1. Country and Sector Background

Malaysia’s development record over the past decades has been impressive. The Malaysian economy, a mixture of private enterprise and a soundly managed public sector, posted remarkable growth in real per capita GDP over the past decades. This growth translated into significant progress in all sectors, with a substantial reduction in poverty.

The Government has placed a high priority on the provision of infrastructure including transport and roads for over three decades. Through significant public expenditures the length of roads has rapidly increased from about 15,400 km in 1965 to about 64,300 km in 1995 (or 318 percent increase). Meanwhile, the number of vehicles has increased at a much higher rate and reached 8.55 million (of which 50 percent are motorcycles) in 1997 (or 1 vehicle per 2.46 people), which reflects a relatively high rate of motorization. The high priority accorded to infrastructure has continued in recent years. Expenditures on transport are expected to increase from RM 11.6 billion in the sixth Five-Year Plan (1991-1995) to about RM 15.5 billion allocations in the seventh Five-Year Plan (1996-2000) or 34 percent increase. The share of roads is expected to increase from RM 7.6 billion to RM 9.8 billion (29 percent increase) over the same period.

In 1983, the Government introduced the privatization policy which resulted in a significant increase in the involvement of the private sector in the provision and operation of infrastructure. The Federal Roads Act of 1984 allowed the Government to grant private companies the right to collect tolls on public roads. Toll roads through build-operate-transfer (BOT) schemes are being operated (principally the north-south expressway) and others are in the development state. Most infrastructure public investments for new roads,
widening/betterment of existing roads and highway maintenance are implemented by private contractors. The Government has selected a private contractor to undertake maintenance of federal roads in Peninsular Malaysia through a 10-year performance-based contract. This contract has not yet been signed and there seems to be some opposition to it from the Ministry of Works (MOW), which is responsible for the highway sector through its Road Branch of the Public Works Department (JKR). Also, there has been a recent public outcry against new toll roads and toll rate hikes. This together with the contingent liability associated with many private concessions as well as the low level of transparency in which some concessions were awarded has drawn renewed attention to the risks associated with private financing of infrastructure and the difficulty of attracting private funds over the medium-term. Also, it highlighted the importance of efficiency of transport operation and the need to get more out of the existing facilities.

With the deepening of the financial crisis, allocations to highway maintenance and rehabilitation were reduced from RM 310 million in 1997 to RM 140 million in 1998. Although allocations for 1999 will be significantly higher than in 1998, they will not reach the pre-crisis level till end of 2002. Additional funds are required to help preserve existing road assets to prolong their economic life and reduce transport costs. This would result in providing much needed work opportunities for contractors which would lead to employment opportunities, many requiring semi-skilled and skilled labor, which are suited to the poor.

Pre-crisis, a high and sustained rate of growth, with low unemployment were achieved. Investments in transport in general and roads in particular, provide a catalyst for development. Resumption of growth in Malaysia will require increases in highway capacity. In this regard priority should be given to limited expansion of the capacity of sections of high priority federal roads where the volume to capacity ratio is high. Investments in major new construction should at this time have a lower priority. However, in the long run, new construction would be carried out by both the public and private sectors and generally in accordance with the Highway Network Development Plan of 1991 which proposed a road network configuration for all of Malaysia to sustain the increasing traffic demands for the year 2020.

Traffic accidents have been increasing at 10 percent per annum over the last ten years. Despite the governments efforts to reduce road accidents, fatalities reached 6300 in 1997 or 7.4 per 10,000 vehicles which is about three to four times the rate in developed countries. The Government accords traffic safety a high priority and has established a National Road Safety Council to develop a plan to reduce traffic accidents and to guide and coordinate the highway safety work in Malaysia.

In view of the deepening financial crisis, the Government in July 1998 announced a National Economic Recovery Plan to bring the economy back on a positive growth path. The government proposed a plan of action to mitigate the adverse social impacts of the crisis which threaten to reverse the gains made in the past. The Government approached the Bank for help in strengthening this plan and implementing it through a Social Sector Support Project, an Education Project, a Y2k project, and a road maintenance project. The latter, which is the subject of this PID, is being developed on a rapid timetable in order to support ongoing government efforts to preserve the existing road assets, increase traffic capacity at selected locations where
the volume to capacity ratio is high, and increase the safety of traffic along the highway network.

