Preparation of Vietnam Road Safety Project – Phase 1

ENVIRONMENTAL ASSESSMENT

Final Report

Opus International Consultants in partnership with the Transport Development and Strategy Institute
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Final Report

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Executive Summary

This report gives an Environmental Assessment of the Vietnam Road Safety Project (VRSP). The VRSP is a multi-component, multi-phase project. Phase 1, proposed to run for 4 years, consists of the following nine linked components:

(i) strengthen the management and technical capacity of the NTSC and prepare a national roll-out program for phase 2 of the road safety strategy;

(ii) demonstrate comprehensive, integrated safety programs in three high risk corridors and develop the programs for nationwide application - the designated “safe highway” corridors are:

• National Highway 1 (km 172 – km 463) Hanoi to Vinh
• National Road 51 (km 0 – km 75) Bien Hoa to Vung Tau
• National Highway 1 (km 1915 – km 2068) Ho Chi Minh City to Can Tho;

(iii) develop nationwide traffic accident monitoring and analysis tools;

(iv) enhance the application of road safety audit;

(v) enhance the identification of and response to accident blackspots;

(vi) improve driver training, testing and licensing, and vehicle testing;

(vii) improve traffic safety enforcement and coordinated road user education and awareness campaigns;

(viii) improve pre-school and school-based road safety education; and

(ix) improve the state of readiness, awareness and coordinated response of emergency services.

The potential environmental impacts of all nine components are assessed. Only component 5: Blackspot Improvement involves engineering work and the scale of land acquisition will be kept to a practical minimum. A screening analysis of an initial 15 proposed blackspot improvements suggested that seven of the proposals could be considered to be environmentally slightly negative. They were:

Improvement 1: National Highway 1, km 267+500: Major Intersection Improvement

Improvement 4: National Highway 1, km 387 to km 388: Carriageway Widening and Realignment

Improvement 5: National Highway 1, km 419+500: Alignment Problem

Improvement 8: National Road 51, km 5+250 to km 5+700: Major Intersection Improvement
**Improvement 9:** National Road 51, km 6+700: Major Intersection Improvement

**Improvement 10:** National Road 51, km 10+500: Major Intersection Improvement

**Improvement 11:** National Road 51, km 65: Major Intersection Improvement.

Of the fifteen proposals originally identified for Year 1 of VRSP, **six were removed from the Year 1 program prior to commencement of public consultation**, generally because since their initial identification, the projects concerned had been committed for implementation outside of the Year 1 program or even outside of the VRSP. As a consequence, only one of the seven proposals now included in Year 1 (Improvement 5: National Highway 1, km 419+500: Alignment Problem) and identified as being in the category where it could be considered to be environmentally slightly negative remains in the Year 1 Program. Widening introduced in the final design solution for one of the other remaining Year 1 Improvements (Improvement 7: National Road 1A, Km 456+450 – Km 456+821) also may now be considered to be environmentally slightly negative, whereas in the initial screening it was considered environmentally neutral.

The other seven components listed above are also assessed. Of those, three (Components 2, 3 and 6) are assessed as being environmentally neutral, and the other four (Components 12, 13, 14 and 15) are assessed as being environmentally slightly positive.

The geographical coverage and timeframes for the project activities are described, as well as an analysis of alternatives (including the “without project” option).

The applicability of the World Bank Safeguard Policies to the VRSP is carefully considered. It is concluded that the Environmental Assessment Safeguard Policy is applicable, the Involuntary Resettlements Safeguard Policy may be applicable, it is unlikely the Indigenous Peoples Safeguard Policy is applicable, and the other seven Safeguard Policies are not applicable.

The World Bank Environmental Assessment Category for the VRSP is to be assessed at the appraisal safeguard meeting to be held on 22 November 2004. It is expected to be “B”. An Environmental Management Plan (EMP) for the VRSP has been prepared, as a separate document. At this stage of the project cycle, the following is proposed for consultation and disclosure of the VRSP:

- A Vietnamese language translation of this Environmental Assessment and the EMP be prepared, and made available to potentially affected groups in the three demonstration corridors.
- In consultation with relevant provincial authorities and any local NGOs, appropriate public outreach and consultation be undertaken at any of the areas of blackspot improvements which, based on considerations of the nature of the engineering work and the circumstances of the adjoining community, are deemed to require such consultation.
• The findings of those consultations be recorded, incorporated into relevant documents, and taken into account in the finalization of the project preparation, and in the implementation. If, as a result of the consultation process, it becomes clear than more disclosure (such as the provision of engineering drawings) is required, then these should be provided as required to potentially affected groups.

A considerable amount of stakeholder consultation took place during the preparation of the VRSP. This included:

• The Initial Workshop held on 28 November 2003,
• 14 meetings held during the reconnaissance trips on the three demonstration corridors from 24 to 26 November 2003 and 1 to 4 December 2003,
• Various other consultation between 7 and 14 January 2004, and
• A formal public consultation program undertaken between 22 and 28 March 2004.

The latter involved separate local teams, led by TDSI, conducting a series of Public Consultation Meetings, and Focus Group Meetings as well as the processing of Key Informant Questionnaires. (Refer separate Report On Public Consultation Meetings – November 2004)
Background

Project Justification

Transport safety, and road safety in particular, has become a high priority for the Government of Vietnam (GOV). Road fatalities increased 39 percent in the year 2000 to 2001 and 22 percent in the year 2001 to 2002. Fatalities are particularly common among younger motorcycle users. A recent World Bank review of the health sector in Vietnam showed that intra-cerebral hemorrhage (common to motorcycle accident victims) has become the major cause of hospital death in Vietnam. Most motorcycle accident victims are young and hospital statistics suggest that between 30-50% die as the result of their injuries.

The GOV has taken a number of positive traffic safety management steps. The National Traffic Safety Committee (NTSC) has been established to coordinate improvements in traffic safety. The NTSC has prepared a National Program for Traffic Safety 2001-2005 (NPTS) covering all modes of transport, which was approved by the GOV in July 2001. The NPTS calls for a range of policy and physical interventions grouped into 21 projects to be supported by government budgets, driver training and license fees, insurance and Overseas Development Assistance sources.

Areas of proposed action in the road sector include:

(a) education and publicity campaigns for traffic safety improvement
(b) application of road safety audits on newly improved, upgraded or built roads
(c) definition and improvement of blackspots
(d) development of a traffic accident reporting and analysis database
(e) re-planning the system of training and licensing of drivers
(f) forming and building up first-aid stations for traffic accidents, and
(g) mechanizing and gradually modernizing the system for registering motorized road vehicles.

The purpose of this report is to assess the potential environmental impacts of the Vietnam Road Safety Project (VRSP). The Terms of Reference of the Environmental Impact Specialist for the project preparation is given in Annex 1. Output documents are this project-level Environmental Assessment and an Environmental Management Plan for Engineering Works, the latter as a separate document.
Strategic Framework

The Government of Vietnam’s country development objectives are clearly presented in the Comprehensive Poverty Reduction and Growth Strategy (CPRGS). This takes the Vision laid out in the ten-year Socio-economic Development Strategy (current Strategy 2001 –2010) and develops it into concrete action. The CPRGS addresses three overarching development objectives – 1) high growth through a transition to a market economy; 2) an equitable, socially inclusive and sustainable pattern of growth; and 3) the adoption of a modern public administration, legal and governance system.


Achievement of the first of the CPRGS development objectives – high economic growth – will be accompanied by high growth in traffic, and hence exposure to greater risks on roads. It has been estimated that road deaths will grow on average by 80% in the East Asia and Pacific region over the next two decades, in the absence of new policies and additional road safety investments. That projection realistically – and probably conservatively – reflects the situation in Vietnam.

The World Bank’s Transport Safety Strategy Review (TSSR), prepared in July 2003, appraises road safety management practices and outcomes in Vietnam using international best practice as a benchmark. While preparing the TSSR close attention is paid to helping achieve development objectives 2 and 3 of the CPRGS. In line with the World Bank’s Country Assistance Strategy for Vietnam, the TSSR addresses health shocks that push people into poverty or make escape from poverty difficult and it targets reductions in the health losses and economic inefficiencies resulting from road crash trauma.

The World Bank’s TSSR found that:

- there is ineffective performance management, weak implementation arrangements and fragmented interventions;
- there are gaps in the National Program for Traffic Safety (NPTS) and an absence of clear priorities for action based on strategic analysis of the problem;
- proposed activities and interventions lack adequate finance, proper coordination and planning, and, in some cases, do not adequately reflect good practice; and
- there is also a serious lack of capacity, resources and skills within the agencies responsible for program delivery, and responsibilities and accountabilities within and across agencies and levels of government remain unclear.
The TSSR proposes a road safety strategy for Vietnam, in three phases spanning the next 15 years. The strategy aligns with both the country development objectives of the Government of Vietnam (GoV) and with the road safety priorities identified in the NPTS. The aim of the strategy is to more sharply focus the specification, targeting and delivery of proposed NPTS projects, plus support a wider array of World Bank and other donor safety initiatives in the longer term, within an integrated safety management framework.

Key priorities for phase 1 (the first 5 years) of the TSSR are to improve safety standards and rules and related compliance in targeted high risk corridors, to address legislative amendments to the Road Act where needed, to commence development of comprehensive analysis tools, to undertake reviews of all elements of the safety management system, and to prepare roll-out strategies for the next phase.

The TSSR includes a draft project design summary for the phase 1 activities, which are to be packaged into a proposed Vietnam Road Safety Project (VRSP) - Phase 1, to be funded through a World Bank credit.
Policy, Legal and Administrative Framework

The Vietnamese policy and legal framework for environmental management is as follows:

Law on Protection of Environment

The Law on Environmental Protection was enacted on 27 December 1993, and came into effect on 10 January 1994. It sets out the over-arching environmental requirements for development projects. In particular, it provides for the submission of environmental impact assessment reports for new and existing facilities.

Decree to Provide Guidance for Implementation of Law on Environmental Protection

Government Decree No. 175/CP was promulgated on 18 October 1994. It provides guidance for the implementation of the Law on Environmental Protection. Specifically it provides broad guidelines on the need to carry out environmental assessments for investment projects.

Decision on Vietnamese Standards of Environment

Ministerial Decision No. 2920/QD-MTg, dated 21 December 1996, of the Minister of Science, Technology and Environment sets Vietnamese standards for certain environmental parameters. Applicable standards will be referred to in the presentation on the prevailing environmental situation, in section C of this report. These relate to air quality, water quality and noise.

Circular to Provide Guidance on Preparation of Environmental Assessments

Ministry Circular No. 490/1998/TT-BKHCNMT of the Ministry of Science, Technology and Environment (MoSTE) was issued on 29 April 1998. It provides guidance for the preparation and appraisal of environmental assessments for investment projects, to satisfy compliance with Decree No. 175/CP. More information on this Circular is included in section A4 of this report.

Regulation of Environmental Protection in Transport Industry

Promulgated with Ministerial Decision No 2242/QD/KHKT-PC, dated 12 September 1997, of the Minister of Transport. It provides the legal framework of environmental requirements for development projects in the transport industry.

Guidelines for Environmental Assessment of Road Construction Projects

MoSTE issued in 1999 Guidelines for the Environmental Assessment of Road Construction Projects. The Guidelines provide information on the content of environmental impact assessment reports, including the recording of background (prevailing) environmental data, mitigation and monitoring, and the content of the Environmental Management Plan.

The key agencies with environmental responsibilities in Vietnam include:
Ministry of Natural Resources and Environment (MoNRE). MoNRE is the lead agency for the development of environmental policy. It has taken over the legal framework outlined above, which had originally been promulgated in the name of MoSTE.

National Environment Agency (NEA). Located within MoNRE, the NEA is the main agency for implementing environmental policy at the national level.

At the provincial level there had been constituted various Departments of Science, Technology and Environment (DoSTEs). Presumably these will progressively be reconstituted as Departments of Natural Resources and Environment in the future. In some urban areas there are also Environmental Committees. These are usually chaired by the Vice-Chairman of the People’s Committee, and include the representation of relevant line departments. The People’s Committees, or Environmental Committees, have authority to review and comment on the environmental aspects of investment applications.

The administrative structure for the transport sector has, at the national level, the Ministry of Transport (MoT) responsible for constructing, maintaining and operating highways. For major road projects are usually assigned to a Project Management Unit (PMU), dedicated to that project or a group of related projects. PMUs come under the direct control of the MoT.

For the Vietnam Road Safety Project (VRSP) responsibility rests with PMU-1 (which was originally set up for National Highway 1). PMU-1 will have responsibility for the implementation of the project. They are also responsible for obtaining all of the necessary GoV approvals (including those on environmental considerations). Hence, PMU-1 is the “client” for the project preparation. The World Bank has proposed that an independent monitoring agency would be used to monitor compliance during implementation.

The National Traffic Safety Committee (NTSC) is responsible for coordinating other agencies involved with implementation of the VRSP, including the preparation work. A Project Steering Committee (or Advisory Board) has been established to oversee the preparation, and the subsequent implementation, of VRSP.

The components of the VRSP-Phase 1 are described in section B1 of this report. There are a number of GoV agencies involved in those components, including:

- NTSC – component 1, and coordination of VRSP preparation
- PMU-1 of the MoT – management of the VRSP, and “client” for the preparation
- Ministry of Police (MoP) – component 3, and the enforcement parts of components 2 and 7
- Vietnam Road Administration (VRA) – driver training, testing and licensing, and road related parts of component 2, components 4 and 5, and the driver training, testing and licensing part of component 6
- Vietnam Register (VR) – vehicle testing part of component 6
• Ministry of Education and Training (MoET) – component 8

• Ministry of Health (MoH) – component 9.
Vietnamese Environmental Requirements

The purpose of environmental assessment is to ensure that environmental issues have been and will be properly taken into account within the design and implementation of the Project. The process also provides the documentation necessary to ensure that this has been and will continue to be the case pursuant to both Vietnamese and World Bank requirements. This report is part of that documentation, being a project-level Environmental Assessment. An Environmental Management Plan for Engineering Works is also being prepared, as a separate document. Vietnamese environmental requirements are addressed in this section of the report, and World Bank requirements are outlined in section A5, section F.1, and Annex 2.

Ministerial Circular No. 490/1999/TT-KHCNMT, on guidance for the preparation and appraisal of environmental assessments for investment projects, recognizes two categories of project, viz.:

- **Category I**: includes projects which have the potential to cause widespread environmental impacts or are difficult to control. A list of Category I projects is given. They require preparation of a full environmental impact assessment.

- **Category II**: includes all other investment projects not considered Category I. These require the submission of a “Registration for Securing Environmental Standards” (RESES”).

It is quite clear that the Vietnam Road Safety Project (VRSP) is a Category II project. That is, a Certificate for Securing Environmental Standards is required. For the VRSP appraisal of the RESES would be carried out either by the NEA (on behalf of MoNRE), if the work is deemed to exceed 50 km, or by the local environmental agency (a DoSTE, or equivalent), if the work is deemed to be less than 50 km.

The required content of the RESES (as set out in Appendix III of Circular No. 490) is similar to that of an environmental impact assessment report, but the information required is in much less detail. This assessment document and the accompanying Environmental Management Plan (EMP) have all of the information required for the RESES. Especially relevant sections of the EMP are the Mitigation Plan and the Environmental Monitoring Plan.

Although consultation and disclosure are largely matters covered by the World Bank requirements (and as such they are described in section A5 and Annex 2 of this report), they are also referred to in Government Decree No. 22/CP, dated 22 May 1993. This Decree sets out the responsibilities, authorities and organization of the Ministry of Science, Technology and Environment (MoSTE). Presumably these now relate to the responsibilities, authorities, etc of the Ministry of Natural Resources and Environment (MoNRE).
It is prudent to maintain a regular dialogue with the NEA on the specific GOV environmental assessment requirements, including those on consultation and disclosure, as they relate to the VRSP. Such a dialogue has been established, between TDSI and the NEA, and the minutes of the first meeting are included in Annex 5 of this report.
World Bank Environmental Requirements

The World Bank defines Environmental Assessment (EA) as the umbrella term for the process of examining the environmental risks and benefits of proposed investment programs and projects and recommending measures to avoid, minimize or negate negative impacts. Therefore, EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project.

EA evaluates a project’s potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The World Bank favors preventive measures over mitigatory or compensatory measures, whenever feasible.

The World Bank classifies a proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project, and the nature and potential environmental impacts. At the time of the preparation of this environmental assessment the Environmental Assessment Category for the Vietnam Road Safety Project (VRSP) is given as “TBD” (to be determined). Hence this is a topic for future environmental consideration. Section F1 of this report describes the four World Bank environmental assessment categories, and discusses what may be considered as the appropriate category for the VRSP.

As an integral part of its EA requirements, the operations of the World Bank are guided by a comprehensive set of policies and procedures dealing with the Bank’s core development objectives and goals, the instruments for pursuing them, and specific requirements for Bank financed operations.

The core of this guidance lies in the World Bank’s Operational Policies, which are short, focused statements that follow from the Bank’s Articles of Agreement, its general conditions, and from policies specifically approved by the Board.

