	Total	(B Rp.)												
		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
1. Civil Works	707.7	0.0	0.0	84.0	112.0	84.0	43.8	43.8	0.0	50.0	50.0	77.1	86.1	77.1
2. Consulting Services	49.5	0.0	4.9	4.9	4.9	6.7	2.1	2.1	2.9	2.9	4.5	4.5	4.5	4.5
3. Land Acquisition	83.1	9.6	19.2	19.2	2.2	4.3	4.3	1.9	3.7	6.7	6.1	6.1	0.0	0.0
4. Administration Cost	14.2	1.1	1.1	1.1	1.6	1.6	0.4	1.2	0.7	1.1	1.1	1.1	1.1	1.1
Total	854.5	10.7	25.2	109.2	120.6	96.6	50.7	48.9	7.3	60.7	61.6	88.7	91.7	82.7

Note: VAT is not included.

Source: JICA Study Team

In Option B, external soft loan funding will be used for the civil works and consultancy services by DGH and then provided on a granting basis to South Sulawesi Province. Both the land acquisition cost and the administration cost will be supported fully by APBD I.

(5) Financing Plan for Hertasning Road (Section D)

There may be two possible funding options for the development and maintenance of the Hertasning Road Project as indicated in **Table 10.7.7**. Option A is to finance the project based on the use of as much local funding as possible, where the project will be developed and maintained as a provincial road. The provincial budget of South Sulawesi Province (APBD I) will be used for the construction and maintenance of the project whereas the land acquisition cost will be covered by both APBD I and APBD II (Gowa). The administration cost also will be covered by both APBD I and APBD II.

Table 10.7.7 Base Project Cost and Funding Options - Hertasning Road

	Funding Option		Base Cost
	Option A	Option B	B Rp.
1. Civil Works	APBD I	APBN*	61.0
2. Consulting Services	APBD I	APBN*	4.3
3. Land Acquisition	APBD I/APBD II	APBD I/APBD II	9.8
4. Administration Cost	APBD I/APBD II	APBD I/APBD II	1.2
Total			76.3
5. Routine Maintenance/yr	APBD I	APBD I	0.2
6. Periodic Maintenance /5yrs	APBD I	APBD I	4.0

Notes: 1. * as this road is used as access road to solid-waste land fill, it might be possible to be financed by APBN.

2. VAT, Price Escalation and Contingency are not included.

Option B is to use APBN since this road is constructed as a main access road for the solid waste landfill planned to be located behind Mt. Moncongloe in Kabupaten Gowa under the central government initiative.

(6) Financing Plan for Abdullah Daeng Sirua Road**1) Makassar City Section**

The Abdullah Daeng Sirua Road would not have a status of provincial road in accordance with the Law No. 38 of 2004 concerning Roads. There may be two possible funding options for the development and maintenance of the Abdullah Daeng Sirua Road Project as illustrated in **Table 10.7.8**. Option A is to finance the project based on the use of as much local funding as possible, where the project will be developed and maintained as a Makassar City road. In Option A, Makassar City bears the construction, land acquisition and maintenance costs. On the other hand, Option B is to use the funding from South Sulawesi Province (APBD I) and/or APBN as much as possible.

Table 10.7.8 Base Project Cost and Funding Options - Abdullah Daeng Sirua Road

	Makassar City Section			Kabupaten Maros and Gowa Section		
	Funding Option		Base Cost	Funding Option		Base Cost
	Option A	Option B	B Rp.	Option A	Option B	B Rp.
1. Civil Works	APBD II	APBD I/APBDII	91.2	APBD II	APBD I/APBN	124.2
2. Consulting Services	APBD II	APBD I/APBDII	6.4	APBD II	APBD I/APBN	8.7
3. Land Acquisition	APBD II	APBD I/APBDII	31.5	APBD II	APBD I/APBD II	5.4
4. Administration Cost	APBD II	APBD I/APBDII	1.8	APBD II	APBD I/APBD II	2.2
Total			130.9			140.5
5. Routine Maintenance/yr	APBD II	APBD II	0.2	APBD II	APBD I/APBD II	0.2
6. Periodic Maintenance /5yrs	APBD II	APBD I/APBD II	1.0	APBD II	APBD I	3.9

Note: VAT, Price Escalation and Contingency are not included.

