Water Resources Department

2.4 IT Audit on Implementation of "Enterprise Information Management System-EIMS" by Water Resources Department, Madhya Pradesh

Executive Summary

Introduction

Water Resources Department of Madhya Pradesh is entrusted with the responsibility of development of water resources of the State. A water management system including dams, large canal network, meeting water requirements of irrigation etc. exists in the state. The Enterprise Information Management System is a part of the World Bank funded Madhya Pradesh Water Sector Restructuring Project. Objectives of EIMS are to streamline and improve efficiency, facilitate better planning and management of the integrated water resources, irrigation and drainage systems. In the EIMS, focus would be to create an information backbone and information flow arrangements to make WRD deliver cost-effective and efficient services. EIMS has 34 modules related to most of the activities of the Department and out of these, 24 modules were checked by us in detail.

General Control

∗ Formal logical access control policy was not framed by the Department. The Department could not develop a change management policy for EIMS. The Department had not implemented business continuity and disaster recovery plan so far.

(Paragraphs 2.4.6.1 to 2.4.6.3)

Application Control

∗ The examination of the database in 24 modules of EIMS indicated inadequate input control, absence of data validation, incomplete mapping of business rules, incomplete capturing of data in many of the modules and non-utilisation of certain modules. Thus, the expenditure of ` 16.79 crore incurred on development of EIMS remained unfruitful to the extent the modules planned are not being developed/utilised.

(Paragraphs 2.4.7.1 to 2.4.7.17)

Contract management of EIMS

∗ An expired Secure Sockets Layer Certification was installed with the web based application. Thus, the web site was not secured. Agreement with the Consultant provided for installation of bilingual dictionary to switch between Hindi and English and phonetic conversion engine. However, these were not installed with the application.

(Paragraphs 2.4.8.2 and 2.4.8.3)

∗ The Department could not develop adequate manpower to utilise full potential of the EIMS application. One year historic and two years current data were not entered in modules by the consultant as envisaged in the agreement. Therefore, projected benefits from the data entry could not be achieved.

(Paragraphs 2.4.8.5 and 2.4.8.7)

> ∗   Some of the main functions of development phase of EIMS were executed through a sub-contracted firm in contravention of the agreement which led to system design deficiencies.
>
> *(Paragraph 2.4.8.8)*

2.4.1   Introduction

Water Resources Department (WRD) of Madhya Pradesh (Department) is entrusted with the responsibility of development of water resources of the State. A water management system including dams, large canal network, lifting water through power, developed over the years for protecting floods, meeting water requirements of irrigation, drainage, industrial, domestic, power generation usages, exists in the state. Most of these systems require modernisation to achieve efficiency in water management and keep pace with the growing needs of the State.

The Government of Madhya Pradesh (GoMP) had approved (September 2003) State Water Policy (SWP) which intended to strengthen the existing water sector infrastructure for environmental balance, skilful and planned management for all types of developmental activities and economic use on the equitable basis.

To achieve the above objectives of the policy, Department had undertaken the Madhya Pradesh Water Sector Restructuring Project (MPWSRP) with World Bank Assistance. The project envisaged reforms in management of State's water resources in general and irrigation, drainage and groundwater in particular. The Enterprise Information Management System (EIMS) is a part of the World Bank funded MPWSRP. The Project Director, Project Implementation and Co-ordination Unit (PD, PICU), WRD awarded (August 2008) consultancy work to M/s Tech Mahindra Limited (Consultant) to design, develop and implement an EIMS for the entire WRD. The development phase of EIMS was completed on 30 September 2013.

Objectives of EIMS

The objectives of EIMS are to streamline and improve efficiency of the existing organisation and facilitate better planning and management of the integrated water resources, irrigation and drainage systems through timely and appropriate decisions. In the EIMS, focus would be to create an information backbone and information flow arrangements to make WRD deliver cost-effective and efficient services. The EIMS focuses on the creation and effective use of IT infrastructure and supporting information systems to institutionally strengthen the core functions of WRD by improving assets management, billing and revenue collections, procurement, financial management, accounting, human resources development and office automation.

Salient Features of EIMS application

EIMS has 34 modules[99] related to most of the activities of the Department such as, asset management, project management, core technical and operational, institutional functions, support functions, office automation,

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[99]   Link for EIMS is available on https//www.mpwrd.gov.in

billing and revenue collection, flood control & works, hydro meteorological etc. The application was developed on Java 2 EE (Enterprise Edition) as front end and Postgre SQL(Structured Query Language) an open source RDBMS[100] as back end. It was a Web based solution that could be accessed via internal intranet or World Wide Web. This was an open source, platform independent application and could be deployed on Windows/Linux/Unix/Sun. Various users such as Executive Engineers (EEs), Sub Divisional Officers (SDOs), contractors etc. could connect to EIMS through internet.

2.4.2   Organisational set-up

The Water Resources Department (WRD) is headed by a Principal Secretary at Government level and the Engineer-in Chief (E-in-C) at Department level. The Department is divided into eight basins each headed by Chief Engineer (CE), 33 circles headed by a Superintending Engineer and 128 divisions headed by EEs who are responsible for construction of Major/Medium/Minor Projects in the different basins in Madhya Pradesh. PD,PICU also functions under WRD which is established for the purpose of implementation of MPWSRP funded by the World Bank.

2.4.3   Audit objectives

Audit objectives were to assess;

∗   Adequacy of general and application controls,

∗   Effective utilisation of available database of 'EIMS' to assist planning and decision making and

∗   Contract management for a consultancy to design, develop and implement EIMS for the Department.

2.4.4   Audit criteria

Audit findings were based on criteria derived from:

∗   System Requirement Specifications (SRS), System Design Document (SDD),

∗   Best practices for development and implementation of application software,

∗   Circulars and Orders issued by the WRD regarding implementation of IT infrastructure and EIMS in WRD,

∗   Terms and conditions of Agreement with the Consultants, MPWD[101] Manual as amended from time to time and CPWA[102] Code.

2.4.5   Scope and methodology of audit

Records relating to award of consultancy contract to the Consultant (August 2008), available in the office of the PD, PICU since its conception to the date (June 2015) and also, database as available for the period up to 31 December 2014 provided to audit by PICU were scrutinised using Computer Assisted

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[100]   RDBMS: Relational Database Management System
[101]   MPWD: Madhya Pradesh Works Department
[102]   CPWA: Central Public Works Accounts

Audit Techniques (CAAT)[103]. Besides, 13 Divisions which were about 10 *per cent* out of total 128 Divisions of WRD were also audited for ascertaining extent of utilisation of various modules of EIMS.