Within the overall set of Operational Policies, World Bank management has identified the following 10 key policies that are critical to ensuring that potentially adverse environmental and social consequences are identified, minimized, and mitigated. These are known as “Safeguard Policies”, and they receive particular attention during the project preparation and approval process:

- Environmental Assessment (OP 4.01)
- Natural Habitats (OP 4.04)
- Pest Management (OP 4.09)
- Involuntary Resettlements (OP 4.12)
- Indigenous Peoples (OD 4.20)
The applicability of the World Bank Safeguard Policies to the VRSP is fully discussed in Annex 2 of this report. Each of the 10 safeguard policies is considered in turn, and an assessment is made as to whether they apply.

The following is a summary of the outcome of that analysis:

- The Environmental Assessment Safeguard Policy is applicable. This document, a project-level Environmental Assessment, is prepared in accordance with OP 4.01.

- An Environmental Management Plan for Engineering Works is being prepared, as a separate document.

- A Social Assessment (a separate document) is also being prepared, to examine potential social impacts of project activities and whether Safeguard Policies on Involuntary Resettlements and Indigenous Peoples apply.

- At this stage of the project preparation the view is that, depending on the design and scale of engineering work associated with Blackspot improvements, minor land acquisition and settlement may take place. This may require application of the Safeguard Policy on Involuntary Resettlements. But the absence of “vulnerable ethnic communities” on the three demonstration corridors indicates that the Safeguard Policy on Indigenous Peoples does not apply (but the Social Assessment will examine that question).

Project Description

Types of Project Activities

The Vietnam Road Safety Project (VRSP) – Phase 1 consists of the following nine linked components:

1. strengthen the management and technical capacity of the NTSC and prepare a national roll-out program for phase 2 of the road safety strategy;
2. demonstrate comprehensive, integrated safety programs in three high risk corridors and develop the programs for nationwide application - the designated “safe highway” corridors are:
   - National Highway 1 (km 172 – km 463) Hanoi to Vinh
   - National Road 51 (km 0 – km 75) Bien Hoa to Vung Tau
   - National Highway 1 (km 1915 – km 2068) Ho Chi Minh City to Can Tho;
3. develop nationwide traffic accident monitoring and analysis tools;
4. enhance the application of road safety audit;
5. enhance the identification of and response to accident blackspots;
6. improve driver training, testing and licensing, and vehicle testing;
7. improve traffic safety enforcement and coordinated road user education and awareness campaigns;
8. improve pre-school and school-based road safety education; and
9. improve the state of readiness, awareness and co-ordinated response of emergency services.

The goal for the four-year, US$25 million VRSP - Phase 1 is to reduce poverty and vulnerability by reducing the rate of road transport injuries and deaths in Vietnam. As mentioned in the section on the Strategic Framework, achieving this goal will contribute to the achievement of the World Bank Group’s Country Assistance Strategy for Vietnam Theme 2, Enhancing Equitable, Socially Inclusive and Sustainable Development, Agenda item (vi), Mitigating the impacts of natural disasters and other shocks, and the Government of Vietnam’s Comprehensive Poverty Reduction Growth Strategy Goal 8 – Reducing Vulnerability. The latter address health shocks that push people into poverty or make escape from poverty difficult.

The objectives and outputs of the nine VRSP – Phase 1 components are described in more detail in the following chart and table.
1: Strengthen NTSC leadership and coordination capacity and prepare targeted and costed national program to roll-out second phase of strategy.

2: Implement and evaluate two ‘Safe Highway’ demonstration programs in high-risk corridors, one in northern Vietnam (Hanoi area) and one in southern Vietnam (HCMC area).

3: Build National Traffic Accident Database and Analysis System, piloted in Component 2 corridors, and deliver program of traffic police training and technical support.

4: Review and upgrade safety audit procedures in Component 2 corridors, and prepare national guidelines and training program.

5: Review and upgrade blackspot identification and remedial treatment procedures in Component 2 corridors, and prepare national program for high priority sites and improved diagnostic tools.

6: Review and evaluate driver training, testing and licensing, and vehicle licensing and testing systems, surveying in Component 2 corridors, and prepare national business development plan.

7: Develop, target and evaluate general deterrence enforcement and coordinated public education programs in Component 2 corridors, and prepare national program.

8: Review and upgrade school traffic safety education in Component 2 corridors, and prepare national program.

9: Review and upgrade emergency medical services in Component 2 corridors, and prepare national program.
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<th>Project Components</th>
<th>Project Objectives</th>
<th>Project Activities / Outputs</th>
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| 1. NTSC strengthening and roll-out strategy | - To make the NTSC capable and powerful to adequately and effectively provide leadership and co-ordination in all traffic safety activities nationwide.  
- To provide the NTSC with full capacity and resources, organization structure, staff, skills and equipment, and facilities for strategy planning, co-ordination and implementation of traffic safety plans/ programs (firstly in the road sector). | - Prepare an effective model for the NTSC organization structures at central and local levels, including functions, legal framework, procedures, structure, staffing, facilities, and equipment.  
- Implement the approved organization model, including:  
  1. prepare draft law  
  2. assist the Government legal process  
  3. prepare an Implementation / Transition Plan  
  4. procure equipment and facilities  
  5. manage implementation / transition.  
- Provide technical assistance by consultants/advisors for:  
  6. preparation and co-ordination of traffic safety projects and strategic planning etc.  
  7. transfer of knowledge and technology to the NTSC (skills improved, equipment and facilities supplied, etc.)  
  8. make the NTSC system effective at both central and local levels.  
- Evaluate Phase 1 interventions and recommend any adjustments.  
- Prepare a Road Safety Strategy document, presenting an integrated, targeted and fully costed program of road safety interventions to roll-out VRSP – Phase 2 (5 years) systematically across Vietnam. |
<p>| 2. &quot;Safe Highways&quot; Demonstration         | - To demonstrate on each of the three “Safe Highway”                                | - Document base information                                                                                                                                           |</p>
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| Projects            | corridors, application of the coordinated and comprehensive interventions developed under other VRSP – Phase 1 components.  
- To evaluate the effect of the integrated interventions on reducing rates and seriousness of road accidents.  
- To expand the integrated interventions and monitoring and evaluation nation-wide. | 9. attributes of the demonstration highways  
10. use of the highways  
11. standard of vehicles  
12. enforcement  
13. community and school children awareness, attitudes and reported behavior to road safety  
14. use of emergency medical services.  
- Develop and implement procedures for updating the base information.  
- Document changes in the base situation and interventions applied throughout the duration of the project.  
- Recommend any adjustments to the Monitoring and Evaluation Framework and reporting.  
- Prepare a program to extend the Monitoring and Evaluation Framework nation-wide. |
| 3. Vietnam National Road Accident Database and Analysis System | To establish a comprehensive road accident database and analysis system for the whole country to fully and precisely collect data for all road accidents.  
- To build up capacity for analyzing accident information for all activities relating to road safety.  
- To share database information among Ministries |  
- Confirm the functional requirements, data to be collected into the database, the method of input, standard reports to be produced, implementation requirements.  
- Issue a Request for Proposal.  
- Evaluate proposals.  
- Prepare draft agreements/regulations on entering, analyzing, accessing and disseminating data.  
- Adjust and standardize the input form  
- Purchase IT equipment for Bureau C26 and three “demonstration corridors”.  
- Design and implement application software.  
- Produce documentation.  
- Provide training/technical assistance. |
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<th>Project Activities / Outputs</th>
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<td>and related agencies.</td>
<td>Pilot implementation in Hanoi, HCMC, NTSC and VRA.</td>
<td>- Evaluate pilot.</td>
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<td>- Back-capture 3 years of data for the demonstration corridors.</td>
<td>- Finalize procedures/regulations.</td>
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<tr>
<td>- Provide further training/technical assistance.</td>
<td>- Purchase equipment for key Police posts.</td>
<td></td>
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<tr>
<td>- Provide further training/technical assistance.</td>
<td>- Implement in key posts.</td>
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### 4. Road Safety Audit
- To enhance road safety in designs, construction and operation of the road network.
- To implement road safety audit on designs, construction and operation of the road network.
- Identify Future Audit Projects.
- Refresher 1 Audits.
- Promotional Workshops.
- Procedures Workshop.
- Refresher 2 Audits.
- Practitioners Workshops.
- On Going Training.
- Selected highway works (under design, construction and operation) audited and recommended treatments defined - first priority given to the "Safe Highway" demonstration corridors.

### 5. Blackspot Improvement
- To improve traffic safety in operation of highway networks.
- Blackspot identification and analysis tools available from the National Traffic Accident Database System and lists of blackspots and treatments recommended.
- Typical blackspot treatments developed.
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|                        | - To continuously control and remove blackspots, reducing the number of traffic accidents on the Demonstration routes. | - Staff of the relevant agencies trained on the instructions, procedures and treatments.  
- Blackspot treatments applied to a number of identified blackspots on the “Safe Highway” Demonstration Corridors. |
| **6. Driver training, testing and licensing; Vehicle testing** | - To improve vehicle driving and vehicle performance to meet the requirements of traffic safety.  
- To improve driver training/ testing / licensing system and vehicle testing system to ensure proper and accurate testing of drivers and vehicles.  
- To improve driving license holders behavior. | - Review and assess existing conditions of driver training (training materials and facilities), testing, licensing and driver license management, and recommend interventions (policy, procedures, physical facilities, equipment, etc).  
- Review and assess testing of vehicles and recommend interventions (policy, procedures, physical facilities, equipment, etc).  
- Institutional strengthening by supply of equipment and facilities to 3 standard vehicle testing stations, and technical assistance to prepare a project to establish a Vietnam Vehicle Testing Centre (for testing new assembled vehicles and new imported vehicles).  
- Implementation of recommended interventions for improvement of vehicle driving (Demonstration Driver Training Centre including building and supply of equipment, training materials, curriculum, etc) and for improvement of traffic vehicle performances (equipment and facilities supplied for vehicle testing stations in connection with "Safe Highway” demonstration corridors).  
- Prepare National Development Plans. |
| **7. Improvements to Traffic safety enforcement and coordinated road user education and awareness campaigns** | - To enhance the effectiveness of traffic safety enforcement by implementing coordinated traffic safety enforcement and road user education and awareness | - Models and typical programs of coordinated traffic safety enforcement and road user education and awareness campaigns developed.  
- Institutional strengthening to the forces of traffic safety enforcement and road user education and awareness campaigns through supply of equipment, facilities, and training. |
### Project Components | Project Objectives | Project Activities / Outputs
--- | --- | ---
**Awareness campaigns** | campaigns.  
- To enhance the capacity and ability for implementation and co-ordination of traffic safety enforcement and road user education and awareness campaigns. | - Coordinated traffic safety enforcement and road user education and awareness campaigns implemented on the "Safe Highway" demonstration corridors.  
- Materials / facilities and curriculum defined for traffic safety education (in pre-school, primary school, secondary school, higher school, colleges and universities).  
- Scope of work for pre-school, school and tertiary road safety education defined for the localities along the "Safe Highway" demonstrations corridors and other selected high risk corridors.  
- Traffic safety education materials/ facilities and curriculum for pre-school, primary school, secondary school, higher school, colleges and universities printed/produced and published for the schools defined above.  
- School teachers trained on application of the traffic safety education materials/ facilities and curriculum and skilful to use them.  
- Improved traffic safety education implemented in the above schools.  
- Models/ typical programs assessed and proposed for expansion over the country.

**8. Pre-school, school and tertiary road safety education** | - To improve road safety education in schools.  
- To enhance the school students' awareness and enforcement of traffic safety regulations. | - Emergency medical services systems set up on the "Safe Highway” demonstration routes.  
- Road users along the "Safe Highway” demonstration routes aware of the emergency medical services when traffic accidents happen and of appropriate emergency medical practices.  
- Medical staff and traffic police along the “Safe Highway” demonstration routes trained on appropriate emergency medical
## Project Components

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Project Objectives</th>
<th>Project Activities / Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- To provide resources for appropriate emergency medical services.</td>
<td>practices.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- An effective and efficient model for emergency medical services developed for extension to other corridors.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Legal framework established for maintaining the emergency medical services systems on the “Safe Highway” demonstration routes.</td>
</tr>
</tbody>
</table>
Geographical Coverage

The nine components of the Vietnam Road Safety Project (VRSP) - Phase 1 involve varying aspects of geographical coverage. The following describes these:

Component 1: Strengthen the National Traffic Safety Committee and Prepare a National Roll-out Program

As the name suggests, the National Traffic Safety Committee (NTSC) is a national body, and so this component has a national focus. Phase 1 of the VRSP (4 years) includes the preparation of a program for national roll-out of VRSP, to be implemented during Phase 2 and any subsequent phases.

Component 2: “Safe Highway” Demonstration Corridors

This component involves, for Phase 1 of the VRSP, the establishment of a monitoring and evaluation framework for the three demonstration corridors (National Highway 1 (km 172 – km 463) Hanoi to Vinh; National Road 51 (km 0 – km 75) Bien Hoa to Vung Tau; and National Highway 1 (km 1915 – km 2068) Ho Chi Minh City to Can Tho). Maps of the three demonstration corridors are given on the next two pages, and a general description of the three road corridors is given in Annex 4 of this report. The ultimate objective of the VRSP is to develop integrated interventions and monitoring and evaluation nation-wide.

Component 3: National Traffic Accident Database and Analysis System

As the name suggests, the database and analysis system will have national coverage. It is intended that during Phase 1 of the VRSP the implementation be initially in Hanoi and Ho Chi Minh City, with roll-out to other areas in subsequent phases.

Component 4: Road Safety Audit

The proposal for this component is to carry out audit training, promotional workshops and procedural workshops. These should be national in coverage, using as data sources all current and future roading projects throughout the country likely to impact on road safety.

Component 5: Blackspot Improvement

Phase 1 of the VRSP includes blackspot improvements on the three demonstration corridors. They exclude those that are likely to be addressed by the World Bank 3 and Me Kong Transportation and Flood Protection Projects currently being prepared. The blackspot improvements involve the three keys areas of intersection upgrades, carriageway cross section improvements and speed management measures, and hence the measures have potential application nation-wide.

Component 6: Driver Training, Testing and Licensing; Vehicle Testing

These activities are national in focus, although it is proposed to use facilities along the three demonstration corridors for trial implementation during Phase 1 of the VRSP. For example, the MOT driver training center in Ho Chi Minh City could be used as the demonstration driver testing center for the two southern corridors.
Component 7: Traffic Safety Enforcement and Road User Education and Awareness
These activities are national in focus, but it is proposed to have trial implementation during Phase 1 of the VRSP along the three demonstration corridors.

Component 8: School Road Safety Education
These activities are national in focus, but it is proposed to have trial implementation during Phase 1 of the VRSP along the three demonstration corridors.

Component 9: Emergency Medical Services
Once again, these activities are national in focus, but it is proposed to have trial implementation during Phase 1 of the VRSP at facilities along the three demonstration corridors.
Map of Demonstration Corridor 1: National Highway 1 (km 172 – km 463) Hanoi to Vinh
Map of Demonstration Corridors 2 and 3: National Road 51 (km 0 – km 75) Bien Hoa to Vung Tau; and National Highway 1 (km 1915 – km 2068) Ho Chi Minh City to Can Tho
Timeframes

The various environmental and social documents required by the World Bank and the Government of Vietnam, including this environmental assessment, have been finalized for disclosure, as described in section F3 of this report, during November 2004.

The World Bank has indicated an estimated date for appraisal of the Vietnam Road Safety Project (VRSP) of 30 November 2004, and an estimated date for Board approval of 8 March 2004.

Phase 1 of the VRSP is planned for a period of four years. Implementation of the individual nine components involves different timeframes. The following describes these:

Component 1: Strengthen the NTSC and Prepare a National Roll-out Program

Principally in Year 1, this component will cover the following:

- Provision of technical assistance aimed at strengthening the capacity and performance of NTSC in (i) monitoring and evaluating road safety; (ii) managing and assessing project road safety interventions; (iii) developing databases, conducting surveys, and collecting data for monitoring and evaluating road safety; (iv) training in leadership, coordination, and strategic planning; and (v) developing a national program of road safety interventions, monitoring, evaluation, and reporting for later phases of the project.

- Hire of local experts to screen selected sites and proposed treatments for environmental impact and ensure that mitigation measures are included and provides support to NTSC for monitoring implementation of the project environmental management plan (EMP).

- Provision of office equipment and other goods for NTSC Executive Office and PMU, including air and water quality monitoring equipment and noise measuring equipment.

- Hire of local environmental experts to conduct independent monitoring of project resettlement safeguard compliance and ensure compliance with the project resettlement policy framework (RPF).

Also this component will cover NTSC’s operations during project implementation, funded by the government over the four years of Phase 1 of the VRSP. The intended hiring of a local Environmental specialist with respect to monitoring and screening will also assist with capacity building of environmental expertise in PMU1. PMU1 will be expected to assign a counterpart.

Component 2: “Safe Highway” Demonstration Corridors

This component will have a majority of the collection of base data, and hence most activity, early in the project, but there will be on-going monitoring throughout the four years of Phase 1 of the VRSP.
Component 3: National Traffic Accident Database and Analysis System

This component will have its major implementation activity in Year 2 of Phase 1 of the VRSP. Implementation is intended to be initially limited to Hanoi and Ho Chi Minh City, with roll-out to other areas (to be implemented in subsequent phases) to be considered in Year 4.

