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INDIA: Institutional Strengthening of the Madhya Pradesh Public Works Department
(Financed by the Japan's Special Fund)

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For Madhya Pradesh Public Works Department

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<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>CADD</td>
<td>Computer Aided Design and Drafting</td>
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<td>EinC</td>
<td>Engineer in Chief, MPPWD</td>
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<td>FMS</td>
<td>Financial Management System</td>
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<td>GoMP</td>
<td>Government of Madhya Pradesh</td>
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<td>HRM</td>
<td>Human Resource Management</td>
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<td>IRC</td>
<td>Indian Roads Congress</td>
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<td>ISC</td>
<td>Institutional Strengthening Committee</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<td>MP</td>
<td>Madhya Pradesh</td>
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<td>MPPWD</td>
<td>Madhya Pradesh Public Works Department</td>
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<td>MPRDC</td>
<td>Madhya Pradesh Road Development Corporation</td>
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<tr>
<td>MPRRDA</td>
<td>Madhya Pradesh Rural Roads Development Authority</td>
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<tr>
<td>QM</td>
<td>Quality Management</td>
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<tr>
<td>RAMS</td>
<td>Road Asset Management System</td>
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<tr>
<td>TA</td>
<td>Technical Assistance</td>
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<tr>
<td>TOR</td>
<td>Terms of Reference for TA 4934_IND</td>
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<tr>
<td>VRI</td>
<td>VicRoads International</td>
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<tr>
<td>WDDF</td>
<td>Works Department Drawing Facility software</td>
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Executive Summary

1 Background to TA

This institutional strengthening technical assistance assignment (ADB TA: 4934-IND) has been undertaken pursuant to the contract entered into between the Asian Development Bank (ADB) and VicRoads International, dated 7 March 2008 (Contract No. S/80-034) for the Government of India and the Government of Madhya Pradesh.

2 Objectives

As detailed in the Terms of Reference (TOR) for the assignment, the main objective of the consulting services is to support the Madhya Pradesh Public Works Department (MPPWD) in implementing its institutional strengthening initiatives, and in particular:

(i) enhance the road organisation structure in Madhya Pradesh for roads policy, planning and execution functions, with direct reference to MPPWD’s role;

(ii) strengthen the MPPWD Planning Unit;

(iii) improve MPPWD business practices, specifically

- procurement and contracting practices;
- planning processes;
- quality assurance; and
- project financial accounting and monitoring systems;

(iv) enhance MPPWD human resource management (HRM); and

(v) enhance MPPWD’s road asset management systems (RAMS).

3 Approach of Consultants

The approach taken by the consultants has been to develop MPPWD capability in each of the target areas by the following process:

1. A situation analysis of current MPPWD practices.
2. A consideration of modern principles and practices applied by road authorities and the benefits to be achieved by their adoption by the MPPWD.
3. Development and documentation of procedures to apply modern principles and practices as appropriate to the Madhya Pradesh context.
4. Development of appropriate information management tools and systems to support application of the recommended procedures and practices in MPPWD.
5. Introductory training of MPPWD staff in modern principles and practices in each of the TA capability improvement areas, and training of identified core staff in application of the recommended procedures and operation of the supporting tools.
6. Recommendation of staffing requirements and appropriate organisation structure to institutionalise new functions and procedures.
7. Identification of ongoing staff development and training requirements within MPPWD to sustain the capability in the organization.
4 Review of Project Achievements

4.1 Realignment of Road Sector Institutions (TOR 1)

Issues identified
There is a consensus of the GoMP and the road sector institutions that the current allocation of responsibilities for roads in the state is broadly appropriate. However, the consultants identified that although the trifurcation of the road management responsibilities of the MPPWD through the formation of the MPRDC and the MPRRDA had been seen as a positive move for managing the development of state highways and rural roads respectively, the role of the MPPWD was less clear. The MP Highways Act provides the legislative mechanism for declaration of roads and road authorities, however the process had not been enacted for the MPPWD.

The trifurcation of road authorities has also left a need for a mechanism to integrate planning and programs to achieve effective state wide outcomes, particularly in areas such as road network planning and road safety.

Achievements
- The MPPWD reviewed the classification of all District Roads and successfully sought declaration of all Major District Roads and declaration of the MPPWD as the responsible road authority under the Act.
- The consultants conducted a brief review of the formation of the MPRDC and identified that there were a number of non-capital initiatives which could be transferable to the MPPWD, particularly adopting a strategic approach to IT rollout, the use of external consultants to supplement expertise and staff resources, third party contract management, stringent budget management and pro-active staff training and development.
- The MPPWD has already commenced outsourcing of some planning and design tasks.

The Way Forward
The MPPWD recognizes the further potential to offset the decline in experienced staff by the use of external expertise through outsourcing and by targeted training and development of MPPWD staff. Implementation of non-capital learnings from the MPRDC experience will complement many of the institutional strengthening initiatives of this TA. The MPPWD has the opportunity to take a lead role in promoting a whole of government approach to road safety and road network planning.

4.2 Strengthening of MPPWD Planning Unit (TOR 2), [incorporating Sound Planning Practices (TOR 3b)]

Issues identified
The strong “grass roots” approach to the development of candidate road projects at the district level allows significant and valuable input by local communities and elected representatives. The candidate projects are subsequently aggregated by division, zone and circle and submitted eventually to the Planning Commission. The bottom-up grass roots planning process could be considerably enhanced by developing a top-down framework strategy for state wide priorities which can be used to guide the identification of appropriate local projects to deliver state benefits as well as local benefits.

The importance and value of the planning function has not been recognized in the MPPWD with nominated “planning” positions either vacant or utilized simply for aggregation of project proposals or progress reports.
Achievements

- The MPPWD has committed to establish a Planning / RAMS unit to drive strategic planning and road asset management in MPPWD in accordance with the unit roles, structure, position descriptions and short term action plan developed in the TA. Initial appointments have been made; however additional professional appointments are pending government approval to the MPPWD proposal for organisation-wide restructure involving surrender of unwanted posts and sanction of new posts.

- A range of MPPWD staff have received training in strategic road network planning seminars conducted by the consultants.

- Draft MPPWD Asset Planning Guidelines have been prepared to provide a strategic framework for the development of programs for road network development and maintenance.

- A framework of Road Network Management Performance Measures has been developed as a basis to monitor and report the performance of the road network and the efficiency and effectiveness of road investments.

- The State Government has subsequently approved and distributed criteria for the development and selection of state – funded projects in accordance with statewide priorities.

The Way Forward
The highest priority for the MPPWD in this area is to complete the appointments of professional staff to the Planning/RAMS unit and to implement the recommended action plan for the unit as the focal point for state wide road network strategy development.

4.3 Improving MPPWD’s Business Practices (TOR 3)

4.3.1 Procurement and Contracting practices (TOR 3a)

Issues identified
Current MPPWD contract documentation does not reflect procurement practices adopted by agencies throughout the developed world. Contracts are heavily biased in favour of the MPPWD. The Contractor has to accept the risk of discontinuous funding from MPPWD, which may require suspension of works.

A range of various contract documents are available for procurement, however there is no formal co-ordination of procurement and contracting practices. Different practices occur in different locations of the state. There are weaknesses in the system of contractor registration which is not based on performance, but focuses on financial capacity. There is a growing shortage of skilled and experienced staff for adequate contract management.

There is increasing concern at the quality of road conditions in Madhya Pradesh and the efficiency and effectiveness of maintenance works. Many MPRDC projects are now completing the Performance Guarantee period and contracts are to be let for future maintenance. The MPRDC has chosen to trial a performance based maintenance contract (PBMC) and this may also have application to MPPWD roads. Long term, performance-based maintenance contracts provide payment to the contractor for achievement of specified pavement performance standards. The contractor decides the most appropriate maintenance treatment regime and has the incentive to achieve efficiencies and long term effectiveness.
Achievements

- A Standard Bidding Document has been approved by the Government.
- The Performance Based Maintenance Contract document, prepared by the consultant, has been approved by the Government.
- The MPRDC has committed to trial a Performance Based Maintenance Contract.
- The ISC has approved the creation of a specialist Contracts Unit in the MPPWD.
- The MPPWD has implemented revised criteria for contractor registration.
- 11 MPPWD staff attended training programs in contract management and field supervision.

The Way Forward

The MPPWD will complete the appointment and training of professional staff to the Legal & Contracts unit to provide a corporate centre of expertise to oversee policy, strategy and procedures in contract management.

The unit will promote the understanding and use of the revised standard bidding document and procedures throughout the MPPWD, implement the revised contractor registration system and initiate contractor performance monitoring.

The MPPWD will trial the use of a third party SQC (Supervision and Quality Control) contract on a cluster of MPPWD works, building upon MPRDC experience. Subject to feedback from the experience of the MPRDC, the MPPWD may consider future implementation of a Performance Based Maintenance Contract trial.

4.3.2 Sound Planning Practices (TOR 3b)

Refer to section 4.2 above

4.3.3 Improved Quality Assurance (TOR 3c)

Issues identified

The consultants identified a widespread lack of understanding of Total Quality Management principles among MPPWD staff, with perceptions of quality management commonly limited to the testing of materials and construction works.

The condition, capacity and staff capability of MPPWD testing laboratories have been allowed to decline to a point where they are currently incapable of conducting the specified materials tests. The laboratories have limited items of testing equipment, and what is available is commonly not calibrated, is poorly maintained or is technically obsolete. Analyses and reporting of test results is undertaken manually.

Laboratory buildings are also poorly maintained, with broken windows and walls, no dust or fume extraction facilities and no air conditioning. Staff report that they receive insufficient funding for equipment maintenance or consumable items beyond staff salaries. Laboratories do not have vehicles available to conduct field testing and many rely upon transport provided by the contractor.

There has been a loss of trained and experienced laboratory staff over many years (a result of the government freeze on recruitment to the public sector) and as a result few laboratories have the necessary staff to undertake testing. No internal or external audits are undertaken of the compliance of laboratories with specified testing and reporting procedures and there is no
A worldwide overview of the performance of laboratories, the distribution of workload, maintenance and calibration of equipment.

There is increasing use of private testing laboratories by MPPWD engineers due to the dysfunctional state of MPPWD laboratories.

There are comprehensive reference documents available from IRC and others providing guides, procedures, specifications and standards for all facets of road construction and maintenance; however, the number, size and format of many QM documents is cumbersome for field use. Some pavements are failing prematurely at 2 or 3 years due to unknown causes. Failures are not investigated to determine causal factor(s) and repeat occurrences continue.

**Achievements**

- The MPPWD has adopted the recommended strategy for upgrading of MPPWD laboratories, initially focusing on establishing high standard, comprehensive “Level 1” testing facilities at 4 locations and subsequently progressively upgrading the remaining laboratories as “Level 2” laboratories for the conduct of routine testing.
- The MPPWD has initiated the establishment of a specialist Quality Management Unit to drive the implementation of quality management practices across the MPPWD in accordance with the unit roles, staffing, position descriptions and action plan recommended by the TA consultants. The initial focus of the QM unit shall be on the laboratory upgrade program and the audit and accreditation of MPPWD and private laboratories.
- The MPPWD has committed to the purchase of specified laboratory equipment from ADB loan funds and the appointment and training of staff as recommended for Level 1 laboratories.
- A Quality Manual has been developed for MPPWD Laboratories. This will provide a proforma/template for the future development of quality manuals in other sections of MPPWD.
- Field construction quality guides have been prepared, including summary information, inspection test plans, and checklists for field application.
- MPPWD staff participated in Quality Management training seminars conducted at Gwalior, Sehore, Indore & Vidisha.
- Computers and peripheral equipment for Level 1 laboratories have been purchased from TA equipment budget and supplied to Gwalior, Bhopal, Indore, and Jabalpur to enable computerization of test records and reports.

**The Way Forward**

The MPPWD will complete the appointment and training of professional staff for the Quality Management unit, recruit and conduct training of staff for level 1 laboratories, procure & ensure calibration of laboratory equipment, renovate or replace laboratory buildings & facilities and procure suitable vehicles for field testing and investigations. Level 1 laboratories will undertake investigation of pavement failures. Computers will be progressively procured by the MPPWD for level 2 laboratories.

The Quality Management unit will take a lead role in implementation of the quality manual for all MPPWD laboratories. This will provide a pilot for the introduction of quality management practices and documentation in other functions of the MPPWD.
4.3.4 Computerised project financial accounting and monitoring systems (TOR 3d)

**Issues identified**
The consultant has identified that the current paper based accounting system results in significant inefficiencies and errors and a lack of timely and adequate reporting of financial data. There is also a lack of transparency of expenditure due to inappropriate delegations. Full delegation of expenditures at division level does not allow effective control by the EinC of state wide budgets at project or program level. Poor budget management results in over commitment of available funds and consequent run-out of funds mid project. The run-out of maintenance funds before the end of the financial year is symptomatic of poor budget monitoring and management.

**Achievements**
- A functional specification has been developed for procurement and customisation of an existing FMS to meet MPPWD requirements, based upon assessment of MPPWD processes, a comparative study of the financial management systems of similar organisations within Madhya Pradesh and neighbouring states and an assessment of the interfaces with the GoMP Treasury WDDF system.
- The Finance Department of GoMP has subsequently committed to develop a whole of government FMS incorporating the functionality proposed for the needs of the MPPWD, as well as other works delivery departments.
- Management level training in Financial Management and Budget Management has been conducted for 20 MPPWD staff.

**The Way Forward**
The MPPWD will liaise closely with the Department of Finance to ensure that the GoMP Financial Management System provides the functionality required for the MPPWD.

4.4 Improve Human Resources Management (TOR 4)

**Issues identified**
The consultants identified a widespread lack of awareness of modern Human Resource Management (HRM) principles among MPPWD management and staff, with perceptions of HRM commonly limited to the administrative functions of employment data, attendance, payroll and leave records.

The MPPWD has had no recruitment for over 20 years. As a consequence there has been a collapsed cadre system, many vacant posts, many staff having multiple “additional duties” posts and a loss of experienced senior staff by retirement.

Compounding the freeze on recruitment, there is no succession planning for key positions and staff training and development programs are ad hoc and poorly attended. There is a lack of clarity and understanding of the specific functions of positions as distinct from generic delegations. Poor internal communications exist across the organisation and there is low staff morale.

The consultant has prepared a further paper addressing a range of issues for the “Revitalisation of the MPPWD. The recommendations focus particularly on aspects of organisation management, culture and HR policy which should be considered concurrently with re-organisation of the MPPWD structure. The revitalisation paper includes:

- Developing a Strategic Approach to Management of the MPPWD
- Focusing on Specialist Functions
- Changing Organizational Structures
- Understanding and developing the role of the MPPWD as an Asset Manager
- Improving Financial Management
- Updating Quality Management and Materials Testing
- Realigning Human Resource Management with the needs of a revitalised MPPWD
- Embracing Technology
- Introducing Modern Road Maintenance Practices
- Managing Relationships with Suppliers, Contractors and the Public

The recommendations are complementary to the specific technical initiatives developed in response to the terms of reference of the TA consultancy.

**Achievements**
- The “Institutional Strengthening Committee” (ISC) was established as a corporate governance group to oversee the TA consultancy and ongoing implementation of institutional strengthening initiatives in the MPPWD.
- A Draft Three Year Training Plan has been developed for the MPPWD.
- A revised organisation structure was developed by the consultants for introduction of central specialist units (Planning/RAMS, Quality, Legal & Contract Services, HRM, IT).
- The MPPWD has reviewed all posts and recommended a revised structure to government, identifying superseded posts to be surrendered and new posts to be created (and recognizing the recommendations of the consultants).
- Initiatives to revitalize the MPPWD have been recommended concurrently with the proposed restructure.
- Recommendations have been made to improve maintenance gang productivity.
- A Corporate Planning process was initiated with staff and a draft corporate plan was developed to strengthen the understanding by staff and external stakeholders of the role and directions of the MPPWD

**The Way Forward**
The ISC will continue as a corporate governance group of the MPPWD and oversee the implementation of institutional strengthening initiatives with support from a small secretariat group. The MPPWD will initially establish a HRM position and unit, expanding upon existing administration and establishment functions. The HRM position will have oversight of implementation of the Three Year Training Plan.

The MPPWD will implement a strategy for re-organisation, including a new structure, internal and external recruitment, implementation of new reporting arrangements and staff briefings.

The effectiveness of maintenance expenditures and the public image of the organization will be enhanced by improvements to maintenance gang training, tools and equipment, works planning, traffic control and use of vehicles for transport of men and equipment. Continuation of the MPPWD corporate planning process will provide a tool for increased staff and stakeholder participation and understanding of the role and responsibilities of the organization.