The Government informed (September 2015) that while 34 modules had been developed, five main modules i.e. SMS based Reservoir monitoring, Feasibility monitoring, Minor scheme monitoring, e-Measurement Book (e-MB) and Irrigation monitoring contributed 80 *per cent* weightage in terms of utility and value for money. Out of 34 modules of EIMS, we checked 24 modules in detail including the main modules.

An entry conference was held on 22 January 2015 with the Principal Secretary, WRD, GoMP for appraising the audit objectives, criteria and scope of audit. The draft report of the IT audit was issued to the Department/ Government on 6 August 2015 and reply of E-in-C to the draft report was received on 5 November 2015. An exit conference was held on 22 September 2015 with the Principal Secretary and other senior officers. Reply given by the E-in-C and views expressed in the exit conference have been suitably incorporated in the report. The recommendations given in the report were agreed to by the Government.

Audit findings

Audit findings relating to general controls, application controls and management of contract for EIMS have been discussed in the succeeding paragraphs.

2.4.6   General Controls

Functions of the Department such as, asset management, bill payment, contract management, irrigation monitoring, dam safety monitoring, human resources management, revenue collection etc. had been covered in the EIMS for its operation and utilisation at division level. In all the modules data was being entered at division level.

General controls include controls over data centre operations, system software acquisition and maintenance, access security and application system development and maintenance. It creates an environment in which the application systems and application controls operate.

Shortcomings in general controls in respect of the IT application of EIMS such as, inadequate logical access controls, improper change management system and absence of business continuity and disaster recovery plan for EIMS were noticed in audit, which have been discussed in the succeeding paragraphs.

2.4.6.1   Inadequate logical access controls

Formal logical access control policy was not framed by the Department.

Risks of unauthorised access to data include the possibility of information leaks that would permit outsiders to assess the present state and characteristics of an organisation. Logical access controls are protection mechanisms that limit users' access to information and restrict their forms of access on the system to only what is appropriate for them.

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[103]   CAAT: Interactive Data Extraction and Analysis (IDEA)

We noticed in all the test checked divisions that the divisions adopted simple single word or only numeric password without using special character therein for access to the data. No norms in respect of password length, duration/expiry, change procedure, alphanumeric pattern etc. were specified to strengthen security for access of the information in EIMS system. Thus, there was a threat to the security of data in the computer system.

The E-in-C, WRD stated (November 2015) that password control was limited to minimum six characters which could be a combination or non-combination of alphabets, numerals and special characters. The reply confirms system does not enforce alpha-numeric and special characters in the password and may allow weak passwords. Also formal logical access control policy was not framed.

2.4.6.2 *Improper change management system*

The Department did not develop a change management policy for EIMS application.

According to the changed necessity, system as developed may require change. This change process may have an impact on the existing controls and may affect the underlying functionality of the system. As per agreement any change would be authorised by a review committee. Further, all changes to system configuration are authorised, tested, documented, controlled, the system operate as intended and that there was an adequate audit trail of changes as provided in the agreement.

We observed (April 2015) that change management for EIMS application was being performed by the Consultant themselves. We further noticed that G-schedule/estimate preparer module, which were previously present in EIMS, were removed from the Divisional Officer's login. Main web page of EIMS did not match with that mentioned in SDD and web page display had been changed more than three times without any change authorisation by the Review Committee. Documentation in respect of these changes was not available in the Department.

The E-in-C, WRD stated (November 2015) that the Department would soon develop a change management policy for EIMS and implement it.

2.4.6.3 *Absence of business continuity and disaster recovery plan*

The Department had not prepared any formal business continuity and disaster recovery plan.

The objective of having a business continuity and disaster recovery plan and associated controls is to ensure that the organisation can still accomplish its mission and it would not lose the capability to process, retrieve and protect information maintained in the event of an interruption or disaster leading to temporary or permanent loss of computer facilities.

The Department was keeping backup of data by updating it in another server kept at the same premises. No backup was maintained at offsite location. Therefore, in the case of disaster, damage may occur to the server being in the same premises and the Department may not be able to recover the data. Even after completion of development phase by September 2013, the Department had not prepared any formal business continuity and disaster recovery plan.

The E-in-C, WRD stated (November 2015) that business continuity and disaster recovery plan would be implemented after migration of EIMS to State Data Centre.

Recommendation

The Government should formulate and implement plan for change management and business continuity for an uninterrupted and intended system operation and utilisation.

2.4.7   Application controls

Application controls[104] are controls specific to an IT System and involve mapping of business rules into the applications; thus providing for input, processing, output controls. Input, processing, output controls include data entry in the modules, availability of data on demand, availability of reports in desired forms and master data management by removing duplicates, standardising data and incorporating rules to eliminate incorrect data from entering the system.

During test checked audit, we noticed instances of system design deficiencies and poor data quality e.g., incomplete and incorrect data, absence of validation checks and inadequate mapping of business rules in the modules. Further instances of incomplete and incorrect data were also observed by us in some of the reports available on website of the Department for monitoring purpose. Such instances have been discussed module-wise in details in the succeeding paragraphs.

2.4.7.1   Asset management module

In this module, holding of all immovable and movable assets such as, dams, canals, distributaries, etc. suitably categorised and maintained at basin, sub-basin and up to division level, were to be included. The objective of the module was to facilitate management of historic data of assets and monitoring for maintenance and operation of these assets. Significant instances of lack of input and output controls observed by audit in data entry in the database of the module are described below:

Database of fixed assets for the module contained 26,486 records of dams, canal, reservoirs, tanks etc. Data analysis of the database shows that:

∗   In the field of date of fixed asset acquired, data were not entered in case of 26,140 records.

∗   Expected date of end of life and date of next service of asset were not mentioned in 26,484 records.

∗   There were 23,507 records of dams etc. which did not show annual irrigation area.

∗   Database of dam additional details created for the module contained 6,947 records. Data analysis shows that:

∗   Fictitious data (as 9999 etc.) was entered in the fields of top width of dam, catchment area and height above lowest foundation. In 261 records of dams, gross storage capacity of water at full tank level was shown as zero but dead storage capacity was shown as 0.001 MCM to 99,999 MCM.

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[104]   List of the modules and sub modules is as per the main web page of EIMS currently available. Data of the various tables had been analysed on the basis of module wise list of tables with their relations given by the PICU, SRS and SDD.

