



**Report of the  
Comptroller and Auditor General of India  
on  
ECONOMIC SECTOR  
for the year ended 31 March 2017**



**Government of Madhya Pradesh**  
*Report No. 4 of the year 2018*

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<b>TABLE OF CONTENTS</b>		
	<b>Paragraph number</b>	<b>Page number</b>
Preface		iii
Overview		v
<b>Chapter I</b>		
<b>Introduction</b>		
About this Report	1.1	1
Profile of audited entities	1.2	1
Audit coverage	1.3	2
Response of the Government to Audit	1.4	2
Action taken on earlier Audit Reports	1.5	3
<b>Chapter II</b>		
<b>Performance Audit</b>		
<i>Narmada Valley Development Department</i>		
Construction of Omkareshwar Sagar Project (Canals)	2.1	5
<b>Chapter III</b>		
<b>Compliance Audit</b>		
<i>Water Resources Department</i>		
Construction of Pench Diversion Project	3.1	31
<b>Audit Paragraphs</b>		
<i>Forest Department</i>		
Cost overrun due to delayed execution of compensatory afforestation	3.2.1	51
<i>Horticulture and Food Processing Department</i>		
Blocking of funds under horticulture schemes	3.2.2	53
Irregular release of funds	3.2.3	55
<i>Narmada Valley Development Department</i>		
Non-imposition of penalty for delays and irregular payment of mobilisation advance	3.2.4	58
<i>Water Resources Department</i>		
Extra cost due to award of work to ineligible contractor	3.2.5	60
Extra cost in canal works of Pawai Medium Irrigation Project	3.2.6	62
Extra cost due to application of incorrect rates for earth work	3.2.7	65
Irregular payment to contractor	3.2.8	67

<b>Appendices</b>		
<b>Appendix No.</b>	<b>Details</b>	<b>Page Number</b>
2.1	Turnkey contracts and consultancy contracts for execution of works under OSP (canals)	71
2.2	Undue financial aid to the contractor for adopting lesser diameter pipe	72
2.3	Execution of coping in lesser width	73
3.1	Extra cost on inadmissible lead of materials	74
3.2	Category wise release of funds to MPSAIDC in the Scheme for Development of Food Processing Industries	75
3.3	Calculation of interest on balance amount of mobilisation advance	76
3.4	Extra cost due to application of incorrect rates of earth work in Tawa Project	77
3.5	Extra cost due to application of incorrect rates of earth work in Barna Project	78

## PREFACE

This Report for the year ended 31 March 2017 has been prepared for submission to the Governor of Madhya Pradesh under Article 151 of the Constitution of India.

The Report contains an overview of significant audit observations and three chapters. Chapter I of the Report narrates the general information about audited entities, audit coverage and responses of the Government to audit and follow up of Audit Reports. Chapter II of Report includes Performance Audit of 'Construction of Omkareshwar Sagar Project (Canals)'. Chapter III presents one Compliance Audit Para of 'Construction of Pench Diversion Project' and eight Audit Paragraphs of various Departments of the Government of Madhya Pradesh under Economic Sector. Significant deficiencies were noticed in the execution of schemes/programmes by the concerned government departments as mentioned below:

**Performance Audit on 'Construction of Omkareshwar Sagar Project (Canals)'**: The project envisaged irrigation of 1.47 lakh hectare by March 2014, remained incomplete due to delays in land acquisition, poor progress in execution of works by contractors and inadequate monitoring. Slow progress in canal works led to creation of less irrigation potential in the years 2015-16 and 2016-17. Contract management was deficient and penalties of ₹ 85.68 crore were not imposed/recovered from contractors for slow progress attributable to them. Quality control of canal works was inadequate and test results for compressive strength of cement concrete lining and other hydraulic structures were below the prescribed norms.

**Compliance Audit on 'Construction of Pench Diversion Project'**: As against planned/designed irrigation potential of 85,000 hectare, irrigation potential of 55,000 hectare could not be created. This was due to slow progress in construction of canal, low priority on construction of distribution network and delays in preparation of proposals for land acquisition by contractors. Despite this, time extensions were granted to contractors without imposing penalties of ₹ 41.35 crore. Audit also noticed substandard and defective works, which were rectified neither by contractors nor by the Department.

Audit noticed instances of violation of provisions of contracts and other codal provisions by departmental officers, which resulted in irregular payments of ₹ 263.38 crore, avoidable extra cost of ₹ 46.43 crore on works and undue advantage of ₹ 113.97 crore to contractors. The instances mentioned in this Report are among those which came to notice in the course of test audit for the period 2016-17 as well as those which came to notice in earlier years but could not be reported in previous Audit Reports; instances relating to the period subsequent to year 2016-17 have also been included, wherever necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

# Overview

## Overview

This Report contains major findings arising out of Performance and Compliance Audits of various Departments under the Economic Sector of the Government of Madhya Pradesh conducted during 2016-17. The Report is structured in three chapters. Chapter I provides general information about audited entities, audit coverage and responses of the Government to the Audit Inspection Reports/Audit Reports. Chapter II of Report contains Performance Audit of 'Construction of Omkareshwar Sagar Project (Canals)'. Chapter III presents one Compliance Audit Para of 'Construction of Pench Diversion Project' and eight Audit Paragraphs. The audit findings included in the Report have total money value of ₹ 572.27 crore involving issues of systemic deficiencies, irregular expenditure, avoidable extra expenditure, etc.

The audit has been conducted in conformity with the Auditing Standards of the Comptroller and Auditor General of India. Audit samples have been drawn based on statistical sampling. The specific audit methodology adopted has been mentioned in each Performance/Compliance Audit report. The audit conclusions have been drawn and recommendations have been made taking into consideration the views of the Government. A summary of the main audit findings is presented in this overview.

### 1. Performance Audit

#### Construction of Omkareshwar Sagar Project (Canals)

The canal system of Omkareshwar Sagar Project (OSP) aimed at irrigation of 1.47 lakh hectare of Dhar, Khargone and Khandwa districts. The OSP (canals) comprises 362.88 km long main canals including Common Water Carrier, Left Bank Canal (LBC), Right Bank Canal (RBC), Omkareshwar Right Bank Lift Canal (ORBLC) and 1,670.64 km of distribution canals. The project is executed by the Narmada Valley Development Authority (NVDA), which is under Narmada Valley Development Department (NVDD).

The project was taken up in four phases. The phase wise turnkey contracts for construction of canals were executed between May 2006 and March 2011 for completion of the last phase by March 2014. As on March 2017, the expenditure of ₹ 3,076.51 crore was incurred on construction of OSP (canals) and none of these phases were completed. The Performance Audit on 'Construction of OSP (canals)' for the period 2012-13 to 2016-17 revealed the following:

#### ***Project Planning and implementation***

Construction of canals were delayed in all phases due to inadequate monitoring, delays in land acquisition and poor progress in execution of works by contractors. Penalties amounting to ₹ 85.68 crore were not imposed/recovered from contractors for slow progress attributable to them. NVDA also did not initiate action to terminate any of the contracts for slow progress and to retender the works.

#### ***Recommendation***

*NVDD should review all cases of delays in OSP (canals) to fix the accountability of contractors and penalty may be imposed as per provisions of turnkey agreements. NVDD should also review the cases of delay to fix accountability on the CE and EE for not enforcing penalty on delays, as per*

*the contract and orders of superior officers respectively. NVDD should also ensure that progress of works under each turnkey contract are adequately monitored by field engineers so as to complete the entire canal system within the revised target for completion of OSP (canals).*

**(Paragraph 2.1.7.1)**

Against the target to create irrigation potential of 1.47 lakh hectare, irrigation potential of 1.28 lakh hectare had been created as on March 2017 by constructing 96.46 per cent of main canals and 88.60 per cent of distribution system. However, there was shortfall of 66,707 hectare (52 per cent) in utilisation of created irrigation potential due to incomplete distribution network and delays in command area development (CAD), besides deficient water in Omkareshwar Dam. The execution of OSP (canals) and CAD works for development of field channels in the command of canals were not taken up simultaneously. Therefore, the gap between irrigation potential created and utilised could not be minimised.

***Recommendation***

*NVDD should ensure expeditious execution of CAD works, particularly in those commands where irrigation potential was created but remained unutilised so that, the benefit of water available in the canals may reach farmers in minimum time.*

**(Paragraphs 2.1.7.2 and 2.1.7.3)**

Chak planning of ORBLC did not precede the land acquisition, as required under the Madhya Pradesh Works Department (MPWD) manual. This led to avoidable expenditure of ₹ 22.43 crore on acquisition of 207 hectare land for buried piped canal.

***Recommendation***

*NVDD should fix accountability for not following the prescribed procedure under the MPWD manual for determining the quantum of land acquisition, which led to avoidable expenditure on land acquisition for ORBLC.*

**(Paragraph 2.1.7.5)**

***Contract management***

Turnkey contractors for construction of canals under Phase I and Phase II were paid ₹ 60.17 crore in excess, for value of work done by sub-contractors. These excess payments were treated as loans to the contractors and subsequently, ₹ 55.58 crore was adjusted irregularly against security deposits and inadmissible price escalations. Audit noticed that the EEs were directly dealing with sub-contractors who were not party to the contract executed by Government with the contractors. The entire transaction was beyond the terms and conditions of respective contracts as well as codal provisions and not authorised by competent authority. Though NVDA was aware of the entire issue, it yet chose to allow the payment arrangements for sub-contractors to continue without required approval of the Government.

***Recommendation***

*NVDD may review from vigilance angle the entire procedure for payments to sub-contractors without the approval of competent authority. NVDD may also fix accountability for irregular adjustment of security deposit and payment of*



*price adjustment to contractors in violation of terms and conditions of agreements. The excess payment may be recovered from contractors.*

**(Paragraph 2.1.8.1)**

Deficient contract management resulted in irregular payment of price adjustments (₹ 101.18 crore), irregular refund of security deposit against bank guarantee (₹ 34.52 crore), irregular payments to contractors beyond the approved payment schedule (₹ 6.30 crore) and unauthorised additional expenditure by NVDA on works within the scope of turnkey contract (₹ 1.28 crore).

**Recommendation**

*NVDD may recover the excess payments to contractors and examine the irregular payment of price adjustment to contractors from a vigilance angle. NVDD may examine irregular refund of security deposit against bank guarantee from a vigilance angle. NVDD may fix accountability for irregular payments to contractors in violation of payment schedule under the agreements and examine these irregular payments from a vigilance angle.*

**(Paragraphs 2.1.8.1 to 2.1.8.5)**

Despite completion of 90 per cent of canals, turnkey contractors did not execute plantations in any of the phases of OSP (canals) as required under the agreement. SE had issued the completion certificate for Phase-IV (Group I) without ensuring plantation by the contractor and other incomplete works in the distribution network.

**Recommendation**

*NVDD should ensure plantation by contractors all along the main canals and distributaries, which should also be recorded in the measurement book. NVDD should fix accountability for issuing completion certificate for Phase-IV (Group I) without fulfilment of entire contractual obligation by the contractor.*

**(Paragraphs 2.1.8.7 and 2.1.8.8)**

**Monitoring and Quality control**

Quality control of canal works was inadequate. Copping, which checks the ingress of water below canal linings, was substandard. Audit noticed cases where test results for compressive strength of cement concrete lining and other hydraulic structures were below the prescribed norms. Damages and cracks in the canal lining were also noticed. However, no action was taken for the rectification of these substandard works.

**Recommendation**

*NVDD should ensure that all the defective canal works are corrected urgently so that it does not affect the strength of canals and related hydraulic structures.*

**(Paragraph 2.1.9)**

**2. Compliance Audit**

**(i) Construction of Pench Diversion Project**

Pench Diversion Project is implemented by Water Resources Department (WRD) of Government of Madhya Pradesh (GoMP). The project was taken up

with the objective of providing irrigation facility, water for thermal power projects and water supply in Chhindwara and Seoni districts. In April 2006, Planning Commission approved the project for investment of ₹ 583.40 crore under State Plan. The project was also included for central assistance under the Accelerated Irrigation Benefit Programme (AIBP) in the year 2007-08 with date of completion as March 2012. As on September 2017, expenditure of ₹ 1,978.24 crore was incurred on the project and it was rescheduled for completion during 2019-20.

For the purpose of this report, Audit examined the records of 'Construction of Pench Diversion Project' in WRD and its concerned field offices covering the period from 2012-13 to 2016-17. Important findings are given below:

### ***Financing of the project***

Due to delays on the part of WRD in providing requisite information to Government of India, the project was not included under AIBP during the years 2012-13 to 2016-17. Thus, out of total expenditure of ₹ 1,679.70 crore on the project during 2012-13 to 2016-17, WRD could not ensure the release of proportionate central assistance of ₹ 419.92 crore under AIBP.

***(Paragraph 3.1.2)***

### ***Project implementation***

The dam work of the Pench Diversion Project was completed by November 2017. However, the canal system remained incomplete due to delays in land acquisition and slow progress in construction works by contractors. The land acquisition, which was essentially a statutory process, was delegated to contractors under the turnkey agreement who delayed the preparation of proposals for land acquisition.

Three out of six contracts for canal construction were eventually rescinded in August 2017 and December 2017. Out of this, Superintending Engineer unauthorisedly revoked (January 2018) the termination order of the contract for construction of Dhamaniya and tail distributary. The field level officers (Chief Engineer, Superintending Engineer and Executive Engineer) had adopted flexible approach towards contractors and granted time extensions without adequate analysis of reasons for delays. Penalty of ₹ 41.35 crore was not imposed on contractors for delays attributable to them.

### ***Recommendation***

*WRD should review all cases of delays in construction of canals to fix the accountability of contractors and penalty may be imposed as per provisions of agreements. WRD should also review all instances of inaction/failure to levy penalty by departmental officers for appropriate departmental action. WRD should also review the irregular revocation of contract's termination order in the construction of Dhamaniya and tail distributary from a vigilance angle.*

***(Paragraphs 3.1.3 and 3.1.3.1)***

The physical progress in construction of main canals was 81 per cent, whereas only 32 per cent of distribution system could be completed as on March 2017. Low priority of construction of distribution network affected creation of irrigation potential. As against planned/designed irrigation potential of 85,000 hectare for the entire project, WRD could create irrigation potential of 30,000 hectare and the utilisation of irrigation potential was 20,256 hectare during 2016-17.

**Recommendation**

WRD should ensure timely construction of distribution system of canals under Pench Diversion Project and fix the accountability for non-inclusion of appropriate clause in the agreement for simultaneous execution of main canal and distribution networks.

**(Paragraph 3.1.3.2)**

**Contract management and quality control**

The payments were made to turnkey contractors without recording detailed measurement of work done in the measurement book, which was in contravention of provisions of the MPWD manual.

**Recommendation**

WRD should ensure that detailed measurements of the works, including those of hidden items are recorded in turnkey contracts and payment to contractors should not be passed without due verification.

**(Paragraph 3.1.4.1)**

Chief Engineer unauthorisedly revised the payment schedule in three turnkey contracts in favour of contractors, which resulted in irregular payment of ₹ 13.41 crore to contractors. Non-adherence to agreement clauses and provisions of schedule of rates resulted in undue financial benefits to contractors and extra cost amounting to ₹ 14.11 crore.

**Recommendation**

WRD should take appropriate departmental action on the officers responsible for undue favour to contractors.

**(Paragraphs 3.1.4.2, 3.1.4.3, 3.1.4.4, 3.1.5.1 and 3.1.5.3)**

Audit also noticed substandard and defective works, which were rectified neither by contractors nor by WRD.

**Recommendation**

WRD should ensure that provisions relating to rectification of defects within the stipulated period are scrupulously followed.

**(Paragraph 3.1.5.2)**

**Internal Control and monitoring mechanism**

The records prescribed in the MPWD manual were not maintained. As a result, hard rock of ₹ 1.46 crore was not accounted in Material-at-Site account. Bank guarantee of ₹ one crore for performance security was not renewed due to which WRD could not forfeit the performance security on the termination of contract.

**Recommendation**

WRD should fix the accountability of departmental officers for non-maintenance of records prescribed under the MPWD manual and for failure to extend bank guarantee.

**(Paragraph 3.1.6.1)**

**(ii) Audit Paragraphs**

Audit has reported on several significant deficiencies in critical areas which impact the effectiveness of the State Government. Some important findings arising out of Compliance Audit (eight paragraphs) are featured in the Report. These observations relate to non-compliance with rules and regulations, audit against propriety, cases of expenditure without adequate justification and failure of oversight/governance, which are mentioned below:

**Forest Department**

Principal Chief Conservator of Forest delayed the inclusion of the compensatory afforestation works under Rajiv Sagar Irrigation Project in 'Annual Plan of Operations' despite availability of sufficient fund in State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA), which resulted in delayed commencement of afforestation work and increase in cost by ₹ 2.00 crore.

*(Paragraph 3.2.1)*

**Horticulture and Food Processing Department**

Directorate of Horticulture and Farm Forestry released funds to implementing agencies for implementation of three horticulture schemes without assessing actual requirement of funds, which resulted in blocking of funds amounting to ₹ 10.63 crore as on March 2017, besides non-recovery of interest of ₹ 3.85 crore earned on unspent balances by these implementing agencies. On this being pointed out in Audit, Department recovered unspent amount of ₹ 8.92 crore from agencies under two schemes.

*(Paragraph 3.2.2)*

Directorate of Horticulture and Farm Forestry released excess financial assistance of ₹ one crore to MP State Co-operative Dairy Federation Limited (MPSCDFL) in violation of the guidelines of National Mission on Food Processing. Besides, the failure of the Directorate to ensure utilisation before release of subsequent instalments of financial assistance during March 2014 to May 2015 led to accretion of unutilised fund of ₹ 2.97 crore with MPSCDFL.

*(Paragraph 3.2.3)*

**Narmada Valley Development Department**

In the work of Nagod branch canal with distributary systems, Narmada Valley Development Authority did not impose penalty of ₹ 13.14 crore for delays attributable to the contractor. The contractor was also granted mobilisation advance of ₹ 2.30 crore in violation of the agreement, besides the interest of ₹ 2.17 crore on mobilisation advance was also not recovered.

*(Paragraph 3.2.4)*

**Water Resources Department**

Failure of the Chief Engineer (Dhasan Ken Kachar, Sagar) in complying with the instructions of Major Project Control Board for verification of pre-qualification documents led to entering into agreement with an ineligible contractor for construction of earthen dam of Pawai Medium Irrigation Project. The agreement was subsequently terminated and re-tendering of the work resulted in extra cost of ₹ 11.08 crore, out of which

extra cost of ₹ 7.47 crore was already incurred on the work as on March 2018.

