

Australia Indonesia Partnership Kemitraan Australia Indonesia



# RECOMMENDATIONS FOR A ROAD SAFETY UNIT AT THE MINISTRY OF PUBLIC WORKS



# INDONESIA INFRASTRUCTURE INITIATIVE

#### Indonesia Infrastructure Initiative

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David Foster Jakarta, September 2009

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## ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank				
AIP	Australia Indonesia Partnership				
AusAID	Australian Agency for International Development				
APBN	Anggaran Pendapatan dan Belanja Negara (National Budget)				
ASEAN	Association of Southeast Asian Nations				
AWP	Annual Works Program				
BER	Bid Evaluation Report				
BINTEK	<i>Bina Teknik</i> (Technical Affairs Directorate, Directorate General of Highways, Ministry of Public Works)				
BINPRAN	(Planning Directorate, Directorate General of Highways, Ministry of Public Works)				
BMS	Bridge Management System				
DED	Detailed Engineering Design				
DGH	Directorate General of Highways				
DGLT	Directorate General of Land Transport				
DIPA	Daftar Isian Pelaksanaan Anggaran (Proposal for Budget Funding)				
EINRIP	Eastern Indonesia National Road Improvement Project				
EIRTP	Eastern Indonesian Region Transport Project				
FED	Final Engineering Designs				
GoI	Government of Indonesia				
GRSP	Global Road Safety Partnership				
HIC	High-Income Country				
IBMS	Indonesian Bridge Management System				
IBRD	International Bank for Reconstruction and Development				
ICB	International Competitive Bidding				
IndII	Indonesia Infrastructure Initiative				
INP	Indonesian National Police				
IRE	Institute of Road Engineering				
IRMS	Interurban Road Management System				
IRSMS	Integrated Road Safety Management System				
ITB	Institute of Technology Bandung				
ITS	Intelligent Transportation System				
ITSAP	Indonesia Transport Safety Assistance Package				
JKJR	Jabatan Keselamatan Jalan Raya (Road Safety Department, Malaysia)				
LIC	Low-Income Country				
M&E	Monitoring and Evaluation				
MIROS	Malaysia Institute of Road Safety Research				

MTEF	Medium-Term Expenditure Frameworks				
NAM	Network Analysis Module				
NOL	No Objection Letter				
NRIP	National Roads Improvement Project				
P2JJ	<i>Perencanaan dan Pengawasan Jalan dan Jembatan</i> (Province – based Technical Planning and Supervision Unit, Roads and Bridges)				
PMU	Project Management Unit				
POLDA	Kepolisian Daerah (Provincial Police Office)				
POLRES	Kepolisian Resor (Local Police Office)				
POLRI	Kepolisian Negara Republik Indonesia (Indonesian National Police)				
PPU	Project Preparation Unit				
RCRB	Research Centre for Roads and Bridges				
ROW	Right-of-Way				
RPJM	Rencana Pembangunan Jangka Menengah (Medium-Term Development Plan)				
RR2P	Second Road Rehabilitation Project				
RRSP	Road Rehabilitation Sector Project				
RSA	Road Safety Audit				
RSU	Road Safety Unit				
SOP	Standard Operating Procedures				
SRIP	Strategic Road Improvement Project				
ТА	Technical Assistance				
ToR	Terms of Reference				
TRL	Transport Research Laboratory (TRL Ltd)				
UKL/UPL	Upaya Pengelolaan Lingkungan/Upaya Pemantauan Lingkungan (Environmental Management Effort/Environmental Monitoring Effort)				
WINRIP	Western Indonesia National Road Improvement Project (planned sister project to EINRIP under DGH/IBRD)				

## **EXECUTIVE SUMMARY**

Indonesia is experiencing a very serious road safety problem with a total of approximately 30,000 traffic fatalities occurring annually. This is a situation that is likely to deteriorate further as a result of the continuing growth in motorisation, particularly with the rapid increase in the volume of motorcycles. Problems in accident recording, resulting in severe under-reporting of accidents, have meant that road safety has attracted only limited public and government attention to what is a very serious public health problem. In addition, there are major economic impacts with one recent study calculating the total cost of traffic accidents<sup>1</sup> at an estimated 2.9 percent of GDP.

As a result of growing concerns of the seriousness of this problem, a study on the road safety situation in Indonesia–fully supported by the Government of Indonesia–was commissioned by the Australian Agency for International Development (AusAID). The study entitled "Initial Investigation of a Possible AusAID Road Safety Project in Indonesia" was carried out by Eric Howard and Associates during 2007 and the report prepared in July 2008 listed nine areas of potential activities for AusAID support.

Following on from the Howard report, three separate but complementary road safety activities in Indonesia have been identified for funding support under the Indonesia Infrastructure Initiative (IndII) which was established in July 2008 by AusAID. These activities comprise;

- this scoping study for establishment of a Road Safety Unit (RSU) in the Directorate General of Highways in the Ministry of Public Works;
- a second project which comprises a series of road safety field reviews of selected blackspot<sup>2</sup> locations to provide practical experience in road safety audit techniques (this was also underway at the time of preparation of this report); and
- a third project which comprises the initial stages of the establishment of the RSU.

During the preparation of this scoping study, further reviews of the road safety institutional situation have been carried out to update the information from the Howard report and these are summarised in the main body of the report and supporting annexes. Of particular significance, the 2009 Law on Traffic and Road Transport was passed during the preparation of this scoping study and a clearer definition of the agency roles and tasks in road safety have been included.

In summary the following are the main responsibilities of the three major agencies responsible for the physical aspects of the road safety environment:

The Directorate General of Highways (DGH) has the responsibility for identifying road safety problem locations such as blackspots, to develop improvement programs and implement measures for traffic accident reduction. However, their full responsibility for these improvements only extends to realignment and/or geometric changes and modifications to street furniture or other facilities in the right of way with the specific exclusion of traffic signs, signals and road markings. In the area of traffic accident prevention, DGH is responsible for carrying out road safety audits for road improvement and new road projects.

**The Directorate General of Land Transport (DGLT)** shares the responsibility for identifying road safety problem locations but has no role in the area of accident investigation or road safety audit. It does have the responsibility in the area of provision of, or modification to, road markings, traffic signs and signals, but not physical changes to the road.

<sup>&</sup>lt;sup>1</sup> The term "traffic accident" is used in this document as it is more commonly used than the term "road crash" in Indonesia.

<sup>&</sup>lt;sup>2</sup> Blackspot: Many traffic accidents are not random events, frequently occurring in clusters in what are termed blackspots and blacklinks.

The **Police** share the responsibility for identifying road safety problems with DGLT and DGH and can recommend to both agencies that action be taken. They have full responsibility for accident investigation and enforcement of traffic laws.

Coordination between these agencies has been limited and will require significant improvement if future road safety efforts are to be fully effective. Although the Presidential Decree on Road Safety, issued in 2007, identified the need for a Road Safety Council which would oversee and monitor road safety activities in Indonesia, little progress appears to have been made. In addition, a decree prepared in 2007 by the Minister of BAPPENAS on the establishment of a Steering Committee on Road Safety with BAPPENAS as the head also does not appear to have been acted upon. This scoping study concludes that the establishment of the Steering Committee with BAPPENAS as the head would be an important step in improving coordination and could lead the way to the development of the full Road Safety Council.

The initial Terms of Reference (ToR) for this scoping study were to develop a Road Safety Audit Unit in DGH but early in the study preparation it was concluded that the role of the unit should be broadened to also include traffic accident reduction, typically in the form of development of blackspot improvement projects and programs. The technical skills required for these complementary programs are similar and the road safety initiative will be significantly enhanced. In addition, a blackspot improvement program is identified in the next Five Year Plan for DGH (2010–2014) and is therefore a requirement.

Consequently the role of the RSU will include traffic accident prevention (Road Safety Audit–RSA) and traffic accident reduction (blackspot improvements) as prime tasks. Although described as a unit, it will comprise a central unit in Jakarta with tasks and responsibilities also being carried out at the *balai* and provincial levels (through P2JJ and *Satker*). Work commenced in July of 2009 on field reviews of identified blackspots in Sumatra and Java by DGH staff under the guidance of a consultant, Phillip Jordan, (as part of the second IndII project described above). It is anticipated that this will lead to the development of mitigating countermeasures to be developed into the first stage of the Blackspot Program.

This scoping study recommends that the initial RSU will comprise a core of approximately 10 individuals who will receive extensive training and mentoring during an 18 month activity. This will include classroom and practical training and the further development of the first year Blackspot Program which will be based on the findings and recommendations of the work from the field reviews described above. The study has concluded that the location of the individuals is less important than their commitment to the program. There will be additional training provided to other staff within DGH and other agencies to broaden road safety understanding to a wider audience.

This study has identified the potential complementary road safety roles of other agencies which include the Institute of Road Engineering (IRE) in Bandung, DGLT, the police, and the universities. It also describes potential, more formal, structures for the staged development of the RSU.

The recommendations are that an internationally recruited adviser in road safety engineering be provided for 12 months, and a nationally recruited highways/traffic consultant be provided for a period of 18 months to support the establishment of the initial RSU and assist with the development of the accident Blackspot program. These two consultants will be supported by additional outside resources to assist with classroom and field training. In addition, it is recommended to include a fact-finding tour which will include Malaysia to learn about their experiences and how they have improved road safety in circumstances which are quite similar to Indonesia with high volumes of motorcycles in the traffic stream.

An 18 month period has been selected as being the estimated time that will be required to institute the changes within DGH and develop improved skills for the core staff of the RSU. It is proposed to commence in the fourth quarter in 2009 and finish by the end of the first quarter of 2011.

The study recommends that this activity be supported by AusAID under the IndII program and it is anticipated that DGH will provide an activity coordinator who will be responsible for overseeing the implementation of the technical assistance and provide the core group of engineers for the initial RSU. DGH will also provide suitable office space for the consultant team and the RSU and cover the cost of the RSU and associated travel expenses for DGH.

## 1 CONTEXT

## 1.1 IMPACT OF ROAD SAFETY PROBLEMS IN INDONESIA

Indonesia is experiencing a very serious road safety problem with a total of approximately 30,000 traffic fatalities occurring annually. This is a situation that is likely to deteriorate further as a result of the continuing growth in motorisation, particularly with the rapid increase in the volume of motorcycles. Problems in accident recording, resulting in severe under-reporting of accidents, have meant that road safety has attracted only limited public and government attention to what is a very serious public health problem. In addition, there are major economic impacts with one recently carried out study calculating the total cost of traffic accidents at an estimated 2.9 percent of GDP.<sup>3</sup>

## 1.2 ERIC HOWARD & ASSOCIATES REPORT – JULY 2008

In response to growing concerns of the seriousness of this problem, a study on the road safety situation in Indonesia–fully supported by the Government of Indonesia–was commissioned by AusAID. The study, entitled "Initial Investigation of a Possible AusAID Road Safety Project in Indonesia", was carried out by Eric Howard and Associates during 2007 and the report prepared in July 2008 listed nine areas of potential activities for AusAID support.

## 1.3 INDII

The Indonesia Infrastructure Initiative (IndII) was established in July 2008 as part of the program of the Australian Agency for International Development (AusAID) to provide support to Indonesia in the areas of:

- infrastructure project management;
- policy and regulatory reforms for infrastructure development; and
- providing a grants program directed at enhancing social and environmental impacts on the government's infrastructure projects.

IndII is a facility-style implementation model, providing for both short-term relatively small activities (projects) and longer-term progressive engagement (programs of work) with selected partner agencies. These may be implemented using technical assistance, capacity building inputs and/or grants for small infrastructure-related works.

As a result of the findings of the Howard report, three separate but complementary road safety projects in Indonesia have been identified for funding support under IndII:

- this scoping study for establishment of an RSU in the Directorate General of Highways in the Ministry of Public Works;
- a second project which comprises a series of road safety field reviews of selected blackspot locations to provide practical experience in road safety audit techniques; and
- a third project which comprises the initial stages of the establishment of the RSU.

During the preparation of this scoping study, further reviews of the road safety institutional situation have been carried out to update the information from the Howard report and these are briefly summarised in Annex 6 of this document.

<sup>&</sup>lt;sup>3</sup> ADB-ASEAN Regional Road Safety Program, Indonesia.