### 4.5 Introduce Effective Road Asset Management Systems (TOR 5)

**Issues identified**
Hard copy plans are prepared for road, bridge and building designs. Asset information is currently collected in response to ad hoc requests and held in hard copy in divisions in many
formats; consequently there is no central repository of state wide asset data (capacity, condition, use). The annual road maintenance budget and its distribution are based upon national norms of costs rather than data on specific Madhya Pradesh road conditions, pavement performance and traffic. No mechanism is available to monitor/assess the performance of pavements or the effectiveness of maintenance treatments

Achievements
- Road Asset Management System (RAMS) software developed for MPPWD.
- 113 staff trained in data collection, data input and operation of RAMS.
- GPS units purchased and 9 staff trained in their use.
- Initial road condition data commenced by MPPWD.
- Planning/RAMS unit initiated, orientation documents prepared.
- CADD software and hardware procured and staff trained.

The Way Forward
The highest priority action is for the MPPWD to complete the collection and input to RAMS of inventory and road condition data for all District Roads under its control. An annual cyclic program can then be established for updating statewide road condition data and input to RAMS. The analyses of road inventory and condition data in RAMS will enable the MPPWD to ascertain annual trends in condition and the effectiveness of maintenance treatment types and programs.

The “Asset Planning Guidelines” will be distributed to divisions in conjunction with staff training in strategic planning and asset management practices. In 3 to 5 years, the MPPWD will be able to develop the statewide maintenance budget and distribution between divisions based upon identified needs and pavement performance, progressively replacing the use of assumed national norms. CADD will eventually be rolled out to all design sections within MPPWD.

4.6 Information Technology (outside TOR)

Issues identified
The significant institutional strengthening initiatives developed in this TA consultancy include many computer-based process improvements, particularly RAMS and FMS. However, to date, the MPPWD has had an ad hoc approach to the purchase of computers and training of staff. The TA initiatives will not be sustainable without a structured and integrated approach by the MPPWD to the procurement of hardware and software, training of staff, computerization of business processes and provision of IT systems support. The consultant instigated several initiatives in IT training, management and strategy development.

Achievements
- The IT Training Centre was established and a Computer Basics training course was conducted from 1st December 2008 to 1st February 2009 under TA sponsorship.
- 78 staff were trained in Computer Basics, funded from the TA consultancy
- The MPPWD has continued the IT Training Centre program from February 2009
- The MPPWD has committed to establish an IT department within the MPPWD. Role statements, structure, position descriptions and short term action plan have been prepared for the proposed IT Department. Appointments are pending government approval to the MPPWD proposal for organisation-wide restructure involving surrender of unwanted posts and sanction of new posts.
• A consultancy brief has been prepared for development of an MPPWD IT strategy

The Way Forward
The highest priority for the MPPWD in this area is to complete the appointments of professional staff to the IT unit and to implement the recommended action plan to establish the unit as the focal point for the roll-out of IT hardware, software and business applications. The Manager IT will oversee the development of the MPPWD IT strategy.

4.7 Recommendations for Equipment Procurement

4.7.1 Equipment for road safety and control of overloading

The Consultants were requested to provide advice regarding procurement of equipment for road safety and control of overloading; such as equipment for driver training and testing, vehicle fitness testing and weighbridges, which might be purchased through ADB loan funds. Following discussions with Police, Transport Department and road agencies, the consultant developed a table of equipment, prioritised by the agencies, to support road safety and control of overloading within the scope of the $1m. ADB loan funds.

After discussion of concept proposals, the ISC directed (February 2009) that the priority for use of loan funds should be for the institutional strengthening of the MPPWD, recognising that there are other programs and funds being made available to other departments for road safety and control of overloading. No further action was taken in regard to such equipment.

4.7.2 Equipment from Loan Funds to support institutional strengthening initiatives

Throughout the period of the TA consultancy, a number of proposals were flagged for potential purchase from ADB loan funds. The following items were approved by ISC for purchase from loan funds:

- Procurement and customization of a Financial Management System to meet MPPWD requirements. (This was subsequently rejected by the Finance Department in favour of development of a whole of government FMS).
- Upgrading and staffing of 4 Level 1 laboratories (Bhopal, Indore, Gwalior, and Jabalpur) for testing, research and auditing.
- Purchase of 10 total station survey units for MPPWD

The TA consultants subsequently prepared specifications, estimate and summary business cases for procurement of the FMS, level 1 laboratory equipment and total station survey equipment from ADB loan funds. The documentation was provided to the ISC procurement committee to proceed with contract preparation, ADB approval, advertisement, assessment and award of tenders.

4.7.3 Procurement of computers and equipment for TA implementation

The consultants procured a range of computers and peripheral equipment for IT training, the initial pilot implementation of the RAMS and FMS, and for level 1 laboratories. The consultants also procured CADD software and associated hardware for the digital design, drafting and storage of plans for MPPWD bridge and buildings assets. All equipment purchased under the TA was subsequently handed over to the MPPWD.
5 TA Implementation Issues

The consultants have identified a range of issues affecting the implementation of the TA consultancy. Some key issues included:

• The need for a whole of government approach for road safety, control of overloading, IT infrastructure and financial management.

• The desirability of IT strategy as a lead activity for institutional strengthening.

• The broad scope of the TA within constrained time and resources.

• The important role played by the MPPWD Institutional Strengthening Committee and Nodal Officers during the TA and in subsequent implementation.

• The need for MPPWD commitment to staff training and enforcement of attendance at courses.

• The lead time required for creating new sanctioned posts and making staff appointments.
Final Report

1 INTRODUCTION

This institutional strengthening technical assistance assignment (ADB TA: 4934-IND) has been undertaken pursuant to the contract entered into between the Asian Development Bank (ADB) and VicRoads International, dated 7 March 2008 (Contract No. S/80-034) for the Government of India and the Government of Madhya Pradesh.

This Final Report provides an overview of the activities, findings and recommendations of the consultant (VicRoads International, Australia) in accordance with the Terms of Reference. The report provides an outline framework of the process followed by the consultants to achieve each of the delivered outputs.

For each of the items of the contract Terms of Reference the report summarises:

- key issues identified in current MPPWD practices;
- recommendations to better align with modern practice in developed road agencies;
- actions undertaken by the consultants and the MPPWD to implement the recommendations;
- outcomes achieved as a consequence of these actions; and
- future actions required for MPPWD to achieve full implementation of the institutional strengthening initiatives.

In conjunction with the Final Report, the consultants provide a compendium of the key reports, guidelines and software developed by the consultants for this TA contract. The documents are referenced throughout the Final Report.

2 OBJECTIVE OF THE TA

As detailed in the Terms of Reference (TOR) for the assignment, the main objective of the consulting services is to support the Madhya Pradesh Public Works Department (MPPWD) in implementing its institutional strengthening initiatives, and in particular:

(i) enhancement of road organisation structure in Madhya Pradesh for roads policy, planning and execution functions, with direct reference to MPPWD’s role;
(ii) strengthen the MPPWD Planning Unit;
(iii) improve MPPWD business practices, specifically procurement and contracting practices; planning processes; quality assurance; and project financial accounting and monitoring systems;
(iv) enhance MPPWD human resource management (HRM); and
(v) enhance MPPWD’s road asset management systems (RAMS).

3 APPROACH OF THE CONSULTANTS

The approach taken by the consultants has been to develop MPPWD capability in each of the target areas by the following process:

- A situation analysis of current MPPWD practices.
- A consideration of modern principles and practices applied by road authorities and the benefits to be achieved by their adoption by the MPPWD.
- Development and documentation of procedures to apply modern principles and practices as appropriate to the Madhya Pradesh context.
- Development of appropriate information management tools and systems to support application of the recommended procedures and practices in MPPWD.
- Introductory training of MPPWD staff in modern principles and practices in each of the TA capability improvement areas, and training of identified core staff in application of the recommended procedures and operation of the supporting tools.
- Recommendation of staffing requirements and appropriate organisation structure to institutionalise new functions and procedures.
- Identification of ongoing staff development and training requirements within MPPWD to sustain the capability in the organisation.

Although the above approach has been taken to the development of MPPWD capability in each of the areas required in the terms of reference, the holistic team approach has sought to identify and achieve synergies in common areas, particularly organisational structure, staffing, training and development needs, quality management, IT skills and support.

On the advice of the consultants, an Institutional Strengthening Committee (ISC) was convened to provide a peak MPPWD governance body to interface with the TA consultants, to review recommendations and to manage implementation of institutional strengthening initiatives. In addition, experienced senior MPPWD staff were designated as ‘Nodal Officers’ to liaise with the consultants in each of the subject areas of the TA consultancy.

Table 1 provides a summary matrix of the approach taken by the consultants and the key achievements using the summary matrix.
**TABLE 1  TECHNICAL ASSISTANCE FOR INSTITUTIONAL STRENGTHENING OF MPPWD**

**APPROACH BY CONSULTANTS – STATUS AT 30 September 2009**

<table>
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<tr>
<th>Capability of MPPWD is to be strengthened in the areas of:</th>
<th>Situation analysis</th>
<th>Modern principles and practice</th>
<th>Modern processes and procedures</th>
<th>Supporting tools and systems</th>
<th>Training and initial application of proposed processes</th>
<th>How is this function staffed and located in the organization structure?</th>
<th>What skills and ongoing training and development are required in MPPWD staff?</th>
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<td>What are the key principles of modern practice?</td>
<td>Map proposed processes. Develop high level procedures with MPPWD</td>
<td>Map the process.</td>
<td>Conduct training of core group.</td>
<td>Consultant conducted staff workshops through the process of development of a draft Corporate Plan. Notification and declaration of MPPWD roads in accordance with Highways Act</td>
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<td>Sound planning practices (TOR 3b); and Introduce effective road asset management system (TOR 5)</td>
<td>Capital programs</td>
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<td>Training in the use of the recommended contract forms and procedures</td>
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<td>Improve MPPWD human resource management (TOR 4)</td>
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4 REVIEW OF PROJECT ACHIEVEMENTS

4.1 Realignment of road sector institutions in Madhya Pradesh (TOR 1)

Clarity of responsibilities between road authorities
The consultants examined the history of the evolution of road institutions in Madhya Pradesh and held wide discussions on the perceived effectiveness of the split in management of the state’s road network by the MPPWD, MPRDC, MPRRDA, municipal corporations and panchayats. The consultants were advised that the Government of Madhya Pradesh was satisfied with current arrangements and the trifurcation of arterial road management across state.

The MP Highways Act has defined the process for declaration of roads and responsible highway authorities; however such declarations had not been enacted by MPPWD. Following guidance from TA consultants the MPPWD undertook a review of district roads (including reclassification of ODRs to MDRs) and tabled a notice to government requesting that it be declared the responsible highway authority for these roads in accordance with the Madhya Pradesh Highways Act. This was duly published in the government gazette. The MPPWD is currently seeking appropriate funding appropriations for the District Road network.

The declaration of MPPWD roads in accordance with the Highways Act reinforces the primary responsibilities of MPRDC, MPPWD, MPRRDA and Panchayats for Highways, District Roads, Rural roads and village roads respectively. The consultants were advised of many instances where rural roads had been handed over to the MPPWD for ongoing maintenance due to an inability of the local panchayat to fund such works. It is essential that any transference of roads to MPPWD from panchayats, municipal corporations or others should also be formalised within the terms of the Highways Act and that appropriate budget adjustments are made.

Integrated road network planning between the road authorities
There is no current mechanism for integrated state wide road network planning through the three separate road authorities. Road users expect to travel safely across the whole road network. They are not aware of administrative boundaries or official road classifications, but want roads which are developed and maintained to safe standards appropriate to their use and consistent across the network.

The NHAI undertakes planning of the complete national highway network across India. The MPPWD position of CE National Highways liaises with the NHAI on NH network planning. Integrated planning across all road classifications is necessary for effective implementation of statewide programs such as road safety initiatives and for planning a total road system to cater for the efficient movement of vehicles moving primary and secondary industry production from farm or factory to local, interstate or international markets.

Currently, separate programs are developed in separate departments and authorities and aggregated by the Planning department for consideration by government. The consultant proposes that the MPPWD should have a lead role in establishing an integrated statewide road network development planning process (working with other road authorities) within an integrated whole-of-government planning process (interfacing with land use planning, economic development etc. This issue is further discussed in section 4.3.2 of this report.

Transferrable learnings from the formation of MPRDC
The ADB requested a review of the MPRDC be undertaken by the consultants to identify learnings from the formation of the MPRDC which could be transferable to the MPPWD. A report was submitted to ADB in January 2009. (Refer attachment 1(i)). The consultants concluded that, although the MPPWD has a much broader range of responsibilities than the
MPRDC and does not have the same opportunities as the MPRDC to create its organisation from scratch, to undertake targeted selection and appointment of new staff, or to establish new office accommodation with IT communications infrastructure, nonetheless there are many non-capital initiatives which could be applied to MPPWD (from MPRDC learnings), including:

- Develop IT strategy and roll-out plan (Also refer section 4.8).
- Increase the outsourcing of professional work to external consultants to offset the decline in numbers of experienced MPPWD staff and to provide specialist skills.
- Trial the MPRDC model of contract engagement of specialist consultants for contract supervision and quality management on a needs basis (Also refer section 4.3.3).
- Manage project budgets within release of sanctioned funds (Also refer section 4.3.4).
- Commit to staff training and development (Also refer section 4.4).
- Enhancing the amenity of the working environment.

**ISSUES IDENTIFIED**

- Clarity of scope of road management responsibilities of MPPWD, MPRDC, MPRRDA, Municipal Corporations and Panchayats must be formalised in accordance with the Madhya Pradesh Highways Act.
- Maintenance responsibilities for rural roads are frequently transferred to MPPWD on an ad hoc basis by panchayats without adequate funding.
- The consensus of GoMP and the road sector institutions is that the current allocation of responsibilities for roads in the state is broadly appropriate. TA has focussed on MPPWD issues only.
- Efficiencies and effectiveness achieved by the MPRDC are not reflected in the MPPWD.
- A need for greater clarity of the role and identity of MPPWD to staff and stakeholders.

**RECOMMENDATIONS**

- Declaration of MPPWD roads and notification as Road Authority in accordance with MP Highways Act.
- Formalise any transfer of roads (and related budget) to MPPWD from panchayats, municipal corporations or others within the terms of the Highways Act.
- Implement the identified non-capital initiatives which could be applied to MPPWD from MPRDC learnings.
- Initiate a mechanism for integrated road network planning between MPPWD, MPRDC and MPRRDA.
ACHIEVEMENTS

- The MPPWD reviewed the classification of all District Roads and successfully sought declaration of all Major District Roads and declaration of the MPPWD as the responsible road authority under the Act. The revised declared road lengths are now the basis for funding applications by MPPWD to GoMP.
- The consultants conducted a brief review of the formation of the MPRDC and identified that there were a number of non-capital initiatives which could be transferable to the MPPWD, particularly adopting a strategic approach to IT rollout, the use of external consultants to supplement expertise and staff resources, third party contract management, stringent budget management and pro-active staff training and development.
- The MPPWD has already commenced outsourcing of some planning and design tasks.

ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

- Implement identified non-capital initiatives which could be applied to MPPWD (from MPRDC learnings), including:
  - Establishing and implementing an IT strategy and roll-out plan (Also refer section 4.8).
  - Trial the MPRDC model of contract engagement of specialist consultants for contract supervision and quality management (Also refer section 4.3.3).
  - Manage project budgets within release of sanctioned funds (Also refer section 4.3.4).
  - Commit to staff training and development (Also refer section 4.4).
  - Encourage workplace tidiness and cleanliness.
  - Improve communications with staff and stakeholders.
- Initiate a mechanism for integrated planning of the total Madhya Pradesh road network between MPPWD, MPRDC and MPRRDA

4.2 Strengthening the MPPWD Planning Unit (TOR 2)

The CE Planning position created following a previous TA consultancy was vacant for a significant portion of the current consultancy. Several Department officers were emphatic that MPPWD does not have a role in planning. It was determined that the role of “Planning” positions in MPPWD has been primarily the aggregation and reporting of proposals and/or project progress reported from divisions. The consultants recognised that there was a need for a change in mindset of MPPWD staff to understand and recognise the context and importance of the Department’s role in the strategic planning and asset management of the Madhya Pradesh road system. The current organisation structure and limited staff perceptions of the scope and importance of the planning function constrain effective planning in the MPPWD.

The bottom-up grass roots planning process used in Madhya Pradesh could be considerably enhanced by developing a framework strategy for state wide priorities which can be used to guide the identification of appropriate local projects to deliver state benefits as well as local benefits. This concept is further discussed in section 4.3.2 of this report.
The consultants conducted training programs on planning concepts, information sources, strategic road network planning practices, information sources and the functions and use of the Road Asset Management System (RAMS) software. Through the TA activities the MPPWD has recognised the need to bolster the CE Planning role and the ISC committed to the establishment of a central Planning/RAMS unit in MPPWD to drive strategic road system planning and asset management practices throughout the organisation.

The consultants have prepared orientation documentation for staff to be appointed to the Planning/RAMS unit, including a summary of the functions of the unit, position descriptions for all positions and a short term action plan for the initial years of the unit (Attachment 2(i)). The appointment of professional staff with appropriate qualifications, experience and aptitude to take this lead role in road network planning and asset management is a very high priority for the MPPWD.