Database of geographical situation of the assets was having 24,663 records. Area of MP is situated at Latitude 21^06' – 26^054' North and Longitude 74^0 – 82^047' East. We found incorrect data entry in the database related to geographical point of asset as below;

∗   Longitude was recorded as less than 0 (-111.696625) in one record of asset which shows that validation check was not there.

∗   In case of 24,660 records, elevation of geographical point of asset was recorded as "0".

∗   In 15,908 records latitude was recorded as "0" and in 15,901 records longitude was recorded as "0".

∗   In 1,146 records latitude was recorded less than 21^06'. In 263 records, it was recorded as more than 26^054'.

∗   In 3,265 records longitude was recorded less than 74^0 and in 26 records longitude was recorded as more than 82^047'.

∗   The database, containing 373 records related to details of schemes of canals being used for irrigation, we noticed following deficiencies;

∗   In case of 360 records, scheme name was not entered.

∗   Discharge capacity of canals shown in the 15 records were either "0" cumec or "9,999,999,999" cumec which was not possible.

∗   Similarly, normal depth of flow of canals was shown either"0" (229 records) or "9,999,999,999" (one record).

In the absence of these vital information in the database, monitoring of assets and decision making for maintenance and operation of these assets through the EIMS module would not be possible or appropriate.

The E-in-C, WRD stated (November 2015) that the data would be filled in the blank database and wherever found necessary, validation would also be done.

2.4.7.2   e-Measurement book module

In e-Measurement Book module, facility for preparation of bills for turnkey/lump-sum contracts, contracts in Electrical & Mechanical formation and for calculation of escalation, was not included.

The e-Measurement Book (e-MB) module facilitates recording of measurement of works and generating running bills for payment to contractors which also includes generation of contractors ledgers.

We noticed (October 2014 to June 2015) deficiencies in validation checks and designed system in the module and a few important deficiencies have been discussed in succeeding paragraphs;

∗   Instances of preparation of running bills manually had been observed by us in four divisions out of 13 test checked divisions. Facility to generate running bills of turnkey and lump sum contract had not been incorporated in e-MB module.

The E-in-C, WRD stated (November 2015) that since the process of turnkey and lump sum contracts were not standardised, each such contract was different from other and therefore this type of contracts were not incorporated in e-MB module.

The reply is not acceptable as turnkey and lump sum contracts could also be incorporated in e-MB module for payment as the percentage rate contracts also have different combinations of items for payment. Moreover, standard forms for payment of running/final bills of lump sum contract is already given as Form 27 A and 27 B respectively in CPWA code.

∗   As per clause 10.7 of the CPWA Code, all transactions with contractors in connection with contracts or jobs undertaken by them should be kept in the contractors ledger, in Form CPWA 43. Maintenance of contractors ledger was the duty of the divisions of the Department. Facility of generating contractors ledger was there in e-MB module but right to open and utilise contractors ledger had not been given to Divisional Officers. Thus, the control on payments to/receipts from contractors, envisaged through contractors ledger was not ensured.

On being pointed out by audit, the E-in-C, WRD stated (November 2015) that aforesaid facility which was suspended from Divisional Officers is now restored.

The fact remains that facility of control on payments/receipts envisaged through contractors ledger was not utilised during this period.

∗   Period of schedule of completion of works given in contracts creates obligation on the part of contractors to complete work during that period. Therefore, a valid time extension must be there for giving right to contractor to continue the work and claim for work done beyond the scheduled completion. We noticed that there was no validation check in the module to stop automatically the entries of running bills in the case of absence of entry of sanctioned time extension in e-MB module. Absence of such validation check may lead to payment to contractors without sanction of time extension.

The E-in-C, WRD stated (November 2015) that the running bill was being generated in some cases without time extensions in the interest of work and to ascertain liability on account of payment to contractors and a flag to notify completion of valid extension of time is available, which gives an alert to the Contractor and EE both.

The reply is not acceptable as the method adopted is against the provisions of the contracts.

∗   Escalation payment to contractor where provided in the agreement, was being done on the basis of index of various components of works i.e. Petrol Oil and Lubricant, material, labour etc. On the base date, which is usually date of opening of tender, facility for automatic calculation of escalation based on index on base date and variable data of quantities and index on the date of execution of work would have minimised manual intervention and ensured greater accuracy in calculations of amount of escalation payable to contractor. However, this has not been incorporated in e-MB module.

The E-in-C, WRD stated (November 2015) that the observation of audit was well taken and after detail examination it would be implemented, if found suitable.

∗   As per MPWD Manual, the MB containing details of measurement of each items of works, forms the basis for payment to contractors against the works executed under a contract. Work MB are used for detailed recording of each item of works executed and abstract MB (Bill MB),prepared on the basis of Work MB, includes summary of each item of work executed which forms the basis of running bills. References of the Work MB number and page

numbers are mentioned in abstract MB. No report on abstract MB was being generated through e-MB module.

We noticed that the Department stopped (August 2012 and March 2014)[105] preparation of abstract MB manually and instructed the divisions to paste copy of running bills in this MB generated through e-MB. As a result of this change, linking of quantities mentioned in the running bills with the quantities mentioned in MBs became difficult for verification of quantities by the Department as well as by the auditors and may lead to incorrect payment to contractors.

We further noticed that Sub-Engineer who is responsible for preparation of abstract MB, was not being associated with e-MB module as preparation of abstract MB had been discontinued. In earlier system, Technical Section, Divisional Accountant (DA)/Account Section of division were responsible for checking technical aspects and accounting aspects of running bills respectively before submission to the divisional officers. The e-MB system, however, does not provide for checking by these Sections/DA, increasing the chances of inaccuracies in recording measurements in e-MB module.

The E-in-C, WRD stated (November 2015) that it would be made mandatory to record reference MB and page numbers of detailed measurements in the remarks column and a circular to this effect would be soon issued. He further stated that the issue of involvement of Technical and Accounts sections as well as DAs in bill passing process would be discussed with field offices and if required suitable correction would be made in the module.

∗ Electrical & Mechanical (E&M) formation undertakes execution of earthworks on behalf of divisions undertaking civil works. Payment on account of hiring charges to earthwork contractors is made on hourly rate basis subject to execution of minimum quantity of earthwork per hour. Quantity of earthwork done by earthwork contractor is certified by civil divisions of the Department. Since two divisions of the Department are involved in the execution and authorisation of payment to earthwork contractor, coverage of E&M formation under e-MB module would facilitate linking and verification of actual executed quantity of earthwork by contractor through e-MB module. Thus, in the absence of e-MB module for E&M formation there is risk of incorrect/double payment to earthwork contractor.