## 1.4 RECENT ROAD SAFETY ACTIONS AND ACTIVITIES

There have been a series of recent actions and activities which indicate the growing importance which is being attached to casualties on the roads in Indonesia and the need to improve road safety. These include:

- ADB-ASEAN Regional Road Safety Program, Country Report and Action Plan for Road Safety in Indonesia (2005);
- Presidential Decree No.6/2007 which instructed government agencies to:
  - provide a policy paper by December 2007 on the establishment of a National Road Safety Council;
  - o develop a road safety information system;
  - develop a national road safety program to address human resource quality and recommended regulatory changes by November 2007;
  - devise means of funding road safety;
  - o provide traffic safety education for children in schools; and
  - o improve public awareness of road safety.
- DGLT Road Safety Action Plan 2008 2012;
- DGH 2010-2114 Plan which includes a road safety program for the first time;
- World Bank support for the Traffic Police and DGLT under the Integrated Road Safety Management System (IRSMS). T his is not yet underway but is planned for commencement later this year;
- GRSP involvement in Indonesia;
- ADB-supported project (2006) manual for "Managing Campaigns for Safety of Road Traffic",
- draft "Roadmap" prepared by IRE May 2009; and.
- the passing of the new Traffic and Road Transport Law which identifies specific road safety initiatives and more clearly defines the respective roles of the different government agencies in the execution of road safety responsibilities.

In addition, there have been some slight improvements in cooperation between the main agencies involved in road safety, in particular between the police and DGH. However, there has been no real action taken on the establishment of a National Road Safety Council which was one of the key elements of the presidential decree and there continues to be only limited coordination between the ministries that should be actively involved in improving road safety.

## 1.5 2009 TRAFFIC AND ROAD TRANSPORT LAW

There are three main agencies which are involved in the management, monitoring and enforcement of the road infrastructure which have an impact on road safety. These are the DGH in the Ministry of Public Works, the DGLT in the Ministry of Transport and the Traffic Police in the Indonesian National Police (POLRI). The traffic and road transport law defines the responsibilities of each of these agencies including their respective roles in road safety.

#### 1.5.1 Background

In June 2009, the new Traffic and Road Transport Law was passed by parliament and was subsequently signed by the president. The law sets out and clarifies the responsibilities of the DGH, DGLT and the Indonesian police.

#### 1.5.2 Summary of Agency Responsibilities in Road Safety Under the Law

Under the new law the roles of the agencies in the area of traffic management and engineering have been defined and these are identified in Annex 1. In summary, the following are the responsibilities of the three major agencies involved in road safety as it pertains directly to the physical road environment.

#### **Directorate General of Highways**

DGH has the responsibility for identifying road safety problem locations such as blackspots, developing improvement programs and implementing measures for traffic accident reduction. However, their full responsibility for these improvements only extends to realignment and/or geometric changes and modifications to street furniture or other facilities in the right of way. Traffic signs, signals and road markings are specifically excluded. In the area of traffic accident prevention, DGH is responsible for carrying out road safety audits for road improvement and new road projects.

#### **Directorate General of Land Transport**

DGLT shares the responsibility for identifying road safety problem locations but has no role in the area of accident investigation nor in the area of road safety audit. It does have responsibility in the area of provision of, or modification to, road markings, traffic signs and signals.

#### **Traffic Police**

The police share the responsibility for identifying road safety problems with DGLT and DGH and can recommend to both agencies that actions be taken. They have full responsibility for accident investigation and enforcement of traffic laws.

#### 1.5.3 Other Significant Items included in the Law

#### Forum of Traffic and Road Transportation

The new law has identified a Forum of Traffic and Road Transportation which will be responsible for the coordination of traffic and road transportation. Its organisation and membership consists of the development, organisational, academic and community elements. The Forum does not currently exist and it is unclear who is responsible for its establishment.

#### **Road Preservation Fund**

The new law has stipulated that a Road Preservation Fund is to be established for road maintenance, rehabilitation and reconstruction and will be managed by DGH. The actual organisation and working arrangements of the unit have yet to be determined.

## 2 CURRENT INITIATIVES AND STATUS OF ROAD SAFETY CAPABILITY

## 2.1 DIRECTORATE GENERAL OF HIGHWAYS (DGH)

## 2.1.1 Road Safety Organisation

The road safety organisation in DGH currently comprises limited staffing in the Environmental Subdirectorate of the Technical Directorate (Bintek). The purpose of the IndII program is to establish an RSU in Bina Marga (Directorate General of Highway Construction and Maintenance) and the work program which is included in this document is designed to provide the first steps in its development. While referred to as a unit it will in fact be a central unit with responsibilities also located in the provinces and in the *balai*<sup>4</sup> and a description of how this may be achieved is discussed in Section 4 of this report.

The RSU will be responsible for implementing two strategies for improvements to road safety performance:

- traffic accident prevention-of which road safety auditing plays an important role in the planning, design and implementation processes; and
- traffic accident reduction–which takes the form of typically blackspot or black link improvements or mass action plans (for example pedestrian crossing treatments outside schools).

Work commenced in July 2009 on field reviews by DGH staff of identified blackspots in Sumatra and Java under the guidance of a consultant, Phillip Jordan, as part of the second IndII project described in Section 1.3 of this report. It is anticipated that this will lead to the development of mitigating countermeasures to be developed into the first stage of the blackspot improvement program.

There have been weaknesses in the systems which have been employed in the design and implementation of the majority of road projects which will impact on the road safety audit process. These are discussed below.

## 2.1.2 Preparation of Road Designs

Loan-funded road improvement projects typically comprise multi-year programs, extending over a period of three to five years with defined Annual Works Programs (AWPs). The project preparation has typically comprised the development of the overall proposed road improvement program to feasibility stage with designs being prepared for the first AWP. These designs have been prepared by local consultants, under the supervision of the Project Preparation Consultant (typically an international consultant with local consultant support) using simplified methods of design. This simplified method has been employed for two main reasons, firstly due to the low level of funding which is allocated for project preparation and, secondly, to speed up the process for implementation and disbursement of the funds.

The project preparation and the detailed designs are generally carried out in Jakarta for loan-funded projects and the involvement of the province and *balai* in the process are fairly limited, with the *balai* having no effective input. The works carried out under APBN are procured in the provinces and are much smaller in scope. A number of designs and supervision are typically included in a package and, under these programs; central DGH involvement is more limited. Figures 1 and 2 illustrate the simplified flow diagrams for the implementation of these works.

<sup>&</sup>lt;sup>4</sup> Balai: Regional offices of Bina Marga which cover highway construction and maintenance in a number of provinces.

Figure 1. Flow Diagram for Donor Funded Betterment Project No Road Safety Audit

(No Land Acquisition)





## Figure 2. Flow Diagram for APBN Betterment Project

The level of detail included in the designs for APBN projects and the majority of loan-funded projects is insufficient to carry out a detailed design RSA since detailed and accurate topographic surveys are generally not carried out and details of the features in the road right of way are not identified accurately on the drawings. To implement a full five-stage RSA therefore needs to be a major improvement in the quality of designs prepared by consultants.

Some Road Safety Auditing has been carried out on the EINRIP project but this has not been to the extent which is required for full RSA. In addition there are some Road Safety Audits which are planned to be carried out under the SRIP project funded by the World Bank.

The implementation of Road Safety Audit and Traffic Accident Reduction Programs will need to recognise these work flow and task responsibilities if they are to become successfully embedded into the existing systems.

## 2.2 MINISTRY OF TRANSPORT – DIRECTORATE GENERAL OF LAND TRANSPORT (DGLT)

#### 2.2.1 Organisation

The DGLT is responsible for the establishment of transport policy, technical guidance, formulation of standards, guidelines and procedures in road transport and monitoring and evaluation of performance. DGLT is divided into three directorates:

- Directorate of Urban Transport;
- Directorate of Traffic and Transportation; and
- Directorate of Land Transport Safety.

The Directorate of Land Transport Safety was formed in 2005 and comprises the following subdirectorates:

- Safety Management;
- Promotion and Cooperation;
- Accreditation and Certification;
- Safety Audit; and
- Administration Sub-division

Its roles include accrediting drivers of public transport vehicles, developing and rolling out road safety promotional campaigns, development of road safety management (including strategy) within Indonesia and currently conducts training in road safety audit activity at local level. However, as indicated in section 1.5.2, the new Traffic and Road Transport Law clearly indicates that DGH–and not DGLT–will be responsible for road safety auditing of the national road network.

#### 2.2.2 Road Safety Initiatives

#### Road Safety Action Plan

DGLT has recently published a road safety action plan which targets improvements in road safety performance. There are eight strategies and 39 associated actions for the period 2008 to 2012. The policy target is to reduce the rate of fatalities per 100,000 population from 14.1 (2002) to 11.3 (2012).

As noted later in this report, however, there are severe weaknesses in the accident reporting which will make monitoring of the actual achievements in road accident reduction extremely difficult, particularly in the short term.

As a result of decentralisation, DGLT has a role in providing advice and guidance to provincial and regional land transport authorities but little influence on actual implementation of programs. However, the capability, background and experience in the provincial and regional offices is generally very limited, particularly in the smaller municipalities and many of the technical positions are filled by unqualified staff. As a consequence, institutional strengthening in the areas of traffic engineering and road safety is very difficult. While in theory, the land transport staff in the regions should play a major role in the investigation of accidents and development of mitigating measures, pilot projects carried out to date to develop the skills in these areas have met with limited success. However, during the visit to Medan during the preparation of this report there was evidence that the provincial land transport agency, the provincial public works and the police had recently worked together on field reviews and investigations of blackspots in North Sumatra. This follows on from cooperation which was developed during the TA for the Road Traffic Safety and Vehicle Weights and Dimensions project carried out under the World Bank-funded Sumatra Regional Road Project.

In general, most of the land transport authorities' attention has been in the area of vehicle inspection and plating of commercial vehicles, vehicle overloading control, collection of local transport levies and bus terminal operation. All of these activities are used for the purposes of revenue collection. The areas of traffic management and control have, in the main, been ignored and road safety has not been a consideration—with the exception of a limited number of loan-funded projects which have focused on it. There is also very little funding made available for maintenance of existing facilities and, consequently, important safety features such as traffic lights, safety barriers and signs are not replaced in a timely fashion, if at all.

#### Recent Activities in Road Safety

A meeting held with the DGLT Road Safety Directorate provided the following information on recent road safety activities and initiatives.

#### **Road Safety Audits**

There is a mandated requirement to carry out RSA on toll roads and DGLT have carried out a series of nine road safety audits on toll roads starting in 2007. It would appear that there has been support from outside agencies for these audits, including international consultants and staff from Gadjah Mada University.

According to the RSA subdirectorate in DGLT, actions have been carried out based on the recommendations of the reports, but this has not been verified. Future monitoring should be carried out to determine what impact the recommendations/actions have had on road safety performance of the toll roads. The quality of the accident data on the toll roads is of a much higher quality than the remainder of the road network and it should be possible to carry out such an evaluation in the future.

#### **Road Safety Audit Training**

The Road Safety Directorate has carried out 10 separate training sessions for road safety auditing on the islands of Java, Sumatra, Sulawesi and Bali with approximately 30 Land Transport Agency staff (Dinas Perhubungan) at the provincial and regional level at each of these sessions. These have been carried out over a three-day period with approximately half of the time in the classroom and the remainder in the field. This activity has been supported by Gadjah Mada University staff. The main purpose of the training has been to increase awareness of Dinas Perhubangan staff in the area of road safety and not to develop a squad of road safety auditors.

#### **Blackspot Improvement Program**

A blackspot implementation program is underway and currently in the design stage for the provinces of East Kalimantan, South Sulawesi and NTB (Sumbawa). Based on accident data collected from the local police office (POLRES) 10 blackspots/blacklinks were identified in each of the provinces and the two highest ranked locations in each of the provinces have been included in the Blackspot Improvement Project. The directorate obtained APBN funding and procured a consultant (PT Mursin Say) to develop and design mitigation measures and these are currently being reviewed by DGLT prior to tender later this year. There does not appear to have been any coordination with DGH on the program.

#### **Integrated Road Safety Management System 1**

The terms of reference are being finalised on the World Bank-funded IRSMS I for DGLT and will focus on two key areas: (i) review of existing funding arrangements and options for sustainable financing of road safety; and (ii) development of a Performance-Based and National Road Safety Strategy, including phasing, costs, and management arrangements. There was a third key area–establishment of a National Road Safety Board which has now been removed from the ToR. This would appear to be a major omission since the limited communication between the major players in road safety in Indonesia appears to be one of the major problems. A review of the draft ToR has indicated that a fairly significant component of the work of the TA consultant will be to provide support to DGH. There has been only limited coordination with DGH on the ToR and there are major overlaps with the work which is being carried out by the IndII consultant, Phillip Jordan, in the areas of field review road safety audits.