Draft MPPWD Asset Planning Guidelines have been prepared (Attachment 4(i)) which provide an asset management framework for developing and managing programs for road development, condition and use. This document is complemented by the RAMS Road / Bridge Data collection Manual and the RAMS User Manual (Attachments 8(iii) and 8(iv)) provide detailed procedures for condition surveys, data entry and analyses using the RAMS software. The Planning/RAMS unit will be the centre of expertise in planning and asset management within the MPPWD and will be the owner of corporate guidelines, procedures and quality systems for these functions.

**ISSUES IDENTIFIED**

- Planning unit not fully staffed. Positions used for collating ad hoc reporting of projects and periodic reports to funding agencies
- MPPWD Planning role has been the aggregation of locally developed project proposals rather than pro-active planning and state wide direction setting.

**RECOMMENDATIONS**

- Establish Planning/RAMS unit as specialist unit to drive strategic planning based upon analysis of factual inventory, condition and road use data
- Establish State wide road network strategy to set standards and priorities for road network development and maintenance in response to forecast patterns of social and economic development
- Establish Road Asset Management System for asset data collection and analyses
ACHIEVEMENTS

- The MPPWD has committed to establish a Planning / RAMS unit to drive strategic planning and road asset management in MPPWD in accordance with the unit roles, structure, position descriptions and short term action plan developed in the TA. Initial appointments have been made; however additional professional appointments are pending government approval to the MPPWD proposal for organisation-wide restructure involving surrender of unwanted posts and sanction of new posts.

- 53 MPPWD staff have received training in strategic road network planning seminars conducted by the consultants.

- Draft MPPWD Asset Planning Guidelines have been prepared to provide a strategic framework for the development of programs for road network development and maintenance.

- A framework of Road Network Management Performance Measures has been developed as a basis to monitor and report the performance of the road network and the efficiency and effectiveness of road investments.

- The State Government has subsequently approved and distributed criteria for the development and selection of state – funded projects in accordance with statewide priorities.

ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

- Complete appointments of professional staff to the Planning/RAMS unit.

- Implement the action plan for Planning/RAMS unit.

- Train staff in strategic transport planning.

- Develop and implement state wide road network strategy.

4.3 Improving MPPWD’s business practices (TOR 3)

4.3.1 Procurement and Contracting Practices (TOR 3a)

The Consultant reviewed current MPPWD contract practices and documentation, together with a suite of contract documentation recommended by previous TA consultants. The consultant has prepared standard bidding documentation to align with modern procurement practices and appropriate for the scope and scale of MPPWD works. Standard documentation is recommended for minor works, medium sized works and consultancy contracts. (refer attachment 3(i))

Alternative contract modalities were considered for the contracting of MPPWD road maintenance. The concept of community based contracts was assessed wherein village
communities contract to maintain road lengths abutting the community location. Although having some potential for developing local ownership and responsibility for road conditions, the model also has the risk of use of unskilled maintenance workers and encourages a fragmented and parochial approach to managing maintenance priorities. At the other extreme, the concept of corridor management contracts was also considered. The model, which commonly includes all aspects of pavement and roadside development and maintenance, was considered presently to have limited application due to the current low skill level of the maintenance contracting industry and to be inappropriate for the management of the MPPWD network of relatively short lengths of MDRs and ODRs. The model of performance-based maintenance contracts, wherein the contractor is paid to sustain the road to defined performance standards was considered to be a potentially achievable step for the MPPWD.

Contract documentation has been prepared for a Performance Based Maintenance Contract (PBMC) for the MPRDC (refer attachment 3(iv)). The contract has been built upon draft documentation from previous TA consultants, and refined to match MPRDC requirements and to align with VicRoads experience in the use of such contracts in other countries. As a first step to piloting this model, the MPRDC has placed the contract on the MPRDC website to seek comment from the local contracting industry and the wider community prior to further action to implement a trial contract. It is envisaged that the MPPWD could adopt the PBMC model subsequent to review of the MPRDC trial.

MPPWD contract management and field supervision practices were reviewed, particularly for the effectiveness of quality assurance on construction and maintenance works. A Field Quality Guide has been prepared (Attachment 3(ii)). Staff training programs were conducted at Bhopal for contract management and field supervision.

The consultant has recommended that MPPWD trial the use of Supervision and Quality Control (SQC) contracts to provide third party supervision and surveillance of works. The objective is to supplement contract management expertise and resources of the MPPWD, to provide independent third party contract supervision and surveillance of works, and to ensure clarity of quality assurance responsibilities of construction contractors.

The consultant has proposed that the MPPWD adopt a process of monitoring and reporting contractor performance. The records of contractor performance would be held with the contractor registration and be accessible when considering a further tender for MPPWD work from the contractor. Draft documentation for such a register has been provided (Attachment 3(ii)).

The consultant’s recommendation for the creation of a central specialist Legal and Contracts unit was agreed by ISC in January 2009. Strong staff concern was also expressed at Corporate planning workshops regarding the availability of internal advice on legal and contract matters. Consultants have prepared orientation documentation for staff to be appointed to the Legal and Contracts unit, including position descriptions for all staff and short term action plan for the initial years of the unit (Attachment 3(iii)).
ISSUES IDENTIFIED

General
• Contract documentation does not reflect procurement practices adopted by agencies throughout the developed world.

• Contracts are biased in favour of the MPPWD – Contractor has risk of discontinuous funding from MPPWD.

• A range of various contract documents are available for procurement.

• No formal co-ordination of procurement and contracting practices.

• Different practices in different locations of state.

• Weaknesses in contractor registration – not based on performance.

• Shortage of skilled staff for adequate contract management.

Maintenance contracts
• There is increasing concern at the quality of road conditions in Madhya Pradesh and the efficiency and effectiveness of maintenance works.

• Many MPRDC roads are now completing the Maintenance Guarantee period and contracts are to be let for maintenance. MPRDC has chosen to trial PBMC and this may also have application to MPPWD.

• Long term, performance-based maintenance contracts (PBMC) provide payment to contractor for achievement of pavement performance standards. Contractor decides appropriate maintenance treatment regime and has the incentive to achieve efficiencies and long term effectiveness.

RECOMMENDATIONS

• Adopt a suite of standard contract documents (as drafted by TA consultants):
  – MPPWD minor works;
  – new standard bidding document; and
  – consultancy contracts.

• Establish uniform procedures for tendering and contracting.

• Revise contractor registration criteria.

• MPPWD trial of SQC contract.

• Establish Contractor Performance reports on all contracts.

• Establish specialist Legal & Contracts unit.
• MPRDC trial a long term Performance Based Maintenance Contract (as drafted by TA consultants).
• Increase training in project and contract management in 3 Year Training Plan.

ACHIEVEMENTS

• A Standard Bidding Document has been approved by the Government.
• The Performance Based Maintenance Contract document, prepared by the consultant, has been approved by the Government.
• The MPRDC has committed to trial a Performance Based Maintenance Contract.
• The ISC has approved the creation of a specialist Contracts Unit in the MPPWD.
• The MPPWD has implemented revised criteria for contractor registration.
• 11 MPPWD staff attended training programs in contract management and field supervision.

ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

• Complete staffing of Legal & Contracts unit.
• Adopt revised standard bidding document throughout MPPWD.
• Implement action plan, particularly:
  - implement revised contractor registration system;
  - initiate contractor performance monitoring;
  - trial third party SQC (Supervision and Quality Control) contracts on MPPWD works;
  - arrange training of Legal & Contracts unit staff; and
  - establish tender and contract award procedures.
• Implement a Performance Based Maintenance Contract trial.

4.3.2 Sound Planning Processes (TOR 3b)

As discussed in Section 4.2, the MPPWD staff considered that the MPPWD did not have a planning role and that the organization was primarily focused on delivery of projects and programs determined by others using budget allocations controlled by others. Staff had limited appreciation of strategic transport and land use planning processes and particularly the potential and importance of MPPWD providing professional inputs in the areas of transport planning and traffic management.

The consultant proposes that the MPPWD should have a lead role in an integrated statewide road network development planning process (working with other road authorities) within an
integrated whole-of-government planning process (interfacing with land use planning, economic development etc). The current segmented process of planning for specific objectives of funding agencies (e.g. PMGSY program, National Highway program, ADB state highway improvement program) could benefit from the development of an “umbrella” integrated state wide road network management strategy across all road classifications.

The current MPPWD practice of development of maintenance program allocations using “norms” for costs and treatment types provides no incentive for understanding the whole of life performance of specific roads and materials, and the different life-cycle costs which can result from different pavement types and maintenance treatment strategies. Review and refinement of maintenance treatment strategies based upon measured pavement conditions has the potential to significantly improve maintenance effectiveness and reduce maintenance costs.

The RAMS (road asset management system) developed in this TA consultancy will provide the platform for collection and analyses of road inventory, condition and traffic data to underpin robust road network development planning and asset management practices. This is discussed further in Section 4.5 of this report.

The consultants have developed the MPPWD Asset Planning Guidelines (Attachment 4(i)). The Guidelines provide an asset management framework for the management of the development, maintenance and use of the Madhya Pradesh road network.

A series of training programs were presented to MPPWD staff covering the principles of strategic planning and road asset management; however due to delays in the establishment and staffing of the Planning/RAMS unit it was not possible to conduct 1:1 training with Planning staff during the tenure of the TA consultancy.

ISSUES IDENTIFIED

- Programs of aggregated project proposals rather than integrated planning.
- “Grass roots” planning process in M.P. is strong in creating local ownership generates projects according to perceptions of local priorities rather than strategic priorities for region or state.
- District Planning Committee and State Planning Commission have key roles in selection of projects for funding.
- Strategic guidelines for project selection and prioritisation are provided separately for NHAI, CRF and PMGSY road programs by the respective (national) funding agency.
- There is no state road network development strategy.
RECOMMENDATIONS

- Initiate a strategic planning framework, driven by government policy priorities.
- Establish state road network strategy.
- Establish strong central planning unit to drive planning processes and provide direction for divisional planning activity.

ACHIEVEMENTS (also refer TOR 2)

- The MPPWD has committed to establish a Planning / RAMS unit to drive strategic planning and road asset management in MPPWD in accordance with the unit roles, structure, position descriptions and short term action plan developed in the TA. Initial appointments have been made, pending government approval to the MPPWD proposal for organisation-wide restructure involving surrender of unwanted posts and sanction of new posts.
- 53 MPPWD staff have received training in strategic road network planning seminars conducted by the consultants.
- Draft MPPWD Asset Planning Guidelines have been prepared to provide a strategic framework for the development of programs for road network development and maintenance.
- A framework of Road Network Management Performance Measures has been developed as a basis to monitor and report the performance of the road network and the efficiency and effectiveness of road investments.
- The State Government has subsequently approved and distributed criteria for the development and selection of state – funded projects in accordance with statewide priorities.

ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD (also refer TOR item 2)

- Complete appointments of professional staff to the Planning/RAMS unit.
- Implement the action plan for Planning/RAMS unit.
- Train staff in strategic transport planning.
- Develop and implement state wide road network strategy.
4.3.3 Improved Quality Assurance (TOR 3c)

The consultants have delivered training workshops on Quality Management principles and practices to MPPWD staff. The MPPWD staff indicated limited perceptions of broader QM concepts and their understanding of quality management focused on the context of materials testing and works quality control.

To initiate development of a corporate quality system, the consultants developed a Quality Manual for the MPPWD materials testing laboratories as a model of the document structure for the MPPWD to apply to other parts of the organization in the longer term (Attachment 5(ii)).

A significant review was undertaken of the MPPWD research and testing laboratories which identified major deficiencies in equipment, accommodation, staffing, training, test procedures and records management. Staff reported an increasing practice of MPPWD staff to use private testing laboratories rather than the deteriorating and dysfunctional MPPWD laboratory network. The decline in the MPPWD laboratories which has been permitted over the past decade unfortunately sends a corporate message regarding a low priority given to quality management; indeed some staff reported that quantity of completed work is openly favoured by senior managers over quality. It is seen as an ‘either/or’ situation, rather than recognizing that both quality and quantity can be achieved through sound construction and quality assurance processes.

The consultants have recommended a 2 tier laboratory strategy (Attachment 5(i)), comprising 4 laboratories located at Bhopal, Gwalior, Indore and Jabalpur to be designated as Level 1 laboratories capable of a broad range of testing, investigation and research; and the 10 remaining MPPWD laboratories to be designated as Level 2 laboratories, resourced to conduct routine materials testing. Recognising financial constraints on the MPPWD, schedules of core equipment for level 1 and level 2 laboratories have been prepared by the consultants with detailed specifications provided to facilitate MPPWD purchases for level 1 laboratories from ADB loan funds. It has been recommended that the proposed QM unit should have overview responsibility for the progressive upgrading and resourcing of level 2 laboratories utilizing any equipment released by purchase of new equipment for level 1 laboratories. The MPPWD has added additional equipment requirements to the level 1 laboratory schedule and procurement is proceeding. The success of the laboratory upgrading program will depend upon the recruitment and training of adequate numbers and appropriately qualified laboratory staff in accordance with the recommendations of the consultants.

Good quality assurance practices were observed on major works with 3rd party supervision, particularly National Highway projects and MP RDC projects. These projects are a significantly larger scale than MPPWD projects; however the consultants have recommended that a SQC contract could be trialed on a cluster of small-medium scale MPPWD projects (Refer Attachment 3(ii)).

A broad range of technically sound specifications, procedures and guidelines are available from Indian Roads Congress (IRC); however MPPWD staff have limited copies of these documents and the number and size of the documents are cumbersome for reference in the field. The consultants have prepared a Field Quality Guide for MPPWD field supervisors to capture the key practices to be followed in contract supervision and quality surveillance (Attachment 3(ii)) Training workshops have been conducted for field engineers targeting the key elements of contract management and field quality assurance practices.

The formation of a central Quality Management unit was recommended and adopted by the MPPWD. To facilitate the mobilization of new staff in the QM unit, the consultants have
prepared orientation documentation incorporating the roles, position descriptions of all positions and a recommended short term action plan detailing priority activities for the first two years operation of the unit (Attachment 5(iv)). The initial focus of the QM unit will be the equipping and staffing of level 1 laboratories; progressive review and upgrading of level 2 laboratories; and implementation of quality procedures and audits of MPPWD laboratories and private laboratories in accordance with the draft Quality Manual prepared by the consultants. In the longer term the QM unit will take a lead role in the development and documentation of quality systems for other core processes in the MPPWD.

**ISSUES IDENTIFIED**

**Total Quality Management**
- Lack of widespread understanding of Total Quality Management principles.

**Laboratories**
- Limited items of testing equipment.
- Equipment is not calibrated or maintained.
- Many items of equipment are technically obsolete.
- Lack of appropriate facilities and maintenance of laboratory buildings.
- Insufficient staffing.
- Loss of trained and experienced laboratory staff.
- The number, size and format of QM documents is cumbersome for field use.
- Mobility (vehicle) required for field testing when required.
- Analyses and reporting of test results is undertaken manually.
- Insufficient funding for equipment maintenance, consumables, contingency items beyond staff salaries.
- Increasing use of private testing laboratories by MPPWD due to dysfunctional MPPWD laboratories.

**Audits and Statewide Consistency**
- No internal or external audits are undertaken of the compliance of laboratories with specified testing and reporting procedures.
- No statewide overview of performance of laboratories and distribution of workload, equipment and staff development issues.

**Premature Failures of Pavements**
- Some pavements are failing prematurely at 2 or 3 years due to unknown causes. Failures are not investigated to determine causal factor(s) by MPPWD laboratories.

**RECOMMENDATIONS**

**Total Quality Management**
- Establish a central Quality Management Unit to drive quality management practices in MPPWD.
- Training of MPPWD staff on Quality Management Principles.
- Initially establish a ‘Quality System’ approach for one part of the MPPWD organization.

**Laboratories**
- Establish internal quality system accreditations scheme and work towards external accreditation if appropriate.
- Establish hierarchy of 4No. Level 1 laboratories and 10 No. Level 2 laboratories.
| - Re-equip level 1 laboratories and progressively review and equip level 2 laboratories. |

**Audits and Statewide Consistency**
- MPPWD to establish internal program for auditing and accreditation of MPPWD and private testing laboratories.
- Develop Field Construction Quality Guide.
- Trial SQC contract supervision model.
- Reporting and monitoring of Contractor Performance.

**Premature Failures of Pavements**
- Monitor the performance of pavements and investigate premature failures (an important R&D role for Level 1 laboratories).

**ACHIEVEMENTS**

- The MPPWD has adopted the recommended strategy for upgrading of MPPWD laboratories, initially focusing on establishing high standard, comprehensive “Level 1” testing facilities at 4 locations and subsequently progressively upgrading the remaining laboratories as “Level 2” laboratories for the conduct of routine testing.

- The MPPWD has initiated the establishment of a specialist Quality Management Unit to drive the implementation of quality management practices across the MPPWD in accordance with the unit roles, staffing, position descriptions and action plan recommended by the TA consultants. The initial focus of the QM unit shall be on the laboratory upgrade program and the audit and accreditation of MPPWD and private laboratories.