Component 4: Road Safety Audit

This component will provide consulting services for VRA in road safety audit and blackspot or black route identification and treatment: (i) developing, formalizing, and applying procedures; (ii) working with the Traffic Police to specify data and evaluation and monitoring requirements; and (iii) identifying and investigating blackspots and black routes, designing treatments, and monitoring and evaluation of treatment effectiveness.

Component 5: Blackspot Improvement

Nine specific blackspot improvement measures are proposed for year 1 of Phase 1 of the VRSP, out of a total of fifteen that were the subject of field consultation. These involve the three keys areas of intersection upgrades, carriageway cross section improvements and speed management measures.

It is proposed that in Year 1 the focus be on low cost measures, which are expected to have negligible social and environmental impacts. More complex improvements such as major intersection improvements, which typically require more in-depth analysis of the engineering solutions, are to be programmed for years 2 to 4 of the project. Such works will be selected by the Vietnam Road Administration (VRA) in the preceding year on the basis of the most recent accident data.

Component 6: Driver Training, Testing and Licensing; Vehicle Testing

This component will fund consulting services to assist VRA in reviewing driver training, testing, and licensing to prepare a national plan to improve management, procedures, and facilities. On the basis of review of findings, the component will provide equipment for centers in Chi Linh and Ho Chi Minh City.

Component 7: Traffic Safety Enforcement and Road User Education and Awareness

Over years 1, 2 and 3 of Phase 1 of the VRSP this component will fund purchase of vehicles and equipment for the RRTPA to implement a general-deterrence traffic-enforcement model on demonstration corridors and will provide materials, consulting services, and other inputs to implement coordinated road safety education program.

Component 8: School Road Safety Education

This component will provide road safety education materials, equipment, and associated training for schools in demonstration corridors in years 1, 2 and 3 of Phase 1 of the VRSP.
Component 9: Emergency Medical Services

In years 1, 2 and 3 of Phase 1 of the VRSP, this component will provide materials and equipment associated with emergency response in demonstration corridors and training of traffic police in emergency medical treatment through the Ministry of Health.
Description of Blackspot Improvements for Year 1 of VRSP Phase 1

The Blackspot Improvements for inclusion in Year 1 are described below. A plan of each indicating the works proposed is presented in Annexure 6.

Plans of Year 1 Blackspots – VRSP Phase 1

<table>
<thead>
<tr>
<th>Blackspot No.</th>
<th>Corridor</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>National Road 1A</td>
<td>km 340+00</td>
</tr>
<tr>
<td>3</td>
<td>National Road 1A</td>
<td>km 370+900</td>
</tr>
<tr>
<td>5</td>
<td>National Road 1A</td>
<td>km 419+500</td>
</tr>
<tr>
<td>6</td>
<td>National Road 1A</td>
<td>km 452 to km 454</td>
</tr>
<tr>
<td>7</td>
<td>National Road 1A</td>
<td>Km 456+300</td>
</tr>
<tr>
<td>13</td>
<td>National Road 1A</td>
<td>km 1997+700</td>
</tr>
<tr>
<td>14</td>
<td>National Road 1A</td>
<td>km 2000+400</td>
</tr>
<tr>
<td>15</td>
<td>National Road 1A</td>
<td>km 2010+400</td>
</tr>
</tbody>
</table>

Blackspot 2: National Road 1A - km 340+00 (Thanh Hoa province)

This site at present is characterized by a short horizontal curve separating two relatively long straights. The raised formation provides little backdrop to the curve and a school access is located on the apex. There have been 4 accidents resulting in 2 deaths and 4 persons injured since 2000.

The treatment proposed involves some realignment of the corner to achieve a larger radius horizontal curve, the installation of guardrail on the outside of the curve, and improved lane markings including reflectorized edgelines raised pavement markers. Rumble strips and improved signage are also being provided to increase safety at the school location. Encroachment of the corridor to the inside of the curve has been addresed in the public consultation field work in March 2004.
Blackspot 3 (A and B): National Road 1A - km 370+900 (Thanh Hoa province)

At this location there is a small market village on a relatively high-speed section of straight flat highway. The unsealed shoulders encourage people to walk on the carriageway. In the center of the village there is an almost indistinguishable intersection with a long straight access road that carries heavy vehicles. Since 2000 there have been 9 accidents involving 10 deaths and 14 persons injured.

The proposed solution involves widening of shoulders (non structural) through the village to encourage local traffic not to travel on the main carriageway, paving the access roads for around 50m either side of the intersection. Raised islands are to be constructed on the secondary road to highlight the location of the intersection and to protect sight lines. Limit lines will be painted to indicate where approaching vehicles should stop. Other measures will include rumble strips and additional signage on both roads and it is also proposed that a gateway style treatment be applied at the southern end of the village (km 371+20) to highlight the changing nature of the road environment and the need for additional care. Such features are not commonly used in Viet Nam and their effectiveness needs to be tested. It is proposed that this village be one test site.

There is expected to be no disturbance to market stalls at the intersection, as a consequence of the measures proposed.
Blackspot 5: National Road 1A - km 419+500 (Thanh Hoa province)

Although this location was not on the list of blackspots supplied by the VRA, a small temple has been erected at the site to acknowledge those who have been killed at this location. Local advice was that 14 deaths had occurred since 2000. The site is located on a series of curves with light industrial development, a truck park to one side and fields to the other. The key issues appear to be encroachment of the trucks and associated activities onto the carriageway, which reduces sight distance. This forces passing vehicles out, which squeezes traffic in the opposing direction and those using the narrow shoulders.

The treatments proposed include pavement extension to the inside of the curve to improve traffic space, attention to pavement marking and signage including the equivalent of chevron boards. Centreline delineation will be provided by pavement marking and raised reflectorized markers. Vibrational paint markings will be used for edgelines. The encroachment into crop-land was addressed during public consultation field work in March 2004.
Blackspot 6: National Road 1A - km 452 to km 454 (Nghe An province)

Traveling north out of Vinh, the highway runs parallel to the railway on a raised formation with narrow (approximately 1.5m shoulders) that provide little protection for non-motorized users. Although not identified as a blackspot by RRMU 4, it is understood that the accident rate on this section is high. The primary measures proposed at this location will be the use of vibrational paint edgeline marking, bidirectional raised reflectorized markers on the centerline and the use of reflectorized guide posts. (Plastic posts have been recommended by the preparation consultants. The design also includes some sections of widening, the scope of which was addressed during the public consultation fieldwork in March 2004.)
Blackspot 7: National Road 1A - Km 456+300 (Nghe An province)

Having been traveling on a relatively long flat straight section of rural road, vehicles traveling southbound to Vinh enter a series of reverse curves with a railway crossing located beyond the second curve. Traffic speeds are higher than desirable and forward sight distance through the curves to the railway crossing and to any associated traffic queues is often limited by the opposing traffic stream. In order to cross the railway on the level, the super elevation on the second curve is minimal, which results in loss of control accidents. There have been 9 accidents involving 13 deaths and 14 persons injured at the site since 2000.

The proposed treatment involves improved lane delineation, rumble strips at both ends of the rail crossing approach, improved signage and guardrail to protect southbound traffic taking a left hand bend just prior to the rail crossing. A gateway treatment is proposed at the Hanoi end and its exact location is to be agreed. Some widening is proposed to the immediate north of the rail crossing and this was discussed during public consultation fieldwork.
Blackspot 13: National Road 1A - km 1997+700 (Tien Giang province)

This site involves a narrow bridge with insufficient carriageway to accommodate non-motorized vehicles and slow motorized vehicles. The vertical profile of the hump-backed bridge severely limits the available sight distance. The downstream alignment contains some unexpected feature that is hidden from view by the bridge. Guardrails on both side of the bridge are to be extended and this necessitates the extension of two existing local tracks to a point where they can intersect with the highway. No change is proposed with the road profile but improvements will include guide signage, the addition of raised reflectorized markers on the centerline and removal of steps at the bridge edge which presently cause problems for pedestrians and cycles.
Blackspot 14: National Road 1A - km 2000+400 (Tien Giang province)

The nature of this site is similar to Blackspot 13. Warning signs will be erected and guardrails extended. Rumble strips at each approach are also proposed and any steps at the edge of the bridge will be remedied. The guardrail extension will also require the extension of a local track which intersects with the road on the bridge approach from Can Tho.

Blackspot 15: National Road 1A - km 2010+400 (Tien Giang province)

The situation at this site and the treatments proposed are similar to Blackspot 14. Measures to be provided include guardrail extension, signage, rumble strips and centerline and edge marking.
For details of design drawings, see Annexure 6

**Prevailing Environmental Situation**

This section provides information on the existing (prevailing) environmental situation relevant to the Vietnam Road Safety Project (VRSP). The topics covered are air quality, water quality and noise. The data presented is also relevant to decisions about any environmental monitoring required during implementation of engineering works associated with the VRSP, to ensure compliance with the Environmental Management Plan (which is being prepared as a separate document).

Two important factors in the coverage of the prevailing environmental situation are the nature of the proposed engineering works and the sensitivity and circumstances of the environment in which the proposed engineering works will occur. On the nature of the proposed engineering works for the VRSP – Phase 1 this is limited to small-scale activities as part of blackspot improvements. Direct environmental impacts will be confined to existing roadways and immediately adjacent areas. Indirect environmental impacts, associated with materials supply, will occur over a larger area but they are expected to be minor in their (incremental) impacts.

On the sensitivity of the receiving environment, it can be concluded that project area of the engineering works associated with the VRSP is most insensitive. It involves existing roadways, and so the incremental environmental impacts are expected to be slight. If, for example, the engineering works for the VRSP were to be carried out in a previously undisturbed location, particularly one that contains unique habitats, the potential for significant (incremental) environmental impacts is much greater.

**Air Quality Situation**

There is no regular air quality monitoring in most of the project area of the VRSP. The following are the results of air quality monitoring (24-hour average samples) in some urban areas along the three demonstration corridors:
### Urban Area

<table>
<thead>
<tr>
<th>City</th>
<th>TSP (mg/m³)</th>
<th>SO₂ (mg/m³)</th>
<th>NO₂ (mg/m³)</th>
<th>CO (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HaNoi</td>
<td>0.3 - 0.45</td>
<td>0.04 - 0.06</td>
<td>0.5 - 0.8</td>
<td>3 - 6</td>
</tr>
<tr>
<td>Ho Chi Minh</td>
<td>0.25 - 0.40</td>
<td>0.11 - 0.23</td>
<td>0.4 - 0.9</td>
<td>2 - 5</td>
</tr>
<tr>
<td>Vinh</td>
<td>0.25 - 0.3</td>
<td>0.02 - 0.06</td>
<td>0.3 - 0.5</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Dong Nai</td>
<td>0.30 - 3.0</td>
<td>0.05 - 0.12</td>
<td>0.4 - 0.6</td>
<td>3 - 6</td>
</tr>
<tr>
<td>Vung Tau</td>
<td>0.30 - 0.42</td>
<td>0.05 - 0.13</td>
<td>0.3 - 0.6</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Binh Duong</td>
<td>0.35 - 0.4</td>
<td>0.07 - 0.19</td>
<td>0.2 - 0.3</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Can Tho</td>
<td>0.3 - 0.4</td>
<td>0.02 - 0.03</td>
<td>0.2 - 0.4</td>
<td>3 - 4</td>
</tr>
<tr>
<td>LongAn</td>
<td>0.2 - 0.25</td>
<td>0.02 - 0.13</td>
<td>0.3 - 0.5</td>
<td>2 - 3</td>
</tr>
<tr>
<td>Ca Mau</td>
<td>0.15 - 0.25</td>
<td>0.01 - 0.06</td>
<td>0.2 - 0.4</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Tien Giang</td>
<td>0.15 - 0.2</td>
<td>0.01 - 0.02</td>
<td>0.1 - 0.3</td>
<td>2 - 4</td>
</tr>
</tbody>
</table>

*Sources: Prevailing Environment Report 2002*

**Note:** TSP is total suspended particulate; SO₂ is sulphur dioxide; NO₂ is nitrogen dioxide; and CO is carbon monoxide.

These results can be compared with the following Vietnamese air quality standards, TCVN 5937, 1995:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>1 hour average (mg/m³)</th>
<th>24 hour average (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>SO₂</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>NO₂</td>
<td>0.4</td>
<td>0.1</td>
</tr>
<tr>
<td>CO</td>
<td>40</td>
<td>5</td>
</tr>
</tbody>
</table>

The following are typical air quality levels in various types of locations, measured close to National Highway 10:

<table>
<thead>
<tr>
<th>Typical Locations</th>
<th>TSP (mg/m³)</th>
<th>SO₂ (mg/m³)</th>
<th>NO₂ (mg/m³)</th>
<th>CO (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural area (Bi Cho)</td>
<td>24-hr</td>
<td>0.34</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>1-hr</td>
<td>0.45</td>
<td>0.07</td>
<td>0.04</td>
</tr>
<tr>
<td>Typical Rural area (Thuy Son)</td>
<td>24-hr</td>
<td>0.49</td>
<td>0.12</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>1-hr</td>
<td>0.53</td>
<td>0.30</td>
<td>0.05</td>
</tr>
<tr>
<td>Industrialized Suburban area (Bac Ha)</td>
<td>24-hr</td>
<td>0.39</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>1-hr</td>
<td>0.48</td>
<td>0.18</td>
<td>0.05</td>
</tr>
<tr>
<td>Low Density Suburban area (Thai Binh)</td>
<td>24-hr</td>
<td>0.52</td>
<td>0.14</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>1-hr</td>
<td>0.52</td>
<td>0.12</td>
<td>0.04</td>
</tr>
</tbody>
</table>
As can be seen, the air pollutant of greatest concern is TSP (total suspended particulate). It is a significant problem in both urban and rural areas. In urban areas industry and transportation are the principal sources, whereas in rural areas TSP can be attributed to dirt roads, quarrying operations, and in winter months in northern Vietnam from heating processes. Coal is the dominant source of energy for industry. Wood and coal are common fuels in rural areas. Particularly high levels of TSP are measured near cement works and steel mills.

<table>
<thead>
<tr>
<th>Area Description</th>
<th>24-hr</th>
<th>1-hr</th>
<th>1-hr</th>
<th>24-hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isolated Rural area (Nam Dinh)</td>
<td>0.36</td>
<td>0.09</td>
<td>0.02</td>
<td>3.6</td>
</tr>
<tr>
<td>Urban-Industrial area (Ninh Binh)</td>
<td>0.65</td>
<td>0.08</td>
<td>0.04</td>
<td>4.0</td>
</tr>
<tr>
<td>Typical Urban area (Hai Phong)</td>
<td>0.54</td>
<td>0.13</td>
<td>0.03</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Source: NR 10 Consultant December 1999
As the following charts confirm, total suspended particulate is a more serious air pollutant in Vietnam than sulphur dioxide, especially in industrial areas. Thuong Dinh is in Hanoi, Tan Binh is in Ho Chi Minh City, and Bien Hoa is in Dong Nai province near Ho Chi Minh City.

**Total Suspended Particulate**

![Total Suspended Particulate Chart]

The permissible TSP standard is 0.2 mg/m³

**Sulphur Dioxide**

![Sulphur Dioxide Chart]

The permissible SO₂ standard is 0.3 mg/m³

For the VRSP the only air pollutant potentially associated with engineering works is total suspended particulate. Hence this is the only one that may be worth monitoring, if at all.
Water Quality Situation

There is no regular water quality monitoring in most of the project area of the VRSP. Most of the monitoring is limited to the major rivers. Monitoring is conducted for only a few basic parameters, and regular monitoring for organic substances is not carried out. Where major rivers pass through urban areas it is found that dissolved oxygen levels drop to below a level that will not support fish life (i.e., below 4 mg/liter).

The quality of the northern rivers of Vietnam, such the Hong (Red) River, is fairly good and can be used to supply most activities and agricultural production. Although the standards for some parameters such as Biochemical Oxygen Demand, Dissolved Oxygen and Ammonia do not meet the more stringent water quality standards of TCVN 5942-195, they do reach lesser standards. The southern rivers, such as the Sai Gon, have declined in quality, as indicated by their low pH. The Sai Gon and Vam Co Dong rivers have become heavily acidified and the pH is, respectively, 4.4 - 5.0 and 3.8 - 4.0.

For the VRSP the water quality parameters of most relevance are:

- Suspended solids
- Biochemical Oxygen Demand (BOD)
- Dissolved Oxygen
- Oil and Grease

The following are Vietnamese water quality standards for those parameters, TCVN 5943-1995:

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Concentration, mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bathing</td>
</tr>
<tr>
<td>Suspended Solids</td>
<td>25</td>
</tr>
<tr>
<td>BOD</td>
<td>20</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>&gt;4</td>
</tr>
<tr>
<td>Oil and Grease</td>
<td>none</td>
</tr>
</tbody>
</table>

Note: All concentration limits are maxima, except for those Dissolved Oxygen which are minima.

It is unlikely that either the direct or indirect impacts of VRSP will have any significant impact on water quality. That is, it is unlikely VRSP will result in water quality conditions, even locally, any worse than the currently prevailing situation.
Noise Situation

There is no regular environmental noise monitoring in most of the project area of the VRSP. However noise levels are sure to be intense, as they are throughout Vietnam, largely attributable to vehicular traffic. Noise levels vary according to urban and rural locations, and they are particularly high in congested areas during in a large measure too frequent and excessive use of horns, as a mean of announcing one’s presence and intentions.