#### Indonesia Transport Safety Assistance Package (ITSAP)

Through a number of discussions and meetings between AusAID and DGLT it has been decided to conduct a basic road safety workshop that will involve participants from DGLT, DGH and the National Traffic Police and a follow-up session three to four months after the initial workshop.

The workshop is likely to be held in October 2009 in Jakarta and AusAID are contracting two consultants (Associate Professor Barry Watson and Dr Mark King) from the Centre for Accident Research and Road Safety - Queensland (CARRS-Q) to conduct the workshop.

#### 2.2.3 Impact of New Traffic and Road Transport Law

As indicated in Section 1.5, the new law when signed by the president will remove the responsibility of RSA from DGLT and will result in a reorganisation of the Road Safety Directorate. There is uncertainty as to the full impact that the changes to the law will have on the Road Safety Directorate but the directorate believes that they may focus more on engineering aspects such as black spot improvements. Their area of responsibility under the law is limited, however, and excludes physical changes to the road. The form of the enacting regulations will be a key factor in how they restructure. The main responsibility in the area of road safety for DGLT is in the provision of signs, signals, markings and other traffic-related street furniture. Signs and markings are not prepared consistently and the manual for their location is too simplified. There would be significant benefit in developing a manual/detailed guidelines for the layout of signs and markings. This would also be of benefit to DGH in the preparation of new road designs.

## 2.3 INDONESIAN TRAFFIC POLICE

#### 2.3.1 Overview

Despite pilot projects in selected provinces where a computerised accident recording system has been trialled, the police accident reporting system used is a manual system with the data collected and held in the local police office. Summaries are sent to the provincial office. There are problems with the volume of accidents reported since there is reluctance by police officers to record accidents which will not result in a court case. As a consequence, only very serious accidents are generally recorded. There are also problems with follow-up with the hospitals and, consequently, fatalities are severely underreported.

Accident statistics reported by the Traffic Police for the period 2002 to 2007 are included in Table 2.1 below. It would appear that there has been an increase in the reporting of accident-related injuries since 2005 rather than a sudden increase in the incidence of injuries.

No	Effect	Year					
		2002	2003	2004	2005	2006	2007
1	Death	8,762	9,856	11,204	16,115	15,762	16,548
2	Injury	14,941	14,836	21,067	87,208	85,592	66,040
3	Total Accident	12,267	13,399	17,732	91,623	87,020	48,508
4	Growth in Accident Numbers (%)		9.23	32.34	416.71	-5.02	-44.26

#### Table 1. Summary Data on Reported Traffic Accidents (2002–2007)

Source: Directorate of Traffic Police (2007)<sup>5</sup>

Based on information included in the Howard report, for the year 2002 there were an estimated 30,000 fatalities (Ministry of Health) –this compares to the total reported above of just less than 9,000. Until a robust system of accident reporting and recording is implemented, establishing future targets of fatalities per 10,000 registered vehicles will be difficult to monitor. The component of the IRSMS dealing with upgrading the system of accident reporting–which is discussed below–is, therefore, extremely important from both the perspectives of identifying where the efforts should be best placed to reduce the accident rate as well as to plot the actual impacts of the efforts.

Previous pilot projects have attempted to implement a computerised accident reporting/recording system (referred to as the Triple L system) and they have proved to be unsuccessful for a number of reasons:

- the system was not formally adopted-even in the provinces where it was piloted-and consequently Standard Operating Procedures (SOPs) were not prepared for the reporting procedures;
- the system was not nationally implemented, which resulted in the frequent staff transfers diluting the number of police staff who had received training in the use of the reporting system;
- the reporting requirements were overly complicated due to the data collection requirements of DGLT and consequently met with resistance from the police;

<sup>&</sup>lt;sup>5</sup> Taken from Ministry of Transport website.

- the police did not have ownership of the project since the client for the project was DGLT; and
- there were major problems with the mapping for the system and this seriously impacted on the usefulness of the data collected.

A visit to the POLDA office in Medan revealed that the computerised system which had been installed during 2002 was not being used. In preparation for field reviews to be carried out under the guidance of Phillip Jordan under the second IndII-funded road safety project, the police have compiled summaries of accident data to identify the locations with the worst road safety record. This information indicates some very serious road safety problems with a number of locations averaging over five fatal accidents/km/year.

#### 2.3.2 Current Activities in Road Safety

Under the World Bank-funded Strategic Road Improvement Project (SRIP), a Technical Assistance is proposed for the Consulting Services for the IRSMS 2 project which has the objective of supporting development of an Accident Report System in relation to the following:

- design and development of Traffic Accident Reporting System Application and Traffic Violation application system;
- design and development of system integration of the four systems: Driver's Licence, Vehicle Registration, Traffic Accident and Traffic Violation;
- implementation of fully integrated IRSMS with functionality to deliver user-friendly accessible output to various agencies;
- preparation of institutional development and capacity-building program on road traffic safety;
- preparation of bidding documents for the procurement of equipment for the system and provision of procurement support; and
- development of the IRSMS long-term plans including ToRs.

The deadline for Expressions of Interest was March 2009 and the TA is anticipated to commence later this year with a duration of approximately two years for phase 1. This will involve the provision of IRSMS to the Traffic Police Section of the Indonesian National Police (INP), the Traffic Police in Central Java and Jakarta metropolitan police.

During phase 2 the medium-term development of IRSMS is anticipated to be carried out over a fiveyear period when it will be rolled out to all provincial Traffic Police across Indonesia. The long-term development of IRSMS is anticipated to be carried out over 10 years during phase 3. This will include development of Intelligent Transport systems and full automation. To date, funding has only been allocated for phase 1.

The accident reporting system is a key element in the development of road safety engineering programs and it would be beneficial if the data could be made compatible at some stage with the Indonesian Road Management System (IRMS) which would allow data on locations and numbers/types of accidents to be identified by road section. This would allow statistics to be easily identified for the sections—based on parameters such as accidents/vehicle km (since traffic volumes are already included in the IRMS database. This would allow the safety performance to be reviewed at the same time as road condition and other characteristics. It is also essential that the protocol for receiving accident data is established. The integration of accident data into IRMS would be relatively straightforward.

The implementation of the IRSMS 2 will be controlled by the police and this should overcome a lot of the previous problems, however, the duration of the project appears to be very short. It will also only

cover limited locations with no guaranteed funding for the completion of the implementation of the system throughout Indonesia.

#### 2.3.3 Cooperation with DGH

Since the Howard report was prepared, there have been advances in the cooperation between INP and DGH–mainly as a result of the monitoring and evaluation of the Eastern Indonesia National Road Improvement Project (EINRIP) which was carried out on behalf of DGH with support from AusAID. As part of this project, selected sections of road–both included in EINRIP implementation and some control sections–have been included for review of performance characteristics. Part of this performance review process has been to examine the traffic accident record of the road sections by visiting the local police office and collecting traffic accident data. This has been carried out with the full cooperation of the Traffic Police central office in Jakarta and in the provinces and regions. This commenced in 2008, is continuing this year, and is scheduled to carry on for another five years.

A meeting held during the preparation of this report, confirmed that the police would also be willing to continue this similar process for selected corridors to develop a traffic accident reduction program. They would like to receive the summaries of the collected accident data to support their efforts and have also indicated a strong desire to reinforce any program developed by DGH with enhanced enforcement, in particular in the area of speed control. The police currently have no equipment for speed control and would require a training program in its use. They would like to review the potential of receiving support from AusAID in this area.

After successful implementation of the accident reporting system, the collection and summarising of accident data should be relatively straightforward.

## 2.4 BAPPENAS

A decree was prepared in 2007 by the Head of BAPPENAS on the establishment of a Steering Committee on Road Safety with BAPPENAS as the head. It included the requirement for quarterly meetings, however, to date, it would appear that little progress has been made.

## 2.5 INSTITUTE OF ROAD ENGINEERING BANDUNG (IRE)

The Institute of Road Engineering (IRE) or Pusat Penelitian dan Pengembangan Jalan (Puslitbang Jalan) is the research and development institute under the Ministry of Public Works. IRE has a study group for road safety under the Traffic Engineering and Road Environment Division (Balai Teknik Lalu Lintas dan Lingkungan Jalan) in Bandung.

IRE is preparing a road map towards safer roads in Indonesia as part of the commitment to the Asian highways network in Indonesia. The road map is based on the RPJM and strategic plan of the Ministry of Public Works/Directorate General of Bina Marga and fulfilment of the Road Act No. 38/2004.

The main direction of the road safety road map is to support road development in Indonesia and improve road safety and activities including:

- developing road safety technology;
- preparing a manual for road accident prevention, facilities for pedestrians, bicycles and motorcycles and Intelligent Transportation System (ITS);
- developing design specifications for road accident prevention, facilities for pedestrians, bicycles and motorcycles;

- preparing departmental regulations for road safety policies;
- developing road safety devices such as roadside barriers, markings, signs, speed reduction and ITS;
- developing laboratory facilities for supporting road safety programs; and
- developing capacity building in the area of road safety for the Ministry of Public Works.

One of the main areas of concern is improving road "link" safety in both urban and rural areas; improving intersections-nodes-(for example at grade and grade separation junctions); access to residential and office complexes; motorcycle, bicycle and pedestrian lanes; and local area traffic management.

IRE has also developed a road safety audit process that has followed Australian best practice at the predesign, draft engineering design, detailed engineering design and operational road stages. The program will establish an up-to-date user friendly manual of road safety audit, pilot projects for all stages, improve capacity building, prepare a draft ministerial decree of road safety audit, support activity programs and improve road safety audit equipment.

## 2.6 UNIVERSITY ACTIVITIES IN ROAD SAFETY

Discussions have been held with representatives from selected universities in Indonesia. Current related identified activities include:

- Inter University Forum for Transportation Studies or Forum Studi Transportasi antar Perguruan Tinggi (FSTPT). This was established in 1999 and currently has 60 active university members. The objectives of the forum are to improve:
  - the quality of research-by conducting an annual symposium and publishing accredited national journals twice a year; and
  - the quality of teaching-by conducting a series of short courses annually coordinated with the symposium.

This year's symposium will be held at Petra Christian University in Surabaya in November 2009 and the short courses coincidently will be road safety with the main staff input from University of Indonesia, Gadjah Mada University and Brawijaya University (Malang, East Java). The objectives are to increase the awareness of road safety problems in Indonesia and the short course material and discussion could be used to prepare part of a traffic safety course in the future.

- Tripartite agreement between University of Indonesia, Bandung Institute of Technology and Gadjah Mada University for research, education and training collaboration in infrastructure. This agreement was signed in 2007 to support government efforts to boost infrastructure development in Indonesia. The objectives are:
  - to provide high-calibre training and education for capacity building in infrastructure sectors;
  - o to collaborate on multi-disciplinary research in the area of infrastructure;
  - to conduct staff and student exchanges (credit earning and transfer system) within the tripartite system; and
  - to prepare a joint Master's degree program in infrastructure development.

These tripartite activities were recognised by the government. The student exchange program, for example, is the only program of its kind in Indonesia and it will be extended to make it available to all students in other universities studying for a short period (one or two semesters) at one of the tripartite universities. The credit earning system is currently limited to the civil and environmental engineering undergraduate program and in the next academic year will start for the Master's

program in the area of infrastructure. Joint research is another interesting activity, the tripartite universities form the infrastructure and transportation research cluster in the Directorate General of Higher Education.

## 2.7 TABULATION OF ROAD SAFETY ACTIVITIES OF MAIN AGENCIES

Table 2 that follows identifies the major current and future planned road safety activities of DGH, DGLT and the Traffic Police.