The E-in-C, WRD stated (November 2015) that since the E&M formation did contracts for works related to multiple projects in a single agreement, it became difficult to incorporate it in current version of e-MB. He further added that after discussion with E&M authorities suitable process would be devised to include the monitoring of contracts of E&M formation.

∗ In the e-MB module, fields and nomenclature for deductions on account of royalty, income tax, commercial tax, labour welfare cess etc. are not fixed. Thus, there was no planning for accounting of these amounts in appropriate heads in the e-MB module itself. As a result, accounts of these deductions were being prepared manually. Thus, deductions from the running bills of contractors have not been mapped in the module.

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[105] Vide order 205/AS/2012 dated 06 August 2012 and vide order 21/PA/Add. Sec./camp/wrd/2014 dated 20 March 2014

The E-in-C, WRD stated (November 2015) that the point of audit was well taken and would be implemented soon.

∗ Facility to check availability of allotment of funds for the work was not available in the e-MB module because Budget module of EIMS was not complete and Budget module was also not integrated with the e-MB module. Such integration was required while making payment so as to know availability of budget before generating running bills and avoid payments in excess of allotments.

The E-in-C, WRD stated (November 2015) that although a module 'Budget and Allotment' was available but after implementation of Financial Management Information System (FIMS) by the Finance Department, the 'Budget & Allotment module' has become redundant.

Full potential of the application could not be derived due to non-integration of two modules for checking up the availability of budget before generating running bills.

∗ The e-MB Module, which is for preparation of running/final bills and payment in respect of a work had not been designed to generate running bills in Form 26 of CPWA Code. We further noticed that the generated running bills did not contain information such as number and date of the previous bill for this work, figures for work abstract etc. as required in CPWA Code.

The PD, PICU replied (June 2015) that the generated bills were in the form and requirement of the Form 26.

The reply is not acceptable as some of the required columns as mentioned above were missing in the designed running bill proforma. Further, absence of aforesaid information in the generated bills was confirmed through records of test checked divisions.

Thus, facility of the e-MB module had not been utilised to the full extent and the relevant business rules were not completely captured for ensuring correct payments to contractors.

2.4.7.3   *e-Measurement report*

The e-Measurement report contains information about running bills of contractors with required related details of the work for payments. Total 1,645 records were available at the end of September 2015 in the e-measurement report analysed by us. Lack of input controls and validation checks at data entry level had been observed as below;

∗ In case of 42 records, same contract ID had been allotted to two different works. This also shows absence of validation checks to restrict such mistake.
∗ In the case of 340 records of completed contracts as on 30 September 2015, dates of first running bill and last running bill were not entered in the records.

The E-in-C, WRD replied (November 2015) that such instances had occurred during initial phase of implementation of e-MB during 2012-13 and necessary validation had been incorporated to avoid such error. He further stated that

some of the records might be of turnkey and E&M contracts and necessary validation would be activated to minimise inconsistency in the data entry.

The reply is not acceptable as instances of duplicate contract IDs were noticed in respect of contracts entered into after 2012-13 also.

2.4.7.4   Contract monitoring module

There were incomplete and inaccurate data of guarantee, time extension etc. in the Contract Monitoring module; therefore the module was not being utilised to the full extent.

The Department engages contractors for execution of works relating to construction of dams, canals, lift irrigation schemes etc. The contract monitoring module includes facility of registering contractors for assigning works and measuring financial progress of contracts for major/medium and minor works to facilitate monitoring of progress of works. In the module, details of 1,329 contractors in respect of 3,191 contracts were available as of July 2015.

A database of guarantee detail of the Contract Monitoring module contains details of guarantee submitted by the contractors as per the conditions of contracts. We noticed (April 2015) following deficiencies in the database:

∗   Guarantee details of only 92 agreements of ongoing contracts had been entered in database though ongoing contracts were more than 3,000.

∗   Description of nature of deposit such as, fixed deposit receipts (FDR), bank guarantee should have been explained in database but it was left blank in 30 records.

∗   Indian Financial System Code (IFSC Code)is an eleven character code assigned by the Reserve Bank of India (RBI) to identify every bank branch. In the absence of this validation check, entry of incorrect IFSC could not be restricted in case of 14 records.

We noticed following deficiencies during scrutiny of the database having 117 records related to details of time extension cases of construction works:

∗   Reasons for time extension was to be noted in extension remarks field but this was left blank in 51 records.

∗   Order numbers of sanction of extension of time of contracts were left blank in four records.

The contract progress review data table contains details of status of contracts. We noticed following deficiencies in the database containing 40,469 records (relating to contracts):

∗   Remarks of reviewing authorities for review of progress of the contracts, were not there in case of 28,846 records.

∗   Data entry of previous payment and percentage of completion was shown as "0" for all the 40,469 records.

The data table of history of financial progress of the contract contains 6,297 records (relating to 1,524 contracts). We noticed following deficiencies in the database:

∗   Current stage of work was left blank in case of 1,363 contracts (about 89 *per cent*) indicating incomplete database.

∗ In case of 72 contracts, current status of work was shown complete but field for issue of completion certificate showed that certificate was not issued or the field was left blank, indicating incomplete database.

As such, the facility of monitoring of works through this module was not being utilised to the full extent because of incomplete and inaccurate database in the module.

The E-in-C, WRD *inter alia* replied (November 2015) that the data would be filled in blank database and wherever found necessary, validation would be done.

2.4.7.5   Contract monitoring report

Contract Monitoring Report being displayed on web site of the Department for monitoring purpose contains information about running contracts and contractors. Data in respect of all the eight zones was available in the report. Report of CE, Chambal Betwa Basin, Bhopal as on 30 September 2015 was scrutinised by us. Following deficiencies were noticed;

∗ In case of 35 records out of total 551 records, contract agreement date was the date later to the date of completion of work. This indicates absence of validation checks.

∗ For looking after execution of 133 works, no Sub-Divisional Officer (SDO) or Sub-Engineer was shown assigned.

The E-in-C, WRD accepted (November 2015) the observations and replied that the validation would be done so that such error does not occur and concerned EE would be asked to assign the work to the concerned SDO and Sub Engineer.

2.4.7.6   Dam safety monitoring module

Dam Safety Monitoring Module facilitates in creation of dam data book, creation and maintenance of inspection records for important dams and inspection by DSO[106] and DSIP[107] etc. Thus, the module also facilitates monitoring of inspection of major, medium and minor dams/tanks by the Department.