The following are the results of environmental noise monitoring in some urban areas along the three demonstration corridors:

<table>
<thead>
<tr>
<th>Locations</th>
<th>Noise level (dB)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ha Noi</td>
<td>80</td>
<td>National Highway 5 at Sai Dong</td>
</tr>
<tr>
<td>Vinh</td>
<td>80</td>
<td>Nguyen Trai Road</td>
</tr>
<tr>
<td>Ho Chi Minh</td>
<td>82-85</td>
<td>Intersection Dien Bien Phu – Dinh tien Hoang</td>
</tr>
<tr>
<td>Dong Nai</td>
<td>80</td>
<td>Bien hao II Industrial Zone</td>
</tr>
<tr>
<td>Vung Tau</td>
<td>70-75</td>
<td></td>
</tr>
</tbody>
</table>

Source: Environmental Report on 2002 by National Environment Agency

These results can be compared with the following Vietnamese noise standards, TCVN 5948, 1995:

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Limits (L eq ) in Decibels (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>06:00 to 18:00</td>
</tr>
<tr>
<td>Sensitive Receptors</td>
<td>50</td>
</tr>
<tr>
<td>Residential Areas</td>
<td>60</td>
</tr>
<tr>
<td>Commercial and Industrial Areas</td>
<td>75</td>
</tr>
</tbody>
</table>

Notes: The term dBA is a weighted measurement of sound. It is a logarithmic scale. The term L eq represents a sound level equivalent, i.e., an energy-averaged sound level that includes both steady background sounds and transient short term sounds. The L eq represents the level of sound which, when averaged over the sampling period, is equivalent in energy to the fluctuating sound level over the same period.

There are no environmental noise standards in Vietnam specific for transport corridors. Because noise levels attenuate quickly with distance – generally by about 3-4 dBA with every doubling of distance – the proximity of the noise source to receptors, especially sensitive receptors, is therefore an important consideration. For example, a noise level of 85-90 dBA at a distance of 20 meters from a source would reduce to about 62 dBA at a distance of 700 meters.

The Vietnamese noise standards refer to “sensitive receptors”. These are hospitals, schools, residential areas, etc at which exposures to excessive noise can be detrimental. Sensitive receptors are usually identified in terms of specific land uses and activities, and the concept is inherent in the establishment of these noise standards.
The following are noise levels in various types of locations, measured close to National Highway 10. The noise levels are expressed in terms of $L_{eq}$ (time of day) – defined as an average of sound levels over a period defined as that time of the day, and $L_{90}$ or $L_{10}$ – defined as the percentile distributions of sound levels, i.e., the sound level exceeded for an indicated percentage of the measurement period. $L_{90}$ is the sound level exceeded 90 percent of the measurement period, and is commonly used to represent background sound levels. $L_{10}$ is the sound level exceeded 10 percent of the measurement period, and hence represents the peak sound levels. Both are useful measures.

<table>
<thead>
<tr>
<th>Typical Location</th>
<th>Noise levels (dBA)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$L_{eq}$</td>
<td>Day</td>
<td>Eve</td>
<td>Night</td>
<td>Day</td>
<td>Eve</td>
<td>Night</td>
<td>Day</td>
<td>Eve</td>
<td>Night</td>
</tr>
<tr>
<td>Agricultural area (Bi Cho)</td>
<td>69</td>
<td>61</td>
<td>59</td>
<td>71</td>
<td>64</td>
<td>58</td>
<td>56</td>
<td>50</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Developed area (Thai Binh-Bo Bridge)</td>
<td>76</td>
<td>72</td>
<td>64</td>
<td>77</td>
<td>72</td>
<td>63</td>
<td>66</td>
<td>58</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Typical Rural Area (Thuy Son)</td>
<td>72</td>
<td>65</td>
<td>57</td>
<td>73</td>
<td>65</td>
<td>57</td>
<td>58</td>
<td>51</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Rural-Suburban Area (Bac Ho)</td>
<td>64</td>
<td>52.5</td>
<td>45</td>
<td>62</td>
<td>52</td>
<td>45</td>
<td>44</td>
<td>47</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Isolated Area (Hai Phong Urban)</td>
<td>58</td>
<td>53.8</td>
<td>49</td>
<td>57</td>
<td>49</td>
<td>45</td>
<td>44</td>
<td>39</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Urbanized-Industrial (Ninh Binh)</td>
<td>80</td>
<td>75</td>
<td>71</td>
<td>80</td>
<td>76</td>
<td>74</td>
<td>66</td>
<td>61</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Typical Urban Location (Hai Pong)</td>
<td>73</td>
<td>70</td>
<td>57</td>
<td>75</td>
<td>72</td>
<td>57</td>
<td>62</td>
<td>60</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

Source: NH-10 Consultants, December 1999

The above results confirm how excessive the prevailing environmental noise levels are in Vietnam. It is unlikely that either the direct or indirect impacts of VRSP will have any significant impact on environmental noise. That is, it is unlikely VRSP will result in noise conditions, even locally, any worse than the currently prevailing situation caused by vehicular traffic.

If noise measurements are worth doing at all, the following are the environmental noise quality parameters of most relevance to the VRSP:

- Sound levels at the 10 percentile distribution, $L_{10}$
- Sound levels at the 90 percentile distribution, $L_{90}$
- Equivalent sound levels averaged over the sampling period, $L_{eq}$
Environmental Assessment of Engineering Works

Potential impacts

Of the nine components of Phase 1 of the Vietnam Road Safety Project (VRSP) outlined in section B1 of this report, only component 5: Blackspot Improvement involves engineering work and the scale of land acquisition will be kept to a practical minimum. This section addresses the potential environmental impacts of those engineering works. It needs to be remembered that Component 5 amounts to, in monetary terms, only about 10% of Phase 1 of the VRSP.

Annex 3 of this report has a screening analysis of 15 proposed blackspot improvements initially proposed for implementation in Year 1 of Phase 1 of the VRSP. The analysis suggests that maybe seven of the proposals will involve significant engineering works. These are:

- Improvement 1: National Highway 1, km 267+500: Major Intersection Improvement
- Improvement 4: National Highway 1, km 387 to km 388: Carriageway Widening and Realignment
- Improvement 5: National Highway 1, km 419+500: Alignment Problem
- Improvement 8: National Road 51, km 5+250 to km 5+700: Major Intersection Improvement
- Improvement 9: National Road 51, km 6+700: Major Intersection Improvement
- Improvement 10: National Road 51, km 10+500: Major Intersection Improvement
- Improvement 11: National Road 51, km 65: Major Intersection Improvement.

Of the fifteen proposals originally identified for Year 1 of the VRSP, six were removed from the Year 1 program prior to commencement of public consultation, generally because since their initial identification, the projects concerned had been committed for implementation outside of the Year 1 program or even outside of the VRSP. As a consequence, only one of the seven proposals now included in Year 1 (Improvement 5: National Highway 1, km 419+500: Alignment Problem) and identified as being in the category where it could be considered to be environmentally slightly negative remains in the Year 1 Program. Widening introduced in the final design solution for one of the other remaining Year 1 Improvements (Improvement 7: National Road 1A, Km 456+450 – Km 456+821) also may now be considered to be environmentally slightly negative, whereas in the initial screening it was considered environmentally neutral.

The main potential impacts relate to air quality, water quality and noise. As with the discussion on the prevailing environmental situation, given in section C of this report, the impacts can be compared with Vietnamese standards for those environmental parameters.
The screening analysis in Annex 3 considers short-term potential impacts. That means, they include potentially negative impacts during the construction phase. Where possible existing conditions will improved or mitigated.

An Environmental Management Plan (EMP), taking into consideration the findings of the environmental assessment, has also been prepared. The EMP includes a policy framework and guidelines for environmental assessment and impact mitigation for annual work programs as they are identified. The policy framework outlines studies and actions that may be required to ensure that a work package contains the environmental and social information needed to determine if the works are likely to have significant environmental impact or require land or asset acquisition or resettlement, and that the works meet the Bank’s environmental and social requirements. Road works with minor impacts will use the standard operating procedures outlined in the EMP. It is not expected that any works will have serious environmental impacts. The PMU and provincial and district authorities will be responsible for ensuring implementation of the EMP.

The EMP also addresses the environmental training needs of the Ministry of Transport, provincial departments of transportation staff, NTSC PMU staff responsible for environmental issues, and contractors.

**Mitigation measures**

Where possible existing conditions will improved or mitigated.

The Environmental Management Plan (EMP) addresses mitigation measures by way of an Environmental Mitigation Plan. More information on the EMP is given in section F2 of this report. Although the mitigation measures in the EMP initially apply to the engineering works associated with proposed blackspot improvements in Phase 1 of the VRSP, the measures should equally apply to any significant engineering work associated with the VRSP.

The Environmental Mitigation Plan in the EMP includes mitigation in the following five areas:

- Materials supply (indirect impacts)
- Soils
- Hydrology
- Air Quality
- Noise

The primary mechanism for environmental mitigation is the use of enforceable contract provisions. Where appropriate bid and contract documents will include specific requirements. Responsibility will be achieved via contract enforcement by PMU-1 and the independent monitoring agency. The cost of environmental mitigation requirements are
expected to be largely included as a design standard, and hence are part of the expected project costs.

The EMP also includes an Environmental Monitoring Plan, to ensure compliance with the Environmental Mitigation Plan.
Monitoring

There is provision in Phase 1 of the VRSP for the hire of local experts to screen selected sites and proposed treatments for environmental impact and ensure that mitigation measures are included. There is also provision for hire of local environmental experts to conduct independent monitoring of project resettlement safeguard compliance and ensure compliance with the project resettlement policy framework (RPF). There is also funding for support to NTSC for monitoring implementation of the project environmental management plan (EMP) and for the supply of office equipment and other goods for NTSC Executive Office and PMU, including air and water quality monitoring equipment and noise measuring equipment.

The monitoring should cover the following:

- Checking the performance of contractors against the enforceable contract provisions related to the environmental aspects of the engineering works;
- Carrying out any required ongoing consultation with groups potentially affected by the engineering works;
- Ensuring the findings of those consultations are recorded, incorporated into relevant documents, and taken into account in subsequent implementation;
- Engaging any additional environmental assistance (especially in the area of environmental measurement), for which an appropriate budget needs to be provided; and
- Disclosing the results of that testing to potentially affected groups and other relevant stakeholders.

These matters are discussed in greater detail in the EMP. As with other aspects of the EMP, although the monitoring plan is initially to apply to the engineering works associated with proposed blackspot improvements in Phase 1 of the VRSP, the provisions of the monitoring plan should equally apply to any significant engineering work associated with the VRSP.
Analysis of Alternatives

The World Bank requires an analysis of alternatives to the proposed engineering work. The proposals are based on a careful analysis of data on blackspots, and reconnaissance trips on all three demonstration corridors. This began with some 57 blackspots compiled by the Regional Road Maintenance Units (RRMUs) responsible for each of the corridors, supplemented with a couple more blackspots identified during the reconnaissance trips, especially on National Highway 1 in Nghe An province. From that a list of 15 blackspot improvements was developed.

There is always the alternative of “without project”. However, the screening analyses given in this report (for all components) indicate that the VRSP is likely to have minimal adverse environmental impacts. This suggests that from an environmental perspective there is little difference between the carrying out of the engineering work and the “without project” alternative. Some of the proposed engineering works would have short-term environmental benefits, and of course the primary reason for doing the project is the road safety benefits that would accrue.

The timing of the proposed engineering is also a factor. It is proposed that in Year 1 the engineering work associated with blackspot treatment will focus be on low cost measures, which are expected to have negligible social and environmental impacts. More complex improvements such as major intersection improvements, which typically require more in-depth analysis of the engineering solutions, are to be programmed for subsequent years of Phase 1.
Integrating environmental aspects into project decision-making

A primary purpose of the Environmental Management Plan (EMP) is to integrate environmental considerations into all aspects of the project design and implementation. It will eventually be a responsibility of Project Management Unit-1 of the Ministry of Transport to ensure that is done, because any environmental transgression is likely to come to the attention of local environmental agencies (DoSTEs, or their equivalent), and/or to the attention of the National Environmental Agency.

The environmental requirements of the Government of Vietnam are based on the application of preventive measures, including mitigating and managing any potential adverse environmental impact through good project design. The World Bank also favors preventive measures over mitigatory or compensatory measures, whenever feasible.

The framework developed by this documentation (that is, the environmental assessment and the EMP) should help facilitate integration between the environmental aspects and project decision-making.
Environmental Assessment of Other Components

Whereas section D of this report covered the environmental assessment of engineering works (i.e., those associated with component 5: Blackspot Improvement), this section provides an environmental assessment of the other eight components of Phase 1 of the Vietnam Road Safety Project (VRSP). These eight components amount to, in monetary terms, about 90% of Phase 1 of the VRSP.

Component 1: Strengthen the National Traffic Safety Committee and Prepare a National Roll-out Program

The activities of this component will not have environmental impacts.

Environmental Assessment: neutral

Component 2: “Safe Highway” Demonstration Corridors

The establishment of a monitoring and evaluation framework, and its application on the three demonstration corridors, are activities that will have no environmental impacts.

Environmental Assessment: neutral

Component 3: National Traffic Accident Database and Analysis System

Similarly, the establishment of a national accident database and analysis system will have no environmental impacts.

Environmental Assessment: neutral

Component 4: Road Safety Audit

The carrying out of road safety audits and the training envisaged in this component may heighten general community awareness of environmental issues.

Environmental Assessment: slightly positive

Component 6: Driver Training, Testing and Licensing; Vehicle Testing

The driver training, etc, and in particular the vehicle testing, may have positive environmental benefits in terms of reduced emissions from individual vehicles.

Environmental Assessment: slightly positive
Component 7: Traffic Safety Enforcement and Road User Education and Awareness
Better enforcement of traffic road safety, and improved road user education and awareness, may result in greater compliance with environmental requirements.

*Environmental Assessment: slightly positive*

Component 8: School Road Safety Education
The school road safety education in this component may heighten general community awareness of environmental issues, and help achieve a “mainstreaming” of concern about environmental issues, especially with the younger generation.

*Environmental Assessment: slightly positive*

Component 9: Emergency Medical Services
As a consequence of improved emergency medical services there should be improved data on the environmental health impacts of traffic. This can be considered a positive environmental aspect. Balancing that is a likely increase in the quantity of medical waste to deal with.

*Environmental Assessment: neutral*
F. POLICY FRAMEWORK FOR ENVIRONMENTAL CONSIDERATION OF FUTURE WORKS

F.1 World Bank Environmental Assessment Categories

At the time of the preparation of this environmental assessment (EA) the Environmental Assessment Category for the Vietnam Road Safety Project (VRSP) is given as “TBD” (to be determined). Hence this is a topic for future environmental consideration. The following is a description of the four World Bank environmental assessment categories, and a discussion on what may be considered as the appropriate category for the VRSP.

The World Bank classifies a proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project, and the nature and potential environmental impacts.

- **Category A Projects**: If it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project’s potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the “without project” situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance.

- **Category B Projects**: If its potential adverse environmental impacts on human populations or environmentally important areas are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects.

- **Category C Projects**: If it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.

- **Category FI Projects**: If it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

World Bank Procedures require at the earliest stage of the project cycle the Task Team for the project, with the concurrence of the Regional Environment Sector Unit (and, as necessary, with the support of the Environment Department), to assign the proposed project to one of the four categories. Dual categories (e.g., A/C) are not used. The Task Team is to record the category for the project in the initial Project Information Document.
Although a Concept Stage PID for the VRSP was issued on 17 December 2003, both the Environment Category and the Safeguard Classification remain to be determined.

There have been indications the World Bank will classify VRSP as an Environmental Assessment Category B project. The screening analyses given in this report (for all components) indicate that the VRSP is likely to have minimal environmental impacts. This suggests that Category C may be more appropriate.
Local Government Environmental Assessment Category.

- **Category I Projects**: If it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. The full EA for a Category I project is required examines the project's potential negative and positive environmental impacts, and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. The EA will be evaluated and cleared by MONRE.

- **Category II Projects**: Potential environmental impacts on human populations or environmentally but less adverse than those of Category I projects. These impacts are site-specific; mitigatory measures can be designed more readily than for Category I projects. These kind of project need to prepare Registration for Environmental Quality Compliance. Local provincial DONRE will evaluate and clear on environmental issues of these projects.

Following local EA regulations, the project activities is within scope of category II.
F.3 Potential Environmental Issues

- Proposed blackspot treatment works along the three road corridors may include small civil works such as installation of guard rails, signage, and rumble strips; construction of traffic islands and segregated traffic lanes; and minor road widening and improvements to accommodate pedestrian, the environmental impacts associated with these minor civil works are expected insignificant.

- Prior to selection of blackspots for treatment, it will be necessary to undertake an initial screening on likely environmental problems, including the review of past experience with previous environmental protection problems, Particular attention will be paid in the screening to encroachment on land use, potential causes of siltation, interference with water quality and drainage patterns, noise and dust pollution and general nuisance.