<b>Road Safety Activity</b>	DGH	DGLT	Traffic Police					
Existing Activities								
Road Safety Directorate in DGLT.	Very limited coordination with DGLT.	Already established in DGLT.	Very limited coordination with DGLT.					
Road Safety Action Plan.	Little or no input into the plan.	Prepared by DGLT and covers eight strategies and 39 associated actions for the period 2008 to 2012 covering all agencies involved in road safety. There appears to have been either little or no coordination with the other agencies.	Little or no input into the plan.					
Road Safety Audits.	RSA has been carried out on projects on the AusAID-funded EINRIP and to a limited extent on SRIP. Further work is planned on the remainder of the SRIP projects.	Have carried out a program of RSA training and some toll road audits. This is now not a responsibility of DGLT under the 2009 Traffic and Road Transport Law.	No involvement.					
Blackspot Improvement Program	Field reviews in Java and Sumatra being carried out in 2009 with support from IndII with intention to implement improvements in 2010.	Limited program being designed in 2009 in East Kalimantan, South Sulawesi and NTB.	Police have provided support on accident data for DGH program in 2009 and there are signs of improvements in coordination.					
Future Planned Activities								
Road Safety Unit which will carry out Traffic Accident Prevention (Road Safety Audits) and Traffic Accident Reduction Programs.	To be established in DGH and this will involve the continuation of road safety audits for new projects or those involving realignment and/or widening. A blackspot program will be the main focus of the Traffic Accident Reduction Program in the short term. Will require input from DGLT.	Will assist with signs and markings for Traffic Accident Reduction Program.	Will provide accident information and receive feedback from DGH and DGLT.					

## Table 2. Current and Future Planned Road Safety Activities for Main Agencies

#### RECOMMENDATIONS FOR A ROAD SAFETY UNIT AT THE MPW

<b>Road Safety Activity</b>	DGH	DGLT	Traffic Police
ITSAP – Support from AusAID for improved communication and coordination in road safety.	No involvement during the preparation for the workshop.	Small amount of support by AusAID through DGLT to assist in improving coordination–in particular between DGLT, Traffic Police and DGH. Planned workshop in October 2009 to improve awareness in all of the organisations.	No involvement during the preparation for the workshop.
IRSMS 1 – Support from World Bank loan (SRIP) to DGLT.	ToR identifies that DGH will get support from consultant working under DGLT. There has been either little or no coordination with DGLT in the development of the ToR and this overlaps with work being carried out under IndII support.	<ul> <li>World Bank-funded activity which is designed to:</li> <li>review existing funding arrangements and options for sustainable financing of road safety;</li> <li>develop performance-based national road safety strategy; and</li> <li>provide support to DGH to develop black spot and road safety audit programs.</li> </ul>	Limited involvement.
IRSMS 2 – Support from World Bank loan (SRIP) to Police.	No involvement.	No involvement.	Will support the development of a new accident reporting system and trialling in five provinces and the improvements to licensing of drivers and vehicle registration and traffic violation systems and related institutional strengthening and capacity building.

## **3 DEVELOPMENT OF THE ROAD SAFETY UNIT IN DGH**

## 3.1 INTERNATIONAL REVIEW OF DIFFERENT ORGANISATIONAL STRUCTURES FOR ROAD SAFETY

In July 2000 the UK Department for International Development (DFID) commissioned a study which examined different organisational structures for road safety in both High-Income Countries (HIC) and Low-Income Countries (LIC). The study concluded that different management structures in road safety can be effective and that the provision of dedicated staff and sufficient funding are the main issues rather than the details of the management structure.

It also identified the two key factors which make it difficult to manage road safety activities. Firstly, coordination is complicated by the number and variety of organisations involved in the different aspects of road safety. Secondly, the various statutory bodies dealing with roads and road transport–including ministries of transport, health and the police–do not usually have road safety as their first priority. All of the HICs included in the study had trained staff and effective programs but this was not the case in all of the LICs. It concluded that the management challenge in LICs is to expand the capacity of the institutions and to ensure they are given good professional support.

The report commented that the multi-faceted nature of road safety activities requires close cooperation between the agencies but that this has proved difficult in practice with working relationships between individuals and institutions in particular taking a long time and a lot of effort to develop. It found that a key relationship between the police and the road authority was an effective starting point for cooperation.

Some of the key recommendations of the study were:

- the lead responsibility for road safety must be clearly defined-whatever organisational structure is adopted;
- To define the specific responsibilities of the lead body in addition to the role of coordinating road safety interventions by other agencies;
- the lead responsibility should lie with the road authority with its minister reporting on the road safety situation to government/parliament;
- good working relationships need to be established between all contributors. Effective liaison between the police and the engineering departments—who share responsibility for the safe operation of the roads—is the key relationship and an effective starting point; and
- an adequately resourced road safety office is seen as an essential element of an effective approach, whatever, organisational model is adopted. Trained professional staff are as important as adequate funds in this context.

## 3.2 ORGANISATION OF ROAD SAFETY IN INDONESIA

In spite of the presidential decree of 2007 which stipulated that a Road Safety Council were to be formed, a lead agency in government in Indonesia has not yet been agreed to guide the national road traffic safety effort. However, in the meantime it will be possible and indeed beneficial to develop an RSU within Bina Marga. While the unit will not include all of the necessary functions for all facets of road safety improvements, it can provide beneficial results to road safety through physical changes to the road environment. This will require coordination with the Traffic Police and DGLT which over time should develop into much closer relationships and interactions. The Road Safety Strategies and Action Plan for Indonesia developed by DGLT–which was discussed earlier in this report–has no current status, however, it would appear to be the only plan that has been developed to date. A summary of the plan is included in Annex 2. In the short term it should be possible to develop an RSU

which would satisfy Strategy 6 from the plan: Reduction of the road safety risks on the road network through modern engineering techniques. To assist in the cooperation and to ensure that the agencies work together it is strongly recommended that BAPPENAS play the lead role and, at least in the initial stages, form a Steering Committee for Road Safety which can eventually lead to the establishment of a Road Safety Council.

## 3.3 TASKS OF AN RSU IN DGH

Driver behaviour is frequently identified as the major contributor to traffic accidents and there can be an attitude that unless behaviour can be modified through increased enforcement or longer-term driver education, then nothing can be done to improve road safety. However, many traffic accidents are not random events, frequently occurring in clusters in what are termed blackspots and blacklinks. These occur at locations where there are factors which cause drivers to make mistakes which result in accidents. Identifying what these factors are and then either removing them from an existing road or ensuring that they are not replicated in the construction of new roads is the key to improved traffic engineering safety. This approach is included in the development of traffic accident prevention and reduction programs which are described below which are the two major task areas of the RSU. Due to the limited expansion of the road network in Indonesia, the greatest benefits for the road safety program will accrue from the accident reduction program although the traffic accident prevention program is still an important component of the road safety initiative.

Although the term Road Safety Unit is used in this document, it will require responsibilities at all three levels in DGH: central, balai and province (P2JJ) and not simply in one unit per se.

#### 3.3.1 Traffic Accident Prevention

The concept of an RSA for new or improved roads was introduced in the UK in the 1980s and has gained popularity in most developed countries and, more recently, in developing countries. It has been demonstrated to be effective in every country it has been introduced. There is now a requirement to introduce RSA into DGH and to make it mandatory for all projects in the future. There are at the present time a number of issues which will reduce the effectiveness of road safety audits, at least in the short term:

- inadequate funding for project preparation of road projects resulting in surveys/designs which are not detailed and drawings which do not provide sufficient detail for road safety audit purposes. This will therefore require greater attention to RSA during construction in the short term until detailed designs are commonplace for road improvements. This will necessitate field changes and contract amendments which may lead to difficulties with the government auditor;
- the institutionalising of RSA is likely to take some time and may meet with some resistance; and
- the extent to which RSA, on its own, will improve road safety performance during the next five years is, for example, likely to be limited due to the limited extent of new construction of roads or road improvements.

## 3.3.2 Traffic Accident Reduction

Where traffic accident data is readily available and well documented, it is possible to develop very focussed programs for accident reduction in the form of blackspot improvements. In Indonesia, however, there have been problems and issues with the extent of traffic accident reporting and there is a program which is being undertaken which is attempting to address this. Consequently, for possibly the next five years or more, the extent of traffic accident data available for the development of a blackspot program will be limited.

There is, however, sufficient data to identify links or corridors where the traffic accident frequency is very high and much higher than the average for the overall interurban national road network. This data can be collected from records held in the local police (POLRES) office and, based on this, a hazardous corridor list could be prepared with priority links and junctions identified on the corridors. By applying the same principles as used in carrying out an RSA it will be possible to identify the hazardous features of the link and to develop countermeasure improvements which will help to mitigate the problems.

It is intended that the field reviews being carried out under the guidance of Phillip Jordan will develop such countermeasures and allow designs, under supervision, to be prepared and projects implemented under either the SRIP project or from APBN funding.

#### 3.3.3 Summary of Tasks of Unit

As the road safety efforts of all involved agencies mature, the following tasks should be carried out as a minimum–with responsibilities allocated to the central, balai and provincial (P2JJ) levels of Bina Marga:

- ensure that sufficient trained and experienced staff are employed within the unit;
- receive and monitor the quality of the accident database from the Traffic Police;
- review and report on the road safety performance of the road network;
- develop an ongoing annually updated Road Safety Plan;
- monitor the progress of road programs and organise RSAs either in-house or through third party consultants at the appropriate stages of the development of the projects;
- monitor the RSA reporting and actions taken on recommendations from the RSA on designs/implementation;
- develop and implement programs for traffic accident reduction–for example The Hazardous Corridor and Blackspot Programs–these will initially concentrate on the North Java and East Java Corridors;
- ensure that budget funding is in place for the implementation of road safety programs;
- monitor and evaluate the effectiveness of accident reduction programs;
- identify support requirements and coordinate with DGLT and Traffic Police;
- prepare an annual report on the road safety performance of the national road network;
- provide road safety training to the broader audience within DGH and to consultants involved in road design;
- provide RSA training and accreditation (this could be external to the unit); and
- organise publicity campaigns in coordination with DGLT and Traffic Police.

It will be essential to develop in the shortest possible time frame a core group of road safety auditors who can then provide the necessary practical training to develop the skills of candidates with the necessary background. In the first instance, DGH has indicated that it would like to see the main core of qualified road safety auditors located within the agency who will then develop the skills of others. It is anticipated, however, that the initial tasks to be carried out and the location of the staff will be very much dependent on the staff resources and when they can be made available.

## 3.4 SUPPORTING TASKS FOR OTHER RELATED AGENCIES

#### 3.4.1 DGLT

DGLT is a highly centralised agency which, amongst its other duties, provides training and support to provincial and regional land transport agencies (Dinas Perhubungan). It has limited experience in the procurement of works for implementation and its budgeting capability for the development of programs has been limited to date. This is in contrast with DGH which has deconcentrated to some extent with support at the balai and provincial levels. There is also a limited amount of engineering experience in DGLT and generally much less in the provincial and regional land transport agencies (Dinas Perhubungan).

In the short term it is recommended that DGLT work closely with DGH and be used as a review agency for the design of signage and road markings prepared by DGH in the development of its road safety and road upgrading improvements. There is no guideline for the layout of road markings and signs in Indonesia and this is a serious omission. Support to DGLT for the development of such a document and training for its implementation should be given serious consideration. This would be beneficial for both the design teams and the reviewers and would lead to best practice in what is a very important area for road safety.

Close cooperation can be developed during this project by the implementation of joint programs such as the improvements to the field review and development of accident reduction programs on the identified corridors in Java and Sumatra as a starting point. It is recommended that selected staff from DGLT should be included in some of the field reviews which are to be carried out with the input of Phillip Jordan.

#### 3.4.2 Traffic Police

Discussions held with the traffic police during the preparation of this report and discussed briefly in section 2.3.3 ascertained that the police are willing to give support to DGH in the identification of accident problem locations and are prepared to provide support to reinforce infrastructure programs which are designed to improve road safety. As the new accident reporting system is developed it will be essential to ensure that it will provide the necessary information on accident cause, type and location which will assist with the development of traffic accident reduction programs and assist in determining causes which may be mitigated by the development of mass accident reduction plans.

## 3.4.3 BAPPENAS

BAPPENAS is Indonesia's National Planning Agency and has a major role in ensuring that the road network in Indonesia is safe and secure. There has been no agreement on the lead agency in road safety or the establishment of a Road Safety Council, however, a decree was issued by the Head of BAPPENAS in 2007 establishing a Road Safety Steering Committee with BAPPENAS as the head. It is recommended that this steering committee coordinate the road safety programs in the various government agencies until a Road Safety Council can be established. The role of the steering committee in the short term should be to ensure that the key agencies involved in road safety infrastructure–DGH, DGLT and INP–coordinate, cooperate and develop programs that will lead to accident prevention and reduction. In time this steering committee should evolve into a full Road Safety Council which will be multi-faceted and cover all areas of road safety.