Source: JICA Study Team

The annual size of the road construction/betterment budget for Makassar has been Rp. 30 to Rp. 50 billion in recent years whereas the annual funding requirement for the civil works and the consultancy services of the project will be Rp 30 to Rp 40 billion. Therefore, it is not likely that Makassar City will be capable of funding the project by itself.

In Option B, APBN will be used for the civil works and consultancy services from DGH through South Sulawesi Province. Both the land acquisition cost and the administration cost will be supported by APBD I and II.

2) Kabupaten Maros and Gowa Section

Option A envisages project financing by Kabupaten Maros and Gowa by APBD II. However, Kabupaten Maros and Gowa do not have capacity for funding the project.

This road should be financed by the province (APBN I) as a provincial strategic road and/or by APBN as this is a strategic road for the Mamminasata Metropolitan Area. In Option B, APBN and APBD I will be used for the civil works and consultancy services from DGH through South Sulawesi Province. Both the land acquisition cost and the administration cost will be supported by APBD I/APBD II.

As the Maros/Gowa section of the Abdullah Daeng Sirua Road is for inducing the creation of a new satellite town, it might be possible to find private investors who participate in the town development to construct the Maros and Gowa section as an access road.

(6) Private Sector Investment

As the central section of the Mamminasa Bypass and the Kabupaten Maros/Gowa section of the Abdullah Daeng Sirua road are for inducing the creation of a new satellite town, it might be possible to find private investors who participate in the new town development to construct these roads as a part of the new town facilities.

10.7.3 External Soft Loan for Mamminasa Bypass and Abdullah Daeng Sirua Road

(1) Base Cost

It may be possible to introduce an external soft loan for the central section of the Mamminasa Bypass and the Kabupaten Maros/Gowa section of the Abdullah Daeng Sirua Road as those are for inducing the creation of a new satellite town in accordance with the Mamminasata Spatial Plan.

Table 10.7.9 Base Project Cost for External Financing

Item	Unit: Rp Bill.		Total
	Mamminasa Bypass Middle Section	Abdullah Daeng Sirua Road Kab. Maros/Gowa Section	
Civil Works	279.93	124.20	404.13
Consulting Services	19.60	8.70	28.29
Land Acquisition	47.91	5.43	53.33
Administration Cost	5.60	2.21	7.81
Total	353.03	140.53	493.56

Source: JICA Study Team

(2) Project Cost and Loan Amount

Table 10.7.10 shows the financing plan for the project utilizing the external soft loan prepared on the basis of the following assumptions:

- * 100% of the costs of civil works, consulting services and contingencies are financed by an external soft loan
- * GOI finances the land acquisition/resettlement, administration cost and tax (VAT), which are not eligible for the JBIC loan
- * The assumed currency exchange rate is US\$ 1.00=¥120=Rp.9,322.

The total project cost is estimated at Rp 814 billion. The loan amount for the project, which is the total cost of civil works, consulting services and contingencies, is estimated to be US\$ 72.2 million. The rest of the project cost, namely the land acquisition cost, administration cost and tax cost, estimated to be Rp 150 billion, will be financed by the local budget (APBN and APBD). The loan can cover 81.5% of the project cost.