We noticed (April 2015) following significant deficiencies in scrutiny of database of inspection of dams by DSIP:

∗ Against 4,431 minor, 142 medium and 24 major completed and ongoing irrigation projects, data in respect of inspections of 37 dams only was found available.

∗ Observations and comments of inspecting authorities were not available in the database though facility to record the same in the database was provided in the module.

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[106]   Dam Safety Organisation is a wing of the department established for evaluation of the present condition of dams and for giving technical advice for improvement therein.

[107]   Dam Safety Inspection Panel is a panel for inspection of dams have storage capacity of 60 million cu m.

∗   In database of inspection of dams by DSO, only 238 records of dams were available in the database against 4,597 completed major, medium and minor projects as of December 2014.

These deficiencies indicated incomplete database and absence of validation checks.

The E-in-C stated (November 2015) that since inspection of dam is continuous process, data in the module would be populated as and when the inspections were carried out and now submission of inspection report was being done only through the module and no hard copy/paper submission was required.

The reply is not acceptable as these fields were related to safety of dams and consequently related to safety of assets and life of human being residing in nearby area. Therefore, these fields were required to be maintained and updated mandatorily.

2.4.7.7   Human resources management system module

The module, aimed at for management of human resources, includes database of employees postings, current Department, immediate superior details, details of head of the Department, employees personal data, information relating to the annual confidential report of employees, property returns filed by employees, attendance details and balance leaves. The module also provided for auto calculation of salary and terminal benefits of employees based on other relevant data.

∗   Database containing employee details having 5,235 records of employees i.e. address, contact number, computer skill, probation etc. Each record contained 47 fields. We noticed that in the database, data had been fed in only 12 fields and remaining 35 fields were left blank.

∗   453 records belonging to the retired employees, were not automatically flagged as retired, indicating system design deficiency.

∗   Data in emergency contact number of employee was left blank in case of 5,042 records and contact person name in case of emergency was "self" in 105 records of employees.

∗   Postal address was not entered in case of 4,439 records of employees.

∗   Home district was not recorded in 4,763 records of employees.

∗   Bank account number of 4,829 employees not available in database.

∗   In records of employees family details we noticed that against 6,658 employees as on December 2014 in the Department, total 427 records of family members relating to only 137 employees were available.

∗   Age of dependent was not captured correctly and indicated as "Zero" in the records of 426 family members of employees.

Thus, the management of human resources was not possible through the module because of incomplete database.

The E-in-C, WRD replied (November 2015) that the data would be filled in blank database, validation would be done wherever found necessary and deficiencies pointed out would be corrected.

2.4.7.8   Non-agricultural revenue (industrial revenue) module

Non-agricultural revenue module, developed for monitoring revenue collection from industrial consumers, contains details of registration of industrial consumers, agreement with consumers, water usage records, generation of bills and recovery of water charges.

We noticed (April 2015) following deficiencies in the database of water usage in the module having 2,202 records:

∗   In 990 records, details of agreements with consumers were not available and shown as "non-agreemented".

∗   Agreement ID was given in respect of 577 records but marked as "non-agreemented"; indicating inconsistencies in the database and absence of a validation check.

The E-in-C, WRD stated (November 2015) that the data would be checked, corrected and validated if required.

2.4.7.9   Flood control management module

Flood Control Management module is a SMS based monitoring application that facilitates sending of information on reservoir level through SMS by the field staff to the central server for the purpose of flood control. The module facilitates for drawing inferences about flood situation and water availability in the reservoir.

Daily rainfall is recorded at every rain gauge station and conveyed by the staff to their immediate officer and also at data centre at Bhopal.

We noticed following significant deficiencies in records regarding highest flood level, danger water level etc. of dams/river sites, having 5,297 records:

∗   Highest flood level, year of highest flood level and danger water level were shown as zero in all the records.
∗   District identity was also not entered therein.
In the absence of these data it would not be possible to adequately monitor and draw inferences about flood situation and water availability in the reservoir.

The E-in-C, WRD stated (November 2015) that the module would be implemented soon as per the audit observations.

2.4.7.10   Reservoir monitoring report
The SMS based reservoir monitoring system has been developed for the monitoring of water level especially during rainy season. This module provides facility of getting compiled information of daily water level and capacity available by sending a simple SMS by the tank gauge reader.

(i)   SMS based reservoir monitoring daily report

SMS based reservoir monitoring report as on 25 September 2015 had been test checked by us. Instances of incomplete data had been observed by us as summarised below;
∗   Data in respect of only 136 reservoirs was being maintained in the report while number of completed projects are 4,597[108].

In the absence of data regarding flood level etc., in Flood Control Management module, it would not be possible to adequately monitor about flood situation.

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[108]   Source of information is Administrative Report of the Department.

∗   In case of 27 reservoirs, static data of reservoir levels, live capacity and live storage had not been recorded.

∗   Though required updation on daily basis, daily reports of reservoir monitoring data in respect of all the 136 reservoirs was not being updated by the departmental authorities.

The E-in-C, WRD replied (November 2015) that all important reservoirs, 136 in number, were being monitored through this module and it could be extended whenever required. He further added that due to technical problem, sometime SMS was not received by the server.

(ii)   River gauge water level report

River gauge water level monitoring through SMS based system was developed to know the availability and flow of water in rivers. The river gauge reader sends SMS which are captured in server and a report is displayed.

We observed from river gauge water level report as on 4 October 2015 that out of 86 discharge stations data in respect of 15 gauge discharge stations only was available in the report.

The E-in-C, WRD replied (November 2015) that at present only 15 rivers gauge stations were brought on the system. He further added that the remaining river gauge readers would soon be brought on to use the system.

2.4.7.11   Surface water module

The Surface Water module is meant for entering meteorological and hydrological data and provides facility for entry of rainfall, water level and climate data as observed by field offices of the department. The module thus facilitates for drawing inferences about meteorology and hydrology of a place.

We noticed (April 2015) following significant deficiencies in the database of the module having 4,920 records for data relating to temperature, pressure and other climatic details:

∗   In 3,739 records, minimum temperature of the station was mentioned as zero, indicating that this information was not being collected and entered in the database.

∗   In 4,912 records, absolute pressure[109] was shown as zero though it has some value.

Thus, the database in the module was not complete/accurate to draw correct inferences about meteorological and hydrological status of a place.

The E-in-C, WRD *inter alia* replied (November 2015) that the data would be filled in and wherever found necessary, validation would be done.

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[109]   Absolute pressure is the pressure measured relative to zero pressure or a total vacuum.