#### 3.4.4 IRE

IRE has carried out some research in the area of road safety and this should continue to be their role. The advent of the new accident reporting system should provide IRE with access to much more detailed information which will allow further research to be carried out. It would be beneficial if they would, as a starting point, review the research and findings of Malaysia's Institute of Road Safety Research (MIROS) which could then be verified in the Indonesian situation.

#### 3.4.5 Universities

Universities across Indonesia can be employed to fill the gap of capacity building of road safety engineering in Bina Marga and the continuity of human resources development. Two university activities can be highlighted for providing training centres and trainers and moreover, the university staff can also be employed as part of the traffic safety unit in Bina Marga–both at the national level in Jakarta and supporting the balai.

The role of the universities-initially the Bandung Institute of Technology (ITB), Gadjah Mada University in Yogyakarta and University of Indonesia in Jakarta-will be to provide classroom training which will provide initial support to this program. In addition, they can also continue with ongoing training as required with the modules which are prepared (or modified) in the development of the program. It is also anticipated that working closely with IRE, research projects will be developed which can lead to the development of road safety improvements which are appropriate to Indonesia. These three universities can be the core of road safety activities and, through FSTP, support from other universities across Indonesia can add to this activity.

## 3.4.6 Consultants

The available skills in detailed road and traffic design are very limited in Indonesia and it will be necessary for road design and traffic consultants to develop their basic skills and then focus on improvements to road safety practice. The universities can fulfil a major role in this area by providing suitable training modules at a number of locations throughout Indonesia, not simply on Java, in support of the development of these skills. It is anticipated that in the future, some qualified road safety auditors will be recruited in the consulting industry which will provide support to the overall road safety program. This is, however, likely to take time to develop.

#### 4 ESTABLISHMENT PHASES OF ROAD SAFETY UNIT IN DGH

#### 4.1 STAGE 1

Stage 1 over a period of 18 months will establish the core unit which will comprise a group of approximately 10 technical staff who will receive training and carry out road safety audits and implement blackspot improvements with the support of international and local consultants provided by IndII support.

#### 4.1.1 Road Safety Audit

It will not be practical to attempt to create the full road safety unit right from the start and the staging of the development of the road safety unit will be critical in determining whether it will be successful or not. There will be limitations on the staff available to work within the unit and it will be important to ensure that a core of approximately ten trained staff will be established as quickly as possible which will then form the nucleus of an in-house training team, as well as carrying out the preliminary tasks of the unit. The previous section identified the tasks for a mature road safety unit and outlined the tasks which should be carried out at each level of DGH, however, the initial setup and tasks to be carried out will be slightly different. In addition, it would be sensible to use the RSA which is going to be carried out under SRIP and IndII for practical training for DGH staff.

In the initial stage there are two logical courses of action, each of which will be discussed in detail below:

- The road safety unit will initially be concentrated in the central office of Bina Marga in order to create a core of approximately 8 to 10 engineering staff who, over a period of approximately two years, will develop sufficient experience to carry out traffic accident prevention and reduction programs with only limited outside resource assistance from specialist international consultants.
- Supplementing the small core of qualified staff in the central office of Bina Marga, will be other trained road safety staff located in selected balais. As with the central unit, approximately 10 engineering staff will need to be successfully trained.

#### **Centralised Road Safety Unit**

Initially located within the Subdirectorate of Environmental Affairs in the Directorate of Technical Affairs, a group of selected staff members will receive a combination of classroom and field training in RSA. This initial work is likely to be concentrated on loan-funded projects, prepared predominantly in Jakarta and on selected projects under APBN programs. These will probably be projects where road widening and/or alignment changes are included. It is anticipated that the staff would work in groups of three engineers working closely with an experienced international road safety auditor. There are projects, in particular under the SRIP and EINRIP projects, where this experience could be developed and which could include three stages: design, pre-opening and monitoring of performance after opening. Typical requirements for suitable minimum RSA qualification–which would include a formal training course with a minimum of five road safety audits–should be achievable within a period of 18 months to 2 years.

The tasks and responsibilities under this proposal are illustrated in Annex 5 in Figures7 and 8 for national and loan-funded projects respectively. This indicates a three-stage process for the RSA which is likely to remain until improvements are made to the detailed road design.

It will rely heavily on the second stage audit prior to project opening because of the limitations of the simplified design approach used on most current projects. It is also recommended that only projects which involve either road widening or geometric changes should be included initially.

### Balai-focused Road Safety Unit

The balai currently has the responsibility for reviewing the designs for APBN works which are procured and supervised by the P2JJ in the province. It is therefore logical to consider a Balai Road Safety Unit–with support from the Central Road Safety Unit–where RSA tasks can be carried out by the balai, either in-house or by outside consultants. There would be benefit in the initial stages if the balai were to carry out this function themselves to develop a core team with the necessary skills who can then provide mentoring and training to others as the unit develops. If this approach were to be adopted it is recommended that a minimum of two staff members be trained in the Planning and Design Division of the balai. Initially it is further recommended that the minimum geographic area covered by the initial RSU should include the following balais:

- Balai Besar 1 in Medan;
- Balai Besar 2 in Palembang;
- Balai Besar 4 in Jakarta; and
- Balai Besar 5 in Surabaya.

This will support the corridors identified as high priority for traffic accident reduction (see next section).

In addition it is recommended that a minimum of two staff members be fully trained in the Subdirectorate of Environmental Affairs within the Directorate of Technical Affairs, which would bring the full complement of the RSU to at least 10 during the initial stage.

A summary of the tasks and responsibilities using this approach is illustrated in Annex 5 in Figures 9 and 10 for national and loan-funded projects respectively and, as with the central RSU, this assumes a three stage RSA in the initial stages.

#### 4.1.2 Traffic Accident Reduction

The skills required for the traffic accident reduction program are similar to the skills required for RSA. While the development of designs for road maintenance, betterment and improvement currently rests with the P2JJ within the province, it will be difficult in the initial stage to provide sufficient fully trained staff at the provincial level. It is therefore recommended that responsibility for the development of the traffic accident reduction program during the initial stage of the RSU should be colocated with responsibilities for RSAs. The tasks to be carried out by the P2JJ are likely to be limited to liaison with police and collection of accident data and the procurement processes for consultants and contractors.

Figure 11 provides a summary of the tasks to be carried out at each level in DGH for the traffic accident reduction program for the central unit and Figure 12 provides the summary for the balai unit. The majority of the tasks will be carried out by either the central unit or the balai with limited assistance from the provincial level of DGH. In either model, however, the Satker will be responsible for the procurement of the consultants and the contractors for implementation of the program, similar to road betterment projects under local budgets. The concepts for the traffic accident reduction projects will need to be well-defined by the RSU, since the extent of the consultants' road safety knowledge and skills is very limited. In the early projects it is likely that the consultant will be providing more or less a drafting function, working up the details of the concepts prepared in the RSU.

#### 4.1.3 Comparison of Central vs. Balai Focus for Initial RSU

Table 4.1 provides a summary of the advantages and disadvantages of the two alternatives considered for the focus of the initial RSU. Even with the balai there will be a component of the unit in the central office.

Item	Central Focus	Balai Focus	
Field visits for RSA and blackspot programs.	Travel costs will be higher due to greater travel distance.	Travel costs will be reduced due to shorter distance.	
Coordination with police to obtain accident records.	Better coordination with central police and weaker coordination with local police.	Weaker coordination with central police (but this would be provided by central RSU staff) better coordination with provincial police.	
Loan-funded projects.	Currently loan-funded project designs are reviewed in <i>Bintek</i> in the central DGH office. RSA in the <i>Bintek</i> will be consistent with this system.	RSA conducted in the <i>balai</i> will result in additional approval level.	
APBN funded projects.Designs are approved in the bala conducted in central unit will res additional approval level.		Design approval and RSA in <i>balai</i> will be consistent with current system.	
Staffing.	May be difficult to identify a suitable number of candidates.	Initial work could be carried out by existing staff in the <i>balai</i> Planning and Design Division.	
Training and mentoring of staff.	Will be easier to train and more likely to achieve consistent results and development of skills.	Will involve more travel for trainers/trainees. May result in less consistent results and development of skills.	
Supervision and monitoring of staff performance.	Will be easier.	Will be more difficult.	
Accommodation	Office accommodation is in short supply in the central office.	Staff can be accommodated in the <i>balai</i> office.	
Future deconcentration of activities.	Will need to start deconcentration and will result in some staff transferring to the <i>balais</i> in the future.	Deconcentration will be continuation of existing system.	

Table 3.	Preliminary	Comparison of	f Advantages and	Disadvantages of	RSU Model
	J				

## 4.2 STAGE 2

Stage 2 is anticipated to be established within a period of five years. While it is likely that staff resources will be continue to be a constraint to the early development of the RSU, it is recommended that this stage should still concentrate on the continued development of the central unit with deconcentration to the *balai* level and increasing the geographic spread of the unit using the approach identified for the initial stage in Section 4.1 above. This would also require some increase in the staffing of the central level and the establishment of a separate subdirectorate would be beneficial. This would increase the overall staffing of the RSU to in the order of 30 technical positions. Figures 3 and 4 illustrate the likely organisational structure for the RSU and how it will fit into the overall Bina Marga central organisation.

## 4.3 STAGE 3

Stage 3 is anticipated to be established within a period of 10 years and will involve the duties for traffic accident reduction to be devolved to the *balai* and provincial levels, with projects and programs being developed similar to road betterment projects currently carried out under the national budget. This can occur when the RSU has demonstrated that the approaches to traffic accident reduction have been proven to be successful and there is confidence in the further development of the program. This will then require a substantial increase in the staffing levels at all levels with the duties of the *balai* being one of review and RSA, with a five-level system of auditing to be carried out. Staffing levels are likely to require in the order of over 100 involved in the RSU.

The approach to increasing the numbers of skilled and experienced road safety engineers will require a conscious effort to an ongoing training and mentoring program, likely performed by a combination of university lecturers for the classroom training and in-house field review training and mentoring after the initial training has been carried out. It is likely to take in the order of 10 years to develop a full complement of staff.



## Figure 3. Organization Chart Interim RSU



Figure 4. Organization Chart for Bina Marga Central Office with RSU

## 5 TOR FOR ESTABLISHMENT OF STAGE 1 OF THE RSU

## 5.1 PURPOSE

The purpose of the activity is to establish a functioning Stage 1 RSU in DGH which will be capable, at the end of the activity, of carrying out Road Safety Audits and Blackspot Improvement Programs with some continuing minimal support and which will result in measurable improvements to road safety on the national road network. A secondary outcome from the activity will be improvements to the quality of road design and construction as an outcome of the RSA process.

## 5.2 OBJECTIVE

The objective of this activity is to support the establishment of an RSU within DGH by assisting in:

- defining the structure and functions of the RSU (it is anticipated that the secretariat for the RSU will be located within the Subdirectorate of Environmental Affairs) with road safety responsibilities and task areas which will be carried out by additional staff in the balai and provinces;
- determining appropriate administrative and regulatory procedures necessary to embed road safety auditing with DGH;
- defining the tasks and reporting procedures for the central RSU and the supporting roles of the balai and province;
- defining priority training programs for DGH staff, as well as the wider professional road engineering community in Indonesia;
- implementing a training program for both the government and nongovernment areas;
- developing an appropriate audit works program;
- developing an appropriate traffic accident reduction program, initially focused on the North National Road Corridor in Java and the East National Road Corridor in Sumatra; and
- establishing strong relationships with other agencies connected with road safety-in particular the DGLT and the INP.

The activity will draw upon international institutional experience in establishing and managing RSU within road departments/authorities.

## 5.3 OUTPUTS

The following outputs will be delivered:

- work plans showing major milestones and program of activities, updated regularly and detailing the approach to be used in delivering the activity;
- monthly progress reports following the standard IndII report format;
- an update and expansion of the "Initial Review of a Possible AusAID Road Safety Project" report;
- special reports related to the tasks listed below; and
- Activity Completion Report.

#### 5.4 TASKS

In delivering this activity, IndII will provide consultants who will work with DGH in the tasks described below. The workplan to be prepared by the consultants will include these tasks, and other tasks that may be necessary in order to undertake the assignment and meet the objectives. A task flow diagram is included in Figure 5.



#### Figure 5. Task Flow Chart for Establishment of Road Safety Unit

#### 5.4.1 Task Area 1: Defining the Functions and Structure of the RSU

Although this document refers to the RSU, there will be tasks and duties which are to be carried out at each level in DGH: central, balai and province. A summary of tasks and potential responsibilities at each level is included in Annex 3 of this document. This identifies the broad tasks required to implement both traffic accident prevention (primarily road safety audits) and traffic accident reduction (for example blackspot programs). These are to be reviewed, modified and agreed early in the project to allow staffing requirements to be determined based on the agreed tasks to be carried out at each level.