**Table 10.7.10 Project Cost and Loan Amount for Middle Section of Mamminasa Bypass and
Kab.Maros/Gowa Section of A.D.Sirua Road (Option of External Loan)****Loan Amount (Allocation of Loan)**

Category	Loan Amount (Million US\$)	% of Eligible Expenditure to be financed
(A) Civil Works	\$61.4	100%
(B) Consulting Services	\$4.6	100%
(C) Contingencies	\$6.1	
Total	\$72.2	

Breakdown of Loan Amount

Category	F.Currency (Million US\$)	L.Currency (Billion Rp.)	Total (Equiv.Million US\$)	
1. Civil Works	\$22.23	202.1	\$44.45	Civil Works for Civil Works Incl. Contingencies
2. Price Escalation	\$3.81	119.9	\$16.99	
3. Physical Contingency	\$2.60	32.2	\$6.14	
4. Consulting Services	\$1.99	24.1	\$4.64	Not eligible for JBIC Loan
5. Land Acquisition	\$0.00	76.4	\$8.40	
6. Administration Cost	\$0.00	7.8	\$0.86	
7. Tax	\$0.00	66.4	\$7.30	
Total	\$30.62	528.8	\$88.79	

Note: (Equiv. Rp. 807 billion)

Currency Exchange Rates

Rp 1.00 = ¥0.0130 = US\$ 0.000110
US\$1.00 = ¥120 = Rp. 9,322

(3) Annual Fund Requirements

The financing plan is further broken down by annual fund requirements based on the implementation schedule as indicated in **Table 10.7.11**. In the schedule, the foreign currency component is assumed to be 50% of the civil works and consultancy services costs and the rest is the local currency component. Price escalation is assumed to be 2% per year for the foreign currency component and 6% for the local currency component.

**Table 10.7.11 Disbursement Schedule for Middle Section of Mamminasa Bypass and
Kab.Maros/Gowa Section of A.D.Sirua Road (Option of External Soft Loan)**

Category	Total	2007	2008	2009	2010	2011	2012	2013	2014	2015
(I) Foreign Currency Portion (Mil US\$)										
Civil Works (Base Cost)	22.23	0.00	0.00	0.00	0.00	0.00	0.00	7.22	8.34	6.67
Price Escalation 2.0%	3.81	0.00	0.00	0.00	0.00	0.00	0.00	1.07	1.43	1.30
Physical Contingency 10.0%	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.98	0.80
Sub-Total	28.64	0.00	0.00	0.00	0.00	0.00	0.00	9.12	10.75	8.77
Consulting Services (Base Cost)	1.56	0.00	0.00	0.00	0.00	0.00	0.39	0.39	0.39	0.39
Price Escalation 2.0%	0.25	0.00	0.00	0.00	0.00	0.00	0.05	0.06	0.07	0.08
Physical Contingency 10.0%	0.18	0.00	0.00	0.00	0.00	0.00	0.04	0.04	0.05	0.05
Sub-Total	1.99	0.00	0.00	0.00	0.00	0.00	0.48	0.49	0.50	0.51
Total	30.62	0.00	0.00	0.00	0.00	0.00	0.48	9.61	11.25	9.28
(II) Local Currency Portion (Bil Rp.)										
Civil Works (Base Cost)	202.07	0.00	0.00	0.00	0.00	0.00	0.00	65.63	75.82	60.62
Price Escalation 6.0%	119.87	0.00	0.00	0.00	0.00	0.00	0.00	33.05	45.02	41.80
Physical Contingency 10.0%	32.19	0.00	0.00	0.00	0.00	0.00	0.00	9.87	12.08	10.24
Sub-Total	354.13	0.00	0.00	0.00	0.00	0.00	0.00	108.55	132.92	112.66
Consulting Services (Base Cost)	14.15	0.00	0.00	0.00	0.00	0.00	3.54	3.54	3.54	3.54
Price Escalation 6.0%	7.80	0.00	0.00	0.00	0.00	0.00	1.48	1.78	2.10	2.44
Physical Contingency 10.0%	2.19	0.00	0.00	0.00	0.00	0.00	0.50	0.53	0.56	0.60
Sub-Total	24.14	0.00	0.00	0.00	0.00	0.00	5.52	5.85	6.20	6.57
Land Acquisition and Resettlement	53.33	0.00	0.00	0.00	0.91	11.12	20.88	20.43	0.00	0.00
Price Escalation 6.0%	23.02	0.00	0.00	0.00	0.24	3.76	8.74	10.29	0.00	0.00
Sub-Total	76.35	0.00	0.00	0.00	1.14	14.88	29.62	30.71	0.00	0.00
Administration Cost	7.81	0.00	0.00	0.00	0.00	1.56	1.56	1.56	1.56	1.56
Total	462.43	0.00	0.00	0.00	1.14	16.44	36.70	146.67	140.69	120.79
(III) VAT Tax Portion (Bil Rp.)										
Civil Works (Base Cost)	40.93	0.00	0.00	0.00	0.00	0.00	0.00	13.29	15.36	12.28
Price Escalation	15.54	0.00	0.00	0.00	0.00	0.00	0.00	4.31	5.84	5.39
Physical Contingency	5.65	0.00	0.00	0.00	0.00	0.00	0.00	1.76	2.12	1.77
Sub-Total	62.11	0.00	0.00	0.00	0.00	0.00	0.00	19.36	23.31	19.44
Consulting Services (Base Cost)	2.86	0.00	0.00	0.00	0.00	0.00	0.72	0.72	0.72	0.72
Price Escalation	1.01	0.00	0.00	0.00	0.00	0.00	0.19	0.23	0.27	0.31
Physical Contingency	0.39	0.00	0.00	0.00	0.00	0.00	0.09	0.09	0.10	0.10
Sub-Total	4.27	0.00	0.00	0.00	0.00	0.00	1.00	1.04	1.09	1.13
Total	66.37	0.00	0.00	0.00	0.00	0.00	1.00	20.40	24.40	20.57
(IV) Total Project Cost (Bil Rp.)										
	814.27	0.00	0.00	0.00	1.14	16.44	42.19	256.69	269.96	227.85
Eligible Portion (Loan Amount)	663.73 81.5%	0.00	0.00	0.00	0.00	0.00	10.01	204.01	244.00	205.71