- The MPPWD has committed to the purchase of specified laboratory equipment from ADB loan funds and the appointment and training of staff as recommended for Level 1 laboratories.

- A Quality Manual has been developed for MPPWD Laboratories. This will provide a proforma/template for the future development of quality manuals in other sections of MPPWD.

- Field construction quality guides have been prepared, including summary information, inspection test plans, and checklists for field application.

- 43 MPPWD staff participated in Quality Management training seminars conducted at Gwalior, Sehere, Indore & Vidisha.

- Computers and peripheral equipment for Level 1 laboratories have been purchased from TA equipment budget and supplied to Gwalior, Bhopal, Indore and Jabalpur to enable computerization of test records and reports.
### ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

- Complete staffing of Quality Management unit.
- Implement quality manual for laboratories.
- Procure & ensure calibration of laboratory equipment.
- Renovate or replace laboratory buildings & facilities.
- Procure suitable vehicles for field testing and investigations.
- Recruit staff (and conduct training) for Level 1 laboratories.
- Procure computers for all Level 2 laboratories.
- Distribute field quality guides.
- Conduct a trial of SQC contract supervision model on MPPWD projects.
- Conduct staff training in quality management.

#### 4.3.4 Computerised project financial accounting and monitoring systems (TOR 3d)

A situation analysis (Attachment 6(i)) has highlighted that the financial and budget reporting processes in the MPPWD are post event and do not provide a basis for active budget management and decision-making. The procedures focus on expenditure reporting rather than managing annual and whole of project allocations, expenditure, commitments and budgets.

The reporting is primarily directed to satisfy the statutory requirements of the State and Central Governments via the Accountant General. The systems are paper based with the intrinsic risk of errors in transposition of data between reports and potential for unauthorized alterations and adjustments. The manual transfer of reports causes delays in the aggregation of sub-divisional and divisional reports to state wide reports and restricts the timely supply of data to management for action.

The TA consultants recommended that a computerized project financial accounting and monitoring system be adopted by the MPPWD to address these issues and to enable the introduction of effective real time financial management and budget monitoring practices aligning with modern international practice. Computerised financial management systems (FMS) are in widespread use throughout India and internationally; consequently the consultants recommended that the MPPWD should not seek custom software to be written for the MPPWD, but should procure an established online FMS prepared for a similar public sector organization in India and have it customized for the aspects unique to the MPPWD. This approach would minimize the risks by using a proven base product with strong local support and limited customization to meet MPPWD requirements. The consultants have developed specifications for the required functionality of the FMS, customization and training requirements (Attachment 6(ii)).
The ISC adopted the consultant’s recommendation at the September 2008 ISC meeting and subsequently sought government approval for the purchase and customization of an established FMS using ADB loan funds. The GoMP Finance Department concluded that it would be most cost effective to accelerate its proposed development of a whole of government online financial management system and to accommodate the core functionality of the MPPWD proposal in order to meet the needs of all departments.

The consultant’s Financial Management Specialist conducted training workshop for finance staff and non-finance staff to providing an overview of sound financial accounting and budget management processes and introducing staff to the potential functionality of an online FMS.

**ISSUES IDENTIFIED**

- Inefficiencies and errors due to a paper based accounting system.
- Lack of timely and adequate reporting of financial data due to manual system.
- Lack of transparency of expenditure due to inappropriate delegations. Full delegation of expenditures at division level does not allow effective control by EinC of state wide budgets at project or program level.
- Poor budget management – over commitments, run-out of funds mid project, run-out of maintenance funds before end of financial year.

**RECOMMENDATIONS**

- Implement an FMS which meets MPPWD functional requirements.
- Increase focus on Budget Management.
- Adopt whole of life project and program management.
- Manage budgets at all levels of the project hierarchy.

**ACHIEVEMENTS**

- A functional specification has been developed for procurement and customisation of an existing FMS to meet MPPWD requirements, based upon assessment of MPPWD processes, a comparative study of the financial management systems of similar organisations within Madhya Pradesh and neighbouring states and an assessment of the interfaces with the GoMP Treasury WDDF system.
- The Finance Department of GoMP has subsequently committed to develop a whole of government FMS incorporating the functionality proposed for the needs of the MPPWD, as well as other works delivery departments.
Management level training in Financial Management and Budget Management has been conducted for 20 MPPWD staff.

### ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

- Liaise with the Department of Finance to ensure that the GoMP Financial Management System provides the functionality required for the MPPWD.

## 4.4 Improve Human Resource Management (TOR 4)

The MPPWD is currently confronted by:

- a shortage of experienced professional staff, particularly at middle management levels
- a large number of retirements of senior staff
- an embargo on new recruitments for the past 20 years
- a backlog of staff training
- a surplus of unskilled field staff
- a need to retrain or redeploy staff with manual tasks which are superseded by new technology, and
- traditional public sector employment practices, such as promotions based primarily on seniority rather than performance.

Significant and immediate human resource management initiatives are required to address these issues if the MPPWD is to be an efficient and effective organization for the Government of Madhya Pradesh.

A widely held perception of Human Resource Management among MPPWD staff (in common with many traditional public sector organisations in India), is that it is an administrative function responsible for procedures such as recruitment, leave, service and salary records. It is seen as a support function which is undertaken only in the responsible administrative area, rather than being recognized as an integral management responsibility for all staff in supervisory roles.

### Training and Development

Effective staff development and training is a cornerstone of modern HRM practice. The consultants have examined MPPWD staff training needs with the conduct of a Training Needs Analysis and the development of a Three Year Training Plan (Attachment 7(ii)). Successful implementation of the training plan is dependent upon the identification of specific training programs to meet high priority needs and the selection of participants based on aptitude, experience, work relevance or potential.

Within the requirements of the Terms of Reference of the TA consultancy, the consultants have conducted a range of training programs for MPPWD staff. The feedback received from the staff who have participated in the training programs has been positive with particular appreciation of the active learning models used and the engagement of participants in interactive 2-way discussions. This is in contrast to traditional 1-way lecture-based training. A range of effective training models was introduced to 7 MPPWD staff attending the “Training of Trainers” program (Attachment 7(ii))
Specialist Functions

The TA consultancy has recommended the establishment of central specialist units for Planning and Road Asset Management, Quality Management, Legal & Contract Services, Information Management and Human Resource Management. The units are proposed to provide centres of expertise and drive the development and implementation of policy, strategy and procedures in these functions across the MPPWD.

The professional staffing of the specialist units has not been completed within the period of the TA consultancy. Pending final staff appointments to the specialist units, the consultants have prepared orientation documents for each unit which describe the structure, roles and staff position descriptions and propose initial short term action plans (Attachments 2(i), 3(iii), 5(iv), 9(i) and 7(iii)). It is recommended that the MPPWD should progressively develop such a style of position description for each staff member in the new organization structure. Current position descriptions are commonly limited to a salary classification, a position title, delegated authorization and specific reports to be prepared without clarity of the specific objectives of the position.

Organisational Restructure

The successful creation of the Institutional Strengthening Committee (ISC) for strategic overview and decision making in relation to this TA has also demonstrated the ongoing value of such a peak corporate governance group for discussion, development and decision-making on MPPWD policy and strategy issues.

Following consultation with ISC and senior MPPWD officers, the consultant has recommended a revised organizational structure (Attachment 7(iii)) which establishes functional groupings and lines of responsibility in the specialist areas. The proposal includes changes to roles and reporting lines associated with the MPPWD regional engineering network and its relationship to the office of the Engineer-in-Chief.

Over the period of the TA consultancy it became apparent that the administrative processes and responsibilities of MPPWD officers were unclear for reporting and recommending the surrender of old posts, creation of new posts and sanction by government. Documentation of the process by the consultant on the advice of the Principal Secretary has facilitated progress towards achieving government approval.

The MPPWD has reviewed the current structure and 8,000 staff positions across all parts of the organization and identified posts to be surrendered to offset the creation of new posts. The MPPWD proposal establishes 9 units within the EinC office, and proposes a reduction of 27 sub divisions and 2 divisions. All functions relating to the planning, design, construction and maintenance of major buildings will be grouped within one business unit of MPPWD, ultimately operating on a similar model to the MPRDC. The MPPWD has incorporated the recommendations of the consultant (focusing on the establishment of specialist functions) in a broader restructure proposal which is currently (Sept 09) being finalized for submission to the Government for approval.

Revitalisation of the MPPWD

The consultant has prepared a further paper addressing a range of issues for the “Revitalisation of the MPPWD”. The recommendations focus particularly on aspects of organisation management, culture and HR policy which should be considered concurrently with re-organisation of the MPPWD structure. The revitalisation paper discusses:

- Developing a Strategic Approach to Management of the MPPWD
- Focusing on Specialist Functions
• Changing Organizational Structures
• Understanding and developing the role of the MPPWD as an Asset Manager
• Improving Financial Management
• Updating Quality Management and Materials Testing
• Realigning Human Resource Management with the needs of a revitalised MPPWD
• Embracing Technology
• Introducing Modern Road Maintenance Practices
• Managing Relationships with Suppliers, Contractors and the Public

The recommendations are complementary to the specific technical initiatives developed in response to the terms of reference of the TA consultancy.

Corporate Planning
It was identified through discussions with staff that there is a need for increased clarity of the roles, responsibilities and directions of the MPPWD as well as increased clarity of the individual roles and responsibilities of staff positions within the MPPWD. The consultant has guided the MPPWD through the initial steps of a Corporate Planning process including 2 staff workshops (total 26 staff) and development of a draft corporate plan document (Attachment 7(v)). The draft Corporate Plan should be reviewed and finalized to reflect the roles and functional arrangements in the new organization structure currently being finalized by the MPPWD. Effective presentation of this document to staff and stakeholders through publication and further discussions will widen the understanding of the MPPWD’s role, corporate directions and priorities.

It was evident that, although there are clear and focussed roles of MPRDC and MPRRDA, for the development of state highways and rural roads respectively, the role of the MPPWD was less clearly defined and it effectively has a default role to manage the balance of roads and functions. The lack of clarity of the MPPWD role is compounded by the practice of government (District Collectors) to use MPPWD staff as a resource for any government role in a district (including health programs, school programs, electoral duties, etc) unrelated to road system management or civil engineering. This is a long established government practice but it cuts across the authority of MPPWD management and impacts on MPPWD efficiency and staff morale. Resolution of this issue is outside the scope of this TA consultancy and requires a whole-of-government review. A corporate plan will provide a suitable summary to staff and stakeholders of the technical initiatives, organisation restructure and cultural changes being introduced by the MPPWD.

Maintenance Gang Productivity
Recommendations have also been made for improvements to maintenance gang productivity (Attachment 7(vi)). This brief review was undertaken in conjunction with the consultants’ reviews in the areas of contract management and asset management. The report identifies a number of opportunities for improvements including - staff training, maintenance works planning, site management and traffic control, supply of basic hand tools and equipment, and use of vehicles for gang mobility. These initiatives should be initially piloted and refined in one or two divisions, and the pilot divisions used for demonstration and practical training to other divisions.
ISSUES IDENTIFIED

- Loss of experienced senior staff by retirement.
- No succession planning for key positions.
- No recruitment for 20 years, many vacant posts.
- Collapsed cadre system.
- Staff having multiple “additional duties” posts.
- No managed training and development program.
- Lack of clarity and understanding of functions of positions (as distinct from generic delegations).
- Poor communications within organisation and low staff morale.

RECOMMENDATIONS

- Review and revitalise organisation structure with clarity of functions, duties and responsibilities for key positions.
- Create central specialist units as focal point for policy, strategy and procedures for critical corporate functions.
- Implement a rolling Three Year Training Plan in response to identified training needs.
- Create dedicated central unit for Human Resources Management.
- Undertake a corporate planning process in the MPPWD.

ACHIEVEMENTS

- The “Institutional Strengthening Committee” (ISC) was established as a corporate governance group to oversee the TA consultancy and ongoing implementation of institutional strengthening initiatives in the MPPWD.
- A Draft Three Year Training Plan has been developed for the MPPWD.
- A revised organisation structure was developed by the consultants for introduction of central specialist units (Planning/RAMS, Quality, Legal & Contract Services, HRM, IT).
- The MPPWD has reviewed all posts and recommended a revised structure to government, identifying superseded posts to be surrendered and new posts to be created (and recognizing the recommendations of the consultants).
• Initiatives to revitalize the MPPWD have been recommended concurrently with the proposed restructure.

• Recommendations have been made to improve maintenance gang productivity.

• A Corporate Planning process was initiated with staff and a draft corporate plan was developed to strengthen the understanding by staff and external stakeholders of the role and directions of the MPPWD.

**ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD**

• Continue the role of the ISC to oversee implementation of I.S. initiatives.

• Finalise corporate plan and distribute and discuss with staff and stakeholders.

• Establish HRM position and unit.

• Implement Three Year Training Plan.

• Implement strategy for re-organisation (creation of structure, internal and external recruitment, implement new reporting arrangements, staff briefings).

• Implement improvements to maintenance gang training, tools and equipment, works planning, traffic control and vehicles for transport of men and equipment.

### 4.5 Introduce effective road asset management systems (TOR 5)

The TA consultants have developed a Road Asset Management System (RAMS) for the MPPWD built upon the framework of the Electronic Road Register (ERR) of the MPRDC and tailored to the inventory and condition data items and report requirements of the MPPWD. This is detailed in Attachments 8(i) to 8(iv). Training courses were conducted for MPPWD staff, covering Asset Management principles, road condition data collection, bridge management systems, and RAMS operations. (Attachments 8(v) and 8(vi)).

**Data collection**

Recommendations were made by the TA consultants in May 2008 that the MPPWD undertake automated road condition data collection; however the MPPWD opted to use manual data collection by divisional staff. In the absence of any data provided for MPPWD roads, the final testing of the RAMS software and the RAMS operator training were undertaken using sample data obtained via MPRDC for State Highways.

At the end of June 2009 only 20% of road inventory and condition data has been received by the Planning/RAMS unit; however the data received is (a) not in standard format of RAMS input (b) not correct or accurate and (c) mostly limited to inventory data extracted from other reports. Significant work is required by MPPWD to ensure road condition data collection is accurate and correct; otherwise any analyses using RAMS will give meaningless reports.
Planning/RAMS unit
As discussed in sections 4.2 and 4.3.2, significant delays have been experienced in the establishment of the accommodation and staffing of the Planning/RAMS unit. Pending government approval to the new specialist units in the MPPWD, 3 AE’s were appointed to the Planning/RAMS unit in June 2009; however these appointees were not computer literate and had not attended RAMS training. The TA consultants conducted urgent basic training with these appointees to assist them to receive and enter any data received from divisions for input to RAMS.

In the absence of professional appointments to the Planning/RAMS unit while the TA consultants were in Madhya Pradesh, orientation documentation has been prepared for staff to be appointed to the Planning/RAMS unit, including position descriptions for all staff and a short term action plan for the initial years of the unit (Attachment 2(i)). The establishment of the complete Planning/RAMS unit is essential for the introduction of good planning and asset management practices in the MPPWD. The collection and analysis of accurate and complete inventory and condition data is critical for the development of needs-driven programs for road network development and asset maintenance programs. The RAMS software provides an asset management tool. It is not a “black box” and requires strict control of data input quality and a critical approach to analyses and the interpretation of outputs. Staff must be appropriately qualified and skilled in accordance with the position descriptions provided.

The consultants have developed the MPPWD Asset Planning Guidelines (Attachment 4(i)). The Guidelines provide an asset management framework for the effective and efficient management of the development, maintenance and use of the Madhya Pradesh road network.

**ISSUES IDENTIFIED**

- Asset information collected and held in hard copy in divisions in many formats; consequently there is no central repository of state wide asset data.

- No road numbering system present, no accurate Location Referencing Points.

- Road maintenance budget and distribution based upon national norms of costs rather than data on Madhya Pradesh road condition, pavement performance and traffic.

- No mechanism available to monitor/assess the performance of pavements or the effectiveness of maintenance treatments.

- Hard copy plans are prepared for road, bridge and building designs.
## RECOMMENDATIONS

- Develop a computerised road asset management system (RAMS) and road numbering and location referencing system for the collection and analysis of asset data (including inventory, condition and use).
- Train staff in asset management principles and asset data collection and analysis.
- Implement computer-aided Design and Drafting (CADD).

## ACHIEVEMENTS

- Road Asset Management System (RAMS) software developed for MPPWD.
- 113 staff trained in data collection, data input and operation of RAMS.
- GPS units purchased and 9 staff trained in their use.
- Initial road condition data commenced by MPPWD.
- Planning/RAMS unit initiated, orientation documents prepared.
- CADD software and hardware procured and 10 staff trained.

## ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

- Complete the collection and input to RAMS of inventory and road condition data for District Roads.
- Establish an annual cyclic program for statewide road condition data collection and input to RAMS.
- Conduct analyses of road condition data to ascertain annual trends in condition.
- Distribute “Asset Planning Guidelines” to divisions.
- Develop statewide maintenance budget and distribution between divisions based on identified needs and pavement performance (progressively replacing the use of assumed national norms).
- Complete roll-out of CADD to all design sections within MPPWD.
4.6 Information Technology (outside TOR)

The Terms of Reference for the TA consultancy focus on the development of improved systems and procedures to strengthen MPPWD capability across a range of areas. IT -based communications, reporting and business applications are key elements of such improved systems and procedures, particularly RAMS and FMS. The implementation of these initiatives is dependent upon the availability of computers, computer literacy of staff, availability of internet, local area networks (LAN) and state wide area network (SWAN), IT support, and a strategic plan for purchases and rollout.

However there is no strategy or program in place for the strategic roll-out of IT infrastructure (software, hardware and networks) for the MPPWD and no specific corporate capability in place to manage IT policy, strategy, implementation, training and support. To address these issues, the Consultant prepared:

(i) **IT Department**
A proposed structure for a MPPWD IT department and detailed requirements for central and divisional staff. It has been recommended that the key managerial positions should be filled by recruitment of experienced I.T. professionals from industry. In the absence of professional appointments to the IT department while the TA consultants were in Madhya Pradesh, orientation documentation has been prepared for staff to be appointed to the department, including position descriptions for all staff and short term action plan for the initial years of the department (Attachment 9(i)).

(ii) **IT training**
The need for training in computer literacy was identified as a high priority in the Training Needs Analysis. It was identified that a large number of middle and senior level staff of MPPWD were not using IT as a basic tool for word processing, spreadsheets and internet, due to an absence of introductory training.

A program of training in computer basics was initiated by the TA consultants. A 6 – person computer training room was established using MPPWD computers which were subsequently replaced by equipment funded by the TA. A local IT trainer Ms Rachna Sharma was engaged by the consultants for an initial period of 2 months.

The program (Attachment 9(iii)) was conducted over five 3hour sessions per week. On completion of the program, participants will be competent to start a computer, produce and format basic word processing and spreadsheets and access the internet. These basic skills are pre-requisite for MPPWD to use business applications such as FMS and RAMS under development in the current TA. Following the success of the initial 2 months training sponsored by the TA, the MPPWD has continued the program and has engaged Ms Rachna Sharma on a continuing basis. The initial priority has been given to training of staff in the EinC office, Capital zone and National Highways zone offices at Satpura Bhawan.

(iii) **MPPWD Information Technology (I.T.) strategy**
A brief was prepared for an independent specialist consultancy to develop an MPPWD IT strategy and implementation plan for MPPWD (Attachment 9(ii)). The intention is that the consultancy would be managed by the Manager IT Systems, as a priority task for the head of the proposed IT department. The objective of the proposed IT strategy is to establish IT policy for software, hardware, training, support
and maintenance and to develop a strategy and phased implementation plan and budget for the integrated roll-out of IT infrastructure across the MPPWD.

**ISSUES IDENTIFIED**

- The significant institutional strengthening initiatives provide computer-based process improvements, particularly RAMS and FMS.
- The MPPWD has had an ad hoc approach to the purchase of computers and training of staff.
- The TA initiatives will not be sustainable without a structured and integrated approach by the MPPWD to the procurement of hardware and software, training of staff, and the computerization of business processes.

**RECOMMENDATIONS**

- Establish a MPPWD I.T. department.
- Recruit external IT expertise to manage I.T. department.
- Develop a MPPWD I.T. strategy for the phased computerisation of MPPWD with policy and strategy for rollout of hardware, software and staff training.
- Establish I.T. training centre with dedicated trainer.

**ACHIEVEMENTS**

- IT Training Centre established and Computer Basics training course conducted from 1st December 2008. to 1 Feb 09 under TA sponsorship.
- 78 staff trained in Computer Basics funded from TA.
- MPPWD has continued the IT Training Centre program from February 2009.
- MPPWD has committed to establish an IT department within the MPPWD. Role statements, structure, position descriptions and short term action plan have been prepared for the proposed IT Department. Appointments are pending government approval to the MPPWD proposal for organisation-wide restructure involving surrender of unwanted posts and sanction of new posts.
- Consultancy brief prepared for development of an MPPWD IT strategy.
Additional Actions Required for Full Implementation by MPPWD

- Establish IT Department.
- Recruit experienced IT staff from IT Industry.
- Develop MPPWD IT strategy.

4.7 Recommendations for Equipment procurement

4.7.1 Equipment for road safety and control of overloading

The Consultants were requested to provide advice to GoMP and assist procurement of equipment for road safety and control of overloading; such as equipment for driver training and testing, vehicle fitness testing and weighbridges, which might be purchased through ADB loan funds. The Transport Department and Police Department are by legislation, the nodal agencies for transport load management and road safety respectively.

VicRoads Consultant Transport Planner investigated the needs and priorities for expenditures in these categories through detailed discussions with MPPWD staff, Transport Department and Police Department in October 2008. The consultant spoke to the agencies independently and collated a listing (Table 1) of separately suggested equipment requirements; however he emphasised that an integrated strategic approach would be more beneficial for road safety outcomes for Madhya Pradesh.

Whole of government approach to road safety

The current Madhya Pradesh road casualty rate of over 5,600 deaths per annum is extremely high by world standards. This is the equivalent of over 15 jumbo jets crashing in the state of Madhya Pradesh each year with no survivors. This is a major economic and social burden for the community. There is a limited perception of the role of MPPWD in managing road safety, beyond ensuring the design of safe roads in accordance with design standards. Although there is a State Road Safety Committee, there appears to be an absence of a sustained and integrated approach to road safety programs between Police, Transport Department and the road agencies.

The consultant recommended that any strategic investments in road safety equipment should be identified through an integrated co-ordinated approach such as through the State Road Safety Committee.

Control of overloading

There is an established network of public and private weighbridges in Madhya Pradesh, however enforcement of overloading has been identified as an issue by previous TA consultancies. There is a lack of clarity of the responsibility and authority of the MPPWD to implement and enforce mass limits, a role which is currently undertaken by the Transport Department.

Following discussions with Police, Transport Department and road agencies, the consultant developed a table of equipment, prioritised by the agencies, to support road safety and control of overloading within the scope of the $1m. ADB loan funds. The focus of the table was on vehicles to support enforcement of mass limits, policing of driver behaviours and response of maintenance gangs to repair pavement failures and hazards.
After discussion of the concepts, the ISC directed (February 2009) that the priority for use of loan funds should be for the development of MPPWD, recognising that there are other programs and funds being made available to other departments for road safety and control of overloading. No further action was taken in regard to such equipment.

4.7.2 Equipment from Loan Funds to support institutional strengthening initiatives

Throughout the period of the TA consultancy, a number of proposals were flagged for potential purchase from ADB loan funds. The following items were reviewed by ISC in February 2009:

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimated Cost</th>
<th>ISC decision</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Financial Management System</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procure FMS, customize to MPPWD, implementation, training and support</td>
<td>200,000 $USD</td>
<td>Loan Funds</td>
</tr>
<tr>
<td><strong>2 Laboratory Upgrading</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Level 1 laboratories (Bhopal, Indore, Gwalior, Jabalpur)</em></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Upgrading and staffing of a core of 4 high capacity laboratories for testing, research and auditing has been recommended as the highest priority for improved quality of MPPWD construction works.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>300,000 $USD</td>
<td>Loan Funds</td>
</tr>
<tr>
<td>Vehicles</td>
<td>54,000</td>
<td>X</td>
</tr>
<tr>
<td>Facilities</td>
<td>21,000</td>
<td>X</td>
</tr>
<tr>
<td><strong>IT</strong></td>
<td>2,000</td>
<td>TA equipment</td>
</tr>
<tr>
<td><em>Level 2 laboratories (10 No.)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review, upgrading and staffing of 10 research and testing laboratories as Level 2 laboratories for routine testing has been recommended to be undertaken progressively subsequent to the establishment of the Level 1 laboratories. It is anticipated that level 2 laboratories will have significant equipment repaired and also receive used but serviceable equipment available from the re-equipment of level 1 laboratories.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>156,000</td>
<td>X</td>
</tr>
<tr>
<td>Vehicles</td>
<td>135,000</td>
<td>X</td>
</tr>
<tr>
<td>Facilities</td>
<td>34,000</td>
<td>X</td>
</tr>
<tr>
<td><strong>3 Road Condition Survey Equipment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended options of ARRB Hawkeye 1000 digital laser profilometer and imaging system or ROMDAS bump integrator and digital imaging system for collection of asset inventory data and annual road condition surveys for RAMS</td>
<td>140,000 $USD</td>
<td>X</td>
</tr>
<tr>
<td><strong>4 CADD for Bridge Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Aided Design and Drafting (CADD) is recognised nationally and internationally as best modern practice in all areas of structural design. The MPPWD has suggested that introduction of CAD would be opportune at this time, not only to meet the requirement for digitised bridge drawings in the RAMS Bridge Register, but to bring MPPWD structural design and drafting practices up to industry norms.</td>
<td>55,000 $USD</td>
<td>TA equipment</td>
</tr>
<tr>
<td><strong>5 Bridge Inspection Program</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage engineering consultancy to establish inventory and condition data for MPPWD bridges and enter in RAMS</td>
<td>200,000 $USD</td>
<td>X</td>
</tr>
<tr>
<td><strong>6 MPPWD IT Strategy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engage consultancy to establish policy, strategy and action plan for implementation of IT hardware, software and training across MPPWD</td>
<td>20,000</td>
<td>X</td>
</tr>
<tr>
<td><strong>7 Total Stations Survey Equipment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposal from ISC for purchase of 10 total station survey units for MPPWD</td>
<td>30,000 $USD</td>
<td>Loan Funds</td>
</tr>
</tbody>
</table>

The TA consultants subsequently prepared specifications, estimate and summary business cases for procurement of the FMS, level 1 laboratory equipment and total station survey equipment from ADB loan funds. The documentation was provided to the ISC procurement committee to proceed with contract preparation for ADB approval and MPRDC advertisement of tenders.
4.7.3 Procurement of computers and equipment for TA implementation

The consultants procured a range of computers and peripheral equipment for the initial pilot implementation of the RAMS and FMS, and for level 1 laboratories. The consultants also procured CADD software and associated hardware for the digital design, drafting and storage of plans for MPPWD bridge and buildings assets. All equipment purchased under the TA was subsequently handed over to the MPPWD. The following table provides a summary of the equipment purchased under the TA contract and its location in the MPPWD.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>No.</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer stations</td>
<td>20</td>
<td>7 x Computer training centre, 1 x Planning/RAMS unit, 1 x Quality Management unit, 4 x Level 1 laboratories, 5 x Zonal offices for initial FMS pilot (SE Admin), 1 x Divisional offices for initial RAMS, 1 x CE Capital zone</td>
</tr>
<tr>
<td>UPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printer</td>
<td>10</td>
<td>1 x Planning/RAMS unit, 1 x QM unit, 2 x Finance, 2 x Computer training centre, 4 x Level 1 laboratories</td>
</tr>
<tr>
<td>Scanner</td>
<td>6</td>
<td>1 x Planning/RAMS unit, 1 x Computer training centre, 4 x Level 1 laboratories</td>
</tr>
<tr>
<td>Digital cameras</td>
<td>3</td>
<td>Bhopal, Gwalior, Jabalpur laboratories</td>
</tr>
<tr>
<td>Data projector</td>
<td>2</td>
<td>Computer training centre, NH conference room</td>
</tr>
<tr>
<td>GPS units</td>
<td>10</td>
<td>1 x Planning/RAMS unit, 9 x Zones</td>
</tr>
<tr>
<td>CADD Server</td>
<td>2</td>
<td>Bridge Division, Architects Division</td>
</tr>
<tr>
<td>Graphic workstation (CADD)</td>
<td>5</td>
<td>Bridge Division</td>
</tr>
<tr>
<td>Colour plotter (CADD)</td>
<td>1</td>
<td>Bridge Division</td>
</tr>
<tr>
<td>Mono scanner (CADD)</td>
<td>1</td>
<td>Bridge Division</td>
</tr>
<tr>
<td>AutoCAD software</td>
<td>5</td>
<td>Bridge Division</td>
</tr>
<tr>
<td>ArchCAD software</td>
<td>2</td>
<td>Architects Division</td>
</tr>
</tbody>
</table>

5 GENERAL ISSUES REGARDING TA IMPLEMENTATION

5.1 General Issues regarding the design of the TA consultancy

Whole of Government approach

Many institutional strengthening changes require a “whole of government” approach to be successful, particularly in the areas of planning, financial and budget management, IT implementation, HR management, and road safety. In these areas established Central or State government policy and procedures dictate the practices of all government departments. These procedures may be defined to ensure consistent employment conditions across the government sector or to facilitate the aggregation of departmental information into whole of government
reports. Changes in one department in isolation can be isolating rather than encouraging a whole of government approach.

Similarly, in areas where two or more departments have shared or complementary roles, (such as transport and land use planning, the management of road safety or the control of overloading) it is not possible to change or re-distribute those roles through the actions of a single department such as the MPPWD. A whole of government approach would strengthen the outcomes in these areas.

**Institutional Strengthening as a pre-requisite or co-requisite for investment**

Institutional strengthening consultancies are commonly funded by ADB and WB in parallel with significant investments in road development programs with the objectives to (firstly) ensure efficiency in the implementation of the road development programs and (secondly) to ensure asset management practices are in place to ensure the long term sustainability of the completed roads. Consequences of this model of parallel funding of the IS TA consultancy and the road development program are that (a) the road agency is faced with delivering an exceptionally large construction and maintenance program, commenced using the existing organization structure, resources and procedures (with their identified inefficiencies); and (b) the highest priority of the organization is to commit staff to the successful delivery of the road program. Resourcing of the institutional strengthening process is seen as a low priority and organizational change is not attractive in a period of peak workload. The TA consultancy is a small percentage of the total program budget.

An alternative approach would be to initiate the institutional strengthening program 18 months in advance of the road program investments, with achievement of specified institutional strengthening milestones as a pre-requisite condition for subsequent roadworks funding, rather than a parallel contract. This approach would provide an incentive for achievement of institutional changes and assist efficient implementation of the road development program with new business systems in place.

**Primary client**

The ADB loan agreement has been made with MPRDC as the signatory; however the focus of the TA consultancy is the institutional strengthening of the MPPWD. This arrangement has influenced the procurement decisions of the ISC and involves an additional organization in the procurement process.

**IT strategy as a lead activity to Institutional Strengthening**

The establishment of an IT strategy would be desirable as a lead activity to similar Institutional strengthening consultancies in the future. Establishment of an IT strategy provides a defined platform for the roll-out of computers, training of staff and the development of business applications. Difficulties have been experienced in the implementation of business applications developed in this consultancy due to the absence of computers in workplaces and the lack of computer-literate staff. VicRoads has also experienced a similar situation with institutional strengthening activities in Lao PDR for the World Bank. The consultants have taken initiatives outside the TOR to introduce computer basics training and advise MPPWD on IT rollout.

**Duration of the TA consultancy**

The introduction of significant changes in organization structure, workplace technology and business practices in an organization which has undergone minimal changes in decades will require a long term process of physical and cultural changes in the workplace. It has been acknowledged that the scope of the TA is very broad for a 12 month program and it is recognized that the work undertaken provides the starting point for the implementation of institutional changes, rather than the end point. In this context the MPPWD and the ADB agreed
to the Consultant’s recommendation to the establishment of the Institutional Strengthening Committee which, while acting as a steering committee for the project, also has a role to ensure sustainable implementation of initiatives beyond the period of the TA consultancy. The challenge of the TA consultancy was increased by the extensive public holidays and National and State election periods in 2008-2009.

5.2 Communications

5.2.1 Communications between MPPWD and Consultant

The scope of the consultancy has been to provide “Technical Assistance” to assist the MPPWD in the implementation of a range of institutional strengthening initiatives. The role of the consultant has been to assist the MPPWD, relying upon close 2-way liaison and communication with the client and strong commitment and participation by MPPWD.

In September 2008, the Consultants recommended the formation of an Institutional Strengthening Committee (ISC) to provide a peak governance body to interface with the TA consultants, to review proposals and to manage institutional strengthening initiatives. In addition, ‘Nodal Officers’ were nominated to liaise with the consultants in each of the subject areas of the TOR for the TA consultancy. The membership and role of the ISC and the names and roles of the nodal officers are provided in attachments 10(i) and 10(ii).

5.2.2 Communications within MPPWD staff and stakeholders

There has been very limited awareness of the presence, purpose and scope of the TA consultancy among MPPWD staff aside from those directly participating in the ISC or as nodal officers. Staff at all levels, including Chief Engineers, have attended training courses without a prior understanding of the context of the institutional strengthening initiatives. This reflects the absence of effective internal communications mechanisms within the MPPWD.

In the course of development of the corporate plan, a wider program of consultation with staff and external stakeholders was recommended by the consultants but not approved by the ISC. It is considered that this approach does not tap into the collective knowledge and understanding of the staff at all levels. Effective communications within MPPWD between management and staff is essential for the understanding and implementation of change initiatives.

A presentation was prepared for the new Minister for MPPWD regarding the significant factors affecting the quality of road pavements in Madhya Pradesh; as a key stakeholder in the TA consultancy (Attachment 5(iv)).