***(Paragraph 3.2.5)***

Failure of Executive Engineer, Water Resources Division, Pawai to ensure rectification in the bill of quantity (G-schedule of the contract) in the canal works of Pawai Medium Irrigation Project before entering into agreement resulted in extra cost of ₹ 1.34 crore on execution of M-10 grade canal lining which was paid at the higher rate applicable for M-15 grade canal lining.

***(Paragraph 3.2.6.1)***

Failure of Chief Engineer (Dhasan Ken Kachar, Sagar) to finalise technical estimates of the canal works of Pawai Medium Irrigation Project before publishing Notice Inviting Tender (NIT) resulted in substantial increase in the estimated quantity during execution of works. A portion of the work was subsequently withdrawn from the contractor and re-awarded to another contractor at higher cost resulting in extra contractual obligation of ₹ 6.49 crore.

***(Paragraph 3.2.6.2)***

Adoption of incorrect rates for earth work of canal with lead resulted in extra cost of ₹ 7.05 crore on works of cement concrete lining of Tawa Project and Barna Project.

***(Paragraph 3.2.7)***

Executive Engineer, Keoti Canal Division, Rewa did not regulate payment to the contractor as per the payment schedule under the agreement for construction of Bahuti canal, which resulted in irregular payment of ₹ 153.25 crore to the contractor without achieving milestones for creation of irrigation potential.

***(Paragraph 3.2.8)***

**Chapter I**  
**Introduction**

## CHAPTER-I

### INTRODUCTION

#### 1.1 About this Report

This report contains the results of Performance and Compliance Audits of various Departments under Economic Sector of the Government of Madhya Pradesh conducted during 2016-17 in compliance with the CAG's audit mandate under Article 151 of the Constitution of India and the CAG's (Duties, Powers and Conditions of Service) Act, 1971.

This Report aims to assist the Madhya Pradesh Legislative Assembly in ensuring executive accountability and improving the process of governance and improving public service delivery of various Departments.

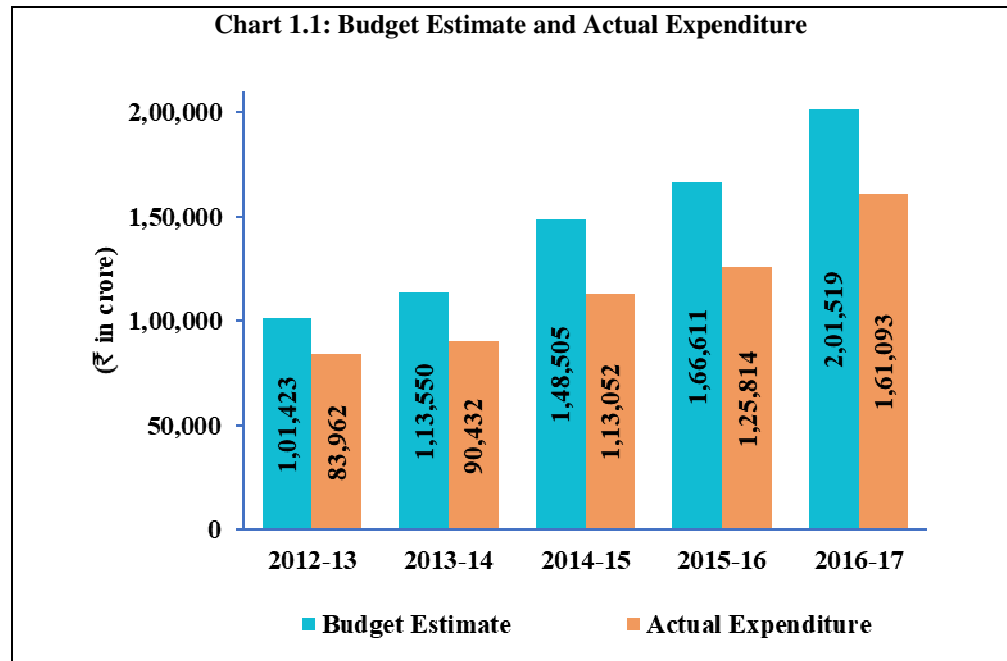
The layout of the Report is as under:

1. **Chapter I:** General information about the audited entities.
2. **Chapter II:** Performance Audit on 'Construction of Omkareshwar Sagar Project (Canals)'.
3. **Chapter III:** Compliance Audit on 'Construction of Pench Diversion Project' and eight Audit paragraphs.

#### 1.2 Profile of audited entities

Sixteen out of total 54 Departments in Madhya Pradesh fall under the Economic Sector. These Departments are headed by Additional Chief Secretaries/Principal Secretaries, who are assisted by Commissioners/Directors and subordinate officers under them.

The trend of budget estimate and actual expenditure of the State Government during 2012-17 is as detailed in **Chart 1.1**.



(Source: Appropriation Accounts of respective years)

The trend of expenditure of five major Departments under Economic Sector during 2014-15 to 2016-17 is given in **Table 1.1**.

**Table 1.1: Expenditure of major Departments under Economic Sector**

(₹ in crore)

Department	2014-15	2015-16	2016-17
Public Works	5,067.60	6,319.77	8,253.99
Water Resources	4,178.93	5,954.12	7,423.14
Agriculture	2,552.27	1,926.30	4,734.91
Forest	2,222.96	2,035.77	2,159.63
Narmada Valley Development Department	982.98	1,381.18	1,986.45

(Source: Data collected from Finance Department, Government of Madhya Pradesh)

### 1.3 Audit Coverage

During the year 2016-17, the Accountant General (Economic and Revenue Sector Audit), Madhya Pradesh conducted the compliance audit of 479 out of the total 1,458 auditable units under the 16 Departments pertaining to the Economic Sector, and also one Performance Audit on 'Construction of Omkareshwar Sagar Project (Canals)'.

### 1.4 Response of the Government to Audit

Audit affords four stage opportunity to the audited units/Departments to elicit their views on audit observations, viz.,

- **Audit Memos:** Issued to the head of the audited unit during the field audit to be replied during the audit itself.
- **Inspection Reports:** Issued within a month of the completion of audit to be replied by the head of the audited unit within four weeks.
- **Draft Paragraphs:** Issued to the heads of the Departments under whom the audited units function for submission of departmental views within six weeks for consideration prior to their being included in the Audit Report.
- **Exit Conference:** Opportunity is given to the head of Departments and State Government to elicit departmental/Government views on the audit observations prior to finalisation of the Audit Report.

In all these stages, Audit strives to provide full opportunity to audited units/heads of Departments/State Government to provide rebuttals and clarifications and only when the departmental replies are not received or are not convincing, the audit observations are processed for inclusion in the Inspection Report or Audit Report, as the case may be. However, it has been noticed that the audited units/ Departments, in most of the cases, do not submit timely and satisfactory reply as indicated below:

#### 1.4.1 Inspection Reports (IRs)

A detailed review of IRs issued up to March 2017 to 1,458 Drawing and Disbursing Officers (DDOs) pertaining to 16 Departments revealed that 24,061 paragraphs contained in 6,046 IRs were outstanding for settlement for want of convincing replies as on 31 March 2018. Of these, the DDOs submitted initial replies against 18,366 paragraphs contained in 4,013 IRs while, in respect of 5,695 paragraphs contained in 2,033 IRs there was no response from DDOs.



The status of outstanding IRs is given in **Table 1.2**.

**Table 1.2: Outstanding IRs and Paragraphs (issued up to 31 March 2017) as on 31 March 2018**

Sl. No.	Period	No. of outstanding IRs (per cent)	No. of outstanding Paras (per cent)
1	2016-17	528 (9)	3,520 (15)
2	1 year to 3 years	1,468 (24)	9,012 (37)
3	3 years to 5 years	623 (10)	2,819 (12)
4	More than 5 years	3,427 (57)	8,710 (36)
<b>Total</b>		<b>6,046</b>	<b>24,061</b>

During 2016-17, 12 meetings of Audit with departmental officers (Audit Committee Meetings) were held, in which 218 IRs and 1,467 Paras were settled.

#### **1.4.2 Performance and Compliance Audits**

For the present Audit Report 2016-17, draft reports on one Performance Audit, two Compliance Audits and 22 Audit Paragraphs were forwarded to the concerned Administrative Secretaries to elicit their views on the audit observations. While replies/responses have been received for the Performance Audit and Compliance Audits, no replies has been received till March 2018 for eight out of 22 Audit Paragraphs, despite repeated reminders.

#### **1.5 Action taken on earlier Audit Reports**

According to the rules of procedure for the internal working of the Committee on Public Accounts, the Administrative Departments were to initiate, *suo moto* action on all Audit Paragraphs and Reviews featuring in the Comptroller and Auditor General's Audit Reports, regardless of whether these are taken up for examination by the Public Accounts Committee (PAC) or not. They were also to furnish detailed Action Taken Notes (ATNs), duly vetted by audit, indicating the remedial action taken or proposed to be taken by them.

During the years 2011-12 to 2015-16, 98 audit paragraphs were reported in the Audit Reports on Economic Sector. Of these, PAC had taken up 50 paragraphs for discussion and 48 paragraphs for written reply. Out of eight recommendations of PAC on these paragraphs, ATNs of Government were received on five recommendations as on March 2018 as detailed in **Table 1.3**.

**Table 1.3: Status of PAC discussion, Madhya Pradesh, Vidhan Sabha**

Status	Audit Report on Economic Sector for the year 2011-12 to 2015-16
No. of total Audit Paras	98
Taken up by PAC for discussion (Oral discussion)	50
Taken up by PAC for submission of written reply	48
Recommendation made by PAC	08 (05 paras under oral discussion + 03 paras for written reply)
ATN received	05 (03 paras under oral discussion + 02 paras for written reply)
Action taken by the Department	05 (03 paras under oral discussion + 02 paras for written reply)

## **Chapter II**

### **Performance Audit**

#### **2.1 Construction of Omkareshwar Sagar Project (Canals)**

## Chapter-II

### Performance Audit

#### Narmada Valley Development Department

#### 2.1 Construction of Omkareshwar Sagar Project (Canals)

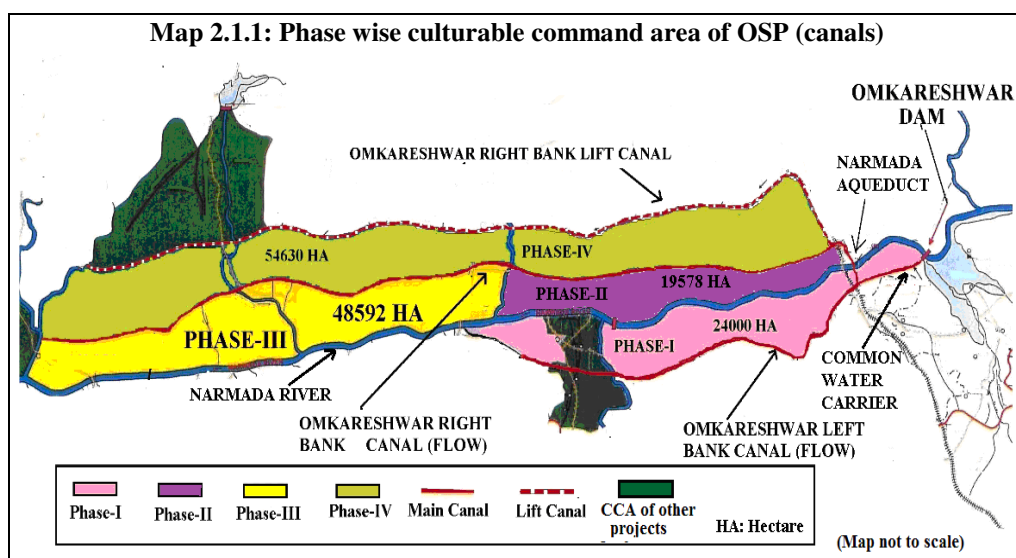
##### 2.1.1 Introduction

The Narmada Water Disputes Tribunal<sup>1</sup> allocated (December 1979) the State of Madhya Pradesh 22,511.01 million cubic metre (MCM) water each year from the Narmada River. The Omkareshwar Sagar Project (OSP) is a major multipurpose project of the Government of Madhya Pradesh (GoMP), for utilisation of 1,300 MCM Narmada water. The Project consists of three units, viz., Dam located at Omkareshwar in Khandwa district, Canals and Power House.

The canal system of OSP, fed from Omkareshwar dam, aimed at irrigation of 1.47 lakh hectare culturable command area<sup>2</sup> (CCA) of Khandwa, Khargone and Dhar districts. The OSP (canals) consists of 362.88 km long main canals including Common Water Carrier, Left Bank Canal (LBC), Right Bank Canal (RBC) and Omkareshwar Right Bank Lift Canal (ORBLC). It envisages construction of 1,670.64 km of distribution system of main canals including distributary canals, minor canals and sub minors. The OSP (canals) was taken up in four phases, as detailed in **Table 2.1.1** and **Map 2.1.1**.

**Table 2.1.1: Details of different Phases of OSP (canals)**

Phases of OSP (canals)	Details of canals covered
Phase – I	Common Water Carrier from 0 km to 12.39 km, LBC from 0 km to 64.11 km, RBC from 0 km to 9.775 km
Phase – II	RBC from 9.775 km to 68.92 km
Phase – III	RBC from 68.92 km to 162.70 km
Phase – IV	ORBLC



(Source: Records of Narmada Valley Development Authority)

<sup>1</sup> Narmada Water Disputes Tribunal was constituted in October 1969 to adjudicate upon the dispute regarding sharing of water of the Narmada River among Gujrat, Madhya Pradesh, Maharashtra and Rajasthan.

<sup>2</sup> The area which can be irrigated from a scheme and is fit for cultivation.

### 2.1.1.1 Project cost

The details of administrative approval for OSP by GoMP are given in **Table 2.1.2**.

**Table 2.1.2: Administrative approvals for OSP by GoMP**

Month/Year of administrative approval	Approved cost (₹ in crore)	Price Level Year <sup>3</sup>	Components of project cost
August 1991	788.03	1987	₹ 462.72 crore for dam and power house and ₹ 325.31 crore for canals
June 1996	1,784.29	1993	₹ 1,076.29 crore for dam and power house and ₹ 708 crore for canals
March 2011	2,504.80	2009	The revised administrative approvals of March 2011 and May 2015 were entirely for canals. The dam and power house were completed in November 2007.
May 2015	3,699.48	2014	

Planning Commission approved (May 2001) the project for investment clearance of ₹ 1,784.29 crore under State Plan for completion by March 2010. Later on, the revised investment clearance of OSP (canals) for ₹ 2,504.80 crore was approved in September 2010 with stipulated completion of the project by March 2014, which was subsequently revised (September 2014) by Planning Commission to March 2017. All four phases of OSP (canals) were included for funding under the Accelerated Irrigation Benefit Programme (AIBP) of Government of India (GoI) as detailed in **Table 2.1.3**.

**Table 2.1.3: Details of Phase wise inclusion of OSP (canals) under AIBP**

Phases	Phase-I	Phase-II	Phase-III	Phase-IV
Year of inclusion under AIBP	2003-04	2007-08	2007-08	2014-15

The Central and State shares of funding under AIBP varied between 25:75 and 90:10 in different phases/years. As on March 2017, expenditure of ₹ 3,076.51 crore was incurred on construction of OSP (canals) and irrigation potential of 1.28 lakh hectare had been created by constructing 96.46 per cent of main canals and 88.60 per cent of distribution system.

### 2.1.2 Organisational setup

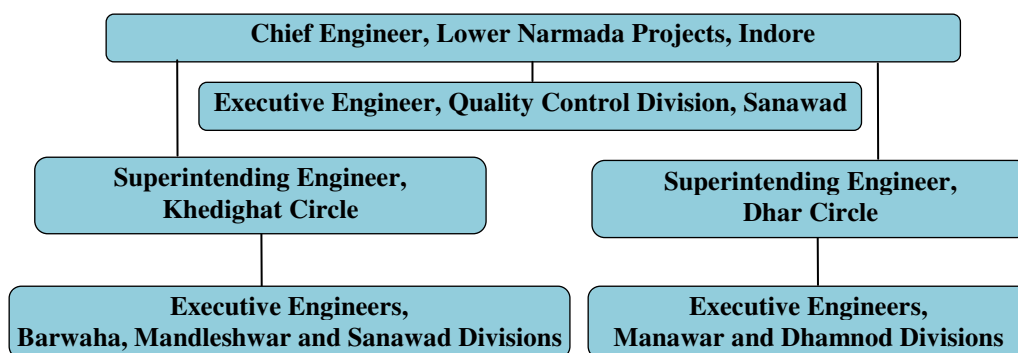
The OSP (canals) is executed by Narmada Valley Development Authority (NVDA), which is a multi-disciplinary authority under Narmada Valley Development Department (NVDD). NVDA is headed by a Chairman. Vice Chairman of NVDA is its Chief Executive Officer, who is assisted by five Members of NVDA<sup>4</sup>. Member (Engineering) is responsible for planning, execution and monitoring of irrigation projects.

At the field level, Chief Engineer (CE), Lower Narmada Projects, Indore is responsible for overall execution of OSP (canals). He is assisted by Superintending Engineers (SEs), Executive Engineers (EEs) along with the supporting engineers/staff, as depicted in **Chart 2.1.1**.

<sup>3</sup> Price level year is the year of unified schedule of rates on which estimated cost for the project was prepared. The unified schedule of rates is published by Water Resources Department for preparation of estimates.

<sup>4</sup> Member (Engineering), Member (Finance), Member (Rehabilitation), Member (Power) and Member (Environment and Forest).

Chart 2.1.1: Field level organisation setup of NVDA for execution of OSP (canals)



### 2.1.3 Audit Objectives

The performance audit of ‘Construction of OSP (canals)’ was conducted to examine whether:

- Funds were adequately available and effectively utilised;
- Planning of the canal project was adequate and it was effectively executed as per specifications and terms and conditions of the contracts; and,
- Quality control and monitoring mechanism for the project were effective.