Note: Currency Exchange Rates US\$ 1.00= Rp. 9,322 = 120 J.Yen
Rp 1.00= US\$ 0.00011 = 0.013 J.Yen

Source: JICA Study Team

CHAPTER 11 CONCLUSIONS AND RECOMMENDATIONS

11.1 Conclusions on F/S Roads

11.1.1 Trans-Sulawesi Mamminasata Road

(1) The Study Team identified that the Trans-Sulawesi Mamminasata Road (TSMR) is the highest priority road link among the four F/S roads. It will directly contribute to the development of the Mamminasata Metropolitan Area by:

- improving the present urban road network;
- coping with the increasing traffic demand;
- enhancing regional development; and
- supporting logistic flow for inducing trade, investment and industrial development.

It also will indirectly contribute to:

- expanding development to the whole eastern regions of Indonesia; and
- reducing poverty and regional development gaps.

(2) The feasibility study for the TSMR has shown that the Project is highly viable in both technical and economic aspects (EIRR: 28.5-30.2%). Therefore, it is recommended that the Project be implemented at an earliest date for the benefit of national and regional economy.

(3) As to the construction plan, a full access-controlled express highway for the Middle Ring Road section under PPP (Public Private Partnership) scheme is judged not feasible because its FIRR is only 6.5%. Thus this project should better be implemented in the category of public financing (Government) projects.

(4) Collection of low user charges at the toll gates installed at access points (Tallo River Bridge and Jeneberang River Bridges) to Makassar City could raise a sufficient fund for covering the maintenance costs required for the TSMR.

(5) The current progress of ROW acquisition for the Middle Ring Road (Section B) is approximately 60-70%.

(6) EIA (AMDAL) report on the TSMR Project was approved by the Governor of South Sulawesi Province in September 2007.