2.4.7.12 Water user association[110] and other participatory irrigation management module

The Water User Association (WUA) and other Participatory Irrigation Management module aims at to assist monitoring the activities of WUAs and funding to WUAs by the Department.

We noticed (April 2015) that details of 1,966 WUAs for 2,094 schemes under eight zones of the Department had been entered in the module. Performance grading of only 264 WUAs against 1,966 WUAs was mentioned in database of the year 2013-14. Data of the WUAs was not updated for the years 2014-15 and 2015-16. This shows that the module was being utilised partially.

The E-in-C, WRD stated (November 2015) that efforts were being done to use the module for WUA works. The reply confirms that the database of the module was not being updated for facilitating its meaningful use.

2.4.7.13 Irrigation Monitoring module

Due to incorrect and incomplete data regarding irrigation potential and categorisation of schemes in Irrigation Monitoring module, monitoring of operations of irrigation schemes would be difficult.

The Irrigation Monitoring module provides facility of monitoring of operations of major/medium/minor irrigation schemes and it includes details of water storage capacity, irrigation target and achievement, weekly irrigation, progress of irrigation across schemes and Department as a whole, historical records of irrigation activities and irrigation potential available.

We noticed (April 2015) following deficiencies in the table named 'irrigation potential details' having 20,971 records relating to 5,346 projects/schemes under the Irrigation Monitoring module:

∗ Actual irrigation potential area of tanks were shown as "0" hectare (ha) but designed potential were shown as more than "0" ha ranging between 1 to 3,62,102 ha in 12,709 records indicating inaccuracies in the database.

∗ Categorisation of schemes as major, medium and minor in the module was not according to the criteria based on irrigation potential area of such schemes in respect of 416 records.

The E-in-C, WRD stated (November 2015) that for the years 2009-10, 2010-11 and 2011-12 partial data entry was done which would be completed soon and the data entry of actual irrigation was started from year 2012-13. He further stated that the old system of categorisation of schemes on the basis of cost, might be the reason for wrong categorisation in 416 records which would be corrected soon.

2.4.7.14 Irrigation Monitoring Report

Irrigation monitoring report is meant for monitoring irrigation for Rabi crop on fortnightly basis against the target set for irrigation on the basis of availability of water in the irrigation scheme. Report generated on 25 September 2014 was analysed and we noticed shortcomings in the reports as described below projects-wise.

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[110] A water users' association is a farmers organisation. Objectives of WUA are to promote and secure distribution of water among its users, adequate maintenance of the irrigation system and efficient and economical utilisation of water to optimise agricultural production.

Major projects

Out of 24 existing major projects, data of 22 major projects only was being displayed in the report.

∗ In Gandhi Sagar Dam, information on 'culturable command area in hectare' and 'Rabi designed irrigation in hectare' were recorded as zero.

∗ In four records, reservoir level as on 25 September 2014 was recorded as zero metre but available live capacity of the dam ranging between 206.71 Million Cubic Metre (MCM) to 2,197.78 MCM were recorded, indicating absence of validation checks.

∗ For six schemes, targets for Rabi irrigation for the year 2014-15 were fixed but target remarks such as "Palewa *plus* one water", "Palewa *plus* three water" which indicates water to be given for irrigation, etc. were not recorded.

Similar nature of shortcomings were noticed in the reports on Medium Projects and Minor schemes.

The E-in-C, WRD replied (November 2015) that the necessary correction and validation in the data feeding would be done. He further added that no remarks in target remarks column meant all required watering would be provided.

The reply regarding number of required watering is not acceptable as "target remarks" column is meant for recording number of spells of watering for irrigation.

2.4.7.15 Geographic Information System (GIS) module

As per terms and conditions of the agreement, geo-database[111] was to be one of the major application components and for that purpose GIS was to be the common source of information related to water resources of MPWRD.

Geo-database relating to water resources of the State was not provided to us when requisitioned. One link was given on the main page of EIMS webpage which did not show geo-database relating to water resources of the State.

The E-in-C, WRD stated (November 2015) that the GIS module was developed but due to shortage of server, it was not working and after shifting to State Data Centre, the GIS application would be made fully functional and in use.

2.4.7.16 Feasibility Reports (Sadhyata)

Feasibility Reports has three sub-reports viz., New Scheme Report, Repair, Renovation and Rehabilitation (RRR) Scheme Report. Dynamic data available on the WRD portal in respect of these sub-reports as on 5 October 2015 was analysed by us.

(i) New Scheme Report

The report contains information about "pinpointed" new schemes identified for feasibility study, approved schemes, schemes under survey, sanctioned schemes and rejected schemes. In scrutiny of 269 records of new scheme report we noticed that:

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[111] The geo-database is a collection of geographic datasets of various types.

➢ In 13 pinpointed new schemes, total land cost did not match with total cost of irrigated land, un-irrigated land and forest land.

➢ In four of the feasibility approved schemes, total cost of land was also not equal to sum of cost of irrigated land, un-irrigated land and forest land.

➢ In the new scheme report, only one scheme *"Keshariya Kund Tank"* was shown as sanctioned contrary to the fact that many more schemes had been sanctioned by the Department.

The E-in-C, WRD replied (November 2015) that the sanctioned projects might be more which would be checked and updated.

(ii)   Repair, Renovation and Rehabilitation Scheme Report

The RRR scheme report is meant to facilitate the government authorities to accord sanction for preparing DPRs for Repair, Renovation and Rehabilitation (RRR) work in respect of old projects. Records of 91 schemes were available in RRR Scheme Report. We noticed that:

∗ In four records, meaningless data in the column of catchment area in ha were found entered as "99,999,999.000" and "9,999,999.000" which shows that proper validation checks regarding field width were not there in the data base.

∗ In columns of estimated cost of total lining, head work and RRR scheme of canal, data were entered as 3.00 to 2,61,34,800.00 which indicates different units of monetary value being fed by different divisions.

∗ Report shows per ha cost of the 91 schemes ranging between ` 0.14 to ` 8,67,605.71 which was evidently incorrect.

The E-in-C, WRD accepted (November 2015) the observations and replied that proper validation would be done to ensure correct and reliable data in the module.

2.4.7.17   Other modules of EIMS

We also analysed other EIMS modules such as, mechanical works (E & M), SMS based canal monitoring system, establishment related assets, store keeping, procurement and tender management, grievance management, office administration, electronic document management system, environment management, assembly & parliament questions and reply, budget planning and monitoring, ground water and crop revenue and irrigation billing which were either not being utilised by the Department or were having very few but incorrect, incomplete data. Instances of incomplete and incorrect data were also observed by us in data of the reports for monitoring purposes being displayed on web site of the Department.