2. Objectives

The project has four development objectives. First, to preserve the federal roads and bridges, especially in the face of cuts in financial allocations due to the current crisis. Second, to increase traffic capacity along high priority roads in order to reduce congestion and transport costs. Third, to increase traffic safety along the federal road network, which carries the majority of traffic volumes. Fourth, to strengthen road sector management by providing training to staff in the areas of highway planning, design, supervision/project management, safety, and operation and maintenance and by improving the systems for planning and budgeting of expenditures and through improvements to the pavement management system.

3. Rationale for Bank’s Involvement

The first full CAS for Malaysia since 1993 (when the country stopped borrowing from the Bank) has been prepared and is expected to be discussed in March 1999. It supports the Government in mitigating the social consequences of the regional crisis in the short-term and prevent the erosion of social sector achievements in the medium term, and to help restore growth and confidence in the medium and longer terms. The proposed project, an operation in the initial phase of lending to Malaysia after a five-year hiatus, is a response to immediate client needs. Countries facing hard budget constraints (and Malaysia is no exception) commonly underfund road maintenance causing risks to personal safety, loss of accessibility to services, employment and markets, and increased transport cost. The project is designed to address the risk of deteriorating road infrastructure especially in rural areas, and risk of increased fatalities and injuries due to traffic accidents and collapse of slopes along roads. Further, the project addresses directly the issue of unemployment in the construction industry by creating many projects that would be constructed by contractors. Also by supporting expansion of highway capacity along high priority corridors, it would help maintain and facilitate economic growth in the medium- and longer-term.

The Bank would bring in global experience and best practices to help Malaysia in its efforts towards performance-based long term contracting. Similarly, Bank involvement would help accelerate institutional and manpower development in highway planning, design, supervision, safety, operation and maintenance. Bank involvement is also expected to benefit the quality of construction of the roads to be undertaken because of insistence on tighter supervision standards and prequalification of contractors. Further, it is anticipated that the quality of engineering designs and cost estimates would improve because of Bank’s insistence on greater care in their preparation prior to bidding. Moreover, Bank involvement will improve practices in the analyses and implementation of environmental, land acquisition and resettlement, and participatory aspects of projects.

4. Description

The proposed project would comprise the following components. The description of each component would be further refined during project
preparation and the designs and bid documents as well as the related environmental and resettlement studies for the first-year program of implementation would be completed prior to appraisal.

A. Pavement Rehabilitation and Strengthening of Federal Roads Program. Based on condition surveys and preliminary runs of the Pavement Appraisal and Management Systems (PAMS), about 800 km of federal roads in Peninsular Malaysia would be rehabilitated and strengthened over a four year period under the project. Apart from strengthening of the pavement, the works would include minor widening, culvert extension, shifting of utilities and associated works such as pavement markings. Also, this component would include further development of PAMS to make it more user friendly and with linkages to HDM 4.

B. Bridge Replacement and Rehabilitation Program. Based on the results of annual inspection surveys and runs of the Bridge Maintenance System (BMS), a total of about 21 bridges would be repaired or rehabilitated and 137 bridges would be replaced under the project. Generally, these bridges are substandard in terms of their geometric designs compared to traffic volumes carried, or have insufficient opening to accommodate floods, or do not have sufficient structural capacity to meet increasing axle loads and heavier vehicles, or are rated in poor physical condition and beyond economic repair.

C. Slope Protection Program. Many of the federal roads in Malaysia experience problems of slope failures and several studies have been undertaken to address this problem which could result in partial or complete closing of roads, loss of life and injuries, and property damage. On the basis of available studies of slope protection, the results of past and ongoing remedial works, the mandatory slope inspection forms, and traffic volumes carried, a list of about 200 slopes along 11 federal roads would be treated under the project. This component would also include a study for the development of slope safety management program and the services of a slope safety manager to coordinate all actions relating to slope safety.