11.1.2 Mamminasa Bypass

- (1) The Study Team identified that the Mamminasa Bypass is the second highest priority road link among the four F/S roads.
- (2) The Mamminasa Bypass should be constructed as a new road. The appropriate route is that passing through appropriate topography and location where a new satellite town can be developed. The north section of the Mamminasa Bypass should be planned as a bypass for Maros Town while avoiding a planned flood retarding basin of the Maros River. The southern route should be connected to Jl.Tj.Metro Bunga where many development projects are in progress or under planning.
- (3) It will directly contribute to the development of the Mamminasata Metropolitan Area by:
 - inducing a new satellite town at the east of Makassar City and the west foot of Mt. Moncongloe, where flood free 4,000 ha of land could be available for regulated urban development; and
 - enhancing regional development, especially contributing to the development of KIWA (planned new industrial area of Gowa Regency).
- (4) The feasibility study for the Mamminasa Bypass has shown that the Project is viable on both technical and economic aspects (EIRR: 22.4%). Therefore, it is recommended that the Project be implemented at an earliest date for the benefit of national and regional economy.
- (5) As the middle section of the Mamminasa Bypass and the Maros/Gowa Regency section of the Abdullah Daeng Sirua Road are intended to serve directly the planned new satellite town, they might be constructed with cooperation of private investors who will participate in the new satellite town development.
- (6) EIA (AMDAL) report on the Mamminasa Bypass Project needs to be approved by the Governor of South Sulawesi Province.

11.1.3 Hertasning Road

- (1) The Study Team identified that the Hertasning Road is an important arterial road link for the Mamminasata Metropolitan Area.
- (2) The Hertasning Road construction project is an ongoing development project under South Sulawesi Government. It is divided into four sections: Sections A, B, C and D. Section A has already been completed and Section B is under construction. The detailed design for Section C has been completed. Therefore, only Section D was subject to F/S.

- (3) The Hertasning Road has the following functions:
 - Direct access road from the east suburbs to the Makassar City center as one of the radial roads.
 - A main access road to TPA (new final waste disposal area planned at Pattallassang in Gowa Regency).
 - Enhancement of regional development, especially contributing to the development of KIWA (new industrial area of Gowa Regency).
 - A short cut route for the Bili-bili Dam and Malino.
- (4) The feasibility study for the Hertasning Road has shown that the Project is viable on both technical and economic aspects (EIRR: 33.8%) and it will contribute to national and regional economy.

11.1.4 Abdullah Daeng Sirua Road

- (1) The Study Team identified that the Abdullah Daeng Sirua Road is one of the important arterial road links for the Mamminasata Metropolitan Area.
- (2) The Abdullah Daeng Sirua Road construction project is an ongoing development project under Makassar City. It is divided into six sections: Sections A, B, C, D, E and F, and Section B is under construction. Sections E and F are in the Maros/Gowa Regency
- (3) It will directly contribute to the development of the Mamminasata Metropolitan Area by:
 - inducing a new satellite town at the east of Makassar City and the west foot of Mt. Moncongloe, where flood free 4,000 ha of land could be available for regulated urban development;
 - providing direct access for the residents staying in the east suburbs of Makassar City; and
 - enhancing regional development, especially contributing to the development of KIWA (new industrial area of Gowa Regency).
- (4) The feasibility study for the Abdullah Daeng Sirua Road has shown that the Project is viable on both technical and economic aspects (EIRR: 31.0%). Therefore, it is recommended that the Project be continued for the benefit of national and regional economy.
- (5) As the Maros and Gowa Regency sections are intended to serve directly the planned new satellite town, they might be constructed with cooperation of private investors who will participate in the new satellite town development.