Database of the modules of EIMS indicated inadequate input control, absence of data validation, incomplete mapping of business rules, incorrect/ incomplete capturing of data and non-utilisation of certain modules.

The examination of the database in these 24 modules of EIMS as described above indicates inadequate input control, absence of data validation, incomplete mapping of business rules, incorrect/incomplete capturing of data in many of the modules and non-utilisation of certain modules.

In the exit conference (September 2015) Principal Secretary, WRD while accepting the absence of validation, incomplete/incorrect entries of the data in the modules, stated that the EIMS had been a very effective tool for monitoring irrigation projects from the very start of a proposal until completion of construction and thereafter, from filling of reservoirs until irrigation. The inadequacy of server capacity, unwillingness of engineers to learn and use computer and web enabled systems, had been worthwhile obstacles, which had now been overcome. He also added that the consultancy was awarded as a composite contract having high value high priority modules as well as low utility low priority module.

The fact remains that the expenditure of ` 16.79 crore incurred on development of EIMS remained unfruitful to the extent the modules planned are not being developed/utilised.

Recommendation

The Government should ensure completeness, correctness and availability of data that is useful for management for decision making and monitoring. The Government should also completely implement all other modules developed for EIMS.

2.4.8   Contract management of EIMS

World Bank conveyed[112] (July 2008) no objection to sign the contract with M/s Tech Mahindra Limited for consultancy for EIMS design and implementation support for an amount of ` 15,00,47,100. PICU issued (August 2008) letter of acceptance to M/s Tech Mahindra Limited and notice to start the consultancy work on August 2008. Agreement[113] for contract of consultancy was also signed in August 2008.

As per the Agreement, stipulated period of completion was 36 months (up to 31 July 2011). Provision of three years warranty period and three years Annual Maintenance Contract (AMC) period was also there in the agreement. As per reply of the Department, the development phase was completed on 30 September 2013 and warranty phase was effective since 1 October 2013.

An expenditure of ` 16.79 crore, including reimbursement of service tax of ` 1.79 crore, was incurred on the project up to 2013-14.

Shortcomings in management of contract for development of the EIMS were noticed in audit, which have been discussed in the succeeding paragraphs.

2.4.8.1   Non-availability of data dictionary of EIMS

A data dictionary defines the structure of the database and includes name, description, characteristics of every field of each table and types of inter relationships between data elements for facilitating others[114] to refer to them or analyse.

Data dictionary in respect of the EIMS was not made available by the Consultant during concurrency of audit (October 2014 to July 2015). In the

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112   Through email dated 10 July 2008
113   Agreement number 3/EE (BVPP)/SAC/252/08 dated 12 August 2008
114   Programmers, data base administrators, auditors etc.

absence of data dictionary, change management, data base administration and auditing would be difficult.

The E-in-C, WRD stated (November 2015) that the data dictionary was now available and had been provided to Audit.

The reply is not acceptable as data dictionary was provided to us after completion of Audit and it was not comprehensive as details of table and description of field had not been mentioned in the data dictionary.

2.4.8.2 Installation of secure sockets layer

The installed Secure Sockets Layer Certification expired making the website prone to threats.

Development of web portal was the responsibility of the Consultant as per the agreement with them. The requirement of Secure Sockets Layer (SSL) certification for web portal was an integral part of the work to make the web site secured.

We noticed (May 2015) from the web page of EIMS portal that the portal was having an expired SSL certification. Thus, the web site was not secured.

The E-in-C, WRD accepted (November 2015) that SSL certification of website done earlier had expired. He further stated that hardware procured for data centre was being installed at State Data Centre and SSL certification would be done as soon as the EIMS is shifted at State Data Centre.

2.4.8.3 Bilingual dictionary and phonetic conversion engine not installed

Though provided in the agreement bilingual dictionary and phonetic conversion engine not installed with the application.

Agreement with the Consultant provided for installation of bilingual dictionary which allows user to switch between Hindi and English for key fields on data entry screen. Another feature of the dictionary is to enable users to search English words for which Hindi translations were available with the system. The Consultant was also required to design a phonetic conversion engine giving an additional feature of using phonetic Hindi equivalent of English Text.

We noticed (April 2015) that instead of providing bilingual dictionary for facilitating switching between Hindi and English language for key fields, the Consultant provided pre-defined Hindi labels for fields in programming, limiting the use of the software for Hindi users. Non-providing of bilingual dictionary as required in the agreement by the consultant had deprived the data entry staff of the Department the facility of conversion of textual element from Hindi to English and vice versa. Phonetic conversion engine was also not found but total payment as per the agreement was made to the Consultant.

The E-in-C, WRD while accepting the audit observation stated (November 2015) that the compilation of bilingual dictionary field items had been done and installed. He further stated that the use of both bilingual dictionary and phonetic conversion engine would be fully available at the portal as well as with the application after completion of migration of EIMS to State Data Centre.

2.4.8.4 Non-deployment of key personnel by consultant

In the agreement, 11 key personnel and sub-consultants were indicated by name who were responsible for development of EIMS. Eleven other key personnel were to be nominated later on. As per clause 4.2 of the agreement no change shall be made in key personnel except for the reasons beyond the

control of the Consultant. As per Annexure IV of Appendix A[115], in case of non-deployment of key personnel and support staff, remuneration was to be deducted proportionately from the payment considering breach of contract by the Consultant.

We noticed (April 2015) from the records of the Department that four key personnel were not deployed up to July 2009 by the Consultant though the development of EIMS was started in August 2008. The PICU, however, did not recover any amount from the remuneration payable to the Consultant on account of non-deployment of key personnel.

The E-in-C, WRD stated (November 2015) that, the case was not of non-deployment but of delay in approval of change in four key personnel positions by the World Bank and as no shortage in overall man-month for any of these four positions had occurred, therefore no recovery was done.

The reply is not acceptable as four key personnel were not deployed up to July 2009 by the Consultant. Further, the PD PICU (July 2009) had communicated to the Consultant that non-deployment of key personnel had reflected on the quality of the deliverables which was treated as breach of the contract.

2.4.8.5   *Capacity building and institutional strengthening*

The Department could not develop adequate manpower to utilise full potential of the EIMS application.