- Should the screening indicate that potentially significant environmental impacts would be created, the proposed mitigation measures would need to prepare to address or lessen the potential effects identified, Environmental management and impact mitigation requirements are set out in the Contract Specifications to ensure that contractors adhere to mitigation measures during project implementation.

- In order to minimize environmental problems and reduce the potential for land acquisition and resettlement problems, it will be necessary to ensure that work undertaken be done on the existing road platform and within the existing right of way.

Sample of Screening Table

<table>
<thead>
<tr>
<th>Environmental Criteria</th>
<th>Project impact</th>
<th>Description of impact</th>
<th>Mitigation measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Air quality</td>
<td></td>
<td></td>
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<tr>
<td>Cultural heritage</td>
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<td></td>
</tr>
<tr>
<td>Disruption due to construction</td>
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<td></td>
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</tr>
<tr>
<td>Ecology and nature conservation</td>
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<tr>
<td>Landscape effects</td>
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<tr>
<td>Land use</td>
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<td></td>
<td></td>
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<tr>
<td>Traffic noise and vibration</td>
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<tr>
<td>Pedestrians and cyclists effect</td>
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<td></td>
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<tr>
<td>Topic</td>
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<td>----------------------------------</td>
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<td></td>
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<tr>
<td>Community and vehicle traveller effects</td>
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</tr>
<tr>
<td>Water quality and drainage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and soils</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
F.4 **Environmental Management Plan for Engineering Works**

To satisfy both the World Bank and Vietnamese environmental requirements (as described in, respectively, sections A4 and A5 of this report) an Environmental Management Plan (EMP) for the Vietnam Road Safety Project (VRSP) has been prepared as a separate document. The EMP addresses only the engineering works associated with VRSP. It provides a framework of appropriate actions to prevent or mitigate potential environmental impacts and a monitoring plan to ensure compliance with the EMP.

The Table of Contents of the EMP is as follows:

- Executive Summary
  - A. Background
  - B. Screening Analyses
  - C. Environmental Mitigation Plan
  - D. Environmental Monitoring Plan
  - E. Capacity Development and Training
  - F. Cost Estimates
  - G. Integration of the EMP within Project

**Annex:** Blackspot Improvements involving engineering works

The initial application of the EMP is for the engineering works associated with proposed blackspot improvements in Phase 1 of the VRSP. The screening analysis of blackspot improvements given in Annex 3 of this report suggests that there may be six of the proposals that are applicable. These are:

- Improvement 1: National Highway 1, km 267+500: Major Intersection Improvement
- Improvement 4: National Highway 1, km 387 to km 388: Carriageway Widening and Realignment
- Improvement 5: National Highway 1, km 419+500: Alignment Problem
- Improvement 8: National Road 51, km 5+250 to km 5+700: Major Intersection Improvement
- Improvement 9: National Road 51, km 6+700: Major Intersection Improvement
- Improvement 10: National Road 51, km 10+500: Major Intersection Improvement
- Improvement 11: National Road 51, km 65: Major Intersection Improvement.

The EMP should not be limited to just this initial application, and it should be applicable to any significant engineering work associated with the VRSP.
Of the fifteen proposals originally identified for Year 1 of the VRSP, six were removed from the Year 1 program prior to commencement of public consultation, generally because since their initial identification, the projects concerned had been committed for implementation outside of the Year 1 program or even outside of the VRSP. As a consequence, only one of the seven proposals now included in Year 1 (Improvement 5: National Highway 1, km 419+500: Alignment Problem) and identified as being in the category where it could be considered to be environmentally slightly negative remains in the Year 1 Program. Widening introduced in the final design solution for one of the other remaining Year 1 Improvements (Improvement 7: National Road 1A, Km 456+450 – Km 456+821) also may now be considered to be environmentally slightly negative, whereas in the initial screening it was considered environmentally neutral.
F.5 Environmental Mitigation.

It is expected that the potential environmental impact created throughout treatment of the remaining blackspot in future year program would be similar in term of scope and nature with those of the 1st year program. Therefore it is expected that the mitigation plan would be used as similar to the Environmental Mitigation Plan attached to this study.
F.6 Consultation and Disclosure

If the Vietnam Road Safety Project (VRSP) is classified as Environmental Assessment Category B (as discussed in section F1 of this report), the World Bank requires the borrower to consult project-affected groups and local nongovernmental organizations (NGOs) about the project’s environmental aspects, and to take those views into account. The World Bank also requires, for meaningful consultations, relevant information to be provided in a timely manner prior to consultation, and in a form and language that are understandable and accessible to the groups being consulted.

Government of Vietnam requirements on consultation and disclosure should also be followed. Although Ministerial Circular No. 490/1999/TT-KHCNMT, on guidance for the preparation and appraisal of environmental assessments for investment projects, is silent on the matter, application of Government Decree No. 22/CP supports consultation and disclosure for investment projects. Decree 22/CP sets out the responsibilities, authorities and organization of the (then) Ministry of Science, Technology and Environment (MoSTE).

Because the time for consultation is short (only one month), the following is proposed for consultation and disclosure of the VRSP at this stage of the project cycle:

- A Vietnamese language translation of this Environmental Assessment and the Environmental Management Plan (for engineering works) is to be prepared.

- This is to be made available to potentially affected groups in the three demonstration corridors. (Note: this requirement is limited to those groups potentially directly affected by the blackspot improvements.)

- In consultation with relevant provincial authorities and any local NGOs, appropriate public outreach and consultation is to be undertaken at any of the areas of blackspot improvements which, based on considerations of the nature of the engineering work and the circumstances of the adjoining community, are deemed to require such consultation. (Note: it is expected that this requirement may apply to up to six of the blackspot improvements described in Annex 3 of this report. It should also be noted that those six improvements involve only five communities and four provinces.)

- The findings of those consultations are to be recorded, incorporated into relevant documents, and taken into account in the finalization of the project preparation, and in the implementation.

- If, as a result of the consultation process, it becomes clear that more disclosure (such as the provision of engineering drawings) is required, then these should be provided as required to potentially affected groups.

It needs to be emphasized that the consultation and disclosure outlined above presupposes that the VRSP is classified by the World Bank as an Environmental Assessment Category B project, or that the National Environmental Agency deems that the project requires consultation and disclosure to satisfy Vietnamese environmental requirements.
A considerable amount of stakeholder consultation took place during the preparation of the VRSP. This included:

- The Initial Workshop held on 28 November 2003,
- 14 meetings held during the reconnaissance trips on the three demonstration corridors from 24 to 26 November 2003 and 1 to 4 December 2003,
- Various other consultation between 7 and 14 January 2004, and
- A formal public consultation program undertaken between 22 and 28 March 2004.

The latter involved separate local teams, led by TDSI, conducting a series of Public Consultation Meetings, and Focus Group Meetings as well as the processing of Key Informant Questionnaires. (Refer separate Report On Public Consultation Meetings – November 2004)
ANNEXURES
Annexure 1: Terms of Reference of Environmental Impact Specialist

The Consultant, through Kevin Rolfe as the Designated Consultant, will have the role of Environmental Impact Specialist, investigating and producing the Environmental Impact components of the Preparation for the Vietnam Road Safety Project, particularly with respect to producing environmental impact and mitigation documentation in World Bank-compliant form for three demonstration “Safe Highway” corridors. His role will include guidance to the local Environmental “specialist”, this being achieved in a “working as peers” mode. While the appearance will be a joint production effort it is expected that the Consultant will need to lead the counterpart.

Elements to be undertaken by the Consultant, subject to discussion and agreement with Opus’ Team Leader include:

- Desk top studies including:
  - Review of environmental screening models developed for the Road Network Program and appraisal of relevance and potential application to screening “Safe Highway” demonstration corridors
  - Review of environmental factors and development of baseline overview for the “Safe Highway” demonstration corridor.

- Corridor reconnaissance - Reconnaissance of “Safe Highway” corridors with selected stakeholder representatives to gauge / reinforce / complement understanding of environmental issues.

- Focus group reviews – identification and consideration of issues affecting each “Safe Highway” corridor. This task to be integral with corridor reconnaissance.

- Initial Workshops – central role in workshops for each demonstration corridor involving stakeholder representatives. Purpose is to consolidate understanding and buy-in as to the issues, their relative importance and the impact of the likely range of improvement options.

- Impact identification – Preparation of environmental impact identification documentation, which outlines the current baseline situation, and identifies impacts of the various improvement options.

- Follow-up Workshops – central role in follow-up workshops for each “Safe Highway” corridor. Purpose is to consolidate agreement on the various factors and their relative importance, the environmental impacts of improvement options and the appropriateness of mitigation measures proposed.

- Impact Reports – Collation of material presented to and discussed at follow-up workshops (Output 2(a)) Environmental impact assessment and mitigation reports.

- Interaction with Opus’ Social Impact specialist providing the latter with some guidance on the methodologies and documentation requirements of the World Bank.
Preparation – Prior to commencing fieldwork the Consultant will familiarize himself with the current World Bank Environmental Impact procedures and reporting formats to ensure that the latest requirements are being accommodated.
Annexure 2: The Applicability of the World Bank Safeguard Policies

The following discusses the 10 World Bank Safeguard Policies in turn, and analyses whether they are triggered by the Vietnam Road Safety Project:

**Environmental Assessment (OP 4.01)**
The requirements of the World Bank safeguard policy on environmental assessment apply to the VRSP. This environmental assessment and the accompanying Environmental Management Plan are prepared in response to that policy.

**Natural Habitats (OP 4.04)**
None of the demonstration roads of the VRSP involve any protected natural habits. Therefore the safeguard policy concerning natural habitats does not apply.

**Pest Management (OP 4.09)**
No pest management activities are associated with the VRSP. Therefore the safeguard policy concerning pest management does not apply.

**Involuntary Resettlements (OP 4.12)**
A Social Assessment (a separate document) is being prepared, to examine potential social impacts of project activities. It will also examine whether the safeguard policy on involuntary resettlement applies. Depending on the design and scale of engineering work associated with Blackspot improvements, minor land acquisition and settlement may take place, and hence this may trigger the safeguard policy on involuntary resettlements.

**Indigenous Peoples (OD 4.20)**
The Social Assessment is also examining whether the safeguard policy on indigenous peoples apply. The absence of “vulnerable ethnic communities” on the three demonstration corridors indicates that the safeguard policy on indigenous peoples is not likely to be triggered, but the Social Assessment will examine that question.

**Forests (OP 4.36)**
Neither commercial logging nor forest management is involved in the VRSP. Therefore the safeguard policy concerning forests does not apply.

**Safety of Dams (OP 4.37)**
The activities of the VRSP will not involve the construction or repair of dams. Therefore the safeguard policy concerning safety of dams does not apply.

**Cultural Property (OPN 11.03)**
None of the demonstration roads of the VRSP involve any known heritage sites. Therefore the safeguard policy concerning cultural property does not apply.

**Projects in Disputed Areas (OP 7.60)**
The VRSP will not involve activities in disputed areas. Therefore the safeguard policy concerning projects in disputed areas does not apply.

**Projects on International Waterways (OP 7.50)**
The activities of the VRSP will not involve international waterways. Therefore the safeguard policy concerning projects on international waterways does not apply.

The results of these analyses are summarized in the table on the next page:

**WORLD BANK SAFEGUARD POLICIES AND THE VIETNAM ROAD SAFETY PROJECT**

<table>
<thead>
<tr>
<th>World Bank Safeguard Policy</th>
<th>Assessment of whether triggered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Assessment (OP 4.01)</td>
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</tr>
<tr>
<td>Natural Habitats (OP 4.04)</td>
<td>No</td>
</tr>
<tr>
<td>Pest Management (OP 4.09)</td>
<td>No</td>
</tr>
<tr>
<td>Involuntary Resettlements (OP 4.12)</td>
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</tr>
<tr>
<td>Indigenous Peoples (OD 4.20)</td>
<td>Unlikely²</td>
</tr>
<tr>
<td>Forests (OP 4.36)</td>
<td>No</td>
</tr>
<tr>
<td>Safety of Dams (OP 4.37)</td>
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</tr>
<tr>
<td>Cultural Property (OPN 11.03)</td>
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</tr>
<tr>
<td>Projects in Disputed Areas (OP 7.60)</td>
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</tr>
<tr>
<td>Projects on International Waterways (OP 7.50)</td>
<td>No</td>
</tr>
</tbody>
</table>

**Footnotes:**

¹ Depending on the design and scale of engineering work associated with Blackspot improvements, minor land acquisition and settlement may take place. Hence this may require application of the Safeguard Policy on Involuntary Resettlements.

² The absence of “vulnerable ethnic communities” on the three demonstration corridors indicates that the Safeguard Policy on Indigenous Peoples does not apply (but the Social Assessment will examine that question).
Annexure 3: Screening Analysis of Blackspot Improvement

After a careful analysis of data on blackspots, and reconnaissance trips on all three demonstration corridors, a list of 15 blackspot improvements was developed. This began with some 57 blackspots compiled by the Regional Road Maintenance Units (RRMUs) responsible for each of the corridors. That list was supplemented with a couple of additional blackspots identified during the reconnaissance trips, especially on National Highway 1 in Nghe An province.

Of the fifteen improvement proposals originally identified for Year 1 of the VRSP, six were removed from the Year 1 program prior to commencement of public consultation, generally because since their initial identification, the projects concerned had been committed for implementation outside of the Year 1 program or even outside of the VRSP. As a consequence, only one of the seven proposals now included in Year 1 (Improvement 5: National Highway 1, km 419+500: Alignment Problem) and identified as being in the category where it could be considered to be environmentally slightly negative remains in the Year 1 Program. Widening introduced in the final design solution for one of the other remaining Year 1 Improvements (Improvement 7: National Road 1A, Km 456+450 – Km 456+821) also may now be considered to be environmentally slightly negative, whereas in the initial screening it was considered environmentally neutral.

For completeness, all 15 screened blackspots are addressed below.

**Improvement 1: National Highway 1, km 267+500: Major Intersection Improvement [Not proceeding under Year 1 of VRSP Phase 1]**

This Y shaped intersection, which joins the old highway to the new southern approach to Vinh Binh, is the most significant blackspot in all of the three corridors with 83 accidents resulting in 45 deaths and 81 persons injured between 2000 and 2002. The Y shape allows vehicles on all approaches to enter the intersection at speed and use the wide open pavement area to attempting to weave across the approaching traffic flow.

When visited, the intersection was being modified by replacing the existing roundabout with a smaller one some 20m further south. In our professional opinion these improvements will have only limited success and it is expected that this intersection will require a major upgrade. The proposal is to realign the old road and to form a T-junction with the old road intersection the highway perpendicularly. However, in order to monitor this situation these works should be scheduled in year 2 or 3.

**Environmental Assessment (short-term impacts): slightly negative**
Improvement 2: National Highway 1, km 340+000: Curve Delineation and Protection

A short horizontal curve separates two relatively long straights. The raised formation provides little backdrop to the curve and a school access is located on the apex. There have been 4 accidents resulting in 2 deaths and 4 persons injured since 2000.

The minimum treatment for this site involves installing chevron boards to highlight the curve and guide drivers around the curve, installing guardrail on the outside of the curve to retain errant vehicles, and erecting/replacing school warning signs. Consideration will also be given to realigning this curve to improve sight distance and access to the school.

Environmental Assessment (short-term impacts): neutral

Improvement 3A: National Highway 1, km 370+900: Intersection Improvements and Pavement Widening

A small market village is located on a relatively high-speed section of straight flat highway. The unsealed shoulders encourage people to walk on the carriageway. In the center of the village there is an almost indistinguishable intersection with a long straight access road that carries heavy vehicles. Since 2000 there have been 9 accidents involving 10 deaths and 14 persons injured.

The proposed solution involves widening of shoulders (non structural) through the village to encourage local traffic not to travel on the main carriageway, paving the access roads for around 50m either side of the intersection, replacing and relocating the existing STOP signs to be more visible to approaching drivers, and provision of painted Limit Lines to indicate where approaching vehicles should stop. Rumble strips or low speed humps will also be installed on the access road to assist in slowing vehicles as it is expected that, following the paving, access road speeds may rise. Depending on the results of the site survey, consideration will be given to adding kerb blocks and a small splitter island on the access road to highlight the location of the intersection and protect the sight lines.

Environmental Assessment (short-term impacts): neutral

Improvement 3B: National Highway 1, km 371+500: Gateway

It is also proposed that a gateway style treatment be applied at the southern end of the village to highlight the changing nature of the road environment and the need for additional care. Such features are not commonly used in Viet Nam and their effectiveness needs to be tested. It is proposed that this village be one test site. In order to evaluate this measure, it is proposed that the gateway be constructed in Year 3 or Year 4 to give the opportunity to collect the speed profile data that will be used to assess the effectiveness of the previous treatments.
Environmental Assessment (short-term impacts): neutral

Improvement 4: National Highway 1, km 387+390: Carriageway Widening and Realignment [Not proceeding under Year 1 of VRSP Phase 1]

Traveling south, the highway passes through a series of curves before a short downhill grade of 5-6%, further curves and then enters a village. For local traffic traveling north out of the village, the uphill grade impacts on the performance of low powered heavily laden vehicles, such as Cong Nong, which slow to almost walking speed. Faster traffic overtakes these slow moving vehicles but there is insufficient sight distance to do so safely. Since 2000 there have been 11 accidents resulting in 15 deaths and 14 persons injured.