5.3 Role of the Institutional Strengthening Committee (ISC)

The ISC has provided a forum for peak client briefings by the consultants and decision making by the MPPWD. It has introduced a new governance model for decision making on corporate issues in the MPPWD through a group of senior managers, similar to the role of a Board of Directors of a private company.

The formation of the ISC significantly improved the communications between VicRoads and the MPPWD, and 12 meetings have been held between 7th October 2008 and 17th June 2009. Minutes of the ISC meetings are provided in Attachment 10(iii).

The success of the ISC will improve further as the group increasingly works toward adopting corporate leadership group behaviours, including:
- empowerment for frank discussion between ALL members
- group understanding is important prior to any decisions
- Seniority may have casting vote on decisions but should not dictate discussions
- Commitment to corporate meeting as highest priority – not readily postponed
- Commitment to attend all meetings for full duration of agenda (2hrs)
- Abbreviated meetings should be supplemented by additional meeting to complete the agenda

The ISC process could be strengthened to achieve outcomes by:
- consistency of decision making. Some initial decisions eg. purchase of road condition survey equipment were subsequently reversed
- regular meetings with adequate duration to cover the agenda
- clarity of appropriate MPPWD responsibility for enactment of decisions. It is not the responsibility of the consultant to find and direct the MPPWD staff to take action.

The ISC has played an important role during the TA consultancy and will have an equally important role to continue to drive and monitor the implementation of I.S. initiatives in the MPPWD on completion of this consultancy.

5.4 Nodal Officers

The role of Nodal Officers is very important in the TA model; however the effectiveness of the nodal officers was variable due to
- Ease of accessibility according to their office location (particularly difficult for officers posted outside Bhopal)
- Workload and time availability (particularly difficult for officers assigned to more than one post as “additional duties”), and
- The level of experience, knowledge and commitment to the subject area

Carefully selected nodal officers have made a valuable contribution to the effectiveness of consultant recommendations and their implementation.

5.5 Training

The Consultant has observed a low level of commitment by staff to attendance at training programs; however it is understood that this is a systemic problem and is not limited to the training programs conducted by the TA consultants. An analysis of attendances is reported in Attachment 7(ii).

There is a long process for obtaining official direction for participants to attend training courses including approvals by Deputy Secretary and Engineer in Chief, but no commitment to enforce training attendance. The consultants have raised this concern with the ISC but despite frequent assurances, no action has been taken to enforce attendance. Passive acceptance of non-attendance sends an implicit message to staff that training is not considered valuable or important.

The selection of appropriate attendees for training courses has frequently been based upon availability rather than relevance, pre-requisites or aptitude. Despite a memo describing the pre-requisites for course participants, a number of attendees at RAMS user training were not computer literate and required additional training in computer basics before the RAMS software would be relevant to them.
5.6 Making Staff Appointments

Recommendations were made by the consultants and approved by the ISC for the creation of various specialist units in October 2008; however the units have not been fully staffed and operational at 30th September 2009. Initial directions issued by MPPWD nominated staff to the positions in the specialist units as “additional duties”. This resulted in no take-up of positions as the staff were already fully employed in other positions.

The MPPWD subsequently conducted a review of all vacant posts and prepared a submission to government seeking approval for creation of the new posts in the specialist cells and the surrender of nominated vacant posts. While supported by the Principal Secretary and the Minister, this submission is pending decision by government at 30th September 2009.

5.7 Accommodation and OH&S

The process for the allocation and refurbishment of accommodation for the new specialist units has been ongoing since mid February 2009, with one room operational by 30th June 2009. The process has been very slow and has only progressed with frequent visits and questions by the TA consultants.

5.8 Data Collection

The ISC has made repeated commitments to ensure the timely collection of road condition and inventory data collection by MPPWD staff:

- The MPPWD made a commitment in June 2008 to use staff for the manual collection of road inventory and condition data rather than pursue purchase of automated vehicle mounted survey equipment.
- Staff from all zones were trained in road condition data collection for RAMS in October 2008 and January 2009. No data had been collected by December 2008 and the ISC requested the consultants to advise on MPPWD purchase of a multi laser profilometer vehicle for data collection.
- At the ADB mid term mission review meeting in February 2009 the MPPWD again undertook to obtain condition data by manual collection in 3 divisions near Bhopal by mid March; however no data was received by that date.
- At the ISC meeting of 16th April 2009, the TA consultants recommended that the MPPWD consider purchase of simple, “fit-for-purpose” road condition survey equipment based upon ROMDAS bump integrator and videography; however this proposal was rejected by ISC in favour of manual data collection by MPPWD staff. In April divisional staff were again directed by MPPWD to undertake road condition surveys and to submit data by 15th May, or face disciplinary action.
- There have been no reports of any disciplinary actions taken, and approximately 20% of data has been received at 30th June 2009.

The introduction of effective asset management practices in MPPWD is reliant upon collection and analysis of accurate data of asset inventory, condition and use.

5.9 IRC Documents

In all facets of the TA consultancy there has been widespread reference to available IRC guidelines and standards; however staff appear to have limited access to these documents in the workplace. These documents are generally of a high technical standard, are regularly updated
and are India-specific. Compliance with existing IRC specifications and guidelines would be supported by making the documents more widely available to MPPWD staff.

5.10 Study Tour

The TA consultancy has introduced a number of technical, organizational and governance initiatives which are outside the experience of the majority of MPPWD staff. The saying that “seeing is believing” is very applicable to understanding these concepts. A study tour proposal was prepared by the TA consultants for a group of 4 middle managers with key roles in the new MPPWD functional specialist units to visit VicRoads in Melbourne, Australia to study these functions and organizational arrangements in practice in a modern road management authority. The proposal and detailed program is provided in Annex E. Funding for the study tour was not available under the current TA consultancy, however VicRoads has issued an invitation for MPPWD to undertake such a study tour if travel and accommodation costs can be funded by MPPWD sources.

6 SUMMARY OF ADDITIONAL ACTIONS REQUIRED FOR FULL IMPLEMENTATION BY MPPWD

During the period of this TA contract, the VicRoads consultants have provided technical assistance to the MPPWD to identify, scope, design and implement institutional strengthening initiatives in all areas of the TOR. To complete the implementation of these initiatives and to achieve sustained success now requires a continuing commitment of resources by the MPPWD to manage, drive and monitor the ongoing processes of organization change and development.

Successful corporate changes have only been achieved in other international road agencies where: there is full commitment to change by senior management; appropriate resourcing; strong communications; and understanding and participation by staff at all levels from the Principal Secretary to field workers.

Dedicated support staff positions are required to manage and monitor change initiatives under the auspices of a corporate management group. In most modern road authorities a position of “Manager, Corporate Development” or similar title is established reporting directly to the CEO or Principal Secretary. The full-time position would have a classification level equivalent to that of a CE or a senior SE in the MPPWD, with 2 or 3 support staff (classified similar to the EE level in MPPWD). The Institutional Strengthening Committee (ISC) convened under the current TA consultancy provides such a corporate management group which would be appropriate to oversee the continued roll-out of change initiatives.

The Manager, Corporate Development is a high profile position which works closely with senior management tracking organization performance and monitoring the implementation and effectiveness of change initiatives. The position has overview of the implementation of changes in organization structure, organization culture and new technology. The delegated authority given to this position empowers all actions necessary to implement approved change initiatives and publicly reflects the serious commitment by the management of the organization. The following table provides a summary of the remaining actions required by the MPPWD to implement the current institutional strengthening initiatives.
### Action

<table>
<thead>
<tr>
<th>(Refer 4.1 Realignment of road sector institutions TOR 1)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Implement identified non-capital initiatives which could be applied to MPPWD (from MPRDC learnings), including:</td>
<td>S</td>
</tr>
<tr>
<td>- Establish and implement an IT strategy and roll-out plan (Also refer section 4.8)</td>
<td></td>
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<tr>
<td>- Trial the MPRDC model of contract engagement of specialist consultants for contract supervision and quality management (Also refer section 4.3.3)</td>
<td>S</td>
</tr>
<tr>
<td>- Manage project budgets within release of sanctioned funds (Also refer section 4.3.4)</td>
<td>M</td>
</tr>
<tr>
<td>- Commit to staff training and development (Also refer section 4.4)</td>
<td>S</td>
</tr>
<tr>
<td>- Encourage workplace tidiness and cleanliness</td>
<td>S</td>
</tr>
<tr>
<td>- Improve communications with staff and stakeholders</td>
<td>M</td>
</tr>
<tr>
<td>• Initiate a mechanism for integrated planning of the total Madhya Pradesh road network between MPPWD, MPRDC and MPRRDA</td>
<td>M</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>(Refer 4.2 Strengthening of MPPWD Planning Unit TOR 2)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete appointments of professional staff to the Planning/RAMS unit</td>
<td>I</td>
</tr>
<tr>
<td>• Implement the action plan for Planning/RAMS unit</td>
<td>S</td>
</tr>
<tr>
<td>• Train staff in strategic transport planning</td>
<td>S</td>
</tr>
<tr>
<td>• Develop and implement state wide road network strategy</td>
<td>M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Refer 4.3.1 Procurement and Contracting Practices TOR3a)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete staffing of Legal &amp;Contracts unit</td>
<td>S</td>
</tr>
<tr>
<td>• Adopt revised standard bidding document throughout MPPWD</td>
<td>S</td>
</tr>
<tr>
<td>• Implement action plan, particularly:</td>
<td>M</td>
</tr>
<tr>
<td>- Review contractor registration system</td>
<td>S</td>
</tr>
<tr>
<td>- Initiate contractor performance monitoring</td>
<td>S</td>
</tr>
<tr>
<td>- Trial third party SQC contracts on MPPWD works</td>
<td>M</td>
</tr>
<tr>
<td>- Arrange training of Legal &amp; Contracts unit staff</td>
<td>S</td>
</tr>
<tr>
<td>- Establish tender &amp; contract award procedures</td>
<td>M</td>
</tr>
<tr>
<td>• Implement a Performance Based Maintenance Contract trial</td>
<td>M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Refer 4.3.2 Sound Planning Processes TOR 3b)</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete appointments of professional staff to the Planning/RAMS unit</td>
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</tr>
<tr>
<td>• Implement the action plan for Planning/RAMS unit</td>
<td>S</td>
</tr>
<tr>
<td>• Train staff in strategic transport planning</td>
<td>S</td>
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<tr>
<td>• Develop and implement state wide road network strategy</td>
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<thead>
<tr>
<th>(Refer 4.3.3 Improved Quality Assurance TOR 3c)</th>
<th>Timeframe</th>
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</thead>
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<tr>
<td>• Complete staffing of Quality Management unit</td>
<td>I</td>
</tr>
<tr>
<td>• Implement quality manual for laboratories</td>
<td>I</td>
</tr>
<tr>
<td>• Procure &amp; ensure calibration of laboratory equipment</td>
<td>I</td>
</tr>
<tr>
<td>• Renovate or replace laboratory buildings and facilities</td>
<td>S</td>
</tr>
<tr>
<td>• Procure suitable vehicles for field testing and investigations</td>
<td>S</td>
</tr>
<tr>
<td>• Recruit staffing (&amp; conduct training) for Level 1 laboratories</td>
<td>S</td>
</tr>
<tr>
<td>• Procure computers for all Level 2 laboratories</td>
<td>M</td>
</tr>
<tr>
<td>• Distribute field quality guides</td>
<td>I</td>
</tr>
<tr>
<td>• Conduct a trial of SQC contract supervision model on MPPWD projects</td>
<td>M</td>
</tr>
<tr>
<td>Action</td>
<td>Timeframe</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td><strong>(Refer 4.3.4 Computerised project financial management and monitoring systems TOR 3d)</strong>&lt;br&gt;• Liaise with Department of Finance to ensure GoMP Financial Management System provides functionality required for MPPWD</td>
<td>I</td>
</tr>
<tr>
<td><strong>(Refer 4.4 Improve Human Resource Management TOR 4)</strong>&lt;br&gt;• Continue the role of the ISC to oversee implementation of I.S. initiatives&lt;br&gt;• Finalise corporate plan and distribute and discuss with staff and stakeholders&lt;br&gt;• Establish HRM position and unit&lt;br&gt;• Implement Three Year Training Plan&lt;br&gt;• Implement strategy for re-organisation (creation of structure, internal and external recruitment, implement new reporting arrangements, staff briefings)&lt;br&gt;• Implement improvements to maintenance gang training, tools and equipment, works planning, traffic control and vehicles for transport of men and equipment.</td>
<td>I-S-M M S I S</td>
</tr>
<tr>
<td><strong>(Refer 4.5 Introduce effective road asset management systems TOR 5)</strong>&lt;br&gt;• Complete the collection and input to RAMS of inventory and road condition data for District Roads&lt;br&gt;• Establish an annual cyclic program for statewide road condition data collection and input to RAMS&lt;br&gt;• Conduct analyses of road condition data to ascertain annual trends in condition&lt;br&gt;• Distribute “Asset Planning Guidelines” to divisions&lt;br&gt;• Develop statewide maintenance budget and distribution between divisions based on identified needs and pavement performance (progressively replacing the use of assumed national norms)&lt;br&gt;• Complete roll-out of CADD to all design sections within MPPWD</td>
<td>S S M S-M M</td>
</tr>
<tr>
<td><strong>(Refer 4.6 Information Technology)</strong>&lt;br&gt;• Establish I.T. department&lt;br&gt;• Recruit experienced IT staff from IT Industry&lt;br&gt;• Develop MPPWD IT strategy</td>
<td>I S S</td>
</tr>
<tr>
<td><strong>(Refer 4.7 Recommendations for equipment procurement)</strong>&lt;br&gt;Complete procurement from loan funds of:&lt;br&gt;• Equipment for level 1 laboratories&lt;br&gt;• 10 Total station survey units</td>
<td>S S</td>
</tr>
</tbody>
</table>
7 ANNEXURES
7.1 Annex A - Terms of Reference

APPENDIX A

Terms of Reference

TERMS OF REFERENCE OF TECHNICAL ASSISTANCE FOR INSTITUTIONAL STRENGTHENING OF MADHYA PRADESH PUBLIC WORKS DEPARTMENT

A. Objective

1. The main objective of the consulting services is to support Madhya Pradesh Public Works Department (MPPWD) in implementing its institutional strengthening initiatives. Under the institutional strengthening action plan (Appendix 1), MPPWD will enhance road organization structure for roads policy, planning and execution functions; improve state roads business practices; improve human resource management; implement economic budget allocation for road improvement and maintenance; enhance transparency and accountability for fund usage; and increase private sector participation.

B. Scope of Services

2. The consultants will undertake the services in close consultation with Principal Secretary, Secretary, and Engineer-in-Chief, MPPWD. They will also conduct training and workshop as required at the district level and at the state level. MPPWD-wide consultation will also be conducted to disseminate the idea of the sector development initiative.

1. Propose and implement realignment of road sector institutions

3. Road sector institutions involved in state road asset development and management in MP include MPPWD, MP Road Development Corporation (MPRDC), Rural Roads Development Authority, and Panchayat. MPPWD is also responsible for building works. There is a need to realign the overall road sector management framework. The consultants will do the following:

(i) Identify the specific functions required for each layer of the state road network;
(ii) Assess the capacity of existing institutions;
(iii) Assign specific roles of each institution in an optimal manner;
(iv) Identify resource requirement for each institution to function adequately;
(v) Establish the road map to realign the road sector institutions; and
(vi) Implement the initial actions established under the roadmap.

2. Strengthen the MPPWD Planning Unit

4. MPPWD has established the Planning Unit. However, staffing and tools are limited, requiring planning knowledge and tools. The consultants will do the following:

(i) Identify the required resources in the Planning Unit;
(ii) Assist MPPWD in recruiting qualified staff;
(iii) Train staff on the modern road planning methodologies and techniques;
(iv) Based on the road asset management systems installed, assist the Planning Unit in developing a long-term road investment and maintenance program, and an annual maintenance program.
3. Improve MPPWD business practices

5. Adherence to the old codes and procedures are sometimes the cause of delays in preparing and implementing projects. Decision-making is not sufficiently decentralized and operational decisions are delayed due to too many layers of interventions. MPPWD has been aware of the needs of streamlining the business procedures and introducing internationally recognized systems/practices of procurement, quality management, planning, contract/project management and financial management. The consultants will do the following:

a. Sound procurement and contracting processes

(i) Introduce computerized project management tools, train engineers, and implement standardized reporting systems in project and contract management at the district level.

(ii) Provide internationally recognized procurement procedures and standard documents for works, goods and consulting services; prepare standard bid documents and request for proposals in the MPPWD context; and assist MPPWD in procurement using the developed bid documents and procedures.

(iii) Develop an optimal system of construction supervision engaging independent consultants, and assist MPPWD in applying the developed supervision system on a pilot basis. Lessons learnt should be incorporated and reflected in a better system.

(iv) Assist MPPWD develop and test several contracting modalities to maintain state roads, including corridor management, performance-based maintenance contracts, and community-based maintenance contracts.

b. Sound planning processes

(i) Develop state-specific norms for road development and maintenance, and implement in planning and design.