11.2 Recommendations on F/S Roads

11.2.1 Trans-Sulawesi Mamminasata Road

- (1) The Trans-Sulawesi Mamminasata Road Project (the TSMRP) should be implemented as a national strategic road link since it is a part of the Trans-Sulawesi West Corridor and an arterial road for the Mamminasata Metropolitan Area.
- (2) The TSMRP should be implemented in two phases: Phase 1 for Sections B and C (Middle Ring Road and its southern extension), and Phase 2 for Section A (Maros-Jl.Tol.Ir.Sutami IC) and Section D (Sungguminasa - Takalar).
- (3) The Directorate General of Highways (DGH) should request Bappenas to list the TSMRP in the Blue Book for foreign funding assistance.
- (4) DGH should conduct an appropriate project evaluation process and propose, preferably to the Government of Japan, for extension of a soft loan for the implementation of the TSMRP, through PU, Bappenas and MOF as soon as possible.
- (5) The central and regional governments should negotiate and allocate sufficient budget required for ROW acquisition and resettlement for the project preparation. The ROW acquisition for the Middle Ring Road should be continued.
- (6) DGH should make environmental management and monitoring in accordance with the environmental management and monitoring plans established in the EIA Report in cooperation with the agencies concerned.

11.2.2 Mamminasa Bypass

- (1) The Mamminasa Bypass Project (the MBP) should be implemented as a provincial strategic road or a national strategic road since it is an arterial road for inducing the creation of a new satellite town for the Mamminasata Metropolitan Area.
- (2) The MBP should be implemented in four phases. The middle part of the Mamminasa Bypass should be constructed in the first phase since it is an arterial road for the planned new satellite town.
- (3) An external funding would be necessary and, therefore, South Sulawesi Government should request Bappenas to list the MBP in the Blue Book.
- (4) A separate study should be conducted for establishment of a satellite town development plan. The private sector should be encouraged to participate in the required infrastructure construction, including access road for the new satellite town development.
- (5) The regional governments should control housing and other development on the route of

the Mamminasa Bypass and the planned new town area to secure the land for these developments.

- (6) The regional governments should make environmental management and monitoring in accordance with the environmental management and monitoring plans established in the EIA Report in cooperation with the agencies concerned.

11.2.3 Hertasning Road

- (1) Implementation of the Hertasning Road Project (the HRP) should be continued by South Sulawesi Province as a provincial strategic road since it is an arterial road of the Mamminasata Metropolitan Area.
- (2) The remaining sections of the HRP (Sections C and D) might be implemental as an access road for TPA (new final waste disposal area planned at Pattallassang in Gowa Regency).
- (3) A stage construction approach might be applied for Sections C and D of HRP taking tight budget required for both ROW acquisition and construction into consideration. The 1st Stage is widening of the existing 4.5m travelway (carriageway) to a 7.0 m standard road. The 2nd stage is further widening from 2 lanes to 4 lanes with a median.
- (4) The regional governments should control housing and other developments within the planned ROW.
- (5) The regional governments should make environmental management and monitoring in accordance with the environmental management and monitoring plans established in the EIA Report in cooperation with the agencies concerned.

11.2.4 Abdullah Daeng Sirua Road

(1) Makassar City Section

- 1) Implementation of the Abdullah Daeng Sirua Road Project (the ADSRP) should be continued by Makassar City up to the border of Makassar City and Gowa Regency as a strategic road.
- 2) Financial assistance by both provincial and central governments should be made since this is an arterial road of the Mamminasata Metropolitan Area.
- 3) As ROW acquisition is difficult for the beginning section of the ADSRP (Section A) which is located in a densely populated urban area, one-way traffic control should be applied rather than widening it to a 4-lane road, considering the environmental aspect.
- 4) The construction of the road sections in the semi-urban and residential area should be made by utilizing the ROW of PDAM as much as possible. However, the PDAM canal

should be kept open as much as possible for securing a green and water front environment.

- 5) The regional governments should make environmental management and monitoring in accordance with the environmental management and monitoring plans established in the EIA Report in cooperation with the agencies concerned.