D. Highway Safety Program. The program to be included under the project extends over four years and includes accident reduction and accident prevention measures. The accident reduction component consists of treatment of about 200 high accident locations (blackspots) along the federal roads in Malaysia, paving of about 220 km of shoulders primarily to cater to motorcycles, provision of overtaking lanes (about 1 km long) on two-lane roads to reduce head-on collisions at about 30 sites along the heavily traveled federal routes 1, 3 and 5; provision of signs and markings at about 300 locations of sharp curves; provision of pedestrian crossing facilities at about 70 signalized intersections and construction of about ten pedestrian bridges. The accident prevention component includes safety audits (of new highway works initially and of existing roads at a later date as the institutional capacity is increased), provision of services of qualified safety specialists for about 36-person months, and training of staff. Also, the safety program comprises a study of children’s road safety education, study of accident costs with current values, and possibly some work related to ambulance service.

E. Capacity Expansion Program. Based on the ongoing and committed main road improvements and new road construction and on past traffic volumes including 1997, and analyses of volume-to-capacity ratios for federal routes in
Peninsular Malaysia, nine road sections of federal route 1 with a total length of about 50 km are included under the project. The capacity of each section should be expanded. This component also includes a corridor study of federal routes 1, 3, 5, 50 and 68 to provide guidance to JKR in assessing needs, deciding appropriate design standards, and prioritizing investments.

F. Institutional Strengthening/Training. JKR appears to be relatively short of qualified staff. This could be met by hiring consultants to do some of the work, recruiting new staff, or training existing staff. JKR is taking actions in all three areas. In view of the current financial crisis, staff turnover has been reduced, and recruiting is relatively easier. This project includes training of staff in the areas of planning and programming, design, supervision of construction/project management, operation, safety, and maintenance of highways. This component requires further detailing as to the training needs, specific areas/skills for training, number of people to be trained (inside or outside Malaysia), the estimated cost, the expected time period for undertaking the training, and the indicators to monitor implementation and effectiveness of the training.

Project Cost
A summary of the cost estimate and Bank-financing by project component is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Indicative Costs (million US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pavement Rehabilitation and Strengthening</td>
<td>131.9</td>
</tr>
<tr>
<td>2. Bridge Rehabilitation and Replacement</td>
<td>84.7</td>
</tr>
<tr>
<td>3. Slope Protection</td>
<td>103.6</td>
</tr>
<tr>
<td>4. Highway Safety</td>
<td>57.5</td>
</tr>
<tr>
<td>5. Capacity Expansion</td>
<td>70.6</td>
</tr>
<tr>
<td>6. Institutional Strengthening/Training</td>
<td>1.7</td>
</tr>
<tr>
<td>Total Cost</td>
<td>450.0</td>
</tr>
</tbody>
</table>

5. Financing

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount (US$m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBRD</td>
<td>300</td>
</tr>
<tr>
<td>Government</td>
<td>150</td>
</tr>
<tr>
<td>Total Project Cost</td>
<td>450 million</td>
</tr>
</tbody>
</table>

6. Implementation

Implementation Arrangements: The Ministry of Works will have overall responsibility for the project. The roads branch of JKR (a department of MOW) would be responsible for pavement maintenance, rehabilitation and strengthening; slope protection; bridges, road safety and capacity expansion. The Highway and Planning Unit (HPU) of MOW identifies accident black spots but JKR is responsible for the design and implementation. Similarly, although HPU is responsible for the corridor and feasibility studies, JKR is responsible for the design and implementation. Should specific elements concerning the control of axle loads and vehicle weights be included under the project, then the Land Transport Department of the Ministry of Transport would be involved in the project. The implementation of the traffic safety component would be coordinated through the National Road Safety Council.
In view of the large size and complexity of the project, MOW established a project execution office to manage this project, coordinate with the relevant agencies, and deal with the Bank.

Accounting, Financial Reporting and Auditing Arrangements: The proposed loan would be disbursed on the basis of Project Management Reports produced by JKR/MOW and submitted to the Bank on a quarterly basis for project monitoring purposes. To facilitate disbursement, a special account would be opened to finance the Bank's share of eligible expenses in both local and foreign currencies. Independent auditors will conduct periodic accounting and financial audits of MOW/JKR.