### 2.1.4 Audit Criteria

The audit findings are based on the criteria derived from the following:

- Madhya Pradesh Works Department (MPWD) Manual;
- Specifications for Irrigation Works, Quality Control Manual, Technical Circulars, Unified Schedule of Rates (USR) for Works and other orders issued by Water Resources Department (WRD) of GoMP;
- Guidelines for Water Resources Projects issued by GoI and relevant Indian Standard (IS) Codes issued by the Bureau of Indian Standards;
- Detailed Project Reports (DPRs) of OSP (canals); and,
- Terms and conditions of agreements with contractors.

### 2.1.5 Audit scope and methodology

During the performance audit of ‘Construction of OSP (canals)’, records related to planning, implementation and execution of OSP (canals) were examined and related information was collected from NVDA headquarters and the respective offices of CE, SEs and EEs. This included examination of all six turnkey construction contracts and five consultancy contracts for execution of works during the period 2012-13 to 2016-17, as detailed in **Appendix 2.1**.

The objectives, criteria and methodology of audit were discussed in the entry conference held on 28 March 2017 with the Vice Chairman, NVDA, who is also the Additional Chief Secretary (ACS), NVDD. The draft report was issued to NVDD on 30 August 2017. The audit findings were also discussed on 30 January 2018 in the exit conference held with the ACS, NVDD.

The revised report, incorporating the replies of NVDD and views expressed by ACS during the exit conference, was issued to NVDD on 28 March 2018. The replies on the revised report were awaited as of May 2018.

## Audit findings

### 2.1.6 Project funding

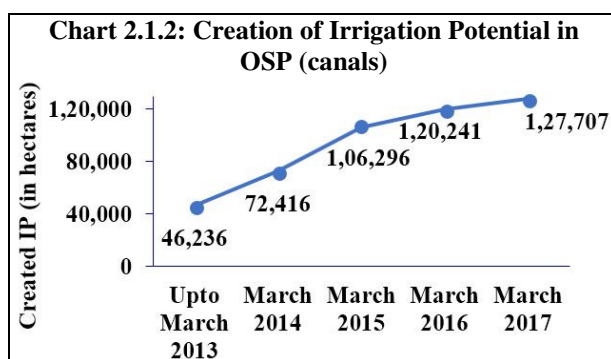
The administrative approval of OSP (canals) increased from ₹ 2,504.80 crore in March 2011 to ₹ 3,699.48 crore in May 2015. Audit scrutiny revealed that the increase in project cost was mainly due to increase in cost of command area development (CAD<sup>5</sup>) works (₹ 588.52 crore), price escalation (₹ 95.16 crore) and land acquisition (₹ 69.70 crore).

Funds for the project are provided through the State budget. Out of total expenditure of ₹ 3,076.51 crore incurred on construction of canals up to March 2017, ₹ 631.32 crore was provided by GoI as Additional Central Assistance under AIBP, ₹ 331.97 crore was augmented from National Bank for Agriculture and Rural Development (NABARD) loans and the remaining ₹ 2,113.22 crore was met from State resources. Budget provisions and utilisation for OSP (canals) during the period 2012-17 were as detailed in Table 2.1.4.

Table 2.1.4: Year wise details of funding of OSP (canals) during 2012-17

(₹ in crore)			
Year	Budget provision	Expenditure	Savings
2012-13	579.85	575.09	4.76
2013-14	426.61	425.18	1.43
2014-15	205.89	199.60	6.29
2015-16	252.37	239.15	13.22
2016-17	310.10	241.27	68.83
<b>Total for 2012-17</b>	<b>1,774.82</b>	<b>1,680.29</b>	<b>94.53</b>

(Source: Detailed Appropriation Accounts of respective years)



The savings in years 2015-16 and 2016-17 were mainly due to slow progress of canal works which resulted in creation of less irrigation potential (IP) during these years, as depicted in Chart 2.1.2.

### 2.1.7 Project planning and implementation

The phase wise details of physical progress of OSP (canals) were as given in the Table 2.1.5.

<sup>5</sup> Command Area Development mainly includes development of field channels and field drains within the command of each canal.

Table 2.1.5: Phase wise details of progress in works

Phases		Phase- I			Phase-II	Phase-III	Phase-IV	Total
Canals		Common Water Carrier	LBC	RBC	RBC	RBC	ORBLC	
Main canal (in km)	Planned	86.178			59.14	94	123.565	<b>362.883</b>
	Achieved (March 2017)	86.178			58.64	93.775	111.47	<b>350.063</b>
Distribution network (in km)	Planned	218.96			154.799	544.64	752.24	<b>1670.639</b>
	Achieved (March 2017)	171.30			125	451.71	732.24	<b>1,480.25</b>
Overall achievement of main canal and distribution network as on March 2017 (in per cent)		84.38			85.84	85.41	96.34	<b>90.00</b>
Dates of agreement for construction of canals		03-05-2006			27-03-2008	28-02-2008	26-03-2011	
Scheduled date of completion		November 2008			September 2010	February 2011	March 2014	
Revised target dates		30-06-2018			30-06-2018	31-12-2018	25-12-2017	

(Source: Records of NVDA)

### 2.1.7.1 Delays in execution of OSP (canals)

The construction of OSP (canals) was awarded to five contractors on turnkey basis. Consultants were also appointed to provide consultancy services to NVDA in respect of supervision, quality control and monitoring of works executed by turnkey contractors, as detailed in **Appendix 2.1**. Scrutiny of records revealed that the construction of canals in all phases was delayed by the contractors.

As per clause 71.1 of the turnkey agreements, the contractors were required to submit the work programme along with assessed monthly cash flow statement. The work programme of the contractor was to be monitored every six months. In the event of any shortfall in progress, penalty up to 10 per cent of contract value was to be imposed at the rate prescribed under clause 115 of the agreements till the shortfall was made up.

Audit scrutiny revealed that six monthly reviews of achievements *vis-à-vis* work programme of contractors were not conducted regularly by the CE, as detailed in **Table 2.1.6**.

Table 2.1.6: Phase wise status of six monthly review meetings as on March 2017

Details of meetings	Phase I	Phase II	Phase III	Phase IV	
				Group I	Group II
Number of meeting due	21	13	18	18	12
Number held	4	3	4	1	2
Date of last review meeting	November 2008	April 2010	March 2010	July 2012	July 2013

The reasons for not conducting six monthly review meetings were not available on record. Audit further noticed that the progress of works was not being reviewed using Programme Evaluation and Review Techniques (PERT)<sup>6</sup> though this was specifically provided for under the scope of consultancy agreement. Thus, the progress of canal works was not monitored at the field level according to stipulations of turnkey contracts and consultancy contracts.

<sup>6</sup> PERT is a time event network analysis system in which various events in a project are identified with the planned time for each and are placed in a network showing relationships of each event to other event.

During the exit conference (January 2018), it was stated that the PERT methodology was old and now the works were executed as per bar chart.

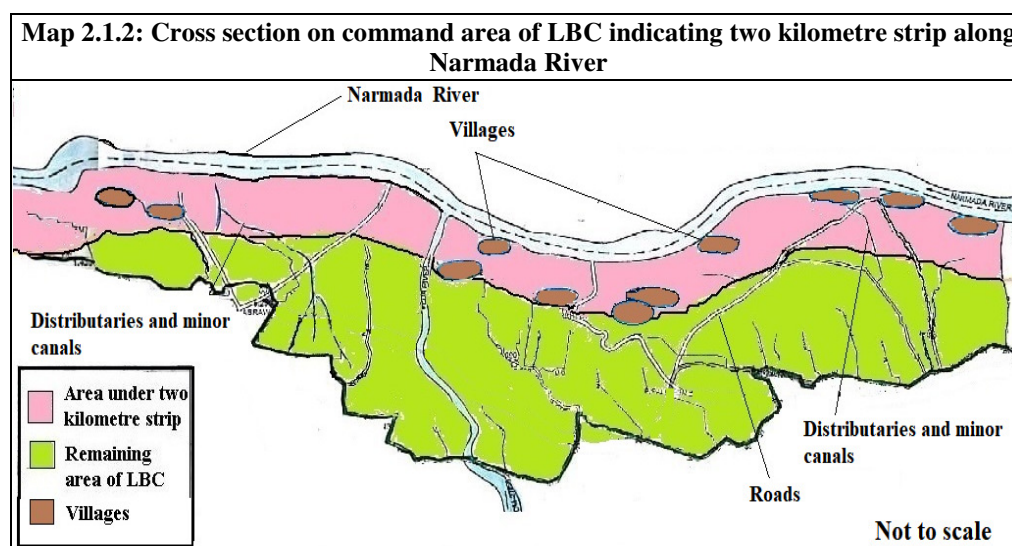
The reply is not acceptable, as consultants were required to submit PERT chart as deliverables under the consultancy contract and the contract was not amended to exclude PERT. Further, audit noticed that bar charts used for monitoring were only a linear representation of the actual status of works, which did not provide details of timeline for completion and identification of alternative activities that could have been simultaneously taken up in cases of hindrance so as to complete the project in the shortest possible time.

The phase wise analysis of delays in execution of canal works are detailed below:

- **Phase-I of OSP (canals)**

The Phase-I of OSP (canals) was scheduled for completion in November 2008. The contractor<sup>7</sup> was subsequently granted 14 time extensions, citing delays in diversion of forest land, court stay, delay in getting permission from railways, delays in land acquisition and hindrances due to *Narmada Bachao Andolan* (NBA). NVDA considered these delays as circumstantial for which neither Department nor contractor was responsible and no penalty was imposed on the contractor.

Audit scrutiny revealed that the clearance for diversion of forest land was granted by GoI in March 2009. The court stay had affected canal works during the period July 2009 to February 2010. The permission from railways was received in January 2012 and land acquisition for LBC was completed by February 2013. Further scrutiny of records revealed that there was hindrance by villagers in distribution network falling under the area of two km stretch along the banks of Narmada River, as detailed in **Map 2.1.2**. However, the contractor did not complete canal works even in areas excluding two km of Narmada *patti* (stretch).



EE informed (May 2013) SE that the areas under hindrance was not more than five *per cent* of total area acquired and the slow progress in works was due to non-deployment of sufficient resources by contractor. Later on, CE recommended (June 2013) for time extension to the contractor after reserving

7 M/s Som Datt Builders Private Limited



the right to impose penalty on contractor. The balance works of Phase-I of OSP (canals) at the end of time extension for the period from April 2013 to December 2013 was as detailed in **Table 2.1.7**.

**Table 2.1.7: Details of balance works of Phase-I as on December 2013**

Item of works	LBC main canal		Distribution System of LBC	
	Total quantity	Balance quantity	Total quantity	Balance quantity
Excavation/filling (in km)	64.11	5.11	188.90	90.07
Cement concrete lining (in km)	64.11	18.11	188.90	104.72
Structures (in numbers)	195	56	751	644

In view of slow progress, the project coordination committee (PCC<sup>8</sup>), headed by the CE, considered (March 2014) the option to terminate the contract under turnkey agreement's clause 92 (termination by Department due to breach of contract), but continuance of contract was preferred in view of perceived delays of six months in new tendering process and risk of increase in cost of remaining work. The turnkey contractor was accordingly allowed to execute some portion of works through sub-contractors so as to complete the works by June 2014. Despite this, the contractor failed to complete the work. However, CE did not impose penalty for delays on the part of contractor.

Further scrutiny revealed that CE directed (August 2016) the contractor to complete the balance works in connecting area other than two km of Narmada *patti*, if farmers were not willing to allow the canal works on their land. However, this was not done and as of May 2018, 34.36 km of distribution network of LBC remained incomplete. Of these incomplete canals, 10.52 km of distribution network (31 *per cent*) was in the area excluding two km of Narmada *patti*.

Thus, slow progress in Phase-I of OSP (canals) was attributable to contractor and the sanction of subsequent time extensions citing circumstantial delays without fixing the accountability of contractor was injudicious. The non-imposition of penalty on contractor, as per terms and conditions of agreement, resulted in undue benefit of ₹ 17.80 crore<sup>9</sup> to contractor.

- **Phase-II of OSP (canals)**

The delays in execution of Phase-II of OSP (canals), injudicious grant of time extension up to November 2013 and non-imposition of penalty of ₹ 19.30 crore for delays attributable to the contractor<sup>10</sup> were highlighted in the Audit Report for year ended 31 March 2014.

Further audit scrutiny revealed that the contractor was allowed (March 2014) to sub-contract the works in view of slow progress and granted third time extension in May 2014 to complete the work up to March 2015. In the status report on progress of works submitted to SE, EE Mandleshwar also proposed (July 2014) for imposition of penalty on the contractor under Clause 115 of the agreement due to shortfall in achieving the targeted progress. However, no penalty was imposed. Subsequently, time extensions were granted by CE/NVDD up to June 2018. The work was incomplete as of December 2017.

<sup>8</sup> PCC consists of CE, SE, EEs and Consultant, which was constituted under clause 21 of Consultancy Agreement to discuss the design, drawings and specification to avoid unreasonable delay in progress of consultancy works.

<sup>9</sup> Penalty at the rate 10 *per cent* of contract amount for Phase-I (₹ 177.99 crore).

<sup>10</sup> M/s Som datt Pvt. Ltd and M/s Karan Development Services (Joint Venture)

The non-imposition of penalty resulted in undue benefit of ₹ 19.30 crore<sup>11</sup> to the contractor.

- **Phase-III of OSP (canals)**

Under the scope for turnkey contract, the contractor was responsible for submission of proposals for land acquisition. The contractor was required to submit all proposals for land acquisition of distribution network by February 2009 in view of approved work programme and considering the requirement of four to six months period to complete land acquisition procedure (as estimated by NVDD). However, as of February 2009, contractor had submitted proposals for land acquisition of 104.76 hectare (12 *per cent*) against the requirement of 878.57 hectare of land for distribution network.

Canal works under Phase-III were affected due to court stay during July 2009 to February 2010. The contractor<sup>12</sup> was subsequently granted first time extension for completion of work up to June 2012 on the grounds of court stay and delays in land acquisition. Audit scrutiny revealed that the contractor submitted proposals for land acquisition for main canal up to March 2012 and for distribution network up to May 2012. Further proposals of supplementary land acquisition were also submitted in December 2013. Thus, contractor did not submit the land acquisition proposals within the first extension period up to June 2012.

Considering delays on part of the contractor, CE calculated (June 2013) penalty of ₹ 31.02 crore<sup>13</sup> in terms of agreement after excluding the period of court stay. However, the time extension was granted (October 2013) from July 2013 to June 2014 without imposing penalty. The reasons why the CE did not levy penalty either then, or thereafter, are not available on record. The CE/NVDD continued to grant further time extensions (up to December 2018) without penalty.

NVDD stated (January 2018) that the work was delayed due to procedural delays in land acquisition, obstruction by NBA activists, court stay, enforcement of new Land Acquisition Act, abnormal heavy rains in non-monsoon period and works of distribution network in two km reach of Narmada River was to be carried out after approval of Gram Sabha as per the direction of Ministry of Environment and Forest.

The reply is not acceptable. The delays were entirely due to the contractor, since factors like procedural delay in land acquisition, obstruction by NBA activists, enforcement of new Land Acquisition Act, etc., did not apply to the submission of proposals. The contractor failed to submit the land acquisition proposals even within the extended period of June 2012. Since the CE had calculated penalty of ₹ 31.02 crore in June 2013 after giving due weightage to period of hindrance to work, non-imposition of penalty then or thereafter resulted in undue benefit of ₹ 31.02 crore to the contractor.

- **Phase-IV (Group II) of OSP (canals)**

Due to non-achievement of targets in Phase-IV (Group-II) during September 2011 to January 2016, SE, Dhar imposed (February 2016) penalty of

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<sup>11</sup> Penalty at the rate 10 *per cent* of contract amount for Phase-II (₹ 193 crore)

<sup>12</sup> M/s Sadbhav Engineering Limited

<sup>13</sup> Penalty at the rate of 10 *per cent* of contract amount for Phase-III (₹ 310.20 crore)

₹ 34.92 crore on contractor<sup>14</sup>. As per agreement conditions, the penalty was recoverable from intermediate payments. However, EE, Manawar recovered only ₹ 17.36 crore up to March 2017. The remaining amount of ₹ 17.56 crore was not recovered, for reasons not on record.

NVDD stated (January 2018) that remaining amount of penalty would be recovered from the contractor.

As discussed in preceding paragraphs, the main reasons for delay in completion of canal works were delays in land acquisition, poor progress in execution of works by contractors and inadequate monitoring of works. NVDA did not initiate action for termination of any of the contracts for rearrangement of the works. One of the deficiencies of these contracts was absence of debit clause<sup>15</sup> for recovery of extra cost for the balance works to be executed through engagement of another contractor. Penalties, which could have been levied under the contract, were also not imposed/recovered from contractor for slow progress attributable to them. Further, as a result of delays in canal works, NVDA had to pay ₹ 1.01 crore to consultants on account of price escalation.

### Recommendation

*NVDD should review all cases of delays in OSP (canals) to fix the accountability of contractors and penalty may be imposed as per provisions of turnkey agreements. NVDD should also review the cases of delay to fix accountability on the CE and EE for not enforcing penalty on delays, as per the contract and orders of superior officers respectively. NVDD should also ensure that progress of works under each turnkey contract are adequately monitored by field engineers so as to complete the entire canal system within the revised target for completion of OSP (canals).*

#### 2.1.7.2 Creation and utilisation of irrigation potential

The planned/designed, created and utilised irrigation potential under each phase of OSP (canals) are as detailed in **Table 2.1.8**.

**Table 2.1.8: Creation and utilisation of irrigation potential as on March 2017**

(Area in hectare)					
Phases	Phase-I	Phase-II	Phase-III	Phase-IV	Total
Designed CCA	24,000	19,578	48,592	54,630	<b>1,46,800</b>
Created irrigation potential	20,036	12,700	40,341	54,630	<b>1,27,707</b>
Utilisation of irrigation potential	14,500	10,000	6,500	30,000	<b>61,000</b>

The shortfall of 66,707 hectare (52 per cent) in utilisation of created irrigation potential was due to delays in CAD works, incomplete distribution network deficient water in Omkareshwar Dam. Substantial shortfall (84 per cent) in utilisation of created irrigation potential under Phase-III was mainly due to insufficient water in canal. Under Phase-IV, which has piped distribution network, the shortfall of 45 per cent in created irrigation potential was mainly due to incomplete works of Supervisory Control and Data Acquisition (SCADA<sup>16</sup>) system and non-upgradation of electric line for providing water to

<sup>14</sup> M/s Sadbhav Engineering Limited – GKC Projects Limited (Joint Venture)

<sup>15</sup> As per provision of the MPWD manual, after rescinding the contract, the Divisional officer may award the balance work to another contractor on the risk and cost of original contractor and any expenses incurred in excess than the original cost shall be borne by the original contractor.