The proposed solution involves improving the readability of the approach alignment with reflectorized road markings and delineation using guide posts and cats-eyes. Chevron boards will be installed for southbound traffic and rumble strips will be installed on the approaches. The shoulder for northbound traffic will be widened to allow the slow moving vehicles to travel outside the main traffic lanes as much as possible.

A further option of localized realignment to ease the curves and improve the sight distances will also be considered depending on the results of the site survey, which should extend from the southbound approach straight through the reverse curves to the village.

Environmental Assessment (short-term impacts): slightly negative

Improvement 5: National Highway 1, km 419+500: Alignment Problem

Although this location was not on the list of blackspots supplied, a small temple had been erected at the site to acknowledge those who have been killed at this location. Local advice was that 14 deaths had occurred since 2000. The site is located on a series of curves with light industrial development, a truck park to one side and fields to the other. The key issues appear to be encroachment of the trucks and associated activities onto the carriageway, which reduces sight distance. This forces passing vehicles out, which squeezes traffic in the opposing direction and those using the narrow shoulders. The traffic speed and alignment compound these problems.

Although the accident claims still require investigation, the site, which involves a series of shallow curves, is likely to be a suitable candidate for widening of the carriageway and additional curve warning signs, chevron boards and improved markings and delineation.

Environmental Assessment (short-term impacts): slightly negative
Improvement 6: National Highway 1, km 452 to km 456: Improved Delineation

Traveling north out of Vinh, the highway runs parallel to the railway on a raised formation with narrow (approximately 1.5m) shoulders that provide little protection for non-motorized users. Although not identified as a blackspot by RRMU 4, it is understood that the accident rate on this section is high. Given the high cost associated with widening the formation, it is proposed that this section be used to test the effectiveness of high level markings and delineation. This system will include reflectorized centerline, audio-tactile (vibraline) edgelines, reflectorized raised pavement markers on the centerline and edge lines and reflectorized plastic guide posts beyond the edge of the pavement.

**Environmental Assessment (short-term impacts): neutral**

Improvement 7: National Highway 1, km 456+300 to km 456+900: Curve Delineation

Having been traveling on a relatively long flat straight section of rural road, vehicles traveling southbound to Vinh enter a series of reverse curves with a railway crossing located beyond the second curve. Traffic speeds are higher than desirable and forward sight distance through the curves to the railway crossing and any associated traffic queues is often limited by the opposing traffic stream. In order to cross the railway on the level, the super elevation on the second curve is minimal, which results in loss of control accidents. There have been 9 accidents involving 13 deaths and 14 persons injured at the site since 2000.

The proposed treatment involves installing chevron boards and guardrail on the curves approaching the railway crossing as well as improved delineation and markings through the curves, and a threshold treatment involving rumble strips and the installation of larger warming signs at the edge of the development.

**Environmental Assessment (short-term impacts): neutral**

Improvement 8: National Road 51, km 5+250 to km 5+700: Major Intersection Improvement [Not proceeding under Year 1 of VRSP Phase 1]

Improvement 9: National Road 51, km 6+700: Major Intersection Improvement, [Not proceeding under Year 1 of VRSP Phase 1]

Improvement 10: National Road 51, km 10+500: Major Intersection Improvement [Not proceeding under Year 1 of VRSP Phase 1]

Since 2000 there have been 22 accidents resulting in 8 deaths and 10 persons injured between km 5+250 and km 5+700, and although the team have not yet obtained accident data for sites 6+700 and 10+500, the sites are such that a coordinated approach should be adopted (although probably undertaken in successive years).
In each case a non-priority road, which services schools, industrial or other high activity areas joins the main highway at an intersection surrounded by market activity. There are high volumes of traffic on the four lane median divided main road and significant turning volumes as well as random cross traffic. The narrow median provides little protection for turning vehicles, which must wait in the center of the intersection.

The solution for these sites is to widen the intersection to form dedicated left turn bays and install traffic signals. Traffic signals are preferred over a roundabout due to the restricted corridor width at the site and its proximity to other intersections at which there are already traffic signals.

**Environmental Assessment (short-term impacts): slightly negative**

**Improvement 11: National Road 51 km 65: Major Intersection Improvement [Not proceeding under Year 1 of VRSP Phase 1]**

This site is the intersection of NR 51 and NR55 as well as servicing the Baria Commercial Center. The relatively new intersection is characterized by wide areas of pavement that allow vehicles to cross at random. As a result, drivers must be searching all possible approach paths to detect conflicting vehicles. With only 5 accidents resulting in 5 persons being injured in the past two years this intersection is not one of the most serious blackspots on the route, although traffic volumes are still relatively low. There is relatively little adjacent activity and improvements made now could be undertaken with minimal disruption. The intersection is typical of many along the route and would be a particularly good demonstration site. The proposed solution is a larger diameter roundabout.

**Environmental Assessment (short-term impacts): slightly negative**

**Improvement 12: National Highway 1, km 1992 to km 1993: Bridge Sight Distance Problem [Not proceeding under Year 1 of VRSP Phase 1]**

**Improvement 13: National Highway 1, km 1997+700 to km 1998+100: Bridge Sight Distance Problem**

**Improvement 14: National Highway 1, km 2000+400 to km 2000+700: Bridge Sight Distance Problem**

**Improvement 15: National Highway 1, km 2010+400 to km 2010+600: Bridge Sight Distance Problem**

Each of these sites involves essentially the same problem - a narrow bridge with insufficient carriageway to accommodate non-motorized vehicles and slow motorized vehicles. In some cases there is a footpath on the bridge but this is usually narrow and requires a step up for access. As a consequence, the footpath cannot be used by those pushing heavily loaded bicycles.
The bridges are often steeply graded, which increases the speed differential between different types of vehicles and at times means cyclists must walk in a limited space. The vertical profile of the hump-backed bridges severely limits the available sight distance. In each case the downstream alignment contains some unexpected feature such as a market or horizontal curve that is hidden from view by the bridge. The accidents at these sites since 1997 are shown in the table below.

<table>
<thead>
<tr>
<th>Location</th>
<th>Accidents</th>
<th>Deaths</th>
<th>Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992 +000 to 1993 + 000</td>
<td>48</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>1997 + 700 to 1998 + 100</td>
<td>16</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>2000 + 400 to 2000 + 700</td>
<td>16</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2024 + 800 to 2025 + 800</td>
<td>23</td>
<td>17</td>
<td>8</td>
</tr>
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</table>

The ultimate solution would be to raise the approach formations to increase the forward sight distance over the bridges and to attach a suitable walking path to the outside of each bridge. Unfortunately this is likely to be prohibitively expensive and the money spent may well be better invested in a larger number of lower cost measures. Furthermore, it is possible that some of these issues may be addressed as part of the Mekong Transportation and Flood Protection Project.

Rather than seeking to improve the alignment to match drivers' speed expectations, the alternative is to seek to modify these expectations. One low cost technique commonly used in Viet Nam, is the installation of rumble strips. However, in most cases there is already a significant difference in level between the approach formation and the deck, which acts as a large speed bump. Despite this, there may also be some additional benefit of installing rumble strips as these are typically used to warn of approaching danger. In addition to adding rumble strips it is proposed to install over sized signs warning of approaching curves and market as appropriate.

\[ \text{Environmental Assessment (short-term impacts): slightly positive} \]

As can be seen, each of these improvements has been subjected to a screening analysis of the potential environmental impacts, and the results of the analyses are given in the table on the following page.

It is important to stress that these are short-term (i.e., almost immediate) potential impacts. That means, where appropriate, they include potentially negative impacts during the construction phase, associated with extensive engineering works. These can often be counterbalanced by such things as immediate reductions in emissions from individual vehicles through better traffic flow, and hence reduced air pollution through less congestion. The fitting of improved warning signs, guard rails, etc can be taken as engineering works with neutral potential environmental impacts.

The overall conclusions of the screening analyses are as follows:
1. None of the fifteen proposed improvements should have considerably negative environmental impacts.

2. Eight of the fifteen proposed improvements may have slightly negative environmental impacts. (Only two of these are included in Year 1 of VRSP Phase 1)

3. Three of the fifteen proposed improvements are assessed to have neutral environmental impacts.

4. Four of the fifteen proposed improvements may have slightly positive environmental impacts.

5. None of the fifteen proposed improvements should have considerably positive environmental impacts. (Three of these are included in Year 1 of VRSP Phase 1)
### SCREENING ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACTS OF BLACKSPOT IMPROVEMENTS
(see footnote for 5-point scale)

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Assessment of Short-Term Environmental Impacts</th>
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</thead>
<tbody>
<tr>
<td>1. Major Intersection Improvement</td>
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</tr>
<tr>
<td>2. Curve Delineation and Protection</td>
<td>Neutral</td>
</tr>
<tr>
<td>3A. Intersection Improvements and Pavement Widening</td>
<td>Neutral</td>
</tr>
<tr>
<td>3B. Gateway Treatments</td>
<td>Neutral</td>
</tr>
<tr>
<td>4. Carriageway Widening and Realignment</td>
<td>Slightly Negative</td>
</tr>
<tr>
<td>5. Alignment Problem</td>
<td>Slightly Negative</td>
</tr>
<tr>
<td>6. Improved Delineation</td>
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<td>7. Curve Delineation</td>
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<tr>
<td>8. Major Intersection Improvement</td>
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<td>9. Major Intersection Improvement</td>
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<td>10. Major Intersection Improvement</td>
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<tr>
<td>11. Major Intersection Improvement</td>
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<tr>
<td>12. Bridge Sight Distance Problem</td>
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<tr>
<td>15. Bridge Sight Distance Problem</td>
<td>Slightly Positive</td>
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**Footnote:**

5-point scale:
- considerably environmentally positive
- slightly environmentally positive
- environmentally neutral
- slightly environmentally negative
- considerably environmentally negative
Annexure 4: Roadway Information Gathered

As the basis for environmental screening, over a period of 7 days (24 – 26 November and 1-4 December) the three demonstration corridors were fully inspected. This involved driving the entire lengths of the corridors and stopping to observe traffic conditions at each of the identified “blackspots”. As well, more general observations were made about the corridors.

A general description of the three demonstration corridors is given below:

Demonstration Corridor 1: National Highway 1 Hanoi to Vinh

The section of National Highway 1 from Hanoi to Vinh (the capital of Nghe An Province) has a total length of 281 km and passes through the following provinces:

- Ha Noi (km 172 – km 189)
- Ha Tay (km 189 – km 215)
- Ha Nam (km 215 – km 251)
- Ninh Binh (km 251 – km 285)
- Thanh Hoa (km 285 – km 383)
- Nghe An (km 383 – km 463)

Much of this section of National Highway 1 runs through plain topography. The Doc Xay road section, which is between Ninh Binh and Thanh Hoa, and the Hoang Hai road section, which is between Thanh Hoa and Nghe An, run through hilly and mountainous topography.

Most of this demonstration corridor is built to class 3 technical standard (plain topographic road with embankment of 12m width, 7m pavement/carriageway width and 2m strengthened shoulder width each side), but there are also some narrow road sections (10 – 11 m wide). The Phap Van – Cau Gie road section, located near the southern area of Hanoi, is a new road section built with 4 lanes and 25 m road width.

Almost 63% of the highway has been upgraded in recent years (1997 to 2000). These works have typically included widening the carriageway to provide additional shoulder width, four laning, and bypasses. A “before and after works” comparison of accidents in the section km 180 to km 280 suggests a 50% reduction in accidents and a 55% reduction in fatalities. However, there still a number of blackspots and the underlying accident rate on some sections remains relatively high.

As mentioned above, the most northern 30 kilometers is a median divided four lane carriageway with side protection, separate paths for non-motorized vehicles, and controlled access. However, with the exception of a few relatively short sections of road near urban areas, the bulk of the highway is not median divided and has limited shoulder width (2.0m) for use by non-motorized vehicles.
Often running parallel to the railway, the road is raised above the surrounding countryside in a relatively narrow corridor. The long straights increase vehicle speeds and give drivers the ability to undertake often risky passing maneuvers, while the lack of backdrop makes identifying and determining the trajectory of approaching vehicles difficult.

The traffic stream is extremely varied ranging from pedestrians and slow moving ox carts, through special agricultural vehicles, bicycles, motorbikes, Cong Nong agricultural trucks, older FIA trucks to modern fast moving cars, small buses and heavy freight vehicles. The wide variation in vehicle speeds results in numerous conflicts between vehicles traveling in the same direction. In many cases the faster vehicles will cross into the opposing traffic stream in order to overtake slower moving vehicles. Marking of the centre, edge and lane lines is at best incomplete, poorly maintained and in generally poor condition.

The raised formation provides relatively little scope for separating vehicle flows, providing protection for turning vehicles near the centerline, or allowing vehicles to stop clear of the carriageway. There is significant ribbon development and encroachment by commercial developments onto the adjacent carriageway.

**Demonstration Corridor 2: National Road 51 Bien Hoa to Vung Tau**

This corridor of 74 km begins at Bien Hoa in Dong Nai province (outside Ho Chi Minh City) and ends at Vung Tau, capital of Ba Ria – Vung Tau Province. It passes through areas of the following provinces:

- Dong Nai (km 0 – km 39)
- Ba Ria – Vung Tau (km 39 – km 74)

The road runs through plain and low hilly topography. In recent years National Road 51 has been widened and upgraded to road class 1 with 4 lanes, embankment width 26 m and pavement width 22 m.

The road passes through a generally prosperous area that is developing rapidly. Numerous new industrial and commercial enterprise parks are being developed adjacent to the highway. Dedicated access roads link the parks to the main highway. The intersections along the highway are more recognizable than those in Demonstration Corridor 1, with advance rumble strips and some limited signage. In some cases traffic signals have been installed, as have dedicated turning lanes. However, those intersections carrying a substantial volume of traffic are typically blackspots and those that are not can be expected to develop into blackspots as traffic volumes increase.

A higher proportion of the traffic using this highway are more modern (higher speed) motor vehicles and there are fewer older slow heavy trucks and few special agricultural vehicles. The typical cross section of this relatively new highway is four lanes with a concrete median barrier and guardrail to separate motorized vehicles from the non-motorized vehicles that should use the adjacent 2.0-2.5m shoulder. While this cross section provides improved safety by separating the opposing traffic streams and motorized vehicles from non-motorized vehicles it introduces other problems.
Vehicles must make U turns at the intersections where there is little protection while waiting for a gap in the opposing traffic stream, and the required turn radii results in vehicles crossing both lanes. The intention appears to be that the separate shoulder lane be used by non-motorized traffic traveling in a single direction. However, to work in this way users would need to cross to the appropriate side of the carriageway at the main intersections. The additional distance and exposure to danger is clearly not favored by users and each shoulder is used by two-way traffic.

Motor vehicles are supposed to use small gaps in the guardrail to access the adjacent properties. As well as creating a point hazard, the gaps in the guardrail are small and do not take into account the turn radii of the motor vehicles they are intended to serve. These vehicles often stop or are parked on the main carriageway and block a lane, since there is no shoulder.

Alternatively, the vehicles enter the non-motorized shoulder at a nearby intersection and drive up the lane. The result is a mixture of motorized and non-motorized two-way traffic trying to use a 2.0 to 2.5m space. When the non-motorized shoulder becomes blocked, non-motorized users return to the main carriageway. This creates further safety problems as only two 3.5m wide lanes occupy the space between the central median and the side guardrail and there is only sufficient width to safety accommodate two vehicles. This has prompted representatives of some agencies to call for the removal of the side guardrail citing safety problems of lane excursions and vehicles being “squeezed” when trying to overtake slow moving vehicles in the confined space.

**Demonstration Corridor 3: National Highway 1 Ho Chi Minh City to Can Tho**

The total length of this demonstration corridor is 153 km, passing through the following provinces:

- Ho Chi Minh City (km 1915 – km 1925)
- Long An (km 1925 – km 1955)
- Tien Giang (km 1955 – km 2027)
- Vinh Long (km 2027 – km 2066)
- Can Tho (km 2066 – km 2068)

The entire road corridor runs through the plain topography of the Mekong River Delta. The old road was built to class 3 technical standard (plain topography with 11-12 m embankment width, 7 m pavement/carriageway width and 2 m strengthened should width each side). Since 2000 the section from Ho Chi Minh City to My Tho, capital of Tien Giang Province, has been upgraded to a class 1 road. It is proposed the section from My Tho to Can Tho will similarly be upgraded.

As with Demonstration Corridor 2 the traffic in this corridor involves a greater proportion of more modern motor vehicles and less agricultural traffic than in the northern demonstration corridor (number 1).
As mentioned, in recent years considerable upgrading has occurred over the northern portion of the corridor between Ho Chi Minh City and My Tho. Over this section the carriageway may be described as two lane with a concrete median separating the opposing traffic stream. Beyond the main traffic lane a 3.5 to 4.0m shoulder carries motorbikes and non-motorized vehicles. The additional width appears to allow these vehicles to overtake each other without having to use the main traffic lane. The capacity of the single main traffic lane is limited and on a number of occasions motorized vehicles use this shoulder area to undertake. As traffic volumes increase this dangerous behavior is likely to become more common unless enforcement is increased.