Monitoring and Evaluation Arrangements: The project will be monitored regarding its developmental and implementation impacts. The key developmental indicators include: (a) percentage of federal roads and bridges in Peninsular Malaysia in good condition; (b) traffic volume-to-capacity ratio along sections of federal roads where capacity will be increased; (c) number of fatalities and serious injuries on the highway network; and (d) number of days roads are closed because of slope failures. Quantitative measures of these indicators for the base year (hopefully 1997 or 1998), mid-year of project implementation (say 2002), and 2-3 years after completion (say 2005) will be developed in cooperation with the Government during project preparation and will be included later in the Project Appraisal Document (PAD). As for the effectiveness of project implementation, percent completion rates for the various components would be the main indicators. These would be based on quarterly progress reports to be submitted by JKR.

7. Sustainability

Experience from completed Bank, ADB and OECF financed highway projects in Malaysia shows that Malaysia has done a reasonable job in implementing new highways and improving existing ones. Generally, the counterpart funds are available on time. The main factor affecting sustainability is expected to be the timely maintenance of roads and bridges which is in turn a function of the available budgets and qualified manpower. This project targets maintenance and preservation of the existing highway network. Except for 1998, the Government has generally allocated reasonable resources to highway and bridge maintenance and treatment of slopes. The Government is committed to substantially increase allocations for routine and periodic maintenance over the next 3-5 years. Also, the role of the private sector in the highway sector has been consistently increasing. It is expected that the performance-based contract for maintenance of the federal highway network will enter the implementation stage soon.

Recruiting and holding on to qualified staff will continue to be a problem for JKR, although the current financial crisis has temporarily reversed this trend. The project contains substantial amounts of training of staff in all aspects of highways and bridges. Also, as more work is done by the private sector, the staffing pressures on JKR are expected to decrease, but the resulting change in its role would necessitate a smaller but higher quality of staff. Also, the university and technical education is doing a better job to produce the manpower required by private contractors and consultants working in the highway area.

The pavement and bridge maintenance systems are operational and will be
improved through this project. These should lead to improved planning and budgeting. Moreover, with the completion and operation of weigh stations under the truck weight control program in the Bank-financed highway rehabilitation and improvement project (Loan 3145-MAY), Malaysia's ability to control axle loads is expected to improve. However, as in most developing countries, adequate enforcement of axle load limits in Malaysia remains a highly desirable but elusive objective. This issue of axle load control will be thoroughly discussed with relevant government agencies during the next visit of the project preparation team to Malaysia and the findings and related action-oriented program would be reflected, as needed, in this project.

Malaysia has been according increased emphasis to highway safety. It seems to have a safety plan with targets as well as a National Road Safety Council to coordinate activities in this regard. The awareness of the problem is high, the priorities for action are reasonable and a sizable component of this project (13% of total cost) is directed towards highway safety. Staff will be trained in the area of highway safety under this project. This leads to guarded optimism regarding sustainability in this area.

Overall, based on the above considerations, the project is likely to be sustainable.

8. Lessons learned from past operations in the country/sector

The Bank has accumulated substantial knowledge and experience through implementation of four highway projects and two urban transport projects in Malaysia, all of which have been completed. While the overall performance of these projects is by large satisfactory, a number of problems have occurred, which have been taken into consideration in the project’s design. These problems include delays in completion mainly due to problems with acquisition of right-of-way, cost overruns mainly caused by poor quality of the initial cost estimates, problems with some of contractors due to inadequate selection, some problems in quality of construction due to insufficient supervision resources from both the Borrower and Bank sides. Also, there were problems caused by shortage of qualified staff and high turnover of JKR staff. There were concerns about sustainability of highway maintenance and the need to control axle loads.

The above problems/concerns will be addressed in this project as follows.