<sup>16</sup> SCADA was to be installed for ensuring equitable distribution of water in field

reservoir (Sisliya tank) which led to insufficient pumping of water and deficient water after 37 kilometer of main canal of ORBLC, as detailed in para 2.1.8.7. Development of infrastructure to facilitate use of sprinkler/drip irrigation systems for efficient use of water under CAD works were also not executed in the command area in ORBLC (Phase IV).

The project envisaged requirement of 1,356 MCM water for 1.47 lakh hectare with annual water allowance<sup>17</sup> of 0.924 MCM for 100 hectare. As against this, NVDA could provide only 407.824 MCM water during July 2016 to May 2017 for irrigation of 61,000 hectare. Thus, the actual annual water allowance (0.612 MCM for 100 hectare) was less than the designed capacity of the canal. Audit scrutiny revealed that, as against the designed capacity of 8.88 MCM per day of the Common Water Carrier, the maximum actual discharge in



**Artificial obstruction in LBC for feeding direct minor-13 (status as on July 2017)**

Common Water Carrier was 3.88 MCM per day during the period November 2015 to February 2017. The low availability of water in main canals had also affected the flow of water in minor canals whose off taking levels were fixed at two third of full supply level of main canal, i.e., above the level of present availability of water. As a result, farmers had to make artificial obstructions for raising the level of

water to feed the minor canals.

Audit observed that low availability of water in main canals was due to insufficient storage of water in dam due to delays in rehabilitation of families residing in submergence area of the dam. For storage of water in the dam up to the Full Reservoir Level (FRL) of 196 metre, rehabilitation of project affected families was to be completed. As of March 2018, 5,799 families had been rehabilitated and 530 families were yet to be rehabilitated.

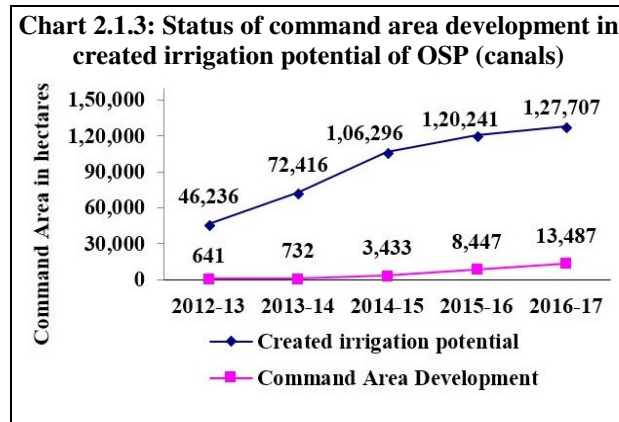
NVDD stated (January 2018) that the complete utilisation of irrigation potential was not possible as OSP dam could not be filled to its full capacity due to law and order situation in submergence area and restriction in construction of distribution network in two km strip of Narmada River. It further stated that the reservoir was now filled up to 193 metre and maximum water would be utilised during the next *rabi* season.

The reply is not acceptable to the extent that NVDD had ignored the slow progress in creation of field channels under CAD works and installation of SCADA system, which would have optimised the utilisation of created irrigation potential. Further, the restriction in construction of distribution network in two km strip of Narmada River affected the creation of additional irrigation potential and not the utilisation of already created irrigation potential.

<sup>17</sup> Net water requirement at canal head

### 2.1.7.3 Delayed implementation of command area development works

As per the Central Water Commission (CWC) guidelines<sup>18</sup>, CAD Plan should be prepared and implemented in such a manner so as to minimise the gap between irrigation potential created and utilised.



Audit scrutiny revealed that the execution of OSP (canals) and CAD works was not done simultaneously, as detailed in **Chart 2.1.3**. While the work of canal system was taken up in 2006-07, the work of construction of water courses and field channels in command area was included in the revised

DPR of OSP (canals) in July 2009. In an affidavit filed (December 2013) before the High Court of Madhya Pradesh, NVDD had submitted the schedule to complete the on-farm development works under CAD by March 2016. However, as of March 2017, CAD works were completed in 13,487 hectare as against created irrigation potential of 1.28 lakh hectare.

NVDD stated (January 2018) that due to less rainfall in the command area and the demand of cultivators, main canal was operating for almost 11 months in every year. The Department had only one month for construction activities. Therefore, it was not possible to implement CAD works as per schedule. The works of CAD would be speeded up as and when the OSP dam was filled up to 193 metre.

The reply is not acceptable, as CAD work was to be executed in the field and it was not directly related to supply of water in the main canal. Further, the unutilised command area, ranging from 52 per cent to 96 per cent was available for CAD works during the years 2012-17. The reply of Department that CAD works would be speeded up with the increase in storage of water in dam, is anomalous, as the demand of cultivator for water does not depend upon storage of water in the dam. Rather, it depends on cropping pattern which would not be different from previous years.

#### Recommendation

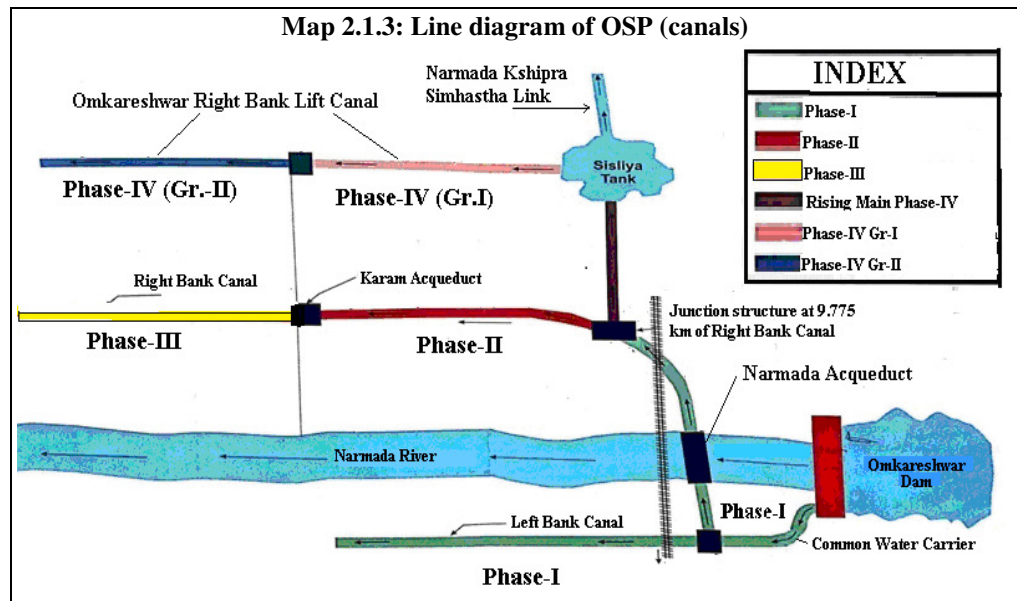
*NVDD should ensure expeditious execution of CAD works, particularly in those commands where irrigation potential was created but remained unutilised so that, the benefit of water available in the canals may reach farmers in minimum time.*

### 2.1.7.4 Improper planning for lift irrigation canals

As per DPR of OSP (canals), the water for ORBLC was to be lifted from junction structure at 9.775 km of RBC main canal with discharge of 15 cumec<sup>19</sup> and filled in Sisliya balancing reservoir, as depicted in **Map 2.1.3**.

<sup>18</sup> Guidelines for Environmental Monitoring of Water Resources Projects, issued (1998) by CWC, GoI.

<sup>19</sup> Cubic metre per second (cumec) is the unit of discharge of water.



NVDA proposed (August 2012) the Narmada Kshipra Simhastha Link (NKSL) project as an augmentation of OSP (canals) for providing five cumec water to Kshipra River after lifting it from the Sisliya tank. The objective of NKSL was to provide clean water to devotees in *Simhastha*<sup>20</sup> 2016 and to provide water for *nistar*<sup>21</sup> purposes in Dewas, Indore and Ujjain districts. Administrative approval to NKSL was granted by GoMP in October 2012 and the expenditure on the project was to be debited to OSP (canals).

Audit scrutiny revealed that the demand for water from Sisliya tank was increased due to NKSL project without commensurate increase in the water inflow to the Sisliya tank. As per DPR of OSP (canals), ORBLC was designed for discharge of 15 cumec of water. Thus, there was requirement of 20 cumec water from Sisliya tank<sup>22</sup>. However, the pumping station, installed (December 2013) at RBC junction structure (at 9.775 km) to discharge water in Sisliya tank, had discharge capacity of only 15 cumec. As a result, there was shortfall in discharge capacity of five cumec to Sisliya tank indicating deficient planning for lift irrigation.

NVDD stated (January 2018) that pumping of water was a continuous process and it was planned to fill the reservoir to full capacity of 10 MCM before the irrigation season. As the capacity of balancing reservoir was sufficient to retain water of 10 MCM and the tank would be filled in planned manner, there would be no problem in regulation of water. NVDD further stated that the maximum water required for irrigation from OSP Phase IV was only in one fortnight of *rabi* season and at that time, the requirement for water in NKSL would also be minimum.

The reply is an afterthought, as CE had also assessed the requirement for increasing the pumping discharge of rising main from 15 cumec to 20 cumec, after this was pointed out by Audit, and requested (June 2017) the contractor to check the system for 20 cumec discharge with the same pipeline with necessary changes in design, if required. CE further informed (May 2018) Audit that the proposal for change in design of pumping arrangement in Sisliya Tank from 15 cumec to 20 cumec was under scrutiny in NVDA.

<sup>20</sup> Simhastha (Ujjain Kumbha Mela) is held every 12 years in Ujjain

<sup>21</sup> Utilisation of water for domestic purposes, i.e., bathing, washing, cattle drinking etc.

<sup>22</sup> 15 cumec for ORBLC and five cumec for NKSL

Moreover, even if Sisliya tank is filled to its full capacity, it would be empty within 23 days in the *rabi* season in view of excess discharge in comparison to water inflow. The OSP project proposal (October 1993) had projected the requirement of water for 135 days during *rabi* season. NVDD had further planned two micro irrigation schemes through NKSL which would also require sufficient water during *rabi* season. Thus, the planning for providing water to Sisliya tank was deficient.

#### **2.1.7.5 Avoidable expenditure on land acquisition due to improper planning**

The MPWD manual stipulates that data of command area, including chaks<sup>23</sup>, should be collected first and thereafter estimates should be prepared. Land plans should be prepared as per these estimates.

As per clause 1.3 of detailed NIT of the turnkey contract, the scope of work included preparation of land acquisition cases by the contractor for submission to Land Acquisition Officer. The cost of permanent land compensation was to be borne by the Government.

The canal work of ORBLC was awarded to two contractors: from 0 km to 51.281 km under Group-I and from 51.281 km to 125 km under Group-II. The entire length (73.972 km) of ORBLC (Group II) main canal was designed as open canal, for which NVDA incurred ₹ 38.18 crore for acquisition of 375.709 hectare of private land during January 2012 to November 2012. The land was acquired based on the land acquisition proposals submitted by the contractor during September 2011 to April 2012.

Audit scrutiny revealed that the chak planning for the command of ORBLC did not precede the land acquisition, as required under the MPWD manual. Subsequently, during the chak planning, the contractor noticed that 3,000 hectare of land could not be brought under command due to lack of required highest ground level (HGL) at off-taking point. In order to bring this area under command, contractor submitted (August 2012) a proposal for conversion of open canal to piped canal. PCC, headed by CE, approved (August 2012) the proposal of contractor for 17.497 km of open canal (from 51.281 km to 68.525 km) and 56.475 km of buried piped canal (from 68.525 km to 125 km).

NVDA had already incurred ₹ 26.33 crore on land acquisition of 243 hectare for the canal length from 68.525 km to 125 km for open canal by the time decision of its conversion to buried canal was taken. The land was acquired for its earlier approved cross section with the provision for service road. Although PCC decided that the cost of any surplus private land would be borne by the contractor, the basis for such a decision was not evident and the quantum of surplus land due to change in requirement was never worked out.

Audit observed that no permanent land acquisition was done for distribution system of ORBLC (Group II), which was *ab initio* designed as a buried piped canal. However, considering the maximum pipe width of 2.4 metre used for the piped main canal of ORBLC and provision of four metre of inspection path<sup>24</sup> for entire piped main canal length of 56.475 km, Audit has worked out the requirement of 36 hectare of land for the buried piped main canal of

<sup>23</sup> A chak is that area of land on one side of a canal which would be commanded by a single outlet.

<sup>24</sup> As per CWC guidelines (2017) for Planning and Design of Piped Irrigation Network

ORBLC (Group II). Thus, the failure of field engineers to finalise chak planning before land acquisition led to avoidable expenditure of ₹ 22.43 crore on additional land acquisition of 207 hectare for buried piped canal.

NVDD stated (January 2018) that the land acquired for construction of canal in the Phase-IV (Group-II) was as per approved cross section, in which provisions of service road, inspection path, side drain, plantation, etc. had been made. The plantation along main canal was proposed on either side and accordingly the land had been acquired. The plantation and service road were in the scope of agreement and thus, acquisition of land was essential.

The reply is not acceptable, as the land was acquired for approved cross section of open main canal and not for the buried piped canal, which would have required acquisition of 36 hectare of land as against actual land acquisition of 243 hectare. Moreover, the primary purpose of land acquisition was construction of canal and not the plantation and service road, as being justified by NVDD.

### **Recommendation**

*NVDD should fix accountability for not following the prescribed procedure under the MPWD manual for determining the quantum of land acquisition, which led to avoidable expenditure on land acquisition for ORBLC.*

## **2.1.8 Contract management**

### **2.1.8.1 Payment to contractors in excess of value of work done**

As per clause 23 of the turnkey agreements, the contractor may sub contract part of construction work under intimation to Engineer-in-Charge. Any such intimation shall not relieve the contractor from any liability or obligations under the contract.

Audit scrutiny revealed that the two turnkey contractors<sup>25</sup> for the works of Phase-I and Phase-II of the OSP (canals) were permitted to execute works through sub-contractors in view of slow progress of works. PCC in a meeting<sup>26</sup> (March 2014) recommended for direct payment to sub-contractors through escrow accounts. The excess payments due to difference between rates of approved payment schedule under turnkey contracts and the rates mutually agreed by contractors and sub-contractors should be adjusted from price escalation payable to contractors. The remaining excess payment was to be treated as loan to the contractors with prevailing rate of interest on commercial loan as applicable in nationalised bank, recovery of which was to be ensured from security deposit/bank guarantees of the contractor kept in the Department. PCC further recommended that the proposed procedure for payment would need confirmation from the competent authority of NVDA.

CE requested (March 2014 and June 2014) NVDA for the approval of the payment procedure recommended by PCC. However, Audit could not ascertain from the records as to what action was taken by NVDA on the requests of CE.

Audit observed, that even though approval of NVDA to PCC's recommendation was not received, SE authorised (March 2014) EEs of

<sup>25</sup> Phase-I: M/s Som Datt Pvt. Ltd and Phase-II: M/s Som datt Pvt. Ltd and M/s Karan Development Services (Joint Venture)

<sup>26</sup> Attended by CE, SE (Khedighat), EE (Sanawad) and EE (Mandleshwar)



Barwaha and Mandleshwar to open escrow accounts and requested banks to open these accounts. Subsequently, EEs were making payments to these escrow accounts of contractors and sub-contractors. Audit further noticed that the memorandum of understanding (MoU) between contractors and sub-contractors were witnessed by EEs and SE. Thus, Barwaha and Mandleshwar Divisions were directly dealing with sub-contractors who were not party to the contract executed by Government with contractors. The entire procedure of making excess payments to sub-contractors through escrow accounts and treating these excess payments as 'loan' to the contractors was beyond the contractual provisions of turnkey agreements and vitiated the contracts.

Further, as provided under the clause 16.1 of the contract, the employer's representative had no authority to amend the contract. As such, CE, SE or EEs were not empowered to deviate from the terms and conditions for payments under the turnkey agreement. Moreover, such arrangement for payment was also not backed by any supplementary agreement/amendment to existing agreements between Government and contractors. Audit noticed that the contractors had subsequently disputed the levy of interest on excess payments. Thus, the interest of Government had also been jeopardised.

The MPWD manual also does not provide for such 'loan' to contractor, except for the payment of secured advance, mobilisation advance and advances for plant and machinery to contractors in certain specific circumstances. Since payments were made by EEs at the rates mutually agreed between contractors and sub-contractors, which were higher than the rates payable by NVDA to the contractors under the turnkey agreement, this resulted in irregular excess payment of ₹ 60.17 crore, as detailed in **Table 2.1.9**.

**Table 2.1.9: Division wise details of excess payments to sub-contractors**

(₹ in crore)

Name of Division and Phase of OSP (canal)	Number of sub-contractors	Agreement value of work executed through sub-contractors (as computed by EEs)	Amount paid to sub-contractors	Excess payments
1	2	3	4	5 = 4-3
Barwaha (Phase-I)	35	23.57	46.38	22.81
Mandleshwar (Phase-II)	39	70.87	108.23	37.36
<b>Total</b>				<b>60.17</b>

(Source: Records of Barwaha and Mandleshwar divisions)

Further scrutiny revealed that EEs of Barwaha and Mandleshwar adjusted ₹ 55.58 crore of excess payments (including interest) against inadmissible price adjustment and security deposit, which resulted in undue benefits to the contractors, as discussed below.

- As per clause 113.2 of the agreements, price adjustment<sup>27</sup> shall be applicable only for work that is carried out within the stipulated time or extensions thereof due to reasons which are not attributable to the contractor.

As discussed in para 2.1.7.1, the delays in execution of works of Phase-I and Phase-II were attributable to contractors and Divisions had to employ sub-contractors due to non-achievement of desired progress in works. Therefore, price adjustment was not payable to the contractors. However, EEs

<sup>27</sup> Price adjustment is an adjustment in the amount paid to contractor for quarterly increase or decrease in rate of labour, cement, steel and other materials.

made irregular payment of price adjustment of ₹ 20.19 crore for Phase-I and ₹ 44.44 crore for Phase-II since March 2014 onwards. Out of these, price adjustment of ₹ 18.89 crore for Phase-I and ₹ 24.90 crore for Phase-II were adjusted against the excess payment (including interest) for works executed through sub-contractors.