The route passes through areas of very dense commercial and industrial activity and the intersections along this section of the route are typically traffic signal controlled. The consistent treatment assists with developing driver compliance and, although the installation and operation of the signals may be improved, these intersections are typically not blackspots. Another positive feature in this section of highway is the use of cut-outs in the median barrier which allow pedestrians to cross without needing to climb over the barrier but stops motorbikes from making risky and illegal U turns.

South of My Tho the highway reverts to two lanes with 2.0 m shoulders and no dividing barrier. The surrounding land use is typically agricultural traversed by the many rivers of the Mekong delta and there are numerous bridges along the highway. These bridges are typically on poor horizontal and extremely poor vertical alignments resulting in restricted sight distance.

The situation is made more dangerous by the market activities that often occur at these locations and which access both local road and river traffic. The bridges are typically steeply graded which pose problems for non-motorized and low powered vehicles and in many cases these users must cross the bridge in the main traffic lanes. A mitigating feature is the disparity in pavement level between the approach and the bridge-deck which acts to an extent as an enormous speed bump. While this deformation reduces approach traffic speeds it causes vehicle to slow rapidly and in some cases cross into the adjacent lanes to find a smoother crossing.
Annexure 5: Various Stakeholder Consultation

1. Initial Workshop
Sofitel Metropole Hotel, 28 November 2003

AGENDA

08:00 Arrive and Tea
08:15 Welcome and Introductions
Doan Thi Phin
NZ Ambassador Malcolm McGoun
08:25 Workshop Purpose, Agenda and Arrangements
Allan Kennaird
08:40 Overview of Road Safety in Vietnam and the National Program on Transport Safety
Tran Quoc Tuyen
08:50 World Bank Transport Safety Strategy Review and the Vietnam Road Safety Project
Allan Kennaird
09:00 The Assignment – Preparation of Phase 1
Allan Kennaird
09:15 Description of Initial Proposals for Each Component and Consultant’s Comment
Allan Kennaird/John Kelly/Fergus Tate
10:00 Tea
10:20 Analysis and Monitoring Framework and Baseline
Fergus Tate
11:00 Overview of Environmental and Social Issues and Mitigation
Justine Bray/Kevin Rolfe
11:30 Lunch
12:30 Discussion on Environmental and Social Issues and Mitigation
Justine Bray/Kevin Rolfe
13:30 Discussion on Blackspots and Safety Audit
Fergus Tate
14:15 Discussion on National Road Accident Database and Analysis System
Allan Kennaird
15:00 Tea
15:20 Discussion on Clinics and Schools
Allan Kennaird
15:40 Discussion on Vehicle Inspection
Allan Kennaird
16:00 Discussion on Driver Training, Testing and Licensing
Allan Kennaird
16:20 Discussion on Road Safety Enforcement and Coordinated Education/Awareness
John Kelly/Dave Cliff
17:00 Discussion on Strengthening NTSC
Allan Kennaird
17:15 Next Steps and Close
Allan Kennaird
List of Participants at Initial Workshop of Vietnam Road Safety Project, 28 November 2003

<table>
<thead>
<tr>
<th>Organization</th>
<th>Name</th>
</tr>
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<tbody>
<tr>
<td>1 Opus</td>
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<td>Fergus Tate</td>
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<td>8 WB</td>
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NB. These are actually the list of invitees. A list of attendees would be different, and quite a lot less, than this.
2. **Reconnaissance Trips**

In addition to traveling the three demonstration corridors, a series of visits to transport authorities, traffic safety committees, regional road maintenance units, a vehicle testing center, secondary and high schools, hospitals and a clinic, and a roadside police station were made over the seven days of reconnaissance trips.

Below is a list of the visits and, commencing on the next page, are minutes of the fourteen meetings:

- 24 November 2003, 13.30 - 14.00: Luong Van Tuy High School, Ninh Binh
- 24 November 2003, 14:20 – 14:45: Vehicle Testing Center at Thanh Binh district, Ninh Binh province
- 24 November 2003, 14:50 – 16:30: Cau Yen Clinic, Hoa Lu district, Ninh Binh
- 25 November 2003, 8:15 – 9:15: Thanh Hoa Transport Authority, Thanh Hoa
- 25 November 2003, 11:30 – 13:00: Thanh Hoa General Hospital, Thanh Hoa Province
- 25 November 2003, 16:45 – 17:30: Phu Dien Traffic Police Station No. 5.1, National Highway 1
- 26 November 2003, 8:15 – 8:55: Regional Road Maintenance Unit No. 4, 58 Phan Dang Luu, Vinh City
- 1 December 2003, 14:10 – 17:00: Regional Road Maintenance Unit 7, 296 Nguyen Van Dau Street, District 11, Ho Chi Minh City
- 2 December 2003, 08:10 – 10:00: Ba Ria - Vung Tau Traffic Safety Committee
- 4 December 2003, 08:10 – 10:00: Cho Ray Hospital, Ho Chi Minh City
24 November 2003, 9:50 – 11:30

Ninh Binh Transport Authority, 40 Le Dai Hanh, Ninh Binh

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird - Opus Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang - interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong - TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang - Traffic Police; Mr. Duong Ngoc Lan - VRA

Traffic Safety Department of Ninh Binh province:
Mr. Nguyen Xuan Hue - Director of Ninh Binh Transport Authority; Mr. Nguyen Ngoc Thach - Deputy Director of Ninh Binh Transport Authority; Mr. Dinh Van Ninh - Vice Manager of Traffic Police Dept-Police Authority; Mr. Pham Cam Ky - Chief of Surgery - The Ninh Binh Provincial Hospital; Mr. Nguyen Quang Anh - Chief of Education Dept. - Ninh Binh Education and Training Authority; Mr. Tran Dang Can - Permanent member of Traffic Safety Dept. of Ninh Binh province

Content:

Mr. Nguyen Xuan Hue reported the traffic safety situation of Ninh Binh province. NH1 through Ninh Binh province has the length of 34 km. Over the last 10 months of the year 2003 there has been 129 accidents (down by 47% compared with the same period of last year):
- Fatalities: 113 (down by 27%)
- Injuries: 104 (down 52%)

In particular, on the National Highway 1 over the last 10 months of the year 2003, there has been 75 accidents accounting for 58% of the total traffic accidents, with:
- Fatalities: 64 (57% of the total fatalities)
- Injuries: 76 (74% of the total fatalities)

The data was collected by the Traffic Police, with no specific classification on ages and gender.

Blackspots: There are 8 blackspots in Ninh Binh province. Some insignificant improvement such as setting traffic signals, jumbo strip has been done.

Mr. Dinh Van Ninh- Vice Manager of Traffic Police Dept
Traffic Police: 80 staff. Traffic Police are now implementing Decision No. 13

Driver training, Testing, Licensing:
- Facilities, curriculum have not met requirements. However, compared with another provinces, it is better. The province still needs the investment.
- These centers operate on commercial basis
• Number of vehicle inspection centers: 1

Mr. Pham Cam Ky - Chief of Surgery Dept.
Medical emergency service for traffic accident victims hasn’t been good. Most of the victims are brought by the people around to the nearest clinics. These victims then are given the first-aid service and moved to the district hospital and to the provincial hospital. Traffic accident victims account for approximately 60% of the total patients. There is one regional emergency station at every 5-7km. It is necessary to invest in the rescue system.

Mr. Nguyen Quang Anh - Chief of Education Dept. - Ninh Binh Education and Training Authority
Education of the traffic safety is implemented in the schools.

Mr. Nguyen Dang Can - Permanent member of Traffic Safety Dept
Traffic Safety Dept. has signed with social organizations such as Women Union, Veteran Union, Farmer’s Union... to promote the public campaigns of traffic safety. A priority is to develop "people traffic safety group" in the communities.
24 November 2003, 13.30 - 14.00

Luong Van Tuy High School, Ninh Binh

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird - Opus Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang - interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong - TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang - Traffic Police; Mr. Duong Ngoc Lan - VRA

Luong Van Tuy High School:
Mr. Nguyen Quang Anh - Chief of Education Dept. - Ninh Binh Education and Training Authority; Mrs. Nguyen Thi Mao - Vice Dean of the School; Mr Pham Van Van - Vice Dean of the School

Content:

Mr. Kennaird introduced the project and raised some questions.

Mr. Van:
The Luong Van Tuy gifted school is located in the center of the Ninh Binh town. (There are a lot of primary and secondary schools surrounding this school.)

The school has 1403 students, 39 classes (the average number of students in one class is 40). Traffic safety education is well considered.

There are two types of traffic safety education:
- Traffic safety is a “content” subject (i.e. Traffic safety is a part of the Morality subject.
- There are plenty of outdoors activities such as making presentation, organizing the contests.

Because traffic safety is not a compulsory subject there is no test or examination. The material used in education: Road Law, Decisions of the GOV. The education is done in conjunction with the support from The Traffic Safety Authority of the province. At the moment there is no textbook for Traffic Safety education.

Students go to school by bicycle (not by motorbike). There is no traffic accident resulting in death, just some accidents resulting in injuries such as hand or leg breaking. These victims were brought to the hospital and carefully treated by the family and the school.

The list of high schools along Highway No. 1 is:
- Luong Van Tuy High School
- Hoa Lu A High School
- Hoa Lu B High School
- Nguyen Hue High School
• Dinh Tien Hoang High School

**Comment/recommendation:**

• The publicity material must be widely available diversified
• Means of publicity must be various
• Methods of publicity must be comprehensive
• The teachers in charge must be trained
• The entire society must learn traffic safety
24 November 2003, 14:20 – 14:45

Vehicle Testing Center at Thanh Binh district, Ninh Binh province

Participants:

Opus, TDSI, and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mrs Justine Bray; Mr Le Than; Mss Hoang Giang; Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Vu Manh Thang (Road and railway Police Bureau); Mr Duong Ngoc Lan (VRA)

Testing Center:
Mr Nguyen Huu Tho - Director

Content:

Mr Nguyen Huu Tho:
There are 9 staff. Self-commercial running.

This center is located in the hidden view (under flyover) with small scale that causes difficulty for vehicles going in and out.

Inspect all kind of vehicles. About 4000 vehicles inspected each year.

Equipment:
- a synthetic basin (side slip, brake testing, loading) of Germany.
- Petroleum gas-tester from Germany.
- Diesel gas-tester from Germany.
- Head light tester from Germany.
- Noise tester from America.

Province to build another center with 2 testing assembly lines estimated 7 billion VND.
24 November 2003, 14:50 – 16:30

Cau Yen Clinic, Hoa Lu district, Ninh Binh

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird- OPUS Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang- interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong- TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang- Traffic Police; Mr. Duong Ngoc Lan- VRA

Cau Yen Clinic:
Mrs. Hoang Thi Nhung - the internal doctor (level 1)- Chief of the Clinic

Content:

This clinic is responsible for 8 villages namely Ninh An, Ninh Van, Ninh Thang, Ninh Hai, Ninh Son, Ninh Phong, Ninh Phuc, Ninh Tien.

The traffic accident victims are brought to the clinic to be given first-aid service such as anti-shock, joints for bone, stitch a wound. There are about 800 patients in the clinic every year. The traffic accident victims account for only 5%.

The victims with severe injuries are moved to the hospitals by taxi or motorbikes of the local people. (There is no emergency ambulance.) The provincial hospital is located about 5 km away from the clinics. There is one ambulance car in the Hoa Lu Medical center (10 km from the clinic). The traffic accident victims are young and middle-age people. The gender is mostly is male.

The accidents often happen when the cars crash the motorbikes. This leads to the severe accidents. The accidents between motorbikes and bicycles are less severe and the victims can be treated at the clinic.

Recommendations:

It is necessary to provide vehicles to carry the victims and the equipment. The equipment needed is:
- Oxygen machine
- Medicine, facility for minor operation
- Other medical equipment

Rebuild the clinic. The existing clinic was built 20 years ago so it is so old and unsafe at the present.
25 November 2003, 8:15 – 9:15
Thanh Hoa Transport Authority, Thanh Hoa

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird - Opus Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang - interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong - TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang - Traffic Police; Mr. Duong Ngoc Lan - VRA

Traffic Safety Department of Ninh Binh province:
Mr. Trinh Khac Viem - Deputy Director of Thanh Hoa Transport Authority; Mr. Nguyen Van Muu - Vice Manager of Traffic Police Dept-Police Authority; Mr. Nguyen Huu Loi - Deputy Director - Education and Training Authority; Mr. Truong Ngoc Can – Specialist - Traffic Safety Dept.; Mrs. Tran Mai Huong - Specialist of Traffic Safety Education in the school, Education and Training Authority; Mr. Le Cong Hoa - Vice Manager of Transport Inspection, Provincial Transport Authority; Mr. Le Van Minh - Team Leader, Transport Inspection Station No. 471, The provincial Transport Authority; Mr. Tran Van Tac – Vice Manage of Transport Inspection Dept. No 472; Mr. Nguyen Ngoc Than - Deputy Director of The Provincial Health Authority

Content:
Mr. Kennaird introduced the project:

His requests:
• Enforcement of traffic safety regulation in the province
• Action plan
• How many traffic policemen are there in the province?
• Equipment for Police
• Publicity of traffic safety (what has been done, what has not been done)
• Visit high school
• Visit the emergency department in the provincial hospital
• Driver training and testing, licensing
• Vehicle inspection: how many stations?

Mr. Trinh Khac Viem:

Population of Thanh Hoa province: >3.6 million. Area: 11,000km². National Highway through the province: 98km. Urban road: 517km. Railways: 102km

Accidents over the last 10 months:
210 accidents, down by 22% compared with that of the same period last year
190 fatalities (down by 57%)
97 injuries (down by 39%)
Road Traffic accident accounts for 92% of the total accidents
On national highways: 143 accidents, 84 fatalities.

Education: Province produced material and grants to the people, subscribed “Road Friend” newspaper.
Have signed memoranda with The Front Father Land, Women Union, The Farmer Union, Veteran Union, Youth Union to comply the traffic safety regulation.

Coordinates with the Justice Authority to train staff to publicize the laws

The Thanh Hoa province is interested in the publicity because the awareness is still low.
The province concentrated on investing to improve the Inspection Station (01 station).
There is one driver-training center.

In the Thanh Hoa province there are 71% of total motorcyclists who have licenses (The motor riders who don’t have the licenses mostly live in the remote areas and in countryside.)
Traffic accident data is collected on daily, weekly, monthly and annual basis. The report of traffic accident prepared by the province is submitted to the Traffic Police Administration every month or at request.

There are 70 traffic policemen in the province: 55 road traffic policemen and 15 waterways policemen.

The intervention applied in the province involves:
Enhanced publicity
Legal arrangements
- There have been 52,682 notice fines issued over the last 10 months. The total fine was VND826 million.
- 240 licenses were withdrawn
- 3,793 licenses were punched
- 12,405 vehicles were temporarily kept
- Improved driver training and vehicles inspection activities
- The enforcement was focused on some offenses such as overspeeding, overtaking and overloading
25 November 2003, 9:30 – 10:15

Nghe An Transport Authority, Nghe An province

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird- Opus Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang- interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong- TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang- Traffic Police; Mr. Duong Ngoc Lan- VRA

Traffic Safety Department of Nghe An province:
Mr. Huynh Thanh Dien- Deputy Director of Nghe An Transport Authority; Mr. Ly Nam Dan- Deputy Director of Police Authority; Mr. Vo Minh Duc- Specialist of The Traffic Safety Department; Mr. Le Van Ngo- Director of the Nghe An Education and Training Authority

Content:

The Provincial Traffic Safety Department provided a report about the traffic safety activities over the last 11 months of the year 2003.

Mr. Huynh Thanh Dien:
The traffic safety is the hot issue to the Government in general and to the Nghe An province in particular. The province keeps a tight control over this issue.

Chairman of the Provincial People's Committee is the Director of The Provincial Traffic Safety Department.

Nghe An province issued many documents to ensure the traffic safety activities and organized many campaigns such as traffic safety publicity, traffic safety education in the schools.

The specific decisions are made to monitor the traffic safety in the province, which are supported by local authorities at different levels. Especially, there is coordination between Youth Union, The Fatherland Front Committee, Farmer Union, Veteran Union, etc.). Therefore the traffic safety in the whole province is improved.

Enforcement is enhanced.

There is one vehicle inspection station (in Vinh city) with one assembly line which has been put into operation since 1997. The province is going to set one more assembly line (estimated cost is VND5 billion). The province will give a loan to the station.

Driver training: There are 7 driver training centers in Vinh City. There is a motorcyclist training center in each district. The automobile driver training is not conducted at district level.
Testing: There is one testing center located in Nam Dan district (27 km from Vinh city). The testing center was built based on South Korea technology.

The accidents occurring in the National Highway No. 1 accounts for 60-70% of the total accidents. Reasons:
- Vehicles volume is very high
- Some road sections are narrow (for example the roads through towns, city)
- The railways go along with the National Highway no. 1

Recommendations:
- Widen some narrow road sections
- Build a system of separate roads (for the pedestrians and non-motorized vehicles)
- Build the high-speed highway from Hanoi to Vinh
- Improve the blackspots

Emergency services for traffic accidents:

The province has one state-owned Emergency Center for traffic accident victims but the operation is not effective.

There is also the private Emergency Center with high quality and good service. The medical clinics coordinates with the hospitals along the national highway in treating accident victims.