A resettlement action plan (RAP) acceptable to the Bank for each of the roads under the first-year program in the capacity expansion component and an acceptable land acquisition and resettlement framework for the physical components where land needs and the number of affected people is small will be required before appraisal can take place. Land and resettlement activities must be physically completed before contractors can start work. The prequalification of contractors will be tightened to help ensure that only capable contractors are prequalified. Cost estimates will be based on solid up-to-date feasibility studies and detailed designs prepared during project preparation and appraisal for the first-year of the implementation program. Also, appropriate physical and price contingencies will be included in these estimates. The consultants who will prepare these studies/estimates will be selected according to the Bank’s procurement guidelines. Further, adequate resources on the Bank side will be reflected in the supervision plan.
Problems of staff shortage and high turnover as well as sustainability of maintenance are inherently difficult. The staffing problems have been substantially reduced by the current financial crisis, which narrowed pay differential between employment in JKR and the private sector, and emphasized the higher risks of losing a job in the private sector. However, the problem is anticipated to arise in the future. The proposed project includes about $2.0 million worth of training which should help ameliorate the problem. Since the last Bank-financed highway project in Malaysia the Government has made significant strides in privatization in general including roads by adopting maintenance by contract and more recently in following performance-based contract maintenance. The task team has furnished appropriate documentation to JKR from the Bank experience in Latin America (especially Argentina, Uruguay and Brazil). As for the issue of axle loads, the proper legal framework is already in place, 43 weigh stations with necessary equipment strategically located in the highway network are operational. Also the design standards have been revised to allow a higher axle load. Some of the bridges will be replaced or rehabilitated under this project because of this increase in axle loads. However, the main problem in practice is commitment and enforcement by all relevant agencies. Experience around the world has shown that this is very difficult to resolve. The task team has asked MOW/JKR together with the Road Transport Department of the Ministry of Transport (JPJ) to prepare a report on the issue of axle loads and further actions to be taken, if any. The mission will discuss this report with the concerned agencies during the forthcoming mission in April/May 1999 and reflect agreements reached in the description of the project as needed.

Experience from other countries with high rainfall and humid tropical weather conditions similar to Malaysia (such as Hong Kong and Brazil) was reflected in the slope protection component of the project. Slope protection works are expensive and available funds should be directed to the most risky locations and where traffic volumes are high and the density of land development is high. The slope protection specialist on the task team has worked with his counterparts at JKR to develop and apply a priority ranking system. Further, the project is expected to include the development of a plan for slope protection in Malaysia.

Malaysia has done a relatively good job in the area of highway safety. Experience from past work and from other countries in EAP region, shows that difficulties of coordination among the various pertinent agencies can be expected. The existing National Road Safety Council (NRSC) will help reduce these problems. Also, the Malaysian team which is in charge of preparation of this component includes a highly qualified and experienced professor of road safety, who is also an active member of the National Road Safety Council. The prospects of modifying this component to qualify as a pilot project for the Global Road Safety Partnership (GRSP) are presently being discussed with the Government/NRSC.

9. Program of Targeted Intervention (PTI) No

10. Environment Aspects (including any public consultation)

   Issues : The EIA process in Malaysia is generally in line with that of the Bank. But, there are differences relating to disclosure of EIA information and depth of treatment of secondary impacts in the project area.
of influence and detailing of mitigation efforts. Government asserted that it will follow Bank's requirements. EIA process in Malaysia is lengthy and this could affect/delay processing of the loan to this project. The Bank’s project preparation team includes a qualified environmental consultant to help guide and expedite preparation of this component.

The road capacity expansion component will be classified as Category A and an EIA and EAP would have to be prepared for each road section. As for the programmatic components (including road rehabilitation/maintenance, accident black spots, bridges, and slopes) an environmental screening and code of good environmental practices would have to be prepared. Should the screening indicate major adverse impacts are expected for some specific works, then a full EIA could be required.

Major land acquisition and resettlement (LA & R) effects are expected for the capacity expansion component of the project. The other components are anticipated to have localized and minor impacts. A RAP for each of the roads included under the capacity expansion component will have to be prepared. A framework for land acquisition and resettlement will have to be developed for the project as a whole. There are some differences between the Bank’s and Malaysia’s policies/procedures in this area pertaining to: the necessity to carry out a social-economic survey, the need for more participation and consultation with the project affected persons, the need to provide options for cash compensation, the requirement to provide compensation for project affected persons regardless of legal ownership title, and the requirement to carry out internal and external monitoring of the implementation of land acquisition and resettlement. Further, MOW/JKR personnel are not familiar with Bank requirements in this area of LA & R. The Bank project preparation team includes a qualified consultant to help guide and expedite preparation of this component. However, the resettlement issue is expected to be a main risk that could delay processing of this project and implementation of works.

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Note: This is information on an involving project. Certain components may not be necessarily included in the final project.

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