- As per clause 108.1 of the agreements, the security deposit (five per cent) deducted from the intermediate payments shall be converted into Bank Guarantee on completion of construction of entire work under the contract. There was no provision for the adjustment of security deposit during the currency of contract.

Audit scrutiny revealed that EEs of Barwaha and Mandleshwar irregularly adjusted ₹ 11.79 crore of excess payment (including interest) to contractors against security deposit<sup>28</sup> during the currency of contracts.

NVDD stated (January 2018) that as per the directives of Hon'ble High Court for completion of the work, it was decided to complete the balance works by deployment of sub-contractors under mutually agreed rates between main contractor and sub-contractor. It further stated that PCC took a correct decision with the power given in the agreement looking at the status of balance work at that time. In the case of Barwaha division (Phase-I), most of the difference had been recovered from main contractor except ₹ 15.32 lakh, which would be recovered before finalisation of the contract. In case of Mandleshwar (Phase-II), ₹ 25.75 crore had already been recovered from the work executed by main contractor and escalation due to main contractor.

NVDD further stated that as the extension was granted on grounds of reasons not attributable to contractors, therefore, the escalation was justifiably paid. As regards adjustment of excess payments against security deposits, it was stated that any amount due from the contractor on any account might be recovered from contractor's deposit available with the Department.

The reply is not acceptable, as the deployment of sub-contractors, payment to them at higher rates and treating the excess payment of ₹ 60.17 crore as loan to the contractor was beyond the ambit of the turnkey agreement as well as the MPWD manual. PCC as well as CE were not competent to amend the terms of the contract. In view of this, CE had also sought (August 2017) ex-post facto approval of the payment procedure. However, NVDA returned the proposal (August 2017) to CE with the remarks to provide reasons for seeking ex-post facto approval after three years. NVDA's stand cannot also be accepted. Though NVDA was aware of the entire issue, it yet chose to allow the payment arrangements for sub-contractors to continue without required approval of the Government. NVDA is therefore, complicit in the unauthorised payment procedure.

Further, the grounds on which time extension was granted to both contractors were injudicious and contractors were not eligible for any price adjustment due to delays attributable to them, as detailed in **para 2.1.7.1**. The adjustment of security deposit against 'loan' to contractor was also irregular in view of clause 108.1 of the agreement. As a result of these adjustments, the objective of deduction of security deposit was also defeated since it is meant for

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<sup>28</sup> Barwaha: ₹ 6.71 crore (Phase-I) and Mandleshwar: ₹ 5.08 crore (phase-II)

protecting the interest of Government during execution of work and during defect liability period.

Thus, the interest burden of the contractors on excess payments was reduced by EEs through irregular adjustment of ₹ 55.58 crore from price adjustments and security deposit during April 2014 to May 2017. After excluding these irregular adjustments and already recovered interest of ₹ 5.64 crore, contractors were liable to pay interest of ₹ 13.15 crore<sup>29</sup> till May 2017 on excess payments of ₹ 60.17 crore.

### **Recommendation**

*NVDD may review from vigilance angle the entire procedure for payments to sub-contractors without the approval of competent authority. NVDD may also fix accountability for irregular adjustment of security deposit and payment of price adjustment to contractors in violation of terms and conditions of agreements. The excess payments may be recovered from contractors.*

#### **2.1.8.2 Irregular payments of price adjustment**

Under the provisions of turnkey agreement, the amount paid to the contractor shall be adjusted quarterly for increase or decrease in rate of labour, cement, steel and other materials.

- ***Payment of price adjustment despite imposition of penalty for delays***

As per clause 113.2 of the agreement, price adjustment clause shall be applicable only for works that are carried out within the stipulated time or extensions thereof due to reasons which are not attributable to the contractor.

Audit scrutiny revealed that SE, Dhar had imposed (February 2016) penalty on contractor due to non-achievement of targets in ORBLC (Group-II) during September 2011 to January 2016. As such, no price adjustment was payable to contractor. However, EE Manawar made irregular payment of ₹ 22.49 crore during July 2016 to January 2018 towards price adjustment for the period January 2016 to September 2017. Further, the price adjustment of ₹ 12.31 crore paid between April 2014 (after stipulated period of completion) and December 2015 was also not recovered.

- ***Irregular excess price adjustment for Vertical Turbine pumps***

Under clause 113 of the agreement for ORBLC (Group-I), price adjustment on vertical turbine (VT) pumps was payable to the contractor on the basis of increase or decrease in the average index number of wholesale prices in India (WPI) of electrical machinery.

Audit scrutiny revealed that EE, Dhamnod incorrectly adopted the WPI for electrical pumps while making payment for price adjustment on VT pumps during the period July 2011 to June 2016. However, all VT pumps were installed by the contractor in December 2013. Therefore, no price adjustment was payable on VT pumps for the period January 2014 to June 2016. As a result of adoption of incorrect price indices and irregular payment for price adjustment during January 2014 to June 2016, EE made excess payment of price adjustment amounting to ₹ 1.75 crore on VT pumps.

<sup>29</sup> At the rate of 14.50 per cent being applied by EEs Barwaha and Mandleshwar for computation of interest on 'loan' to both contractors

On this being pointed out, EE recovered ₹ 0.73 crore from the contractor for excess price adjustment on incorrect indices. However, the irregular payment of ₹ 1.02 crore for payments of price adjustment beyond the month of installation of VT pumps was not recovered.

In the exit conference (January 2018), the ACS stated that the matter would be examined and the excess payment, if any, beyond the month of installation would be recovered from the contractor.

### **Recommendation**

*NVDD may recover the excess payments to contractors and examine the irregular payment of price adjustment to contractors from a vigilance angle.*

#### **2.1.8.3 Non recovery of cost of work executed by the Department**

As per the scope of turnkey contract, all the works, including payment of compensation to farmers for loss due to construction work, cleaning of canal and pole shifting were to be executed by the contractor.

Audit scrutiny revealed that EE, Barwaha incurred (February 2014 to August 2016) ₹ 1.28 crore on payment to farmers and for executing the works of pole shifting and cleaning of canal through other contractors. These works were within the scope of the turnkey contract for OSP (canals) Phase-I. Thus, EE incurred unauthorised expenditure of ₹ 1.28 crore.

NVDD stated (January 2018) that an amount of ₹ nine lakh had been recovered from the contractor and balance amount of ₹ 1.19 crore would be recovered before finalisation of work.

#### **2.1.8.4 Irregular conversion of Security Deposit**

As per clause 108.1 of the agreements, security deposit (SD) (five *per cent*) deducted from the intermediate payments shall be converted into Bank Guarantee (BG) on completion of construction of entire work under the contract. BG shall remain valid beyond 90 days of completion of defect liability period of one year.

Audit scrutiny revealed that Mandleshwar and Manawar Divisions released (November 2008 to February 2017) SD of ₹ 34.52 crore to contractors in lieu of bank guarantees before completion of the entire works under Phase-II, Phase-III and Phase-IV (Group II). Thus, irregular conversion of SD into bank guarantee resulted in extending undue financial benefit to the contractors.

NVDD stated (January 2018) that the SD was converted into BG as per clause 108.1 of the agreement. The SD converted into BG would be released after successful completion of canal system and expiry of defect liability period.

The reply is not acceptable, as SD was to be converted into BG only after completion of works.

### **Recommendation**

*NVDD may examine irregular refund of security deposit against bank guarantee from a vigilance angle.*

#### **2.1.8.5 Payments made to contractors in advance**

As per clause 106 of the agreement, payments to the contractor shall be effected as per provision of the payment schedule in Appendix F of the agreement. The component shown in Appendix F shall be further divided into

appropriate sub-components and their stages for the purpose of payment. CE was to approve sub-components in Detailed Payment Schedule (DPS), which would form part of agreement.

Audit scrutiny revealed that for Phase-I canal works, Barwaha Division paid ₹ 5.22 crore to the contractor in excess of payments due as per Appendix F of the agreement, as detailed in **Table 2.1.10**.

**Table 2.1.10: Statement of irregular payments beyond Appendix F of agreement**  
(₹ in crore)

Component of work	Item of works	Amount payable as per Appendix F	Amount Paid	Excess paid
Common Water Carrier	Survey, earthwork and structures	46.10	46.70	0.60
LBC Direct Minors (27 numbers)	Survey, earthwork and structures	6.78	8.49	1.71
RBC Main Canal	Survey, earthwork and structures	23.23	26.14	2.91

(Source: Appendix F of agreement and records of Barwaha division)

NVDD replied (January 2018) that the payment to the contractor was within the limit of tender cost.

The reply is not acceptable, as payment was not regulated as per Appendix F of the contract and the excess payment under the components Common Water Carrier, LBC Direct Minors and RBC Main Canal would be adjusted only after completion of entire work.

- DPS for earthwork, lining and structures in Phase-III under Manawar Division provided for payment of 95 per cent of the rate to the contractor until the design section is achieved.

Audit scrutiny revealed that design section of direct minors was not achieved due to non-construction of dowels. No reason for non-construction of dowel was available on record. However, the EE deviated from the DPS and paid full amounts for earthwork, lining and structures of direct minors. This resulted in excess payment of ₹ 1.08 crore<sup>30</sup> as compared to amount eligible as per DPS.

NVDD stated that no extra payment would be made to the turnkey agency beyond the contract amount.

The reply is not acceptable, as full payments were made for earthwork, lining and structures without construction of dowels, in violation of the DPS conditions.

### Recommendation

*NVDD may fix accountability for irregular payments to contractors in violation of payment schedule under the agreements and examine these irregular payments from a vigilance angle.*

#### 2.1.8.6 Inadequate recovery of mobilisation and equipment advances

As per clause 113.6 of the contract agreement, the employer will make the interest free mobilisation and equipment advance against an unconditional BG for the amounts equal to the advance payment. Recovery of mobilisation advance and equipment advance was to be made at the rate not less than seven per cent of all interim payments. Full recovery of mobilisation and equipment advance was to be effected before payment of 80 per cent contract value or before completion of 80 per cent of initial contract period, whichever is earlier.

<sup>30</sup> Amount paid: ₹ 21.55 crore – Eligible amount ₹ 20.47 crore

Audit scrutiny revealed that recovery of mobilisation and equipment advances was not effected at the rate of minimum seven *per cent* in 14 running account bills of two works of canals<sup>31</sup> under Dhamnood and Manawar Divisions. In these 14 intermediate payments, the rate of recovery was ranging between zero *per cent* to 6.24 *per cent*. The reason for short recovery was not available on record. As a result of short recovery, the recovery of ₹ 1.17 crore of mobilisation advance was deferred by six months in Dhamnood Division and the recovery of ₹ 1.08 crore of equipment advance was deferred by three months in Manawar Division.

NVDD stated (January 2018) that the recovery had been done before the completion of 80 *per cent* of total time period, including extended period of the contract.

The reply is not acceptable, as the recovery of advance was not effected at the rate of at least seven *per cent* from each bill as required under the agreement which resulted in undue benefit to contractors.

#### **2.1.8.7 Issue of completion certificate despite incomplete works**

The completion certificate for Phase-IV Group-I of OSP (canals) was issued in July 2017. Audit scrutiny revealed that Superintending Engineer, Dhar issued the completion certificate despite various incomplete works, which included incomplete works of SCADA system, incomplete testing of distribution network pipes and upgradation of High Tension (HT) line. SCADA system was to be installed for ensuring equitable distribution of water in 844 chaks. Pressurised flow control metering Devices (PFCMD), a part of SCADA, was to be installed in each chak. However, only 602 numbers (out of 844) of PFCMD were installed as of July 2017.

NVDD stated (January 2018) that SCADA had been installed at pump house (Pumping Station zero) and Sisliya tank, which was functioning at present. As regards functioning of the SCADA system in distribution network, the PFCMD boxes had been installed with SCADA system.

The reply is not acceptable, as the SCADA system was not operational in entire chaks due to installation of less number of PFCMD which affected the utilisation of created irrigation potential and equitable distribution of water. Thus, the completion certificate was issued without fulfilment of entire contractual obligation by contractor.

#### **2.1.8.8 Non execution of plantation along canals**

The turnkey agreements stipulate that the contractor shall plant shade giving trees at an interval of 30 metre on both sides all along the main canal and distributaries, arrange cattle guards for all the plants, provide necessary manure, water them daily and sustain them. If any trees are damaged or lost, the contractors shall replace with new plants and shall maintain these plants till defect liability period of the contract. The contract price quoted by the contractor shall include all these items. An amount of ₹ 10.74 crore was earmarked in DPR (2009) for plantation work.

Audit scrutiny revealed that plantations were not executed by contractors in any of the phases of OSP (canals) despite completion of 90 *per cent* of canals. EEs did not ensure plantation works by turnkey contractors, despite the

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<sup>31</sup> Phase-IV (Group I) and Phase-IV (Group II)

direction (March 2014) of SE, Khedighat to ensure plantation as per agreement clause. Further, SE, Dhar had issued completion certificate for Phase IV (Group I) without plantation by the contractor along ORBLC main canal.

NVDD stated (January 2018) that work of plantation was taken up earlier and could not be completed because of construction works. However, some plantation in Common Water Carrier and main canals were completed, where the reaches were available. Plantation had been started now and would be completed before finalisation of work.

The reply is not acceptable, as the execution of this item of work was not recorded in the Measurement Book and no other documentary evidence was provided in support of plantation along Common Water Carrier and main canals.

### **Recommendation**

*NVDD should ensure plantation by contractors all along the main canals and distributaries, which should also be recorded in the measurement book. NVDD should fix accountability for issuing completion certificate for Phase-IV (Group I) without fulfilment of entire contractual obligation by the contractor.*

#### **2.1.8.9 Incorrect estimation of dimension of pipe led to extra cost**

Paragraph 2.006 of the MPWD manual stipulates that for every work a properly detailed estimate must be prepared for the sanction of the competent authority. IS code 3589: 2001 stipulates that thickness of two-metre diameter pipe shall be 16 millimetre.

Audit noticed that the CE, LNP, Indore accorded (August 2012) the technical sanction for fabrication, laying and joining of rising main pipe line with two metre diameter pipe with thickness of 14 millimetre. This was not in line with provisions of IS code 3589: 2001, as thickness of pipe for two metre diameter should be 16 millimetre. Further scrutiny revealed that the CE, LNP, Indore approved the drawing of the contractor providing for reduced dimension of pipes of 1.80 metre diameter with thickness of 14 millimetre.

Thus, detailed estimates, which was approved in the technical sanction, were made with higher dimension of pipe, but it was reduced at the execution stage while approving the drawing of the contractor without corresponding reduction in the contracted cost. This resulted in undue financial benefit of ₹ 20.72 crore on execution of work in 46,921 metre length, as detailed in **Appendix 2.2**.

The NVDD stated (January 2018) that the tender was floated with estimated cost of ₹ 432 crore whereas final contract value was ₹ 396.39 crore. Thus, cost reduction of ₹ 35.61 crore due to lesser diameter of pipe was already available with the Department. Being a turnkey contract, the bidder was free to submit his design and drawings as per specifications.

The reply is not acceptable, as cost reduction due to competitive bidding cannot be referenced with particular reduction in diameter of pipe. Further, CE had erred in providing two-metre diameter and 14 mm thickness of the pipe in the Technical Sanction, since diameter of pipe in the estimate did not correspond to the thickness of pipe as per IS 3589: 2001. Inclusion of extra

diameter of pipe resulted in undue benefit to contractor at execution stage by way of savings on quantity of steel.

## 2.1.9 Monitoring and quality control

### 2.1.9.1 Substandard execution of works

As per the turnkey agreements, works were to be executed as per provisions of relevant Indian Standard (IS) Codes. Paragraph 8.5 of IS: 10430 (2000) stipulated requirement of cement concrete coping at the top of lining to check the ingress of rain water behind the lining of the side slopes of the canals. The width of coping at the top should not be less than 225 millimetre for discharge up to three cumec, 350 millimetre for discharge more than three cumec and 550 millimetre for discharge more than 10 cumec. Further, as per irrigation specifications issued by Water Resources Department, the width of coping should not be less than 350 millimetre.

Audit scrutiny revealed that the works of coping of canal lining were executed in OSP (canals) with lesser width of 300 mm in cases where discharge was more than three cumec, which was less than the width provided in the agreement. This resulted in substandard execution of canal works, besides undue benefit of ₹ 3.08 crore to the contractor due to execution of coping in lesser width, as detailed in **Appendix 2.3**.

NVDD stated (January 2018) that the width of coping was decided based on the strata available at site and the same width was shown in the cross section appended with the tender document and accordingly the coping width was taken as 300 millimetre during construction. Therefore, no financial benefit was given to the turnkey contractor.

The reply is not acceptable, as the agreement provided for execution of works as per IS codes, which stipulates for coping based on discharge of the canal and not on the available strata at site.

### 2.1.9.2 Inadequate quality control for cement concrete works and earthwork

As per clause 89 of the agreement, the Engineer-in-charge shall give notice to the contractor for any defect. The contractor shall correct the defects within defect correction period at no cost to employer. The defect correction period is 14 days from the date of receipt of notice by the contractor from the Engineer-in-Charge to correct any defects in the work.

Audit scrutiny revealed following:



View of seepage from Karam aqueduct (Phase-II)  
(Status as on June 2017)

- As per prescribed norms under IS: 456 (2000), the compressive strength (after 28 days) of M-15 cement concrete (CC) should be 150 kg/cm<sup>2</sup>. In Mandleshwar division, the compressive strength (after 28 days) of M-15 CC lining<sup>32</sup>, drainage siphons<sup>33</sup>, super passage<sup>34</sup> and Karam aqueduct ranged from 48.30 to 149.49

<sup>32</sup> RD 36,310 metre to RD 36,260 metre and RD 53,000 metre of RBC

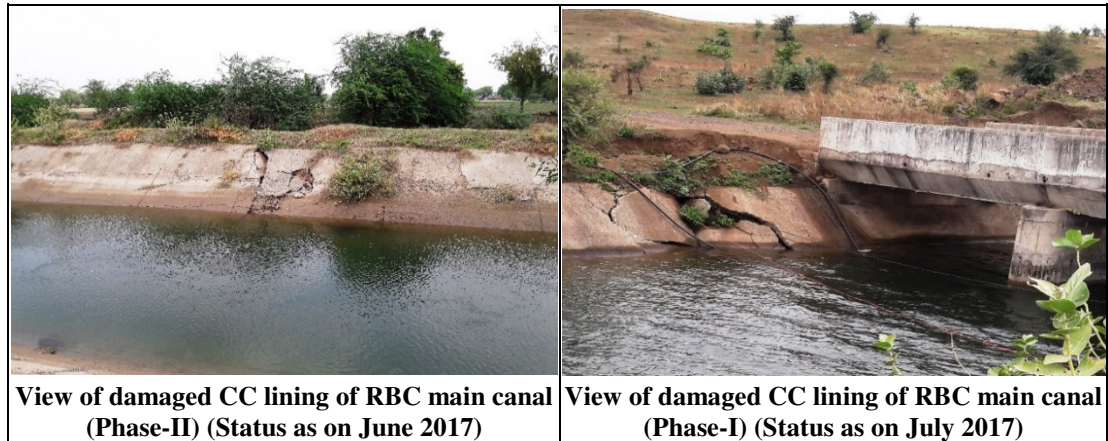
<sup>33</sup> RD 25,485 metre and RD 25,200 metre of RBC

<sup>34</sup> RD 49,410 metre



kg/cm<sup>2</sup>. Similarly, in Barwaha Division<sup>35</sup>, it was 114.76 kg/cm<sup>2</sup> and 107.21 kg/cm<sup>2</sup> in two test reports. Thus, the comprehensive strength of CC lining and other hydraulic structures was below the prescribed norms in test checked cases. Audit noticed (June 2017) seepage from Karam aqueduct during the site visit of canals.