(ii) Establish planning practices and train engineers at the district level based on international best practices.

c. Improved quality assurance

(i) Assist in establishing the competent quality control unit, identifying the resources requirement for the unit.

(ii) Establish a quality assurance strategy and arrangement, including a quality management manual, procedures, and reporting system, taking into account the extensive road network over the large area of the state.

(iii) Pilot-test the manual on a sample of different types of works. Train the staff to use the manual. Assist MPPWD operationalize the manual and reporting system.

(iv) Assist MPPWD to identify, prepare specifications for and procure testing equipment and facilities for the quality management system.

d. Computerized project financial accounting and monitoring systems

(i) Develop a monitoring system for maintenance budget, and assist MPPWD in preparing monthly monitoring reports.

(ii) Computerize PWD financial management systems, and train the accounting staff at the state level and at the district level.
4. **Improve MPPWD human resource management**

6. There was no regular arrangement for providing training and reorientation to the officers of the MPPWD. Promotion prospects are poor and a large number of professional staff remain at lower levels for long periods. Due to financial stringency and overstaffing in the GOMP administration, recruitment of new staff into government employment has been restricted to certain reserved categories only. In the past over 10 years, there has been virtually no recruitment at the assistant engineer level in MPPWD. There is a need to improve the capability of engineering staff and to reform the human resource management policy. The engineers in MPPWD are competent but are demoralized and it is not possible to expect good results without increased training, capacity building and more effective cadre management and putting in place career development strategies. Avenues for promotion of staff have to be ensured, particularly for lower level functionaries. The consultants will do the following:

   (i) Identify the human resource requirement and assist PWD in recruiting adequate number of staff for planning, procurement, quality assurance and social and environment.
   (ii) Develop and implement a scheme of skill development and redeployment in other organizations for full utilization of available manpower.
   (iii) Develop cadre management and assist MPPWD in implementation to ensure promotion opportunity and adequate staffing.
   (iv) Develop continuous result-oriented posting of personnel and assist MPPWD in implementation.
   (v) Identify the training requirement and develop learning and training program.
   (vi) Develop strategy to further enhance the productivity of gang labor, assist MPPWD in implementation, and monitor the productivity.

5. **Introduce effective road asset management systems**

7. MPPWD at the state level and at the district level is weak at road asset management due to lack of data, planning tools and knowledge. The consultants will do the following:

   (i) Implement electronic road register and asset management systems in MPPWD at the state level and the district level for condition-based budget estimate.
   (ii) Program data collection for state road network, and assist MPPWD collect required data.
   (iii) Prepare a manual for use and train engineers to collect data and maintain the database, and generate reports for management information and decision making.
   (iv) Develop a procedure and system for MPPWD to prepare a 3-year and annual programs of road rehabilitation and periodic maintenance.
   (v) Develop a routine maintenance management system to assess needs, budgeting, and reporting of routine maintenance. Pilot-test the system in several field offices and train engineers with a procedures manual.
   (vi) Program data collection for state road network, and assist MPPWD collect required data.
   (vii) Assist MPPWD to prepare a long-term road investment and maintenance program at the state level and at the district level.
   (viii) Assist MPPWD to prepare condition-based annual maintenance program.

C. **Reporting**

8. The consultants will provide ADB with progress reports on the institutional strengthening action plan, including achievements, problems and policy recommendations. The consultants will prepare specific reports in accordance with the terms of reference (TOR). Upon completion
of their services, the consultants will prepare a draft final report covering all tasks required by the TOR. A final report will be prepared 30 days after the tripartite review meeting with GOMP, ADB and the consultants.

9. The consultants, in consultation with GOMP, will prepare a training program in the areas specified in the TOR. The consultants will prepare comprehensive training proposals, including selection criteria for candidates, training objectives, cost estimates and so on.

D. Staffing
10. The TA will be implemented for 12 months from November 2007 to October 2008. International inputs of about 28 person-months and domestic inputs of about 40 person-months are required. International experts include (i) Road Institution Specialist as team leader (8 person months), (ii) Road Asset Management Systems Specialist (3), (iii) Transport Planner (3), (iv) Road Maintenance Specialist (2), (v) Contract/Project Management Specialist (3), (vi) Human Resource Management Specialist (3), (vii) Financial Management Systems Specialist (3), and (viii) Quality Control and Management Specialist (3). National experts include (i) Road Asset Management Systems Specialist (10), (ii) Transport Planner/Traffic Engineer (10), (iii) IT Specialist (database) (10), and (iv) IT Specialist (finance) (10). The broad job description of each expert is in Appendix 2.

E. Cost Estimates
11. The total cost of the TA is estimated to be $1,250,000 equivalent. ADB will finance $1,000,000 equivalent, on a grant basis. The Government's counterpart contribution will be $250,000 equivalent (Table AB.1).
7.2 Annex B - Project Action Plan
## INSTITUTIONAL STRENGTHENING  
### MADHYA PRADESH PUBLIC WORKS DEPARTMENT  
#### PROGRESS ON COMMITTED OUTPUTS at 30th September 2009

<table>
<thead>
<tr>
<th>TOR</th>
<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Propose and implement realignment of road sector institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (i)</td>
<td>Identify the specific functions required of each layer of the state road network</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (ii)</td>
<td>Assess the capacity of existing institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (iii)</td>
<td>Assign specific roles of each institution in an optimal manner. A clear policy will be prepared in relation to responsibilities for ODRs and VRs</td>
<td>The Government of MP wants to maintain the current structure, so the focus of the project will be on the PWD, as agreed with ADB May 2008</td>
<td></td>
</tr>
<tr>
<td>1 (iv)</td>
<td>Identify resource requirement for each institution to function adequately</td>
<td></td>
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</tr>
<tr>
<td>1 (v)</td>
<td>Establish the road map to realign the road sector institutions</td>
<td></td>
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</tr>
<tr>
<td>1 (vi)</td>
<td>Implement the initial actions established under the road map</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Conduct a case study of the systems structures and procedures of MPRDC</td>
<td>Information collected, paper submitted</td>
<td>✓ 15 Dec 08</td>
</tr>
<tr>
<td></td>
<td>Empowerment of MPPWD as Highway Authority in accordance with State Highways Act 2005</td>
<td>Paper presented to ISC 24 Oct 08. Schedule of MPPWD roads approved by Chief Minister Pending notification in the official government Gazette</td>
<td>✓ MPPWD</td>
</tr>
</tbody>
</table>

| 2.0 | Strengthen MPPWD Planning Unit | | |
| 2 (i) | Identify the required resources in the Planning Unit | Proposal and recommendations submitted for resources and structure of a Planning & RAMS Cell | ✓ |
| | | Reviewed organisation structure (at EinC / CE level) to integrate new/strengthened specialist corporate support functions in MPPWD, including Planning, HRM, FM, Contract management, QM and IT. | ✓ |
| 2 (ii) | Assist MPPWD to recruit staff | Role statements and position descriptions provided for key positions | ✓ |
## INSTITUTIONAL STRENGTHENING

### MADHYA PRADESH PUBLIC WORKS DEPARTMENT

### PROGRESS ON COMMITTED OUTPUTS at 30th September 2009

<table>
<thead>
<tr>
<th>TOR</th>
<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 (iii)</td>
<td>Train staff on the modern road planning methodologies and techniques</td>
<td>Training: RAMS data collection</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Final training session completed 12 January 2009</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Training: RAMS data entry and creation of RAMS data files</td>
<td>✓ Jan 09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(also included n RAMS Operations training 27-29 April 2009</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Training: Data sources for planning</td>
<td>✓</td>
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<tr>
<td></td>
<td></td>
<td>Training: Strategic Planning Framework</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A document has been prepared “MPPWD Asset Planning Guidelines” which provides a framework for asset management practices, including</td>
<td>✓</td>
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<tr>
<td></td>
<td></td>
<td>• Maintenance Budget Development using HDM4 principles (&amp;RAMS data)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Maintenance Program Development</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Road network strategy development</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Capital works program development</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>In addition, a complete orientation package has been prepared for unit staff, comprising function statement, list of processes, organisation chart, position descriptions and works program</td>
<td>✓</td>
</tr>
<tr>
<td>2 (iv)</td>
<td>Based on the road asset management systems installed, assist the Planning Unit in developing a long-term road investment and maintenance program and an annual maintenance program</td>
<td>Assist MPWD to finalise maintenance plan and draft budget for FY 2009-2010 based on HDM4 principles</td>
<td>✓ 29 Oct08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Maintenance budget estimate prepared in liaison with MPPWD.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Procedures for (a) statewide maintenance budget and (b) maintenance program development are included in MPPWD Asset Planning Guidelines</td>
<td>✓ 30 April09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Purchase of computer hardware and software for Planning Unit.</td>
<td>✓ 20 Dec 08</td>
</tr>
</tbody>
</table>
### INSTITUTIONAL STRENGTHENING
#### MADHYA PRADESH PUBLIC WORKS DEPARTMENT

**PROGRESS ON COMMITTED OUTPUTS at 30th September 2009**

<table>
<thead>
<tr>
<th>TOR</th>
<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
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</thead>
<tbody>
<tr>
<td>3.0</td>
<td>Improve MPPWD business practices</td>
<td>Training conducted in Contract management and quality control addressing issues of contract supervision, contractor performance and quality assurance and the remedies available under the contract</td>
<td>✔ 30 June 09</td>
</tr>
<tr>
<td>3 a</td>
<td>Sound procurement and contracting processes</td>
<td>Report on MPPWD procurement &amp; contracting processes</td>
<td>✔</td>
</tr>
<tr>
<td>3 a (i)</td>
<td>Introduce computerised project management tools, train engineers, and implement standardised reporting systems in project and contract management at the district level</td>
<td>Review existing updated contract documentation from ADB TA 4013</td>
<td>✔</td>
</tr>
<tr>
<td>3 a (ii)</td>
<td>Provide internationally recognised procurement procedures and standard documents for works, goods and consulting services; prepare standard bid documents and request for proposals in the MPPWD context; and assist MPPWD in procurement using the developed bid documents and procedures.</td>
<td>Formulate an improved procurement process based on recommendations of prior studies done for MPPWD/MPRDC and discussion with MPPWD</td>
<td>✔ 30 June 09</td>
</tr>
<tr>
<td>3 a (iii)</td>
<td>Develop an optimal system of construction supervision engaging independent consultants and assist MPPWD in applying the developed supervision system on a pilot basis. Lessons learnt should be incorporated and reflected in a better system.</td>
<td>Trial recommended for construction supervision by Consultants. Utilise SQC procedures from MPRDC and tailor to MPPWD</td>
<td>✔ 30 June 09</td>
</tr>
<tr>
<td>3 a (iv)</td>
<td>Assist MPPWD develop and test several contracting modalities to maintain state roads, including corridor management, performance based maintenance contracts, and community based maintenance contracts.</td>
<td>Develop specification for Performance-based maintenance contract (PBMC)</td>
<td>✔</td>
</tr>
<tr>
<td>3 b</td>
<td>Sound planning processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 b (i)</td>
<td>Develop state – specific norms for road development and maintenance, and implement in planning and design</td>
<td>Refer 2 (iv) above</td>
<td>✔</td>
</tr>
<tr>
<td>3 b (ii)</td>
<td>Establish planning practices and train engineers at the district level based on international best practices.</td>
<td>Procedures contained in “Asset Planning Guidelines”</td>
<td>✔</td>
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PBMC trial being developed by MPRDC. MPRDC
### TOR OUTPUT (Terms of Reference)

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<tr>
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</thead>
<tbody>
<tr>
<td>3 c</td>
<td><strong>Improved quality assurance</strong></td>
<td></td>
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</tr>
<tr>
<td>3 c (i)</td>
<td>Assist in establishing the competent quality control unit, identifying the resources requirement for the unit.</td>
<td>A complete orientation package, comprising function statement, list of processes, organisation chart, position descriptions and works program has been prepared to assist staff to take-up duties.</td>
<td>✓</td>
</tr>
<tr>
<td>3 c (ii)</td>
<td>Establish a quality assurance strategy and arrangement, including a quality management manual, procedures and reporting system, taking into account the extensive road network over the large area of the state</td>
<td>Compile the relevant sections of existing quality management manuals based on discussions with MPPWD into a single quality management manual that can be adopted by MPPWD as the official MPPWD quality management manual for construction and maintenance works Field Quality Guide prepared. Pilot Quality Manual prepared for MPPWD testing services as the highest priority for MPPWD. The manual provides a model document for the subsequent roll-out of QM to other business units of MPPWD.</td>
<td>✓ ✓ 30 June 09</td>
</tr>
<tr>
<td>3 c (iii)</td>
<td>Pilot test the manual on a sample of different types of works. Train the staff to use the manual. Assist the MPPWD to operationalise the manual and reporting system.</td>
<td>Training conducted in Contract management and quality control addressing issues of contract supervision, contractor performance and quality assurance and the remedies available under the contract Conduct training program for trainers from MPPWD who will carry out the actual training Training of Trainers program conducted 3-4 March 2009</td>
<td>✓ ✓ 20 Mar 09</td>
</tr>
<tr>
<td>3 c (iv)</td>
<td>Assist MPWD to identify, prepare specifications for, and procure testing equipment and facilities for the quality management system.</td>
<td>Identification of necessary laboratory equipment and personnel needs for the existing Central Research Laboratory so that this becomes a modern laboratory to ensure quality management Equipment schedule prepared and costed. Tender documentation in progress for procurement using Loan Funds as directed by ISC 6th March 2009</td>
<td>✓ 14 Mar 09</td>
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</table>
### INSTITUTIONAL STRENGTHENING

#### MADHYA PRADESH PUBLIC WORKS DEPARTMENT

#### PROGRESS ON COMMITTED OUTPUTS at 30th September 2009

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<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
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</thead>
<tbody>
<tr>
<td>3 d</td>
<td>Computerised project financial accounting and monitoring systems</td>
<td>Functionality included in specification for procurement and customisation of FMS</td>
<td>✔</td>
</tr>
<tr>
<td>3 d (i)</td>
<td>Develop a monitoring system for maintenance budget, and assist MPPWD in preparing monthly monitoring reports</td>
<td>Based on discussion with MPPWD, identify problems MPPWD is facing in effectively operationalising the GoMP computerised financial management system and develop the concept design. Situation analysis completed, review of FMS options completed and presented to ISC meeting 7 Oct 2008. Purchase of online FMS approved in-principle by ISC in Oct 08. Direct proposals were sought and assessed. Specifications and Business case were prepared for procurement. Documentation for NCB procurement process is under review of Principal Secretary, Finance at 30 June 2009; prior to submission to ADB for approval to advertise.</td>
<td>✔ 12 Nov 08</td>
</tr>
<tr>
<td>3 d (ii)</td>
<td>Computerise PWD financial management systems, and train the accounting staff at the state and at the district level.</td>
<td>Assist to propose and implement training program to help MPPWD staff operationalise the system. FMS operation training included in FMS purchase. Training: Management Accounting and Budget Control Management training program scheduled for 15th – 16th July.</td>
<td>✔ 31 July 09</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Procurement of new office equipment Equipment purchased for 2 pilot divisions Jan/Feb 09</td>
<td>✔ 20 Dec 08</td>
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<tr>
<td></td>
<td></td>
<td>The proposed purchase of an FMS for MPPWD was not approved by the Finance Department. The GoMP Finance Department has decided that a whole of government FMS shall be developed and the specified requirements of the MPPWD shall be incorporated in that system.</td>
<td>Sept 09</td>
</tr>
</tbody>
</table>
## INSTITUTIONAL STRENGTHENING

### MADHYA PRADESH PUBLIC WORKS DEPARTMENT

**PROGRESS ON COMMITTED OUTPUTS at 30th September 2009**

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<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Improve MPPWD human resource management</td>
<td>Conduct and report situational analysis re HRM – completed Role statements and position descriptions are being prepared for specialist functions in integrated MPPWD structure</td>
<td>✓ May 08</td>
</tr>
<tr>
<td>4 (i)</td>
<td>Identify the human resource requirement and assist PWD in recruiting adequate number of staff for planning, procurement, quality assurance and social and environment.</td>
<td>Review options for outsourcing/ redeployment/ alternative service delivery arrangements</td>
<td>30 May 09</td>
</tr>
<tr>
<td>4 (ii)</td>
<td>Develop and implement a scheme of skill development and redeployment in other organisations for full utilisation of available manpower.</td>
<td>Report and recommendations on Cadre management and result–orientated postings of staff</td>
<td>✓ 30 May 09</td>
</tr>
<tr>
<td>4 (iii)</td>
<td>Develop cadre management and assist MPPWD in implementation to ensure promotion opportunity and adequate staffing.</td>
<td>Review staff monitoring and performance assessment procedures Report as 4 (iii)</td>
<td>30 May 09</td>
</tr>
<tr>
<td>4 (iv)</td>
<td>Develop continuous result-oriented posting of personnel and assist MPPWD in implementation</td>
<td>MPPWD Training Needs Analysis (TNA) – completed Develop MPPWD Training Program and implementation plan – in progress Assist to identify suitable management training program for serving staff of MPPWD in-country. (Included in TNA and Training Plan recommendations) Identify requirements to institutionalise training by the MPPWD including faculty and facilities requirements. (Included in TNA and Training Plan recommendations) Development of technical training material for newly recruited engineers and other technical staff, as well as in-service engineers and other technical staff. Proposal for an inauguration program for new recruits. Technical training program included in Training Plan recommendations Conduct training for trainers of the various training modules Training of Trainers program conducted March 2009 Established IT Training Centre at MPPWD Training Course in Computer Basics commenced 2 December 08</td>
<td>✓ ✓ ✓ ✓ ✓ 30 June 09 30 June 09 20 Mar 09 ✓ ✓</td>
</tr>
</tbody>
</table>
### INSTITUTIONAL STRENGTHENING