(2) Maros/Gowa Regency Section

- 1) The ADSRP in the Maros/Gowa Regency section should be implemented as a provincial strategic road or a national strategic road since it is an arterial road for inducing the creation of a new satellite town for the Mamminasata Metropolitan Area.
- 2) An external funding would be necessary for the Maros/Gowa Regency section and, therefore, South Sulawesi Government should request Bappenas to list up the ADSRP on the Blue Book, as a package with the middle part of the Mamminasa Bypass.
- 3) The regional governments should control housing and other developments within the planned ROW.
- 4) The regional governments should make environmental management and monitoring in accordance with the environmental management and monitoring plans established in the EIA Report in cooperation with the agencies concerned.

11.3 Conclusion and Recommendations on Other Roads

11.3.1 Outer Ring Road

- (1) The Outer Ring Road is one of the important links in the Mamminasata Metropolitan Area arterial road network and its expected functions are as follows:
 - Ring road to contribute to harmonizing urban development;
 - Logistic route for the coming in and out traffic from/to the southern area of South Sulawesi Province to/from KIMA, Makassar Port, new industrial areas along Jl.Tol.Ir.Sutami; and
 - Connection between the north educational center and the south educational center.
- (2) The Outer Ring Road consists of three parts. The north section is the part accessing to KIMA, Jl.Tol.Ir.Sutami and Makassar Port. The middle section runs along the Tallo River and the south section is a connection to the Sungguminasa and Mamminasa Bypass. The Outer Ring Road and the Mamminasa Bypass share the same road at their southern part to connect to the Tj. Bunga Development Area.
- (3) The northern section between Jl.Tol.Ir.Sutami and Jl. Perintis Kemerdekaan through the New Industrial Area (Kawasan Pergudangan dan Industri Parangloe Indah) is under

construction by a private investor and will be completed as planned.

- (4) Intersections for Jl.Tol.Ir.Sutami and the Outer Ring Road should be constructed under the on-going BOT project.
- (5) A 500-700 m buffer zone should be provided between the route of the on-going north section and the Tallo River to avoid negative effects to the river environment.
- (6) As the project is vital on both technical and economic aspects (EIRR: 27%), it is recommended to conduct a feasibility study including EIA for its implementation .

11.3.2 Tj.Bunga – Takalar Road (Jalan Lintas Barat Makassar - Takalar)

- (1) As floods do not occur at the Jeneberang River estuary after the Bili-bili dam construction, many development projects have been implemented. Since the completion of a bridge at the mouth of the Jeneberang River in 2005, development has expanded to the south. An earliest improvement of the Tj.Bunga - Takalar Road (Lintas Barat) is recommended to regulate the sprawled urban development in the area.
- (2) This road link constitutes one of the radial roads (south radial road) in the Mamminasata Urban Arterial Road Network System and it connects the Galesong Port in Takalar. It is recommended to upgrade this road status from Kabupaten road to provincial road as it connects Makassar City to Takalar (Capital of Takalar Regency) along the west coast.
- (3) This road will be an alternative route of the Trans-Sulawesi Road from/to Makassar City to/from the southern part of South Sulawesi Province and contribute to reducing the traffic jam at Sungguminasa.
- (4) As the economic analysis has shown a very high EIRR of 41.4%, it is recommended that the Project be implemented for the benefit of national and regional economy
- (5) Financing for the project implementation should be made by both provincial and central governments since this is an arterial road of the Mamminasata Metropolitan Area.

11.4 Recommendation on Establishment of Coordination Committee for Project Implementation of the F/S Roads

The Study Team understands that good cooperation and coordination between the central governments (Bappenas, MOF and MPW) and regional governments (South Sulawesi Province, Makassar City and Regencies of Maros, Gowa and Takalar) are very important for implementation of the F/S road projects as these are part of the arterial road network for the Mamminasata Metropolitan Area.

The Study Team recommends establishment of a “Project Implementation Committee for Arterial Road Network Development for the Mamminasata Metropolitan Area”. The committee, comprised of the representatives of concerned central and regional governments,

holds periodic meetings for monitoring progress of the project implementation, discusses on problems and measures to solve and takes required actions for smooth implementation of the projects.