- During joint physical verifications of canals, damages and cracks were found at various reaches of main canals of RBC and LBC, as shown in the picture.



View of damaged CC lining of RBC main canal (Phase-II) (Status as on June 2017)

View of damaged CC lining of RBC main canal (Phase-I) (Status as on July 2017)

This was also indicative of inadequate monitoring of construction of canals, as CE, SE, EE and Sub-Divisional Officers (SDOs) were fully responsible for quality control over hydraulic structures as per the MPWD Manual Vol-II. The Engineer-in-charge did also not take any corrective action for rectification of defects.

NVDD stated (January 2018) that all the works are up to the mark, all the test reports were ok, and any defect observed would be rectified in time. At present work was in progress so all the damages and cracks found at various reaches of main canals of RBC and LBC would be got repaired before finalisation of canal work.

The reply is not acceptable, as test results of compressive strength of cement concrete were not as per IS Code in case of reported canal lining and hydraulic structure which may have potentially serious implication.

- As per para 3.5 of IS 13916: 1994, pipe zone areas were to be filled with sound granular soil to a minimum 300 mm above the top of the pipe and secondary backfill having minimum depth of 300 mm.

In Dhamnod division, ₹ 3.32 crore was paid to the contractor for back filling of 3.43 lakh metre of pipes. Audit scrutiny revealed that the payments were made to the contractor by measuring the execution of works (back filling of trenches) in running metre. Thus, field engineers did not measure the volume of executed quantity of granular soil and secondary backfilling. This was in violation of clause 106.10 of the agreement, which provided that all hidden measurement was to be recorded and got 100 *per cent* checked by competent authority before payment.

NVDD stated (January 2018) that back filling over pipes had been done and measurements were taken on basis of payment schedule item. The backfilling over the pipes had been done as per the specifications and up to the mark.

<sup>35</sup> RD 1,625 metre and RD 1,650 metre CC lining of common water carrier

The reply is not acceptable, as thickness of backfilling was not measured and recorded in Measurement Book to ensure execution of the works as per IS code.

### Recommendation

*NVDD should ensure that all the defective canal works are corrected urgently so that it does not affect the strength of canals and related hydraulic structures.*

#### 2.1.10 Crop production in the command of OSP (canals)

Detailed project report of OSP (canals) envisaged production of 11.96 lakh tonne of food grains (2.80 lakh tonne of *rabi* crops and 9.16 lakh tonne *kharif* crops) in the command area after completion of the project. Audit scrutiny of production of eight crops<sup>36</sup> in the command area of OSP (canals) revealed that the production of these crops increased from 6.54 lakh tonne in 2012-13 to 12.73 lakh tonne in 2016-17. The increase in production was mainly due to increase in sowing area by 22 *per cent* and increase in the productivity (average produce per hectare) of wheat (by 32 *per cent*), maize (by 40 *per cent*) and gram (by 100 *per cent*). However, the productivity of five other crops remained less as detailed in **Table 2.1.11**.

**Table 2.1.11: Productivity of crops in the command area of OSP (canals)**

Name of crop	Productivity (in tonne per hectare)		
	As per DPR	Actual during 2012-13	Actual during 2016-17
Paddy	4.00	0.79	1.13
Peas	1.50	0.49	0.56
Groundnut	3.50	1.11	1.44
Cotton	2.50	1.09	1.88
Sugarcane	60.00	29.36	45.02

*(Sources: Detailed project report of OSP (canals) and data provided by Farmer Welfare and Agriculture Development Department)*

#### 2.1.11 Supply of drinking water from OSP (canals)

One of the objectives of the project was to provide 75 MCM drinking water to the habitations in command area of Phase-II, Phase-III and Phase-IV of OSP (canals). Provision of ₹ 13.88 crore was made in the DPR of OSP (canals) for construction of intake wells and laying of pipelines for delivery of water to the habitations. Audit scrutiny revealed that the drinking water was not being supplied from canals to the identified villages in the command area of Phase II, Phase III and Phase IV of OSP (canals).

CE stated (July 2018) that there was no demand from Gram Panchayat/ Nagar Palika/ Public Health Engineering Department to provide drinking water to villages, but that the facility for drinking water could be provided on receipt of demand.

The reply is not acceptable, as the DPR specifically provides for construction of intake wells and laying of pipelines for supply of drinking water from canals, which however, NVDA failed to implement. The question of demand would arise only after the facilities were provided.

<sup>36</sup> *Rabi* crop (Wheat, Gram, Peas and Sugarcane) and *Kharif* crop (Paddy, Maize, Groundnut and Cotton)

### 2.1.12 Summary of conclusions

- OSP (canals), which envisaged for irrigation in 1.47 lakh hectare by March 2014, remained incomplete due to delays in land acquisition, poor progress in execution of works by contractors and inadequate monitoring. Penalties were not imposed/recovered from contractors for slow progress attributable to them. NVDA also did not initiate action to terminate any of the contracts for slow progress and to retender the works.
- CAD works were not taken up simultaneously with the construction of canal works. There was 52 per cent shortfall in utilisation of 1.28 lakh hectare of created irrigation potential due to delays in CAD works and incomplete distribution network, besides deficient availability of water in Omkareshwar Dam.
- Planning for lift irrigation canals was deficient. There was shortfall in discharge capacity of five cumec water at Sisliya tank, which had to feed water to ORBLC and NKSL. Land acquisition for piped main canal of ORBLC before chak planning led to avoidable excess expenditure. Audit also noticed instances of deficient contract management, such as excess payment to contractors, irregular payment of price adjustments and irregular refund of security deposit against bank guarantee.
- Quality control of canal works was also inadequate. Copping, which checks the ingress of water below canal linings, was substandard. Audit noticed cases where test results for compressive strength of cement concrete lining and other hydraulic structures were below the prescribed norms. Damages and cracks in the canal lining were also noticed. However, no action was taken for the rectification of these substandard works.

### 2.1.13 Summary of recommendations

- *NVDD should review all cases of delays in OSP (canals) to fix the accountability of contractors and penalty may be imposed as per provisions of turnkey agreements. NVDD should also review the cases of delay to fix accountability on the CE and EE for not enforcing penalty on delays, as per the contract and orders of superior officers respectively. NVDD should also ensure that progress of works under each turnkey contract are adequately monitored by field engineers so as to complete the entire canal system within the revised target for completion of OSP (canals).*
- *NVDD should ensure expeditious execution of CAD works, particularly in those commands where irrigation potential was created but remained unutilised so that, the benefit of water available in the canals may reach farmers in minimum time.*

- *NVDD should fix accountability for not following the prescribed procedure under the MPWD manual for determining the quantum of land acquisition, which led to avoidable expenditure on land acquisition for ORBLC.*
- *NVDD may review from vigilance angle the entire procedure for payments to sub-contractors without the approval of competent authority. NVDD may also fix accountability for irregular adjustment of security deposit and payment of price adjustment to contractors in violation of terms and conditions of agreements. The excess payment may be recovered from contractors.*
- *NVDD may recover the excess payments to contractors and examine the irregular payment of price adjustment to contractors from a vigilance angle.*
- *NVDD may examine irregular refund of security deposit against bank guarantee from a vigilance angle.*
- *NVDD may fix accountability for irregular payments to contractors in violation of payment schedule under the agreements and examine these irregular payments from a vigilance angle.*
- *NVDD should ensure plantation by contractors all along the main canals and distributaries, which should also be recorded in the measurement book. NVDD should fix accountability for issuing completion certificate for Phase-IV (Group I) without fulfilment of entire contractual obligation by the contractor.*
- *NVDD should ensure that all the defective canal works are corrected urgently so that it does not affect the strength of canals and related hydraulic structures.*

## **Chapter III**

**3.1 Compliance Audit on Construction of  
Pench Diversion Project**

**3.2 Audit Paragraphs**

## Chapter-III

### Compliance Audits

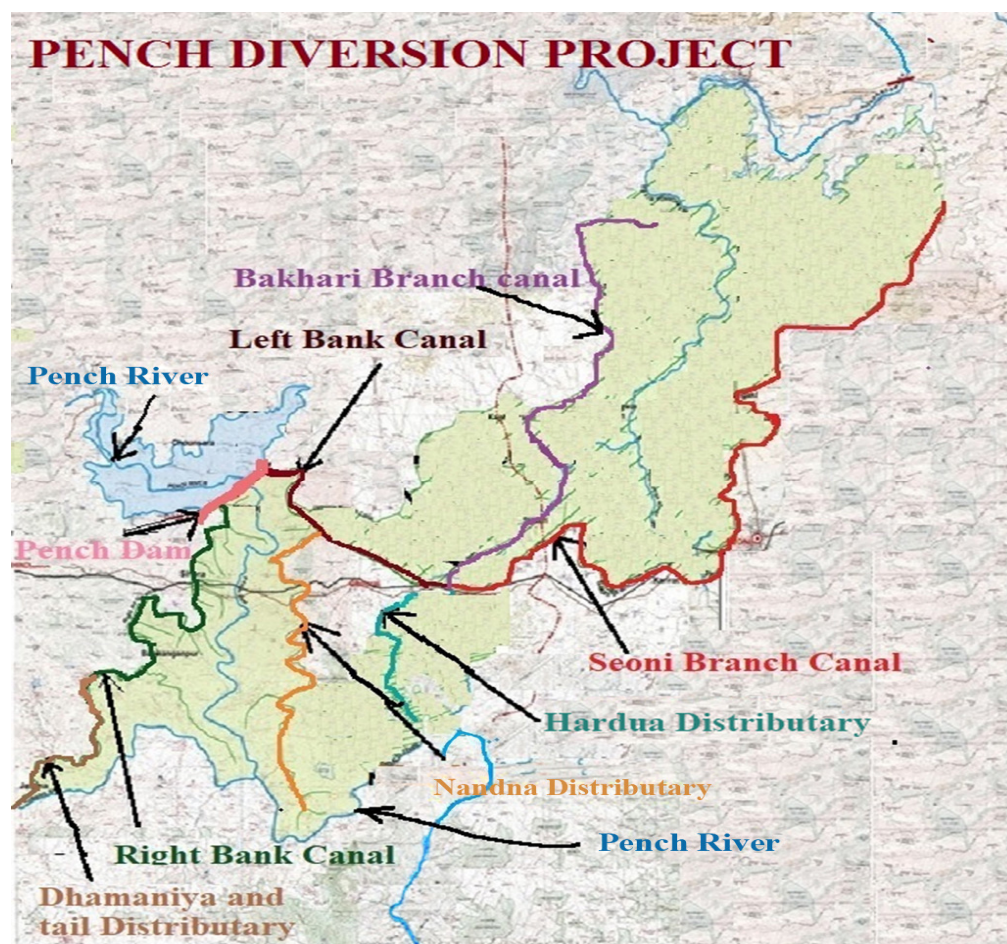
#### Water Resources Department

### 3.1 Construction of Pench Diversion Project

#### 3.1.1 Introduction

Pench Diversion Project was taken up in 1987-88 with the objective of providing irrigation in Pench Sub-basin and to divert the water from Pench Sub-basin to Wainganga Sub-basin for irrigating the upper lands of Wainganga Sub-basin. The Project envisaged construction of 5.97 km long earthen dam (42 metre height) and 360 metre long concrete dam (46.5 metre height), across river Pench in Chhindwara district. The canal systems under the project aimed at providing irrigation facility to 85,000 hectare of net culturable command area (CCA) in Chhindwara and Seoni districts. The project was also to provide 7.40 million cubic metres (MCM) domestic water supply to both districts, besides providing 61.68 MCM of water supply for thermal power projects.

The construction of the Pench Diversion Project was taken up in two phases of five years each. Phase-I of the project included construction of dam, entire Right Bank Canal (RBC) system and initial reach of Left Bank Canal (LBC) from zero km to seven km. Phase-II of the project comprised of construction of remaining LBC from seven km to 20.07 km, Seoni Branch Canal, Bakhari Branch Canal off-taking from 20.07 km of LBC and their distribution network.



### 3.1.1.1 Project cost

The details of administrative approval for Pench Diversion Project by the Government of Madhya Pradesh (GoMP) are given in **Table 3.1.1**.

**Table 3.1.1: Administrative Approvals for Pench Diversion Project by GoMP**  
(₹ in crore)

Month/Year of administrative approval	Approved cost	Target for completion (Years)
April 1988	91.60 (Phase-I only)	1998
September 2003	543.20	2012
September 2013	1,733.06	2015
September 2016	2,544.57	2017

(Source: Orders for administrative approval and detailed project reports)

In April 2006, Planning Commission, Government of India (GoI) approved the project for investment of ₹ 583.40 crore under State Plan for completing it by the financial year 2011-12. Phase-I of the project was included for funding under the Accelerated Irrigation Benefit Programme (AIBP) with 25 per cent Central share and 75 per cent State share during 2007-08 to 2009-10.

As on September 2017, ₹ 1,978.24 crore was incurred on the project, which included expenditure of ₹ 1,256.37 crore on the dam and ₹ 721.87 crore on the canal system. GoI had sanctioned (November 2017) the project under Fast Track Proforma Clearance with an estimated cost of ₹ 2,544.57 crore for its completion during 2019-20.

### 3.1.1.2 Organisational set up

Pench Diversion Project is implemented by the Water Resources Department (WRD) of GoMP. The Principal Secretary (PS), WRD is the head at Government level and Engineer-in-Chief (E-in-C) is the administrative head of the Department. At the field level, Chief Engineer (CE), Wainganga Basin, Seoni is responsible for implementation of the project. CE is assisted by Superintending Engineer (SE), Chhindwara, Executive Engineer (EE), Dam Division, Chourai, Chhindwara and EE, Canal Division, Singna, Chhindwara along with the supporting engineers/staff.

### 3.1.1.3 Scope of Audit

The audit of 'Construction of Pench Diversion Project' was conducted covering the period from 2012-13 to 2016-17. During this period, WRD incurred expenditure of ₹ 1,679.70 crore on the project, which is 85 per cent of the total project expenditure of ₹ 1,973.47 crore as on March 2017. The audit objectives were to ascertain whether the execution of the project was efficient and economical; and, whether quality control and monitoring mechanism was effective. Planning, creation and utilisation of irrigation potential (IP) and fund management for the execution of project were also examined.

The objectives, criteria, scope and methodology of audit were discussed with PS, WRD in the entry conference held on 04 April 2017. During the audit, records were examined at the apex level, in the offices of Major Project Control Board<sup>37</sup> and E-in-C, and at the field level, in the offices of respective

<sup>37</sup> Major Project Control Board, presided by Chief Minister, is a control board for execution of major irrigation multipurpose projects of the State selected by the State Government.

CE, SE and EEs. The draft report was issued to WRD in August 2017. The audit findings were also discussed in the exit conference with PS, WRD held on 27 October 2017. A revised draft report incorporating the views expressed during exit conference, was issued to the Department in March 2018. The replies of Department/field offices have been suitably included in the report. However, the replies on the revised report were awaited as of May 2018.

### Audit findings

#### 3.1.2 Financing for the project

Audit scrutiny revealed that the project was not approved for financial assistance under AIBP during 2012-13 to 2016-17. The revised cost estimate of ₹ 1733.06 crore of the project was forwarded (September 2013) to Central Water Commission (CWC)<sup>38</sup>, GoI. CWC in its various communications (March 2014, June 2014, November 2014, January 2015 and May 2015) sought details of cost estimates with adequate survey and investigation, alignment survey and cross section of branch canals, clarifications on land acquisition and status of approval of Ministry of Tribal Affairs on rehabilitation and resettlement of tribal population.

CE, Wainganga Basin, being engineer of the project, was responsible for providing timely and complete information to CWC. However, information submitted to CWC were only partial. As a result, CWC informed the State Government in December 2016 that the revised cost estimate of Pench Diversion Project was treated as sent back and deleted from the list of projects under appraisal in CWC. Thus, due to delays on the part of WRD to provide information to GoI, the revised estimate of the project was not cleared by CWC and the project could not be funded under AIBP during the period 2012-13 to 2016-17.

WRD, however, continued to account the budget provision and expenditure for Pench Diversion Project under the head 'Additional Central Assistance' in the Detailed Appropriation Accounts. During the period 2012-13 to 2016-17, GoMP incurred ₹ 1,679.70 crore on the project. However, the release of proportionate central assistance of ₹ 419.92 crore<sup>39</sup> under AIBP was not assured in the absence of investment clearance from the Planning Commission during 2012-13 onwards.

In the exit conference (October 2017), PS, WRD stated that the proposal for fast track clearance under AIBP was under submission.

Further scrutiny of records (February 2018) revealed that the sanction of GoI (November 2017) for the project under Fast Track Proforma Clearance included cost of AIBP component of ₹ 1,564.79 crore for Phase-I (approved AIBP component cost - ₹ 310.78 crore in December 2007). Thus, there remained lack of clarity over funding for Phase-II of the project under AIBP as well as reimbursement of central assistance for expenditure already incurred by GoMP on both phases of the project.

<sup>38</sup> CWC is responsible for carrying out techno-economic appraisal of irrigation, flood control and multipurpose project proposed by the State Governments.