Once the tasks and responsibilities have been agreed, preliminary SOPs will be developed and a manual will be prepared. These will be reviewed during the project and updated prior to the completion of the work. In addition, performance targets will be established which will provide the basis for performance evaluation.

Finally, a review will be carried out on the administrative procedures which will need to be followed to formally establish the RSU. It is unlikely that this will be achieved during the project time frame and interim measures will also need to be developed to enable the progressive implementation of the unit.

#### 5.4.2 Task Area 2: Determine the Role of Outside Agencies in Road Safety Audits

In the areas of both RSAs and traffic accident reduction there are advantages in having trained and capable staff in engineering consultants and universities. There are some strengths and capabilities in selected universities in Indonesia which include Bandung Institute of Technology, Gadjah Mada University in Yogyakarta and University of Indonesia in Jakarta. All of these institutions have provided support to DGH and DGLT in areas of training and road safety engineering. It will be important to further develop these skills at the universities and over time to develop similar capabilities in other major universities across Indonesia.

Design work for road improvements in DGH is contracted out to consultants, however, the skill level in road and traffic design is generally weak. Developing skills in road safety design will, therefore, require strengthening of the basic skills of the designers as well as the introduction of new skills which will be required for road safety. This is likely to take a number of years to achieve.

In addition, the IRE in Bandung has developed a number of user guides in traffic and road safety engineering and it is important that their role be clearly defined in relation to the RSU. As the road safety environment matures this should include specific areas of road safety research to be carried out by the centre.

#### 5.4.3 Task Area 3: Assist with Identifying Staff to be Included in the Initial RSU

The consultant will assist in identifying the staff to be included in the RSU. These will ideally be staff dedicated to road safety duties and not existing staff positions where the road safety tasks have simply been added on to their existing duties. The number and background of staff made available to participate in the RSU will be the major determinant in the geographic coverage of the initial unit.

#### 5.4.4 Task Area 4: Selection of Geographic Area to be Covered by Initial RSU

The target time period for this support project is 14 months which will not be sufficient to establish all of the RSUs at each level across Indonesia. Decisions will, therefore, need to be made on where the effort should be concentrated geographically, or it shall be focussed on the central Bina Marga office,

and it will be important to select locations very carefully to achieve success. Criteria will be developed and agreed with DGH to assist in the selection and these are likely to include:

- location of planned short-term road safety programs;
- staff availability and capability;
- identified road safety issues; and
- locations where strong management support is identified.

#### 5.4.5 Task Area 5: Coordination with INP and DGLT

There has been only limited coordination between DGH, INP and DGLT and the Road Safety Council is still not established. It will, therefore, be very important to develop a coordination process and to at least broadly agree the areas of responsibility based on the new Traffic and Road Transport Law. Under the SRIP loan from the World Bank, the two IRSMS projects will provide support to both INP and DGLT which will include the upgrading of the traffic accident reporting system. Protocols for the data transfer and use of the traffic accident software developed in the project need to be agreed. There is an opportunity with specific road safety projects being carried out in each of the three institutions to develop good working relationships. In the short term, cooperation will be required on accessing the existing traffic accident records to assist in the field reviews and traffic accident reduction programs, this has been discussed with the police who are very willing to provide this support.

BAPPENAS has a significant role in coordinating and helping to guide the road safety strategy and should be encouraged to play the lead in this area.

#### 5.4.6 Task Area 6: Capacity Building

#### Task 6.1: Fact Finding Tour to Malaysia

Malaysia is the most mature country in terms of road safety expertise and practices in Southeast Asia and has similar road safety problems to Indonesia with high volumes of undisciplined motorcycle riders. There is likely to be significant benefit in carrying out a fact finding tour early in the project to visit MIROS and the Road Safety Unit in Public Works to learn how Malaysia established these institutions. It will also provide an opportunity to review their road safety programs and research and develop a closer relationship so that common interests can be shared in the future. It would be important for key staff who will be actively involved in the RSU as well as representatives from IRE, INP and DGLT to participate in this tour. Key staff should also be encouraged to participate in overseas conferences and workshops.

#### **Task 6.2: Training Needs Assessment**

The standard requirements for road safety auditors in most countries is that they must have a background in either the design of road or traffic engineering (typically a minimum of five years), have attended an approved RSA training course and carried out a number of RSAs at various stages under the supervision of an experienced road safety auditor. Similarly, road safety engineering design requires many of the same skills. There are, however, weaknesses in the depth of road and traffic engineering design capability and experience at both DGH and with civil engineering consultants in particular. Consequently, for many candidates, training will be required in the following key areas:

- road design;
- road safety engineering;
- road safety audits; and
- SOPs of the RSU.

Assistance will be given to verify the background and experience of candidates to determine the training modules they will need to take. Civil engineering consultants should be encouraged to participate in the training but numbers should be limited in the first instance with a continuing program of ongoing training at regular intervals. It is also recommended that the INP and DGLT be encouraged to send a limited number of candidates for the training. This will not only improve their skills but will also allow closer cooperation between members of the three agencies. It is likely that the majority of DGH participants will require all four modules and other trainees the first three modules.

#### **Task 6.3: Prepare Training Materials**

There are training materials which have previously been prepared by selected universities for short courses on road design and traffic engineering (which have included road safety engineering and risk assessment). These will be reviewed together with similar documents from other sources to identify whether existing guidelines may be appropriate for adoption for Indonesia in at least the short term or what modifications may be required and to make recommendations as to how to best proceed in the short and medium term. The curricula will be finalised, agreed and, where necessary, additional materials prepared by a third party and reviewed and monitored by the consultant and DGH.

#### Task 6.4: Classroom Training Delivery

It is anticipated that this will be carried out predominantly by university staff who have the necessary teaching capability and will likely include lecturers from ITB, Gadjah Mada and UoI, supported by specialist training in RSA from outside Indonesia. During the study tour of Malaysia, the possibility of incorporating training support from Malaysia into the course should be explored. Other support from Australia should also be considered. It is recommended that university staff members should eventually become approved road safety auditors and be capable of providing ongoing training in all aspects of road safety.

#### **Task 6.5: Practical Training Delivery**

The work carried out in the field reviews by the IndII consultant Phillip Jordan will provide some preliminary practical training in road safety audit techniques but clearly this is only the beginning of the practical training. One of the essential requirements for the establishment of the RSU is to have a core of Indonesian nationals who are competent in road safety auditing who can then successively train others to develop similar competence. During the project, individuals will be identified who, with concentrated training, are likely to be capable of achieving this objective.

There are a number of road projects at various stages of development that can provide this practical training over the duration of this IndII project and beyond. How and when this is delivered will need to be developed during the project.

#### 5.4.7 Task Area 7: Road Safety Program Development

#### Task 7.1: Preparation of Initial Three-Year Work Program

It is anticipated that this will concentrate on three areas:

- road safety audit program;
- Traffic Accident Reduction Program; and
- institutional development.

Based on the proposed work program for road betterment and improvement projects, assistance will be provided to develop criteria for projects requiring RSA. This is likely to be staged to reflect the need

to develop the necessary human resources and progress in institutional development. Estimates of the extent of RSA will then be made to determine the number of audits, resources and budget required.

Targets need to be set for the traffic accident reduction works which are to be included in the APBN. These will need to be consistent with the capacity of DGH and consultants and the available budget and initially supported by foreign consultants.

The RSU needs to be progressively implemented across the whole of Indonesia and the timing of this will be dependent on the commitments to training, development of road safety experience in DGH and other agencies and available budget. A realistic plan for implementation is to be developed which is unlikely to result in full coverage in Indonesia within the three-year program.

#### Task 7.2: Initial Traffic Accident Reduction Program

The traffic accident reduction program is likely to concentrate at least initially on the corridors in North Java and East Sumatra. The field reviews carried out as the training exercise with IndII consultant Phillip Jordan should be used as the basis for the first part of the program, with the following being carried out:

- development of mitigating countermeasures;
- preparation of drawings and documents;
- preparation of cost estimates;
- allocation of budget;
- procurement for implementation; and
- supervision and monitoring of the works.

This will provide a useful training exercise for the development of the full range of necessary skills, which will need mentoring support.

Further work will involve the collection of the traffic accident data for the whole corridor, identifying the areas with the most serious traffic accident records and organising field reviews which will then progressively extend the program using the same steps as identified in the previous paragraph.

#### Task 7.3: Liaise with Other Road Programs

There are a number of known road safety initiatives which will be underway during this project. It will be important to liaise with the following to ensure that all projects are complementary:

- IRSMS 1 Support to DGLT. This project includes support to DGH which overlaps with the current proposed work to be carried out under IndII;
- IRSMS 2 Support to INP. This provides a number of areas of support including the upgrading of the traffic accident reporting system. It is essential that the data collected provides accurate coordinated location descriptions. This has been a weakness of previous attempts to upgrade the system;
- ITSAP This will develop a program to improve coordination between the various ministries involved in road safety; and
- SRIP The extent of RSA to be carried out under SRIP has been increased and this will allow the opportunity for development of the experience in RSA for selected candidates.

#### Task 7.4: Support and Mentoring of RSU Functions

Ongoing support will be provided to supplement the classroom training in the SOPs at each level of the RSU. In addition, support and mentoring will be provided for all of the functions of the RSU. There are, however, likely to be limitations to this because of the resources available for the project.

#### Task 7.5: Assist with Monitoring, Evaluation and Reporting Procedures

To enable progress in road safety to be mapped, it will be necessary to establish monitoring and evaluation criteria. The consultant will assist with the development of such criteria and will provide help in the development of reporting formats.

#### 5.4.8 Task Area 8: Additional Areas of Review

The following reviews are also to be carried out by the consultant:

- Identify other areas, where supporting activities might be appropriate, which could build on or add synergies to the initiatives being established.
- Review the need for additional technical support for the RSU, and the capacity of the Research Centre for Roads and Bridges (RCRB) in Bandung to provide such support.
- Identify international forums where road safety matters are discussed, and generally raise the profile of the RSU such that additional funding support might be attracted from other sources.
- Review the extent to which DGH and/or RCRB might support the development of an Indonesian centre for RSA, to support similar needs at provincial, urban and kabupaten level. Give consideration to a medium- to long-term development plan for "safe road engineering" practices throughout Indonesia.
- Extend the work initiated by the AusAID road safety specialist, and actively explore other opportunities to expand the initial program of support. In particular, consideration should also be given to providing support appropriate to the needs of the Directorate General of Land Transport, possibly directed through the Global Road Safety Partnership (GRSP).

## 5.5 ACTIVITY RESOURCING

It is proposed that the services outlined above will require the inputs of two persons. These will be an internationally recruited advisor in road safety auditing provided for a period of 12 months, and a nationally recruited highways/traffic consultant, provided for a period of 18 months.

The 18 month period has been selected as being the estimated time that will be required to institute the changes within DGH and will commence in the fourth quarter in 2009 and finish by the end of the first quarter of 2011. It is suggested that a two-person team is the most suitable combination of resources to bring international experience and knowledge and be able to adapt this to the situation within DGH. It is proposed that the recruitment of the international adviser precede the national recruitment and that the duties and skills for the national consultant be determined after the international adviser has been mobilised. This will ensure that there is a good match between both persons.

The adviser will have substantial skills and experience in all aspects of the required services, including road safety engineering and blackspot investigation, the management of the road safety activities of a roads authority, and institutional advisory services in road safety. The national consultant will have more general experience in highways and traffic engineering since it is anticipated that persons experienced in road safety engineering in Indonesia would be very difficult to locate.

There will be a need for other outside resourcing to carry out both classroom-based and field training. The scope of this will be dependent on the number of identified staff for training. In addition, there is likely to be a need for further support for the mentoring program identified in Task Area 7.

A preliminary schedule is included in Figure 6.

## 5.6 CLIENT SUPPORT

DGH will provide:

- an activity coordinator responsible for overseeing the implementation of the technical assistance;
- office space for the team at DGH, with reasonable access to printing and photocopy facilities and internet;
- budgeting for the RSU in financial year 2010 and beyond;
- DGH support staff as needed; and
- costs of all DGH personnel in undertaking field audits and their attendance at training sessions.