As per the agreement[116], the Consultant was required to identify the requirements for a specialised team of IT/IS[117] specialists within WRD and setting up an appropriate IT/IS organisation, including infrastructure, resources, and maintenance strategy. As per the Institutional Framework Report submitted (September 2009) by the Consultant, in order to provide information and technology support to the IT/IS team, a Central Information and Technology Office (CITO) was to be set up within WRD. The Consultant was also required to provide training in the area of application usage, application support and application administration to the WRD staff.

We noticed (May 2015) that no IT/IS specialist group of WRD personnel had been formed. After the development phase, all the works i.e. web server, implementation of EIMS, database administrators activities and change management control were being done by the Consultant. No development in respect of setting up CITO was observed by us. Though it was stated that training to trainers and users had been provided (June 2009 to May 2013) but deployment of outsourced staff at divisional level indicated inadequate training to users in the Department. When enquired, the Department could not produce to us proper documentation regarding personnel trained, types of training, venue, dates and duration of training programme by the Consultant. As a result, the Department had not developed adequate manpower at field offices as well as at PICU to utilise full potential of the EIMS application.

The E-in-C, WRD while accepting the audit observation stated (November 2015) that the necessary set up proposal for CITO had been prepared by the Consultant and the Department would make necessary arrangement for development of in-house capacity.

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[115]   Negotiated terms and conditions at point number 12 of the agreement
[116]   Clause 1.4 (g) of the Annexure V of Appendix A (ToR) of the agreement
[117]   IT/IS: Information Technology/Information System

The reply confirms that the Department had so far not developed adequate manpower to utilise full potential of the EIMS application.

Recommendation

The Government should ensure identification of a specialised team of IT/IS specialists within WRD for self-dependency along with adequate capacity building to deal with all the tasks of EIMS at Department level.

2.4.8.6 Non-adherence to tests procedure of EIMS application

Tests procedure for EIMS application as provided in the agreement were not adhered to.

As per the terms of the agreement[118] the Consultant was required to prepare a master test plan to test entire application at every step of software development. The Consultant was responsible for maintaining documentation, test reports and entire test logs generated during testing whereas personnel from the Department were responsible for tests and final rating of all accepted test results.

We however did not notice maintenance of a systematic documentation of test reports and entire test logs generated during testing as well as acceptance of test results by the Department. We further noticed flaws in system designs, validation checks etc. as discussed in details in paragraphs 2.4.7.1 to 2.4.7.17.

The E-in-C, WRD accepted (November 2015) that the code level[119] testing and their logs needed to be deciphered and understood but due to lack of IT staff, such an understanding was not available with the Department resulting in lack of maintenance of test log record. He further stated that the Consultant had been asked to submit application test documentations.

2.4.8.7 Non-entry of data by the Consultant

One year historic and two years current data were not entered in modules by the consultant as envisaged in the agreement.

As per the agreement[120], the Consultant was responsible for historic data entry of one year and current data entry of two years for demonstrative pilot phases and for supervision/facilitation of data entry by the users for the roll-out hases.

We found (April 2015) incomplete, invalid and inaccurate data in all the modules in analysis of the data. Most of the modules were unused confirming that one year historic and two years current data were not entered in modules by the Consultant. As a result, benefits expected from the data entry could not be achieved so far. This also indicated absence of effective monitoring by the Department.

The E-in-C, WRD stated (November 2015) that 34 modules were developed for EIMS and during development phase these modules were rolled out after piloting. He further stated that the historic data for five pilot divisions was to be entered in the module, which had been done by the Consultant.

The reply is not acceptable as complete data entry was not done by the Consultant in any of the modules as envisaged in the agreement. Incomplete and inaccurate data in the modules proves that the data entry done by the users was not supervised by the consultant. Therefore projected benefits from the data entry could not be achieved.

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[118] Clause 1.1.10 of Appendix A (Description of Services) of the Agreement
[119] Programming for the EIMS application
[120] Annexure V of Appendix A {ToR clause, 1.8 (5) (e)} of the agreement

2.4.8.8 Irregular sub-contracting of some of the main functions of development phase

Some of the main functions of development phase of EIMS were executed through a subcontracted firm.

As per the acceptance letter to the consultant (August 2008), the consultant was not to intend to subcontract any component of the work. The consultant requested to sought help and support from another firm (September 2008) to provide local logistic support in Madhya Pradesh, just after 01 month from signing of the contract. The permission for the above request was granted by the PD, PICU.

We found that the sub-contracted firm, who was engaged by the Consultants for logistic support, also performed some of the main functions of development of EIMS, which was irregular.

The PD, PICU replied (June 2015) that the no objection to the proposal of consultant to engage another firm for getting logistic support only was given. There was no issue of subcontracting.

Reply is not acceptable as records showed that some of the main functions of development phase of EIMS was got executed through the subcontracted firm which led to system design deficiencies as pointed out in paragraphs 2.4.7.1 to 2.4.7.17.

Recommendation

The Government should ensure comprehensive evaluation of contract implementation and take remedial action accordingly.

2.4.9 Conclusion and recommendations

∗ General controls in respect of the IT application of EIMS were deficient as there were inadequate logical access controls, change management for EIMS application was being performed by the Consultant themselves without documented procedure. Business continuity and disaster recovery plan for EIMS were not prepared.

The Government should formulate and implement plan for change management and business continuity for an uninterrupted and intended system operation and utilisation.

∗ In four out of five main modules implemented by the Department, data was incomplete, incorrect or inconsistent or full potential of the module was not utilised. The database in the other test checked modules of EIMS indicates inadequate input control, absence of data validation, inadequate mapping of business rules of the Department. Instances of incorrect and incomplete entries of data in these modules also and non-utilisation of certain modules were noticed. Thus, the objectives of providing improved and cost-effective services to clients and help improved access to information, transparency and collaborative working and the expenditure of ` 16.79 crore incurred on development of EIMS remained unfruitful to the extent the modules planned are not being developed/utilised.

The Government should ensure completeness, correctness and availability of data that is useful for management for decision making and monitoring. The Government should completely implement all other modules developed for EIMS.

∗   Contract management for EIMS application was deficient as the EIMS portal was having an expired SSL certification; causing threat to its security. Bilingual dictionary for facilitating switching between Hindi and English language for key fields was not provided by the Consultant. The Consultant did not form IT/IS specialist group of the Department personnel as required in the agreement; consequently objective of capacity building in the Department was not achieved.

The Government should ensure identification of a specialised team of IT/IS specialists within WRD for self-dependency along with adequate capacity building to deal with all the tasks of EIMS at Department level. The Government should ensure comprehensive evaluation of contract implementation and take remedial action accordingly.

The recommendations given in the report were agreed to by the Government.