#### MADHYA PRADESH PUBLIC WORKS DEPARTMENT

#### PROGRESS ON COMMITTED OUTPUTS at 30th September 2009

<table>
<thead>
<tr>
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<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
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</thead>
<tbody>
<tr>
<td>4 (vi)</td>
<td>Develop strategy to further enhance the productivity of gang labour, assist MPPWD in implementation and monitor productivity</td>
<td>Report and recommendations on enhanced productivity for gang labour. Report prepared.</td>
<td>✔ 30 June 09</td>
</tr>
<tr>
<td>5 (i)</td>
<td>Implement electronic road register and asset management systems in MPPWD at the state level and the district level for condition-based budget estimate.</td>
<td>Development of RAMS is completed</td>
<td>✔ 31 May 09</td>
</tr>
<tr>
<td>5 (ii)&amp; (vi)</td>
<td>Program data collection for state road network and assist MPPWD collect required data</td>
<td>Program of data collection by MPPWD commenced following data collection training workshops. Currently approx. 20% data collected. Validation and analysis of data to be undertaken by staff of MPPWD Planning/RAMS unit</td>
<td>✔ 30 Jun09</td>
</tr>
<tr>
<td>5 (iii)</td>
<td>Prepare a manual for use and train engineers to collect data and maintain the database, and generate reports for management information and decision making</td>
<td>Manual for collection of road/bridge condition data has been prepared</td>
<td>✔</td>
</tr>
<tr>
<td>5 (iv)</td>
<td>Develop a procedure and system for MPPWD to prepare a 3-year and annual programs of road rehabilitation and periodic maintenance.</td>
<td>Refer 2 (iv) above</td>
<td>✔</td>
</tr>
<tr>
<td>5 (v)</td>
<td>Develop a routine maintenance management system to assess needs, budgeting and reporting of routine maintenance. Pilot the system in several field offices and train engineers with a procedures manual.</td>
<td>Not commenced. Detailed maintenance management system is beyond the current level of computer literacy and asset management knowledge of MPPWD field maintenance staff.</td>
<td></td>
</tr>
<tr>
<td>5 (vii)</td>
<td>Assist MPPWD to prepare a long term road investment and maintenance program at the state level and at the district level</td>
<td>Refer to items 2 (iii) and 2 (iv) above</td>
<td>✔</td>
</tr>
<tr>
<td>5 (viii)</td>
<td>Assist MPPWD to prepare condition-based annual maintenance program</td>
<td>Refer to items 2 (iii) and 2 (iv) above</td>
<td>✔</td>
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</table>
### PROGRESS ON COMMITTED OUTPUTS at 30th September 2009

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<th>OUTPUT (Terms of Reference)</th>
<th>Comment/Measure of Achievement</th>
<th>Target date</th>
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<tbody>
<tr>
<td>6</td>
<td>ADDITIONAL ITEM</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Equipment Procurement (funded under MPSRSPII loan funds)</td>
<td>ISC direction that loan funds should be directed to MP PWD institutional strengthening initiatives, rather than road safety and load management functions of other departments. Proposals submitted to ISC 6th March 2009</td>
<td>✓</td>
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<tr>
<td></td>
<td>Assist GoMP to procure:</td>
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<tr>
<td></td>
<td>Equipment for driver training and testing</td>
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<td></td>
<td>Vehicle fitness testing</td>
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<tr>
<td></td>
<td>Weighbridges</td>
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</tbody>
</table>

| C   | Reporting                   |                                |             |
|     | Inception Report            | Submitted                      | ✓           |
|     | Interim Report              | Submitted                      | ✓           |
|     | Draft Final Report          | Submitted                      | ✓           |
|     | Final Report                | Current Document               | ✓           |
### Personnel Schedule

**As at 31st May 2009**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name/Position</th>
<th>CODE</th>
<th>Total person month input</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Colin Mellor / Kevin Hadingham</td>
<td>*</td>
<td>7.25 8.35</td>
</tr>
<tr>
<td></td>
<td>Team Leader / Road Institution Specialist</td>
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<tr>
<td>2</td>
<td>Justin Weligamage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Road Asset Management Systems Specialist</td>
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<tr>
<td>3</td>
<td>Maurice Lowe</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Shadow for Bridge Management Systems</td>
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<tr>
<td>4</td>
<td>Ian Crossens</td>
<td></td>
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<tr>
<td></td>
<td>Transport Planner</td>
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<tr>
<td>5</td>
<td>Christopher Cox</td>
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<td></td>
<td>Shadow for Planning</td>
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<tr>
<td>6</td>
<td>Stephen Palfreton</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Road Maintenance Specialist</td>
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<tr>
<td>7</td>
<td>Neville Schmid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contract / Project Management Specialist</td>
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<tr>
<td>8</td>
<td>Doug McLaine</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Human Resource Management Specialist</td>
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<tr>
<td>9</td>
<td>Dr Langnan Chen / Shankar Ganesh</td>
<td></td>
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<tr>
<td></td>
<td>Financial Management Systems Specialist</td>
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<tr>
<td>10</td>
<td>Srinivas Rao Nayani</td>
<td></td>
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<tr>
<td></td>
<td>IT Specialist (database)</td>
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<tr>
<td>11</td>
<td>Ramesh Chandra Sahoo</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>IT Specialist (finance)</td>
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<tr>
<td>12</td>
<td>Robert Weatherson</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality Control and Management Specialist</td>
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<td></td>
</tr>
<tr>
<td>13</td>
<td>Matt Walsh</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field supervision &amp; project management</td>
<td></td>
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<tr>
<td>14</td>
<td>Prodip Das</td>
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<tr>
<td></td>
<td>Road Asset Management Systems Specialist</td>
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<tr>
<td>15</td>
<td>Rajeev Roy / Abhai Kumar Khare / Sarfarz Khan</td>
<td></td>
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<tr>
<td></td>
<td>Transport Planner / Traffic Engineer</td>
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</tr>
<tr>
<td>16</td>
<td>Srinivas Rao Nayani</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IT Specialist (database)</td>
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**Subtotal** 40 40

**Total** 70.22

**Legend**
- Extra Inputs at no cost to MPPWD
- Election periods

---

**CODE:** Contract Variation submitted to ADB for replacement of nominated staff member.
### 7.4 Annex D – Training Programs - TA 4934_IND

<table>
<thead>
<tr>
<th>Date</th>
<th>Course</th>
<th>Location</th>
<th>Attendance</th>
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<tbody>
<tr>
<td>May 2008</td>
<td>RAMS workshop</td>
<td>Bhopal</td>
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<td>7 October 2008</td>
<td>Planning Workshop</td>
<td>Bhopal</td>
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<td>20 October 2008</td>
<td>RAMS data collection training</td>
<td>Guna</td>
<td>54</td>
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<td>23 October 2008</td>
<td>Planning and data workshop</td>
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<td>6 November 2008</td>
<td>Quality Management</td>
<td>Gwalior</td>
<td>43</td>
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<td>1 Dec 08 – 31 Jan 09</td>
<td>Computer Basics (continuing from 1 Feb 2009 managed and funded by MPPWD)</td>
<td>Bhopal</td>
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<td>12 January 2009</td>
<td>RAMS data collection training</td>
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<td>06 February 2009</td>
<td>Corporate Planning Workshop</td>
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<td>3- 4 March 2009</td>
<td>Training of Trainers Program</td>
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<td>7/15</td>
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<td>17 April 2009</td>
<td>Corporate Planning Workshop</td>
<td>Bhopal</td>
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<td>27-28-29 April 2009</td>
<td>RAMS Operations Training</td>
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<td>23/23</td>
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<td>May 2009</td>
<td>GPS training</td>
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<td>10-11 June 2009</td>
<td>Contract Management and Field Supervision</td>
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<td>15-16 June 2009</td>
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<td>24 June 2009</td>
<td>GPS training</td>
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<td>16-17 July 2009</td>
<td>Financial Management &amp; Budget Control</td>
<td>Bhopal</td>
<td>9/15 &amp; 11/28</td>
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7.5 Annex E – Study Tour

PROPOSAL FOR A STUDY TOUR
TO VICROADS, MELBOURNE AUSTRALIA
BY STAFF OF MADHYA PRADESH PUBLIC WORKS DEPARTMENT

The proposal is for a 1 week Study Tour by four MPPWD staff to VicRoads, the state road authority for the State of Victoria, Australia.

OBJECTIVES

The objectives of the proposed tour are:

- To enable MP PWD officers to observe the organization and governance structure, modern road management practices and the business systems of VicRoads, the State Road Authority for the State of Victoria, Australia.

- In particular, the visit will enable the officers to see in practice many of the Institutional Strengthening initiatives recommended for adoption by MP PWD by VicRoads International in the ADB funded TA4943_IND. This will facilitate implementation by MP PWD.

- To provide specific technical and strategic management training to each of the officers in their field of specialist responsibility by VicRoads head office and regional staff having those responsibilities.

- To establish peer relationships between MPPWD staff and their VicRoads counterparts which will enable ongoing informal support of MPPWD staff after completion of the current TA consultancy.

- To observe the operational relationships of VicRoads’ Head Office functions and regional management arrangements.

- To enable MP PWD officers to observe the field application of modern technology and equipment to road and bridge construction and maintenance practices.

TOUR PARTICIPANTS

The tour is designed specifically for middle management staff of MP PWD who will have important roles in the implementation of institutional strengthening initiatives in the MP PWD and who will have key roles in the management of the MP PWD over the next 5 to 15 years.

AREAS OF FOCUS

The program will provide an overview of corporate structure and management practices, together with parallel focused programs for:

- Asset Management for roads and bridges
- Planning
- Contract Management and Quality Assurance
- Financial Management, Budget Management and Program Management

These reflect the primary areas of MP PWD institutional strengthening initiatives.
TRAVEL TO/FROM INDIA
The program assumes 2 days of travel from Bhopal via Delhi and Singapore and 1 day return travel to Bhopal via Singapore and Mumbai.

ACCOMMODATION
Accommodation in Melbourne near to VicRoads Kew office can be arranged (current pricing is $145 AUD per shared twin room). It is also anticipated that some VicRoads staff members may offer to host members of the study tour (at no cost) to give them an experience of typical Australian home life.

PROGRAM IN VICTORIA
Overview
The proposed program comprises:

Day 1* VR Head Office, Corporate functions (o/n Melb)
Day 2** VR Head Office, Specialist Functions, Melbourne inspections (o/n Melb)
Day 3*** Travel to a regional office (overnight in regional location) (o/n Region)
Day 4*** Regional operations (o/n Melb)
Day 5* VR Head Office, Corporate functions, Tour summary (o/n Melb)
Day 6* Social / sightseeing / shopping/ relaxation Flight from Melbourne

* Days 1, 5, 6 have a common program for all 4 participants
** Days 2,3,4 include separate programs for each participant

Draft Program
A suggested draft program is attached.
The location of the regional visit and availability of site inspections will be determined closer to the time of the tour, according to works program activity and weather conditions.

ESTIMATED COSTS TO MP PWD

1. Travel Bhopal – Melbourne and return Approx. $3,000 (AUD) per person
   MP PWD to purchase

2. Domestic travel in Victoria $0 - Provided by VicRoads International
   In relation to the program

3. Study Tour program in Victoria $0 - Provided by VicRoads International

4. Accommodation and meals
   Allow $200 (AUD) per person per day MP PWD
   (Note *Some accomm. & meals may provided by VicRoads staff as home hospitality)

5. Medical and travel insurance MP PWD to arrange in India

6. Passports and Australian visas MP PWD to arrange in India

7. Entertainment / entry fees / souvenirs Responsibility of participants
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<thead>
<tr>
<th>Day</th>
<th>AM</th>
<th>PM</th>
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<tbody>
<tr>
<td>Day 1</td>
<td>AM (ALL)</td>
<td>PM (ALL)</td>
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<tr>
<td>Saturday</td>
<td>Melbourne orientation</td>
<td>Corporate governance</td>
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<tr>
<td>Sunday</td>
<td>Welcome to VicRoads (CEO)</td>
<td>Human Resources Development</td>
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<td>Monday</td>
<td>VR Structure and legislation</td>
<td>Corporate Planning</td>
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<td>Tuesday</td>
<td>Asset management</td>
<td>Information Technology</td>
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<td>Maintenance programs</td>
<td>Travel to Region (incl inspections)</td>
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<td>Introduction to role &amp; structure of region</td>
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<td>Bridge Condition Inspection</td>
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<td>Geopave?</td>
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<td>Traffic surveys?</td>
<td>Introduction to role &amp; structure of region</td>
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<td>Travel to Region</td>
<td>Travel to Region (incl inspections)</td>
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<td>Strategic transport planning</td>
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<td>Road network strategy</td>
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<td>Corridor strategies</td>
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<tr>
<td>In transit</td>
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**Financial Management & Budget Management (1 participant)**

**AM**
- VR Finance Department
- Chart of Accounts
- VR Financial Management System
- VR Business Planning process
- VR program development
- Annual report

**AM (ALL)**
- Travel to Region (incl inspections)
- Introduction to role & structure of region
- Regional accounts and payments to contractors
- Program budget reporting
- Corridor inspection

**AM**
- Budget management and management of creditors
- Program budget variations
- Contract variations

**PM (ALL)**
- Region Q&A session
- Travel to Melbourne (incl inspections)
- Load management

- Site Inspection performance standards
- Visit contract maintenance gang(s) at work
7.6 Annex F – Attached Documents – Part 1

Scope of Services (TOR B)

1. Realignment of Road Sector institutions in Madhya Pradesh (TOR 1)
   i. Review of MPRDC

2. Strengthening the MPPWD Planning Unit (TOR 2)
   i. Planning/RAMS Section Orientation Document

Improve MPPWD business practices (TOR 3)

3. Procurement and Contracting Practices (TOR 3a)
   i. Review of Procurement Practices
   ii. Contract and Quality Management
   iii. Legal & Contracts Section Orientation Document
   iv. Performance Based Maintenance Contract
   v. Maintenance Review

4. Sound Planning Processes (TOR 3b)
   i. Asset Planning Guidelines
   ii. Training Presentations

5. Improved Quality Assurance (TOR 3c)
   i. Final Report
   ii. QM manual for Laboratories
   iii. Quality Management Section Orientation Document
   iv. Quality of Roads - Presentation for Minister
   v. Training Presentations

6. Computerised project financial accounting and monitoring systems (TOR 3d)
   i. FMS Final Report
   ii. Situation Analysis
Annex F – Attached Documents – Part 2

7. Improve Human Resource Management (TOR 4)
   i. HRM - Issues
      • Situational analysis
      • Managing for Organisational Change
      • Indian Cadre Systems
   ii. HRM - Training
      • Training Needs Analysis
      • Three Year Training Plan
      • Indian Training and Development Organisations
      • Training of Trainers Program Outline
      • Attendances at MPPWD Training Programs
   iii. HRM - MPPWD Structure
      • Reorganisation of MPPWD structure
   iv. HRM – Corporate Planning
      • MPPWD Corporate Planning Blueprint
      • Final Draft Corporate Plan
      • Corporate Planning Workshops
   v. Improving productivity of Maintenance Gangs & Maintenance Review
   vi. Revitalisation of the MPPWD (refer Contract Variation 10)

8. Introduce effective road asset management systems (TOR 5)
   i. RAMS Final Report and Training Presentations
   ii. Road/Bridge Condition Data Collection Manual
   iii. RAMS User Guide
   iv. Bridge Inspection Manual

9. IT Department (Outside TOR)
   i. Information Technology Section Orientation Document
   ii. IT Strategy Brief
   iii. IT Basic Computer Training Program

10. ISC Meetings
    i. Role of ISC
    ii. Role of Nodal Officers
    iii. Minutes of ISC meetings
        • 071008  241008  111108  290109  120209
        • 060309  190309  160409  300409  190509
        • 060609  170609  250709  300709  150909

Reporting (TOR C)
11. Inception Report
12. Interim Report
13. Monthly Progress Reports
    April 2008   August 2008   September 2008
    October 2008 November 2008 December 2008
    January 2009  February 2009  March 2009
    April 2009   May 2009     June 2009    July 2009
15. Notes for briefings to Minister.