<sup>39</sup> Calculated on the basis of State-GoI ratio (75:25) approved for project funding under AIBP during 2007-08 to 2009-10.



### 3.1.2.1 Utilisation of funds

Funds for the project are provided through the State budget. Out of total expenditure of ₹ 1,973.47 crore incurred on project up to March 2017, ₹ 16.38 crore was provided by GoI as Additional Central Assistance under AIBP during 2007-08 to 2009-10 and the remaining ₹ 1,957.09 crore was met from State resources. The budget provision and expenditure on the implementation of project during 2012-13 to 2016-17 was as detailed in **Table 3.1.2**.

**Table 3.1.2: Budget Allotment and Expenditure**

Year	Budget provision			Total allotment	Expenditure	Utilisation (per cent)
	Original	Supplementary	Reappropriation			
2012-13	128.61	1.09	(-)59.70	70.00	69.50	99.29
2013-14	103.53	50.00	16.79	170.32	169.92	99.77
2014-15	203.62	150.00	21.67 <sup>40</sup>	375.29	375.29	100.00
2015-16	503.76	195.00	53.95	752.71	751.98	99.90
2016-17	303.14	50.00	(-)39.85	313.29	313.01	99.91
<b>Total</b>	<b>1,242.66</b>	<b>446.09</b>	<b>(-)7.14</b>	<b>1,681.61</b>	<b>1,679.70</b>	

(Source: Detailed Appropriation Account and information provided by Department)

The project had been able to absorb the allotted funds during 2012-13 to 2016-17. However, the targeted physical progress could not be achieved due to delays in execution of canal systems, as discussed in succeeding paragraphs.

### 3.1.3 Project Implementation

The project consisted of two parts, viz., head work (construction of dam) and construction of canal system. Audit noticed that earthen dam, non-overflow section of the dam and nalla closure<sup>41</sup> were completed by June 2016. The overflow section<sup>42</sup> of dam was completed in November 2017.

**Table 3.1.3: Details of progress in construction of dam**

Component of work	Date of work order	Stipulated completion	Actual date of completion
Earthen dam section	October 2008	October 2010	Terminated on July 2010
	November 2011	August 2013	June 2016
Over flow section of dam	October 2010	April 2013	November 2017
Non-over flow section of dam	May 2013	November 2014	October 2015

(Source: Records of EE, Canal Division)

Audit noticed that the delays in construction of dam work were attributed to hindrances due to agitation of people residing in the submergence area, change in the location of spill way<sup>43</sup> of the dam as per recommendation made during

<sup>40</sup> This includes re-appropriation of ₹ 22.44 crore, not included in the detailed appropriation accounts due to delayed receipt of re-appropriation order by Principal Accountant General (Accounts and Entitlement) MP from WRD.

<sup>41</sup> Nalla closure of the dam is the stage at which the river is closed and water starts filling in the dam.

<sup>42</sup> Overflow section is built to allow the overflow of surplus water above the top of it. The contract was initially awarded for both overflow and non-overflow sections. However, the non-over flow section was subsequently withdrawn from the scope and this was awarded to another contractor.

<sup>43</sup> Spill way is a structure used to provide the controlled release of flow of excess water from a dam into downstream area.

joint inspection (October 2012) of Geological Survey of India, CWC and WRD and withdrawal of non-over flow section of the dam work from original contractor due to increase in quantity of work in view of changed location of spill way and its retendering.

### 3.1.3.1 Delay in execution of canal works

The construction works of canal and distribution network was awarded to six contractors between September 2012 and October 2013 as detailed in **Table 3.1.4**.

**Table 3.1.4: Details of contracts for canals and distribution network**

Name of work	Nature of contract	Date of work order	Scheduled completion date
Construction of Hydraulic Tunnel (agreement no. 01/2012-13)	Turnkey contract	13-09-2012	12-03-2015
Construction of Seoni Branch Canal (agreement no. 01/2013-14)	Turnkey contract	13-05-2013	12-05-2015
Construction of Bakhari Branch Canal (agreement no. 02/2013-14)	Turnkey contract	24-07-2013	23-01-2015
Construction of Nandna and Hardua distributary (agreement no. 03/2013-14)	Turnkey contract	08-08-2013	07-02-2015
Construction of Dhamaniya and tail distributary (agreement no. 04/2013-14)	Turnkey contract	08-08-2013	07-02-2015
Construction of LBC and RBC (agreement no. 05/2013-14)	Percentage rate contract <sup>44</sup>	12-10-2013	11-04-2015

(Source: Records of EE, Canal Division)

Audit scrutiny revealed that the work of 'Construction of Hydraulic Tunnel' was completed in October 2016. However, the works under other contracts have not been completed as detailed in **Table 3.1.5**.

**Table 3.1.5: Financial Progress of works in canal works**

Name of works	By scheduled completion date	By the end of 1 <sup>st</sup> time extension	By the end of 2 <sup>nd</sup> time extension	By the end of 3 <sup>rd</sup> time extension
Seoni Branch Canal and its distribution network	50 per cent (May 2015)	61 per cent (June 2016)	66 per cent (December 2016)	Time extension was granted till June 2018
Bakhari Branch Canal and its distribution network	30 per cent (January 2015)	70 per cent (December 2015)	83 per cent (June 2016)	92 per cent (June 2017)
Nandna and Hardua Distributaries and its distribution network	5 per cent (February 2015)	15 per cent (April 2016)	19 per cent (May 2017)	19 per cent (Due to slow progress, contract was terminated in August 2017)
Dhamaniya distributaries and its distribution network	6 per cent (February 2015)	31 per cent (May 2016)	32 per cent (December 2016)	34 per cent (Due to slow progress, contract was terminated in August 2017, which was subsequently revoked in January 2018)
Construction of LBC and RBC	50 per cent (April 2015)	65 per cent (December 2015)	79 per cent (June 2016)	82 per cent (December 2016) (Due to slow progress, contract was terminated in December 2017)

(Source: Records of EE, Canal Division)

<sup>44</sup> Under this contract, the contractor has to quote the percentage (above/below/at par) of estimated cost published in the Notice Inviting Tender (NIT). All the items of the work are measured and paid on this quoted percentage rate.

As per clause 115.1 of the standard turnkey agreements<sup>45</sup> and clause 4.3.2 (ii) of the percentage rate agreement, the contractor shall have to pay penalty at the rate of 0.5 *per cent* per week of the total contract value, subject to a maximum of 10 *per cent* of the total contract value, in the event of delay in execution of the works. For the purposes of penalty, the entire work was divided into milestones consisting of two quarters and penalty clause was to be applied automatically for delay in achieving any of the milestones and would continue until the said milestone was achieved.

The contract wise analysis for reasons of delays in canal works is detailed below:

- **Construction of Seoni Branch Canal**

Under the turnkey agreements, the contractor was responsible for preparation and submission of proposals for land acquisition (LA) cases to EE who would further submit these proposals to respective authorities. After approval, the contractor was required to follow up finalisation of awards for timely acquisition by revenue authorities. Contractors were required to submit all proposals for LA cases in the first three quarters.

The contractor<sup>46</sup> was granted (May 2015) first time extension up to June 2016 for completion of Seoni Branch Canal on the ground of hindrance by farmers demanding revised compensation. Audit observed that EE did not properly examine the delays on the part of contractor. The proposals for LA cases and drawings of structures, which were to be submitted by the contractor up to January 2014, were not submitted in their entirety even till March 2017.

Subsequent time extensions were granted to contractor up to June 2018 in the interest of work reserving the right to impose penalty. While recommending (March 2017) the proposal for time extension received from EE, SE noted that the contractor was responsible for delay in submission of LA cases. However, SE did not analyse the period of delays attributable to contractor and penalty to be levied for non-achievement of milestones.

Audit noticed that the contractor did not execute any work during January 2017 to September 2017. EE forwarded (September 2017) the proposal to SE for termination of the contract under clause 115.3 of the agreement which stipulates that total delays in excess of one hundred days (reasons attributable to the contractor) will cause termination of the contract and forfeiture of all security deposits and performance securities. However, the contract was not terminated and penalty was also not imposed on the contractor, which resulted in undue benefit of ₹ 14.55 crore<sup>47</sup> to the contractor.

- **Construction of Bakhari Branch Canal and its distribution network**

As on March 2017, contractor<sup>48</sup> had executed entire work (34.50 kilometre) of Bakhari Branch Canal (main canal) and 103.44 kilometre (82 *per cent*) of minor and distributary. The work was scheduled to be completed up to January 2015. Subsequently, four time extensions up to June 2018 were

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<sup>45</sup> Under Section III of Vol II of turnkey agreement

<sup>46</sup> Sarala Mantena MP JV (joint venture of Sarala Project Works Private Limited and Mantena Infra, Hyderabad)

<sup>47</sup> At the rate of 10 *per cent* of contract amount of ₹ 145.50 crore

<sup>48</sup> Sarala Mantena MP JV (joint venture of Sarala Project Works Private Limited and Mantena Infra, Hyderabad)

granted on the ground of delays in land acquisition not attributable to contractor.

- **Construction of Nandna and Hardua distributary**

Audit observed that there was no progress of work in the construction of Nandna and Hardua distributary by the end of the first milestone in February 2014. The contractor<sup>49</sup> could not achieve any of the milestones by the end of stipulated period of contract (February 2015). Survey work of minors and sub distributaries were not submitted. The land acquisition cases of Nandna distributary (from 17.76 kilometre to 30.60 kilometre) and Hardua distributary (from 8.30 kilometre to 11.26 kilometre) were not submitted by the contractor. Contractor could complete the earth work of 13 kilometre out of 30.16 kilometre canal of Nandna distributary and 700 metre out of 13.50 kilometre canal of Hardua distributary by February 2015.

Due to slow progress in the works, the contract was terminated by the CE in February 2015. However, EE did not enforce the termination and the same contractor continued the execution of canal works. Later on, the CE also granted time extension up to May 2017 to the contractor. Reasons for non-enforcement of CE's order for termination of contract were not recorded by the EE and CE. Audit further observed that the progress of the work after February 2015 remained low (14 *per cent*) due to delays attributable to contractor in submission of drawings of structures and proposals for land acquisition.

The contract was finally terminated in August 2017. However, penalty was neither proposed by EE and SE nor imposed by the CE, which was to be automatically applied for non-achievement of first milestone since February 2014. Non-imposition of penalty resulted in undue benefit of ₹ 12.65 crore<sup>50</sup> to the contractor.

- **Construction of Dhamaniya and tail distributary**

The first time extension up to May 2016 was granted (March 2015) to the contractor<sup>51</sup> on the ground of hindrance to work by farmers demanding revised compensation for land acquisition. By the end of May 2016, contractor could achieve only 31 *per cent* of financial progress and sought for further time extension up to December 2016 on the grounds of non-availability of work fronts due to delays in payments of the compensation to farmers and non-availability of blasting material. While recommending the time extension case to CE, EE and SE concurred with these reasons for delay in the work. Audit scrutiny, however, revealed that EE and SE did not take into account non-submission of land acquisition proposals by the contractor which led to non-availability of work fronts. Subsequently, CE granted (March 2016) the second time extension up to December 2016 by reserving the right to impose penalty.

Audit observed that contractor could complete only one *per cent* of the work during the second time extension (up to December 2016) and two *per cent* of the work during third time extension (up to December 2017). There was no hindrance to the work by farmers and slow progress was attributable to delays in submission of land acquisition cases by the contractor, non-deployment of

<sup>49</sup> HES Infra Private Limited, Hyderabad

<sup>50</sup> At the rate of 10 *per cent* of contract amount of ₹ 126.50 crore

<sup>51</sup> HES Infra Private Limited, Hyderabad

sufficient machinery and non-submission of drawings of structures. Under the revised milestone, the contractor had to submit all the land acquisition proposals by July 2016. This was not achieved. Further, due to non-submission of proposals for land acquisition by the contractor, the notifications published (August 2016) for land acquisition in 30 villages also automatically got cancelled (August 2017).

Despite these delays on the part of the contractor, no penalty was proposed by EE though it was automatically to be applied for non-achievement of milestones. SE and CE also did not examine the case for imposition of penalty during review of the work for time extensions. Non-imposition of penalty resulted in undue benefit of ₹ 7.65 crore<sup>52</sup> to the contractor.

The contract was subsequently terminated (August 2017) by EE on the orders of CE on the grounds of delays by the contractor in submission of land acquisition cases, non-submission of drawings of structures, very slow progress in the work during working season of last two years, contractor's lack of interest in completing the work, etc. However, SE revoked (4 January 2018) the termination after contractor requested (23 December 2017) for a hearing to resolve the issue amicably.

Audit scrutiny revealed that there was no provision in the contract for revoking the termination order. The revocation order cited the recommendation of EE as well as the minutes of a meeting (5-6 December 2017) held by Additional Chief Secretary, WRD as the grounds for revocation. However, the said minutes of the meeting only directed CE to take decision on the appeal by the contractor and re-tendering of the work, if required. Further, the recommendation of EE (30 December 2017) was not based on any analysis of records submitted by the contractor and it merely stated that the recommendation for revocation was issued in the interest of providing immediate irrigation facility to farmer.

Thus, SE and EE were complicit in irregular decision of revoking the contractor's termination. However, no action was taken to levy penalty of ₹ 7.65 crore for delays attributable to contractor on the grounds cited in the termination order. Besides, the indecisiveness of WRD in re-tendering the work, after termination of contract, further delayed the construction work of Dhamaniya and tail distributary.

- **Construction of LBC and RBC**

This work was awarded (October 2013) on percentage rate contract for completion by April 2015. However, the contractor<sup>53</sup> could complete only 50 *per cent* of work up to the scheduled completion period. Time extension was granted up to December 2015 on the ground of hindrance by farmers demanding more compensation for land acquisition.

Audit observed that the land acquisition for the canal was already completed before awarding the work. The work was delayed mainly due to non-deployment of sufficient machinery and manpower by the contractor. Though contractor could execute only 15 *per cent* of work in this extended period (May 2015 to December 2015), penalty for slow progress was not imposed and further time extensions up to December 2016 were granted. Non-

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<sup>52</sup> At the rate of 10 *per cent* of contract amount of ₹ 76.50 crore

<sup>53</sup> MASS Infrastructure Private Limited, Vadodara

imposition of penalty resulted in undue benefit of ₹ 6.50 crore<sup>54</sup> to the contractor for which EE, SE and CE were responsible.

In view of slow progress of work by the contractor, the earth work was partly withdrawn (December 2016) from the contractor. Out of these withdrawn earthworks, works valued at ₹ 3.55 crore were awarded to two contractors and the work of ₹ 37.26 lakh was executed departmentally. The withdrawn works were completed by February 2017.

Further scrutiny revealed that no time extension was granted to the contractor after December 2016 and contractor also did not execute any work during January 2017 to December 2017. Further, reasons for not taking any decision for extension or termination of the contract in December 2016 were not available on record. Indecisiveness of the field level departmental officers (CE, SE and EE) further delayed the execution of work by one year. The contract was eventually terminated in December 2017 without imposition of penalty. It was also observed that though CE had reserved the right to impose penalty at the time of granting periodic time extensions, no action to impose penalty was taken for reasons not on record.

As discussed above, the construction of canals in Pench Diversion Project could not be completed due to delays in land acquisition and slow progress in works by contractors. The land acquisition, which was essentially a statutory process, was delegated to contractors under the turnkey agreement who delayed the preparation of proposals for land acquisition. The cases of time extensions were approved without adequate analysis of reasons for delays. While letters were issued to contractors for expediting the works, these correspondence were not taken into account at the time granting extension. Penalties were not imposed as per provisions of the agreement, even in cases where delays on the part of contractors were apparent. In view of slow progress in works, E-in-C had directed (November 2016) the CE to take statutory action against the contractors under the contracts of Nandna distributary canal and Dhamaniya distributary canal. However, no action was taken. Thus, the field level officers (CE, SE and EE) had adopted flexible approach towards contractors, which contributed to delay in the execution of canal works.

In the exit conference (October 2017), the PS, WRD accepted the observation regarding delays in completion of project and non-imposition of penalty on contractors and assured to examine the matter and take appropriate action. Further action in this regard was awaited (May 2018).

### **Recommendation**

*WRD should review all cases of delays in construction of canals to fix the accountability of contractors and penalty may be imposed as per provisions of agreements. WRD should also review all instances of inaction/failure to levy penalty by departmental officers for appropriate departmental action. WRD should also review the irregular revocation of contract's termination order in the construction of Dhamaniya and tail distributary from a vigilance angle.*

#### **3.1.3.2 Creation of less irrigation potential**

Out of designed irrigation potential (IP) of 85,000 hectare, the achievement was 17,100 hectare as on March 2017 due to slow progress in canal works as

<sup>54</sup> At the rate of 10 per cent of contract amount of ₹ 64.98 crore

detailed in para 3.1.3.1 and low priority in construction of distribution network. The construction of Jamunia micro irrigation scheme (designed IP of 10,000 hectare) was yet to be started and the status of construction of other canals was as detailed in **Table 3.1.6**.

**Table 3.1.6: Construction of main canals and its distribution network as on March 2017**

Parent Canal	Canal/Distributary	Designed length (km)	Completed length (km)	Distribution network	Designed length (km)	Completed length (km)	Designed IP (ha)	Created IP (ha)
RBC	RBC	30.20	30.20	16 minor, Dhamaniya and tail Distributary	95.08	56.11	13,050	4,500
LBC	LBC	20.07	20.07 <sup>55</sup>	5 minors	5.15	0	671	0
	Seoni Branch Canal	49.47	46	Minors and Distributaries	98	6	28,903	4,600
	Bakhari Branch Canal	34.50	34.50	Minors and Distributaries	125.89	103.44	14,506	8,000
	Nandna and Hardua Distributaries	42.51	13.15	Minors and Sub distributaries	196.15	0	17,870	0
<b>Total</b>		<b>176.75</b>	<b>143.92</b>		<b>520.27</b>	<b>165.55</b>	<b>75,000</b>	<b>17,100</b>

(Source: Records provided by EE, Canal Division)

The physical progress in construction of main canals was 81 *per cent* whereas only 32 *per cent* of distribution system could be completed as on March 2017. Due to non-execution of distribution network, no irrigation potential was created even after incurring ₹ 24.02 crore on Nandna and Hardua distributaries. One of the reasons for low priority on construction of distribution system was the absence of any clause in the agreements of turnkey contracts for simultaneous execution of main canal and distribution networks.