The proposed work program will support the establishment of the RSU and will provide the first and important steps in the process. There are likely to be limited resources within DGH who can be immediately dedicated to the RSU and consequently the program will need to concentrate on the central unit and a limited number of balai and provinces. In line with the desire to concentrate traffic accident reduction programs on the North Java and East Sumatra Corridors, it is desirable that the locations selected will support these programs. It will then be possible to carry out RSA on new projects and develop the traffic accident reduction program.

Prior to the commencement of the project it will be beneficial if key personnel likely to be actively involved in the project and who will form the core of the initial RSU are identified.

## 5.7 ADDITIONAL ROAD SAFETY ACTIVITIES FOR CONSIDERATION UNDER SUPPORT FROM INDII

During the preparation of this scoping study there are a number of other potential activities which could be given consideration for support from IndII in addition to the establishment of the RSU in DGH. This could include supporting:

- BAPPENAS to establish the Road Safety Council;
- DGLT to develop procedures for speed management including piloting the implementation of speed management on the North Coast National Road Corridor of Java and the East Coast National Road Corridor of Sumatra;
- DGLT to develop a Manual for Uniform Traffic Control Devices which would provide both DGLT and DGH the necessary detailed information on the use and location of the devices; and
- the police on speed enforcement which could include piloting on the North Coast National Road Corridor of Java and the East Coast National Road Corridor of Sumatra.

As indicated earlier in this report, there is a serious lack of effective coordination between the agencies and an additional potential outcome of IndII support for the above activities would provide opportunities for working together.

Task	k Task Description		2009		2010						2011								
Area		Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1	Define Functions and Structure of RSU																		
2	Determine the Roles of Outside Agencies																		
3	Identify Staff for Initial RSU	-																	
4	Selection of Area Covered by RSU																		
5	Coordination and Cooperation with INP & DGLT	•	•					-											
6	Capacity Building																		
	6.1 Fact Finding Tour to Malaysia																		
	6.2 Training Needs Assessment		-																
	6.3 Prepare Training Materials																		
	6.4 Training Delivery Classroom																		
	6.5 Training Delivery Practical																		
7	Road Safety Program Development																		
	7.1 Preparation of Initial 3 Year Work Program																		
	7.2 Initial Crash Reduction Program																		
	7.3 Liaise with Other RS Initiatives and Programs																		
	7.4 Support and Mentoring of RSU																		
	7.5 Assist with Monitoring Evaluation Reporting Procedures							I											
8	Other Areas of RS Review																		
	Preparation of ACR and Final Report																		
	Staff Resourcing																		
1	International Consultant (12 months)																		
1	Local Consultant (18 months)																		

## ANNEXES

## ANNEX 1: ROLES DEFINED BY 2009 TRAFFIC AND ROAD TRANSPORT LAW

#### 2009 Traffic and Road Transport Law

In June 2009 a revised Traffic and Road Transport law was passed by parliament. The law has more clearly defined the roles of DGH, DGLT and the Traffic Police–the three major government agencies in traffic and road transport, including road safety. The following describes the major responsibilities of each of these agencies.

#### **DGH Responsibilities**

Based on Articles 94 and 96, the responsibilities for DGH in the area of traffic management and engineering are:

- identification of traffic problems;
- inventory and analysis of the traffic flow situation;
- inventory and analysis of road availability and carrying capacity;
- inventory and analysis of traffic impacts;
- determination of service level;
- determination of policy plan for regulating uses of road network and traffic movement;
- improvement of geometry of road sections and/or intersections and road facilities which do not relate directly to road users of the national road network; and
- coordinate, analyse, evaluate and report on the data and performance of traffic management and submit report to Traffic and Road Transportation Forum.

In addition, the law also includes responsibilities of regulation development and control of road infrastructure which are:

- inventory of road service levels and issues;
- preparation of plan and its implementation program and establishment of desired road service level;
- planning, construction and optimisation of use of road section;
- geometric improvement of road section and/or road intersection;
- determination of road class in each road section;
- test of road function eligibility in accordance with traffic security and safety standards; and
- development of information and communication system in the field of road infrastructure.

#### **DGLT Responsibilities**

Based on Articles 94 and 96, the responsibilities for DGLT in the area of traffic management and engineering are:

- identification of traffic problems;
- inventory and analysis of traffic flow;
- inventory and analysis of human and goods transportation demand;

- inventory and analysis of vehicle availability and carrying capacity;
- inventory and analysis of traffic impacts;
- determination of service level;
- determination of policy plan for regulating uses of road network and traffic movement;
- determination of policy of road network uses and traffic movement on particular road networks;
- information dissemination to community on implementing policies;
- procurement, installation, repair and maintenance of road facilities which relate directly to road users for the national road network;
- direction, guidance, training and technical assistance in relation to responsibilities for national road network; and
- coordinate, analyse, evaluate and report on the data and performance of traffic management and submit report to Traffic and Road Transportation Forum.

In addition, the law also includes responsibilities of regulation development and control of road infrastructure which are:

- determination of traffic and road transportation general plan;
- traffic management and engineering;
- technical requirements and operational eligibility of motor vehicles;
- public transportation licensing;
- development of information and communication system in the field of traffic and road transportation infrastructure and facilities;
- development of human resource for organising traffic and road transportation infrastructure and facilities; and
- investigation of violations of public transportation licensing and technical requirements and operational eligibility of motor vehicles, which requires special expertise and/or equipment and is done as stipulated by the law.

#### **Indonesian National Police**

Based on Articles 94 and 96, the responsibilities for the police in the area of traffic management and engineering are:

- identification of traffic problems;
- inventory and analysis of traffic flow;
- inventory and analysis of violations and traffic accident numbers;
- inventory and analysis of traffic impacts;
- determination of policy plan for regulating uses of road network and traffic movement;
- in the event that traffic flow is changed suddenly the police may implement traffic management and engineering by using traffic signs, traffic signals and devices to temporarily control and render road users safe;
- may give related agencies recommendations for implementation of traffic management and engineering; and
- coordinate, analyse, evaluate and report on the data and performance of traffic management and submit report to Traffic and Road Transportation Forum.

In addition the law also includes responsibilities of regulation development and control of road infrastructure which are:

- testing and controlling of licences for driving motor vehicles;
- implementation of motor vehicle registration and identification;
- collection, monitoring, processing and presentation of traffic and road transportation data;
- traffic regulation, surveillance, escorting and patroling;
- law enforcement that includes action against violation and handling of traffic accidents;
- traffic education;
- implementation of traffic management and engineering; and
- implementation of traffic operational management.

#### ANNEX 2: DGLT - ROAD SAFETY ACTION PLAN FOR INDONESIA

DGLT prepared a road safety action plan in 2007 which targets improvements in road safety performance. This has eight strategies and 39 associated actions for the period 2008 to 2012:

#### **ROAD SAFETY STRATEGIES**

#### (SHORT-TERM PROGRAMS)

#### 1st Strategy: To Strengthen Coordination and Road Safety Handling

- 1. Create Road Transport Safety Council
- 2. Create Accident Investigation Unit

#### 2nd Strategy: To Create Public Awareness and Respect for Road Through Education

- 1. Education for society to improve safety awareness through mass media (road safety campaign)
- 2. Safety education programs for elementary and junior high school students
- 3. Training, testing and education program for new drivers
- 4. Training, testing and education for professional drivers
- 5. Accreditation for driving school institution

#### 3rd Strategy: Planning and Performance Evaluation of Road Safety Management

- 1. Construction planning Role Sharing for data Collection
- 2. Database system development supported by the use of information and communication technology

#### 4th Strategy: To Improve Public Discipline and Safety in Road Traffic

- 1. Preparing and implementing decriminalization of traffic violations
- 2. Revision of regulation of road traffic and enforcement
- 3. Preparing to use Communication and Information Technology to support law enforcement
- 4. Monitoring black spot areas
- 5. Revitalization of the speed limit and measurement of any violation
- 6. Traffic calming
- 7. Obligation to use helmet and safety belt
- 8. Conspicuity of motorcycles and riders
- 9. Construction of motor cycle lanes
- 10. Reviewing system of driving licence levels based on merit-demerit points

#### 5th Strategy: To Create Safety Risk Guarantee System and Road Safety Funding Resources

1. Transform planning of SWKLLJ to be an insurance system

2. Review the existing insurance arrangements to ensure they are appropriate for the conditions in Indonesia

3. Involving the third party (insurance company) in the implementation of the Accident Insurance System

- 4. Establishing road safety financing
- 5. Policy Concept Planning to establish and manage road safety funding

#### 6th Strategy: To Eliminate Some Threat Risks From Safety Deficiency on Road Traffic Through Modern Engineering Approach

- 1. Implementation of Road Environment standards that can eliminate accident risk and impact severity
- 2. Standards and regulation evaluation related to road safety (ie road planning standard, traffic sign standard and road equipment)
- 3. Black spot management
- 4. Periodical road safety inspection on existing road network (from national road and district road)
- 5. Introduce road safety audit which starts from the planning process, detailed design, development, and after development stage (Pre opening stage and early operation) 5 Phase Road Safety Audit.
- 6. Develop Analysis Manual of Design Impact Alternative and Road Safety Impact Assessment
- 7. Establishment of Road Infrastructure Safety Management Manual

## 7th Strategy: To Strive to Give Protection to Vulnerable Road Users and Support Transportation Usage That Will be Safer

- 1. Campaign through print and electronic mass media for improving customer awareness and support safer transport
- 2. Supporting program for urban transport reformation
- 3. Establish a tax incentive for public transport use

4. Establish some financial strategies, such as road pricing, to limit access by lower safety performance vehicles

5. Reform traffic regulations to support the increased usage of public transport such as increasing minimum age to get driving licence, parking limitation program, car pooling requirements, speed limitation, traffic calming etc.

## 8th Strategy: To Create an Emergency Response System That Can Be Accessed, With a Ready Response

- 1. Facilitate and rehabilitate Communication and Information System of emergency situation
- 2. Inform public about the existence of emergency response system and how to access it
- 3. Improving paramedic skills in emergency situations to decrease accident trauma

## (LONG TERM PROGRAM)

- 1. Improving role and function of education to create public's awareness and respect for road safety
- 2. Developing Data System and Road Accident Information
- 3. Strengthening the enforcement of traffic regulation
- 4. Funding cooperation for road safety program and safety insurance
- 5. Supporting the use of safer transport.

## ANNEX 3: PRELIMINARY TASKS OF ROAD SAFETY UNIT

#### Preliminary Review of Road Safety Unit Tasks and Responsibilities

Although the scoping is primarily focused on an RSU which will be located in BinTek, there are other tasks and responsibilities which need to be carried out in the *balai* and P2JJ as well as BinPran and this will require modification to the organisations in the *balai* and P2JJ. The following table provides a preliminary summary of potential distribution of responsibilities for discussion.

Task No.	Task Description	Central DGH Tasks/Responsibilities	Balai Tasks/Responsibilities	Provincial Tasks/Responsibilities
1	Ensure that sufficient trained and experienced staff are employed within the unit.	<ul> <li>Establish training programs on road safety audit and road safety engineering during the establishment of the RS unit project.</li> <li>Organize for ongoing training programs to be available and held regularly at either the Training Centre or through selected Universities.</li> <li>Allocate sufficient trained staff to the Balai and Province to carry out the identified tasks.</li> <li>Encourage engineering consultants to undertake training in RSA and RSE.</li> </ul>	<ul> <li>Ensure that there are sufficient trained staff in the Balai and that they are made available for follow up training.</li> <li>Monitor that sufficient trained staff are available in the province and are made available for follow up training.</li> <li>ACTIONS – Report problems to Central Unit</li> </ul>	<ul> <li>Ensure that there are sufficient trained staff in the Province and that they are made available for follow up training.</li> <li>ACTIONS – Report problems to Balai</li> </ul>

Task No.	Task Description	Central DGH Tasks/Responsibilities	Balai Tasks/Responsibilities	Provincial Tasks/Responsibilities
2	Receive and monitor the quality of the traffic accident database from the Traffic Police.	<ul> <li>Coordinate with the Traffic Police to ensure that traffic accident data and the database (after completion of computerized system) will be made available to the provincial DGH.</li> <li>Update IRMS to accept and report on summary traffic accident data.</li> <li>After review by provincial staff on the quality of the data, install summary data in the IRMS system</li> </ul>	• Receive traffic accident data from province and forward to Central unit.	<ul> <li>Initial step is to collect and summarize from the POLRES all of the traffic accident data which is available for the previous 3 years (suggest this should be outsourced and included in the RS unit project).</li> <li>Maintain ongoing coordination with Traffic Police and receive and review data from police. When computerized data is available this should be received by DGH provincial staff and forwarded to Balai.</li> </ul>
3	Review and report on the road safety performance of the road network.	<ul> <li>Initially identify what road safety criteria (eg no. of traffic accidents / veh-km etc) should be used to provide benchmarks for prioritized remedial actions.</li> <li>Monitor the performance of the road network based on information provided by Balai/province.</li> <li>When available monitor the performance using data summarized in IRMS.</li> </ul>	• Receive and review performance data from the province.	• Summarize the traffic accident record on the National Road network and identify hazardous corridors and the worst links on the corridor based on criteria established by Central unit.
4	Develop an ongoing annually updated Road Safety Plan	<ul> <li>Establish levels of funding which are to be allocated for traffic accident reduction programs.</li> <li>Based on feedback information from Task 7 below, the budget costs will be developed which will enable the volume of improvement works to be calculated.</li> <li>Develop a 5 year plan for traffic accident reduction, targeting the highest priorities.</li> </ul>	• Receive and review performance data from the province.	• Based on the traffic accident performance of the road network identify locations which are the highest priorities for traffic accident reduction.