Publicity:

The province produces the materials about traffic safety and distributes it to the people. Every year the province needs about VND 300-500 million to spend on publicity.

Police:

Helmet wearing offense is fined based on Decision No. 15. The fine is too low (only 20,000VND). Speed limit must be complied with the regulations of the MOT. The province lacks vehicles for Traffic Police. The time to one fine notices is about 20 minutes. The province focuses on overspeeding and overtaking offenses.
25 November 2003, 11:30 – 13:00
Thanh Hoa General Hospital, Thanh Hoa Province

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird- Opus Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang- interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong- TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang- Traffic Police; Mr. Duong Ngoc Lan- VRA

Thanh Hoa General Hospital:
Dr. To Hoai Phuong- Deputy Director of the Hospital; Dr. Tran Luong- Chief of the Planning Department; Dr. Nguyen Van Chung- Chief of Neurology Department; Dr. Nguyen Thanh Van - Vice Chief of the Neurology Department

Content:

Information on the Hospital: There are 779 staff (185 doctors, of which there are 104 postgraduates).

Victims are brought to the hospital by the Police or people in the vicinity of the accident.

The age of the victims: usually 20-30 years old (mostly caused by the motorbike accidents). Gender: Mostly male

The hospital does not have the fatality test/check. This test is conducted at the request of the family and police only.

There are 3 levels of the emergency service system: village, district, provincial. The traffic accident victims firstly are brought to the nearest clinics but then moved to the hospital. Most of the victims are treated in the hospital.

The hospital organizes training courses for the medical staff at different levels on a regular basis.

Some facts:
• Each clinic located every 1-2 km.
• The average time of treatment for each patient is 10 days.
• Over the last 10 months there has been 3,483 patients (average number of patients per month is 300 patients) of which 32 died, 249 suffered brain damage, 469 had the bone broken. There has been 182 cases of the thorax damage (3 fatalities).

In order to rescue the traffic accident victims, the hospital has to:
• Improve equipment
• Improve the skill, ability of the medical staff
- Establish network with lower level medical clinics
- The hospital has 4 ambulance cars, which has not met the requirements.
25 November 2003, 16:45 – 17:30
Phu Dien Traffic Police Station No. 5.1, National Highway 1

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird- Opus Team Leader; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang- interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong- TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang- Traffic Police; Mr. Duong Ngoc Lan- VRA

Phu Dien Traffic Police station No. 5.1.
Mr. Pham Trong Thuy- Chief of Traffic Police Station No. 5.1

Content:

Mr. Kennaird introduced the project and raised a series of questions.

Mr Thuy:
The length of National Highway 1 through this province is 83 km was upgraded since 1998 and now has been degraded. There are 20 blackspots and there has been improvement such as rumble strips, signposts.
This station was founded in 2000. Over the last 11 months of the year 2003 there has been 129 accidents.

There are 18 staff in this station (ranging from 14-18). There are six patrolling groups per day for the whole road section (4 members/group). Each month they cover over 10,000 km. Facilities (clubs, clothes, shoes, etc) are provided annually.

Testing shows that 99% of the vehicles are overloaded (even 4 times). There are strict punishment for overspeeding. After three months of enforcement the violations were reduce by 27%.

Vehicles:
Automobiles:
1 Uwatt (1995)
1 Jolie (1/2000)
1 light truck

Motorbikes:
1 Suzuki (1996- out of order)
1 Yamaha

Equipment:
3 speedguns (2 are out of order)
1 weight scale (out of order for 3-4 years)
2 alcohol testers (inaccurate)
Patrolling: ideally should be 24 hours a day. Recently the schedule is from 04:00 to 24:00.

There are about 80-100 fine notices issued per day, about 2,000-200 per month with total fine revenue of VND 700-800million per month.

Reports are submitted to the Provincial Police Department on the 15th and 30th of each month.

Enforcement focuses on helmet wearing and overspeeding. People are equal under law. Accidents usually occur at the weekend (Friday, Saturday) from 6.30- 23.00.

Traffic Police station No. 5.1 only focuses on violation on National Highway 1 and assists protecting screen of the accidents. Accidents are reported through telephone or directly by local people. When accidents happen, Traffic Police station No. 5.1 is responsible for:
- emergency assistance
- scene investigation

**Recommendations:**

- The station needs at least 25 staff or at least 40 people if the station has to carry out the investigation
- Facilities: Needs two more automobiles, 4 specialized motorbikes
- Equipment: Needs 4 speedguns, the suitable alcohol testers, weight scales, telecommunication equipment.
6 November 2003, 8:15 – 8:55

Regional Road Maintenance Unit No. 4, 58 Phan Dang Luu, Vinh City

Participants:

Opus, TDSI and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mrs Justine Bray; Mr John Kelly; Mr Dave Cliff; Mr Le Than; Mss Hoang Giang
Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Mr Nguyen Thanh Phong; Mr Pham Tuan Anh; Vu Manh Thang; Mr Duong Ngoc Lan

RRMU4:
Mr Dinh Nhu Cuong - Deputy Director; Mr Hoang Nghia Phu - Vice head of transportation management department; Mr Bui Minh Dung - Deputy director of Company 470; Mr Ngo Xuan Tem - Head of Department of Company 470.

Content:

A list of blackspots has been provided by RRMU4.

Mr Dinh Nhu Cuong:
RRMU4 is under direct control of VRA, in charge of repairing and maintaining road.

Their points of view:
• Blackspot is place where there are 3 accidents with fatality/year.
• There are 11 sites to be improved on NR1.
• Railway goes parallel with road.
• There are a lots of level-crossings.
• The steep entering to NR1 is more than 10%
• There has not been funding for improvement
• There has not regular report on accident with 1 death/injury
• VRA will be informed if accident related to more than 2 deaths/case
• RRMU4 has not got map for blackspot.
• Need some rescue vehicles (cranes, rescue cars for towing)
26 November 2003, 10:55 – 11:50

Le Loi Secondary School, Ninh Binh

Participants:

Opus, TDSI and related agencies:
Mr. Allan Kennaird- OPUS Team Leader; Mr. Fergus Tate; Mr. Kevin Rolfe; Mrs. Justine Bray; Mr. Le Than; Ms. Hoang Giang- interpreter; Mr. Tran Thanh Thuy – interpreter; Mr. Nguyen Thanh Phong- TDSI Task Manager; Mr. Le Van Dat; Mrs. Tran Thanh Huong; Mr. Pham Tuan Anh; Mr. Vu Manh Thang- Traffic Police
Mr. Duong Ngoc Lan- VRA

Le Loi Secondary School
Mr. Chau - Chief of Education Dept. - Ninh Binh Education and Training Authority; Mr. Xuan - Dean of the School

Content:

Mr. Kennaird introduced the project and raised some questions.

Mr. Chau:
The school profile:
102 teachers and staff; 40 classes; 1743 students

It is necessary to train the teacher who will be responsible for teaching traffic safety. The school is going to put a greater effort on the traffic safety education in the near future.

The traffic safety education is conducted in 150 demonstration schools. The books issued by the MOET are used in the schools but the traffic safety is a part of the Morality subject.

The school organizes the contest for the students' understanding about traffic safety regulations. The school also organizes traffic safety clubs for the students.

The school invites the traffic policemen to make presentation for the students and asks students to sign the memorandum to comply the traffic safety regulations.

There is only one student who got the accident over last several years. The school establish "Red Flag Team" to instruct the students about the traffic safety. The students who get the accident will report to the school to receive insurance.

Recommendations:

- More fund should be granted
- More information should be provided
- More facilities and equipment for traffic safety education is needed.

1 December 2003, 14:10 – 17:00
Regional Road Maintenance Unit 7, 296 Nguyen Van Dau Street, District 11, Ho Chi Minh City

Participants:

Opus, TDSI and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mrs Justine Bray; Mr Le Than; Mss Hoang Giang; Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Mr Le Do Muoi

RRMU7:
Mr Pham Thuc Han - Deputy Director; Mr Nguyen Van Khoi - Deputy head of Traffic Management Department.

Content:

Mr Pham Thuc Han:
NR1 and NR51 have been upgraded, but there are still traffic problems due to:
unsynchronized up-gradation.
does not meet the demand of traffic flow.

NR1 (Ho Chi Minh City to- Can Tho):
- This section is under controlled of RRMU7 since 1998 - 1999. Actual traffic flow is twice that of the design.
- From km 1915 - 1925: 4 lanes
- From km 1925 - 1968: 2 lanes
- In the 2002 - 2003: from km 1925 - 1968 has been converted into 4 lanes by MoT. This section has not been transferred.

In the whole section there are 44 bridges, of which:
- 14 new bridges, in JBIC project (Japan).
- 5 flood prevention bridges.
- 25 old bridges.
- Road and bridges are un-uniformed upgraded (difference between the width of road and bridges).
- Only 14 bridges of Japanese project and 5 flood prevention bridges in Me Kong river delta meet standard. The rest were built before 1975 (7m surface, standardize for vehicles of H30-XB80).
- There are many small curves with R<250 m - there are 9 of those, some even with R = 60m.
- Goes through many populated areas without by-roads and fly-overs.
- Development of the construction work without adequate drainage system has caused stagnancy that leads to degradation of the road and decreased safety.

NR51:
- Brought into operation in the year 2000.
• Has been upgraded into 4 lanes (class 1), but still unsynchronized bridges. (From T-junction of Vung Tau, on the right side are new bridges, on the left are old ones).
• Also passes populated areas without by-roads, fly-overs, under-roads.
• There are total 32 bridges.
• Slippery surface (melting of asphalt in summer, mud in rainy season).

RRMU7 has done some improvements:
• More signposts, markings.
• Increase the grid of the road.
• Rumble strips
• But, no work involving large improvement due to lack of funding.
2 December 2003, 08:10 – 10:00

Ba Ria - Vung Tau Traffic Safety Committee

Participants:

Opus, TDSI, OPUS and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mrs Justine Bray; Mr Le Than; Ms Hoang Giang; Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Mr Le Do Muoi; Nguyen Van Khoi (RRMU7)

Baria - Vung Tau Traffic Safety Committee:
Mr Tran cao De - Director of Provincial Traffic Department; Mr Huynh Van Chau - Deputy Director of Provincial Traffic Department; Mr Nguyen Huu An - Deputy Director of Provincial Traffic Department; Mr Pham Anh Tuan - Head of Department for managing transportation, vehicles, drivers; Mr Nguyen Nhu Hai - Head of Administrative Department; Mr Nguyen Xuan Trach - staff of Provincial Traffic Safety Committee

Content:

A report on traffic safety situation in Ba Ria - Vung Tau has been provided by the provincial traffic safety committee.

Mr Tran Cao De:
Vietnamese Government invested 300 million USD to build one port in the province that 100,000 ton ship may enter (this project funded by Japanese Government) and to build one big market.

Rapid development of the road network. There are three National Roads going through the province, i.e. NR51, NR55, and NR56. There are three projects for upgrading these NRs underway, - 63% of completion, and will be put into operation in the year 2004. The provincial road network is uniformly upgraded. There has been rapid increases in traffic flow.

Most accidents involve motorbikes (over 70%).

There used to be 4 driver testing/month, now has increased two-times.

Activities of provincial traffic safety committee include managing of traffic police patrolling to control traffic accidents.

Since the implementation of Decision No 13, the traffic accident rate has reduced by 25%.

Campaigns of enforcement: 4 times per year:
• Before lunar New Year (Tet).
• After lunar New Year.
• April 30th, May 1st.
• September 2nd.

These campaigns are to refocus traffic safety initiatives, and are conducted at provincial, district and town levels with support of the people.

Development of road does not mean of less accident.

Beside measures to control traffic accident directed by higher level, provincial authorities also have their own initiatives.

In their opinion, the biggest blackspot on National Road 51 is the guardrail between motorized and non-motorized vehicles.

About traffic police:
• Lack of staff to meet the demand.
• Provincial level forces are patrolling on NR51.
• Town level forces are patrolling on NR 55, NR56.
• Besides, there are police for order and security, but having limited power.
• Hold traffic law contest at least once a year.
2 December 2003, 15:50 – 17:10
Long An Traffic Safety Committee, Long An

Participants:

Opus, TDSI and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mr Bill Robertson; Mrs Justine Bray;
Mr Le Than; Mss Hoang Giang; Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Mr
Le Do Muoi; Mr Nguyen Van Khoi (RRMU7)

Long An Province:
Mr Tran Van Don - Deputy Director of Long An Traffic Safety Department; Mr On - Staff
from Provincial Traffic Safety Committee; Mrs Nguyen Thi Kim Phuong - Vice Head of
Administrative Department

Content:

A report on the traffic safety situation of Long An province has been provided.

Mr Tran Van Don:
Traffic safety committee is only at the district/town level not at communal level yet.

Provincial committee has 14 members of which only 3 are permanent. The Head of People’s
Committee chairs the provincial traffic safety committee.

Reduction in traffic accident rates have occurred due to 4 reasons:
• Education and propaganda
• Driver training, licensing
• Enforcement
• Median barrier to separate conflicting traffic flows.

Before any campaign, there will be meeting in traffic safety committee’s members to define
responsibilities and cooperation to have best effectiveness.

In the past, before having the median barrier, accidents usually between car and car, now it
has become between motorcycle and motorcycle.

On education:
• In 2001: traffic safety education was taught in 71 schools.
• In 2002 - 2003: these number reach 95.
• Besides subscribing “Ban Duong” newspaper, the committee also buys Long An
newspaper to provide to schools.
4 December 2003, 08:10 – 10:00

Cho Ray Hospital, Ho Chi Minh City

Participants:

Opus, TDSI, and representative from agencies:
Mr Allan Kennaird; Mr Fergus Tate; Mr Kevin Rolfe; Mr Bill Robertson; Mrs Justine Bray;
Mr Le Than; Mss Hoang Giang; Mr Thanh Thuy; Mr Le Dat; Mrs Tran Thanh Huong; Mr
Le Do Muoi

Cho Ray Hospital
Dr Ha Van Duc - Deputy Director; Dr Hai - Head of Therapy Research;
Dr Ton That Quynh Ai - Head of Emergency Department

Content:

200 - 300 cases/night. Traffic accident victims account for a majority of those.

Cho Ray hospital is a state level hospital, directly controlled by Ministry of Health in the southern provinces. This is the top general hospital with advanced specialized treatment such as cranial trauma. Total patients presently over 1,800, and there is about 2,000 staff.

The Hospital’s equipment and infrastructure were introduced by videotape.

Some facts presented:

- 13,000 fatalities due to not wearing helmets.
- 6 benefits of wearing helmets (tape documented for propaganda).
- Use videotape in driver training, and in special cases such as festival, traffic safety month.
- 40% accidents caused by alcohols (New year, festivals).
- Police are not informed of deaths after brought to hospital, and hospital also does not know deaths if brought to other hospital’s levels.
- Since 1999 - 2001: 60% died due to traffic accident (60% male, 40% female)
- All cases of death due to traffic accident after being brought to hospital considered fatalities by traffic accident.
- 90% self-brought to hospital (taxi, relatives, road-goers), cause difficulty for defining whether are traffic accidents or not.
3. Other Consultation

7 January 2004: World Bank, Hanoi: Tran Thi Minh Phuong – Operations Officer, Transport

8 January 2004: Vietnam Environment & Sustainable Development Institute (VESDI): Le Trinh, Vice President

12 January 2004: World Bank Hanoi: Tran Thi Minh Phuong; Duong Quoc Vinh – Environmentalist; Vu Hong – Operations Officer, Social Policy


14 January 2004 National Environmental Agency - Pham Khang - Vice Director of Appraising Department.
Annexure 6: Plans of Year 1 Blackspots – VRSP Phase 1
Blackspot 3: Km340+00 NR 1A

Arrangement plan of traffic safety
km340+00 - NR 1A

Blackspot 3: Km370+900 NR 1A
Blackspot 5: Km419+500 NR 1A
Widening of road plan

km19+500 - NR 1a
Blackspot 6: Km452-km454 NR 1A

Legend:
- Station
- Miếng chuẩn
- House class 4
- Storeroom house
- Storeroom house
- Rail way

Ministry of Transport
Road Technical Centre IV

Legend:
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Road Technical Centre IV

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- House class 4
- Storeroom house
- Storeroom house
- Rail way

Ministry of Transport
Road Technical Centre IV
Blackspot 7: Km456+300 NR 1A

**Legend**
- Level
- Electric pole
- Warning sign
- Sign prohibitory
- Guidesign
- House class 6
- Kiosk
- Storey house
- House
- Side Ditch
- Railway

**Parameters of Curves**

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**MINISTRY OF TRANSPORT**

**National road No 1A**

**Plan**

Black spot Km456+450 - km456+821

**Road technical center IV**

**Check by**

Nguyen Cung Hoi

**Supervisor**

Nguyen T. Hanoi

**Proj. Manager**

Nguyen Viet Phuong

- Drawing Code: NR 1A-TT 04-§§456 09-2004
- Scale: 1:25m
Blackspot 14Km2000+400 NR 1A
Blackspot 15: Km2010+400 NR 1A

- Rumble trip: 80m from TC4
- Road Technical Centre VII
- Environmental Assessment Final Report 25/12/2004
- TDSI
- OPUS