Task No.	Task Description	Central DGH Tasks/Responsibilities	Balai Tasks/Responsibilities	Provincial Tasks/Responsibilities
5	Monitor the progress of road programs and organize Road Safety Audits either in- house or through third party consultants at the appropriate stages of the development of the projects.	<ul> <li>As a policy decision, identify the types of road improvement projects which will be required to undergo the RSA process and the level of RSA which will be implemented.</li> <li>Develop a list of approved Road Safety Auditors (both in-house and external)</li> <li>Ensure that RSA is being carried out in accordance with the policy.</li> </ul>	<ul> <li>Review the RSA requirements of the identified road program and either organize for RSA in- house or Procure the Road Safety Auditor for the works. Ensure that the procurement is carried out on a timely basis.</li> <li>Monitor the schedule of the project / Road Safety Auditor.</li> </ul>	<ul> <li>Prepare regular procurement schedule for road projects and the type of work to be included in the design.</li> <li>Identify whether RSA will be required according to defined policy.</li> </ul>
6	Monitor the RSA reporting and actions taken on recommendations from the RSA on designs / implementation.	<ul> <li>Review the quality of the RSA reports and their recommendations and review the issues where recommended actions are not taken.</li> <li>Make decisions on whether the designers or RSA recommendations should prevail or recommend another course of action.</li> </ul>	<ul> <li>Review the work carried out by RSA</li> <li>Review areas of disagreement and provide recommendations on actions.</li> </ul>	<ul> <li>Coordinate the interaction between the RSA and the designer of the road works.</li> <li>Participate in the prior to construction RSA</li> <li>Review areas of disagreement between RSA and the designer / construction supervisor.</li> </ul>
7	Develop and implement programs for traffic accident reduction eg. Hazardous Corridor Program, Blackspot program – this will initially concentrate on North Java Corridor and the East Java Corridor.	<ul> <li>Liaise with Balai and Province to ensure that the program progresses in line with the agreed road safety plan and projects are consistent with the plan.</li> <li>Ensure that budget is allocated in the DIPA for the program</li> </ul>	<ul> <li>Review procurement documents and recommendations for award.</li> <li>Review cost estimates for the works and forward to central unit.</li> <li>Review and approve designs prepared.</li> <li>Review the supervision and quality of the implementation works.</li> </ul>	<ul> <li>Based on the work carried out in Task 4 procure consultants to carry out investigation, design and supervision of traffic accident reduction measures.</li> <li>Identify budget requirements for the works.</li> <li>Procure the implementation works</li> <li>Act as the engineer for the works.</li> </ul>

#### RECOMMENDATIONS FOR A ROAD SAFETY UNIT AT THE MPW

Task No.	Task Description	Central DGH Tasks/Responsibilities	Balai Tasks/Responsibilities	Provincial Tasks/Responsibilities
8	Ensure that budget is in place for Road Safety Program Implementation.	<ul> <li>Review and approve projects (Road Safety Unit in Bintek)</li> <li>Include in Budget Program (Bipran)</li> </ul>	• Review and approve cost estimates for consultants and implementation and forward to Central DGH	• Prepare estimated costs for consultants and implementation.
9	Monitor and evaluate the effectiveness of programs.	<ul> <li>Monitor before and after traffic accident record at project locations based on police records</li> <li>Prepare reports on performance and provide information on overall network performance</li> </ul>	• Review reports and take corrective actions if required – in coordination with province	• Review reports and take corrective actions if required – in coordination with Balai
10	Identify support requirements and coordinate with DGLT and Traffic Police	• Establish how and when the data from the police will be provided (ideally the traffic accident data software should be available and licensing should be agreed under the IRSMS)	• Liaise with police and DisHub in line with agreed protocols	• Liaise with police and DisHub in line with agreed protocols
		• Establish how DGLT inputs (if any) will be included in the traffic accident reduction program		
11	Prepare annual report on Road Safety Performance of the National Road Network	<ul> <li>Summarize and update Road Safety Action Plan</li> <li>Summarize program implementation</li> <li>Summarize and comment on overall network</li> </ul>	Prepare and forward data to Central Road Safety Unit	• Prepare and forward data to Balai
		<ul><li>road safety performance</li><li>As the program progresses include</li></ul>		

#### RECOMMENDATIONS FOR A ROAD SAFETY UNIT AT THE MPW

Task No.	Task Description	Central DGH Tasks/Responsibilities	Balai Tasks/Responsibilities	Provincial Tasks/Responsibilities
12	Provide road safety training to the broader audience within DGH and to consultants involved in road design.	<ul> <li>Develop course curriculum in cooperation with training organisation</li> <li>Require consultants to have received and satisfactorily completed road design / road safety training</li> <li>Ensure that delivery of the training is available in regions throughout Indonesia (Balai cities?)</li> </ul>	• Facilitate the training in the Balai	<ul> <li>Encourage local consultants to participate in RS training</li> <li>Require senior road designers to have successfully completed RS training (in ToRs for RS projects)</li> </ul>
13	Provide RSA training and accreditation (this could be external to the unit)	• Organize RSA training courses and socialize the program to the consulting industry	• Organize RSA training courses and socialize the program to the consulting industry	
14	Organise publicity campaigns in coordination with DGLT and Traffic Police.	• In consultation with the police and DGLT develop publicity and enforcement programs to complement the Road Safety Action Plan	• Provide support to the publicity programs at the local / regional level	• Provide support to the publicity programs at the local / regional level

## ANNEX 4: SUMMARY OF *BALAI* LOCATIONS AND GEOGRAPHIC AREAS OF RESPONSIBILITY

<i>Balai</i> National No.	Office Location	Geographic Area of Responsibility
1	Medan	North Sumatra, Aceh, Riau, Kepulauan Riau
2 Padang		West Sumatra, Bengkulu, Lampung
3	Palembang	South Sumatra, Jambi, Bangka Belitung
4	Jakarta	DKI, Banten, West Java
5	Surabaya	Central Java, East Java, Yogyakarta
6	Makassar	All Sulawesi
7	Banjarmasin	All Kalimantan
8	Denpasar	Bali, NTB, NTT
9	Ambon	Maluku, North Maluku
10	Jayapura	Papua, West Papua

Balai and provinces shown in bold type are on the North Java and East Sumatra Corridors.



## ANNEX 5: PROJECT FLOW DIAGRAMS FOR RSA

#### **Task Flow Diagrams**

The following flow diagrams illustrate the tasks carried out for 3 Stage RSA for Loan Funded and National Budget Funded projects and the Traffic Accident Reduction programs for the *Balai* and Central Focused RSU models.





#### Figure 8. Flow Diagram for Donor Funded Betterment Project - with 3 stage RSA Central Focused Model (No Land Acquisition)





Figure 9. Flow Diagram for APBN Betterment Project - with 3 stage RSA Balai Focused Model

## Figure 10. Flow Diagram for Donor Funded Betterment Project - with 3 stage RSA Balai Focused Model (No Land Acquisition)





#### Figure 11. Flow Diagram for Crash Reduction Project – Initial Stage Central Focused Model



Figure 12. Flow Diagram for Crash Reduction Project - Initial Stage Balai Focused Model

## **ANNEX 6: UPDATED INFORMATION ON HOWARD REPORT**

Eric Howard and Associates carried out a review of road safety in Indonesia funded by AusAID during the period 2007 and 2008. The following paragraphs, together with the information included in the first two chapters of this report, provide a summarized update on the Eric Howard Report

## 1. Introduction

### 1.1 Road safety overview

## New Traffic and Road Transport Law

The new Traffic and Road Transport Law was passed by parliament in June 2009 and includes specific provisions and responsibilities for road safety. Under the new law the roles of the agencies in the area of traffic management and engineering have been defined and these are summarised in Annex 2. In summary the following are the responsibilities of the three major agencies involved in road safety as it pertains directly to the physical environment: DGH, DGLT and the Police.

DGH has the responsibility for identifying road safety problem locations such as blackspots, to develop improvement programs and implement measures for traffic accident reduction. However, their full responsibility for these improvements only extends to realignment and/or geometric changes and modifications to street furniture or other facilities in the right of way with the specific exclusion of traffic signs and road markings. In the area of traffic accident prevention, DGH is responsible for carrying out road safety audits for road improvement and new road projects.

DGLT shares the responsibility for identifying road safety problem locations but has no role in the area of accident investigation nor in the area of road safety audit. It does have the responsibility in the area of provision of or modification to road markings and traffic signs.

## 3. Road Safety Management

## 3. Institutional roles, responsibilities and issues

## 3.1.1 Central road safety agencies

## (a) MoT, DGLT, Safety Directorate

As identified above the new law makes changes and road safety auditing is not the responsibility of DGLT. As a consequence the sub-directorate of road safety auditing will need to be disbanded. The major role for DGLT in road safety associated with physical infrastructure is in the installation of road markings and signage and the responsibility for these areas in DGLT is located in the Directorate of Traffic and Transport.

Section 2 of this report provides a summary of recent road safety activities of the various road safety agencies.

## 3.2.1 Universities

The Howard report understates the work being carried out in the universities. ITB, Gadjah Mada University and University of Indonesia have been active in developing academic and training programs which have provided support in the areas of road and traffic engineering. They can form the basis for future training programs and preliminary discussions indicate a willingness to work together to develop joint curriculum which can focus and strengthen the area of road safety engineering.

The Research and Development Centre for Roads in Bandung has prepared a number of manuals for traffic engineering and will have a much larger role to play in road safety research and performance monitoring in the future. It is recommended that they form close ties with MIROS since there are likely to be common road safety issues and MIROS has carried out groundwork in many areas which can be built on to develop Indonesian road safety initiatives.

#### 4. Significant Recent Developments

#### 4.4 World Ban supported road safety projects - from 2008

The statement on the IRSMS for the police being underway is not correct it will commence later this year. Sections 2.1 and 2.3 provide a summary of the work that will be carried out under these two TA's. One of the concerns for the Traffic Police TA is that the accident reporting system is only to be introduced into the Central Police and the province of Central Java and Metro DKI. This is to be followed later by National implementation, however, there is no budget allocated at present to the follow up program.

#### 6. Potential Interventions / Activities

#### 6.1 Indonesian agency views on support activity priorities

The comment (as indicated in the 4.4 above) that the World Bank supported project is underway is incorrect.

#### 6.2 Potential intervention / activity responses to the following identified issues

#### 6.2.2 Inadequate road safety problem assessment

Same comment applies as above referring to World Bank project being underway. There has been cooperation from the INP in the cooperation in collecting existing accident data for the EINRIP Monitoring and Evaluation program and also for the field reviews which will be carried out by IndII consultant Phillip Jordan. To date DGH has not been involved in the development of the TOR and steps need to be taken to ensure that the reporting system will provide adequate data for the development of accident reduction programs.

#### 6.2.4 Poor institutional management settings

The report identifies that training of local government staff is crucial. However, it should identify that the major difficulty lies in the background and experience of the local government staff in particular in Dinas Perhubungan. Many of the staff in technical positions are not qualified to carry out engineering functions. There needs to be much greater emphasis place on job descriptions, minimum qualifications and hiring practices in general.

#### 6.2.5 Inadequate operational capacity within institutions

There is no discussion on the lack of skills in the consulting industry. This applies to even fairly basic final engineering road and traffic design. This will be an impediment in the short term of developing a comprehensive RSA program.