WRD stated (April 2018) that due priority was given for canal network construction. The agencies, which were lagging behind were terminated and fresh tenders were invited. As of November 2017, IP of 30,000 hectare was created and 20,256 hectare was irrigated during the year 2016-17.

The reply is not acceptable, as simultaneous construction of distribution systems of canals were not ensured either in contract or during execution, which affected creation and utilisation of IP. As a result of delays in construction of canal system, the benefit of water available in the dam could not reach to cultivators.

### Recommendation

*WRD should ensure timely construction of distribution system of canals under Pench Diversion Project and fix the accountability for non-inclusion of appropriate clause in the agreement for simultaneous execution of main canal and distribution networks.*

### 3.1.4 Contract Management

#### *Contract management under turnkey contracts*

#### *3.1.4.1 Payments to contractors without recording detailed measurements*

The Madhya Pradesh Works Department (MPWD) Manual prescribes the measurement book (MB) as the initial record upon which the accounts are

<sup>55</sup> Cement concrete lining of two km was yet to be done.

based. The description of works in MB must be lucid enough to ensure easy identification and check. All measurements must bear the dated signature of an official by whom they are taken and at the time of payment all the pages of measurement should be crossed off.

The standard turnkey agreements stipulated that the contractor shall give bill of quantities (BOQ) based on the detailed estimates prepared on the basis of approved design and drawings. The items of the estimate shall be suitably clubbed or grouped for assessment of value of work done. Further the contract provides that contractor shall record joint measurements for work carried out as per procedure laid down by Department for the purpose of keeping record and the same shall be got checked from competent authority before payment. All hidden measurement shall be got 100 *per cent* checked from the competent authority before payment.

Audit scrutiny revealed that none of the turnkey contractors submitted BOQ and clubbing statement based on the detailed estimates. As a result, the executable components of the works and their payable contract rates were not available with WRD. Payments were made to the contractor on kilometre basis without recording detailed measurement of work done in MB. There was no record in the Division to verify the execution of individual items under the contract, such as, watering and compaction of earthwork, execution of cohesive non-swelling soil (CNS), use of low density polyethylene (LDPE) film, etc.

To rectify the above situation, the E-in-C issued a circular (March 2015) to all CEs reiterating that there was no clause in the turnkey agreement nor any para in the MPWD manual which exempts recording of measurement in turnkey contracts. Further audit scrutiny, however, revealed that the practice of not measuring component wise works in the turnkey contracts under Pench Diversion Project continued even after the directions of E-in-C. The EE, Canal Division, sub divisional officer (SDO) and sub engineer were accountable for the irregularity in recording of measurements. The Divisional Accountant also failed to check the measurement books as required under the MPWD Manual.

In the exit conference (October 2017), the PS, WRD assured that appropriate action would be taken. Incidentally, after this being pointed out in Audit, E-in-C had issued charge sheet (September 2017) to the SDO for irregular acceptance of measurement and to the sub engineer for irregular recording of measurement. However, further reply of WRD on the action taken on these irregularities was awaited (May 2018).

### **Recommendation**

*WRD should ensure that detailed measurements of the works, including those of hidden items are recorded in turnkey contracts and payment to contractors should not be passed without due verification.*

#### **3.1.4.2 Irregular revision of payment schedule**

The turnkey agreements stipulated that, the contractor's price bid shall be divided among component of works to their respective percentage as stipulated in the 'Schedule of Payment - Appendix-F'. These components shall be further divided into appropriate sub-components and their stages for the purpose of payments and the sum of all stages of particular component should be equal to the percentage of that component shown in the 'Schedule of



Payment - Appendix-F'. The detailed schedule of payments was to be approved by CE.

Audit observed that the CE without authority and contrary to the agreement, amended upwards, the percentage of earthwork component at the request of the contractor. This resulted in irregular payment of ₹ 13.41 crore as detailed in **Table 3.1.7**.

**Table 3.1.7: Details showing irregular revision of payment schedule**

(₹ in crore)

Name of work	Approved earthwork percentage	Revised earthwork percentage	Difference of percentage	Amount paid	Excess payment
1	2	3	4	5	6=5×4/3
Seoni Branch Canal	18.00	20.00	2.00	24.87	2.49
Bakhari Branch canal	11.00	20.14	9.14	15.33	6.96
Dhamaniya Distributary	10.69	21.00	10.31	8.06	3.96
<b>Total</b>					<b>13.41</b>

(Source: Records of EE, Canal Division)

WRD stated (April 2018) that the contractor had to submit component wise revised schedule of payment and CE after taking due cognizance of the interdependency of various construction activity, was empowered to approve the schedule of payment submitted by the contractor. Further, as the turnkey contract was a fixed price contract, there was no question of excess payment.

The reply of the WRD is not acceptable, as the CE was not authorised to amend the 'Payment Schedule Appendix-F', which was an integral part of the turnkey agreement. The irregular upward revision of payment schedule for earthwork component of the work led to undue financial aid of ₹ 13.41 crore to the contractor that would be adjusted only after completion of entire work.

### ***Contract management under percentage rate contracts***

#### ***3.1.4.3 Extra cost on inadmissible leads of materials***

The Unified Schedule of Rates (USR) 2009 for 'providing plain cement concrete lining of M-15 grade with paver machine' includes all leads on all materials.

Audit observed, however, that the technical sanction<sup>56</sup> (January 2013) for the works of 'construction of LBC and RBC' provided for additional leads for cement, sand, metal and water in cement concrete (CC) lining resulting in increase of clubbed rate for CC lining by ₹ 348.03 per cubic metre (cum), as detailed in **Appendix 3.1**. Since the contract was awarded at the rate of 7.71 per cent above the tender amount, the payments for CC lining were also made at the rate of 7.71 per cent above the clubbed rate. Thus, incorrect clubbed rate for CC lining, which included inadmissible rates for lead, resulted in extra cost of ₹ 1.95 crore on 51,977.55 cum of executed quantity of CC lining.

In the exit conference (October 2017), PS, WRD stated that the item had been amended in prevailing USR effective from April 2016.

The reply is not acceptable, as the technical sanction for the works of 'construction of LBC and RBC' was prepared on the basis of USR 2009,

<sup>56</sup> The EE, SDO and Sub engineer of the Canal Division prepared the estimate and the CE granted technical sanction.

which did not provide for separate lead in CC lining work. Further, the USR 2016 also does not provide for any additional lead for CC lining.

#### 3.1.4.4 *Non-recovery of cost of hard rock*

In view of slow progress of work, the balance earthwork for construction of LBC from RD<sup>57</sup> 13,515 metre to 15,000 metre was withdrawn (December 2016) from the scope of the original contractor and awarded (December 2016) to two contractors on piece-work basis on the same rate as payable to the original contractor.

The agreement for these piece-works provided that all excavated material would be the property of the Government. The hard rock would be issued to the contractor at the rate of ₹ 94 per cum *plus* royalty charges for *bona fide* reasons in the concerned work. The royalty for hard rock under Madhya Pradesh Minor Mineral Rules, 1996 (as amended in September 2014) is ₹ 50 per cum.

As per general note 1(d) of chapter 4 of USR, for accounting the excavated hard rock, the quantity of utilisable rock to be recorded in the books shall be 1.3 times of the quantity paid in excavation. The excavated hard rock shall be kept and accounted for in material-at-site (MAS) account of the sub engineer. The hard rock which is to be utilised will have to be issued after account for in material-at-site (MAS) account and is to be recovered from the contractor at the issue rate.

Audit scrutiny of MAS account revealed that 98,952.25 cum of excavated hard rock were issued to both contractors at site in December 2016. However, EE did not recover ₹ 1.85 crore<sup>58</sup> for the cost of hard rock from the final payments (January 2017 and February 2017) made to contractors for reasons not on record.

The reply of WRD was awaited (May 2018).

#### **Recommendation**

*WRD should take appropriate departmental action on the officers responsible for undue favour to contractors.*

### **3.1.5 Quality Control**

#### 3.1.5.1 *Non-execution of PVC strips in canals*

Under the turnkey agreements, the EE is responsible for execution of the work. Further, the MPWD manual stipulates that the measurements taken by subordinates shall be checked by the SDO before payment and EE/SDO shall be responsible for measurement recorded/checked by him.

The estimates of turnkey contracts of Seoni Branch Canal provided for placing PVC strips in panel joints in CC lining. As per Irrigation Specification issued by WRD, PVC strips shall be inserted in the concrete lining, before the concrete sets.

Audit noticed during the site visit of Seoni Branch Canal that contractor did not insert PVC strips in CC lining and the EE and SDO failed to ensure this.

<sup>57</sup> Reducing distance

<sup>58</sup> ₹ (98,952.25 × 1.3 × ₹ 144)



Since estimate forms the basis for arriving at the cost of work in turnkey contract, non-execution of PVC strip resulted in undue benefit of ₹ 3.22 crore to the contractor as detailed in **Table 3.1.8**.

**Table 3.1.8: Undue benefit due to non-placing of PVC strip**

Canal	Quantity (in metre)	Rate per metre as per provision made in the estimate (in ₹)	Amount (₹ in crore)
Seoni Branch canal	3,35,737	96	3.22

(Source: Records of EE, Canal Division)

WRD stated (April 2018) that the drawing of CC lining was approved by the competent authority and accordingly lining was executed at site. The provision of joint filler by filler material was approved hence joints were filled by fillers. The joints which were found unfilled would be filled as the works were under progress.

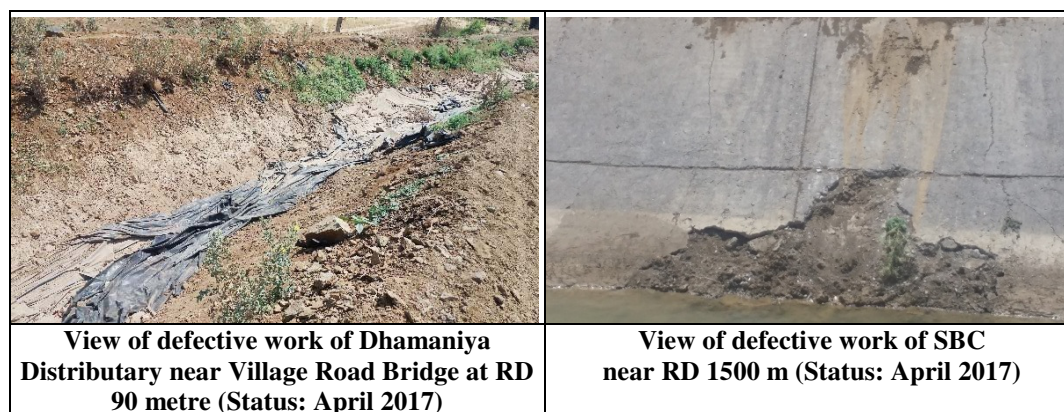
The reply is not acceptable, as the approved drawings provided for execution of CC lining with PVC strip which was required to be executed along with the concreting as per irrigation specification. Further, the payment for CC work, which included the cost for providing and inserting PVC strip at joints, had already been made to the contractor.

### 3.1.5.2 Defective execution of work by contractor

As stipulated in the turnkey agreement, the Engineer or Engineer-in-Charge shall give notice to the contractor of any defects before the end of the defects liability period, which begins at completion. The contractor shall correct the notified defects within the defects correction period, which is within 14 days from the date of receipt of notice by the contractor, at no cost to the employer. The Department may arrange for a third party to correct the defect, if the contractor has not corrected it within the defect correction period. The cost of correction will be deducted from the contract price.

Audit noticed that in respect of three agreements<sup>59</sup>, the EE instructed (December 2016) the contractors that lining work in various reaches of canal was not of acceptable quality. As a result, cracks were occurred in various reaches and panels were broken. The contractors were instructed to rectify the defective works.

<sup>59</sup> Agreement number - 01/2013-14, 04/2013-14 and 05/2013-14



During site visit (April 2017), Audit noticed that the rectification works were neither carried out by the contractor nor was it got rectified departmentally at the risk and cost of contractor.

In the exit conference (October 2017), PS, WRD accepted the facts and instructed EE to prepare liability statement and to recover the amount accordingly from the defaulting contractors.

### **Recommendation**

*WRD should ensure that provisions relating to rectification of defects within the stipulated period are scrupulously followed.*

#### **3.1.5.3 Execution of service and non-service banks with lesser width**

The turnkey contract stipulates that the construction of service roads/inspection path in the canal system shall be as per canal parameters appended with the tender documents. The 'Design criteria for distribution system – as per Indian Standard (IS) Codes' appended with the contract provided that the minimum bank top width of service<sup>60</sup> and non-service banks should be seven metre and 3.5 metre respectively where the discharge of the canal is 15 cubic metre per second (cumec) to 30 cumec (IS Code:7112-1973).

Audit noticed that the IS Code: 7112-1973 was for design of cross section of unlined canals in alluvial soil. The Seoni Branch Canal was lined canal and as such the standards of IS Code:10430-2000 was applicable in this canal, which provided for bank top width of five metre for service banks and four metre for non-service banks where the discharge of the canal is 10 cumec to 30 cumec.

The discharge of Seoni Branch Canal was 18.745 cumecs. Accordingly, contractor submitted drawing for the canal with seven metre service bank and 3.5 metre non-service bank as per IS Code: 7112-1973. However, while approving the design submitted by the contractor, CE reduced the width of service and non-service bank to six metre and 1.5 metre respectively without recording any reasons. Thus, the approved drawing for non-service bank was less than even the minimum top width prescribed under IS Code: 10430-2000. As the canal works was executed with reduced bank top width, this resulted in undue financial benefit to the turnkey contractor as the payments were not proportionately reduced for execution of approximately 28.5 per cent less

<sup>60</sup> For proper inspection and maintenance of canal works, service banks on one side carries a service road for normal movement of inspection vehicles.

earthwork amounting to ₹ 7.09 crore<sup>61</sup>.

WRD stated (April 2018) that top width of canal banks was reduced to minimise the land acquisition. This saved 25.79 hectare land of farmers, which resulted in savings of ₹ 3.86 crore on land acquisition. It was further stated that the reduced top bank width had no adverse effect on stability of banks and also there was no change in canal flow parameters.

The reply of WRD is not acceptable, as it is an afterthought not supported by records. The reduction in banks width without proportionate reduction in payment to contractor resulted in excess payment of ₹ 7.09 crore for earth work which should be recovered from the contractor. Further, the primary purpose of canal banks is to retain water and the minimum top width of canal banks have been prescribed in the IS codes keeping in view the designed discharge of the canal. Therefore, the failure of CE to follow the prescribed specification for the width of canal banks would affect stability of banks.

### 3.1.6 Internal Control and Monitoring Mechanism

#### 3.1.6.1 Non-maintenance of records

Audit scrutiny revealed that Canal Division did not maintain the records prescribed in the MPWD Manual, as detailed in **Table 3.1.9**.

**Table 3.1.9: Statement showing registers not maintained**

Name of register	Codal Provision	Purpose of register
Annual Inspection Register	Para 4.113 of MPWD manual	This record is maintained in Division office for recording results of the inspection of higher officers.
Works abstract	To be maintained in form CPWA 33	This is an account of all the transactions relating to a work during a month in respect of estimates. It is prepared by EE, which is to be closed and checked under the supervision of Divisional Accountant.
Contractor Ledger	To be maintained in form CPWA 43	A separate folio or set of folios is reserved for all the transactions with each contractor. This record is maintained in Division office.
Register of work	Para 4.147 of MPWD Manual and to be maintained in form CPWA 40	To monitor the progress of expenditure on each work by SDO and EE.
MAS accounts	Para 4.070 of MPWD Manual and to be maintained in form CPWA 35	The account is prepared by Sub-engineer and verified by SDO for control on issue of materials. MAS account was not maintained, except for agreement number 01/P/2016-17 and 02/P/2016-17.
Register of interest bearing securities	To be maintained in form CPWA 85	It is maintained to watch the receipt and disposal of securities. EE is required to exercise great care in determining date beyond which securities would cease to operate.

(Source: Records of EE, Canal Division)

As a result of non-maintenance of records as per codal provisions, following irregularities were noticed:

<sup>61</sup> In view of total payment of ₹ 24.87 crore for earth work and considering less execution earthwork by approximately 28.5 per cent due to reduced banks width as compared to specification provided in the agreement.

- ***Non-accountal of hard rock***

Audit noticed that, in the construction work of LBC<sup>62</sup>, the contractor excavated (December 2016) 1.30 lakh cum hard rock. Therefore, the sub engineer was required to account for 1.69 lakh cum hard rock in MAS account<sup>63</sup>. Further scrutiny revealed that Canal Division recovered the cost of 14,721 cum hard rock from contractor at the rate of ₹ 94 per cum *plus* royalty charges. However, no MAS account was maintained by the Division and therefore, the actual quantity of issued hard rock to contractor could not be ascertained. Since the availability of remaining 1.55 lakh cum excavated hard rock of ₹ 1.46 crore at the work site could not be ascertained from the records of Division, the loss to the Government due to subsequent pilferage cannot be ruled out.

- ***Failure to renew bank guarantee***

The standard agreement stipulates that the contractor shall furnish performance security equal to five *per cent* of contract value or ₹ 1.00 crore, whichever is less, which can be in the form of Bank Guarantee (BG). The security shall not be refunded before the expiry of 12 months after issue of the certificate, final or otherwise, of completion of the work and in no case it shall be refunded before the settlement and payment of the final bill. On termination of contract, all security deposits and performance securities would be forfeited.

Audit noticed that in respect of construction work of LBC, performance security of ₹ one crore in the form of BG, was submitted by the contractor. The BG was valid up to 27 September 2015, which was extended up to 27 September 2016. Thereafter, the EE did not take action to renew the BG. Later on, the contract was terminated in December 2017 due to inability of contractor to complete the work within the extended scheduled date for completion, as detailed in **para 3.1.3.1**. Since BG was not valid, EE could not forfeit the performance security.

In exit conference (October 2017), PS, WRD assured that detailed reply will be furnished. However, the same was still awaited (May 2018).

### **Recommendation**

*WRD should fix the accountability of departmental officers for non-maintenance of records prescribed under the MPWD manual and for failure to extend bank guarantee.*

#### **3.1.6.2 *Incorrect technical sanction without detailed survey and field investigation***

The MPWD manual prescribes that when the survey is completed and the final alignment is inspected and approved by the EE, plans and estimates will be prepared realistically after conducting judicious field investigation and sanctioned by the competent authority.

Audit noticed that the estimates for Seoni branch canal system of ₹ 152.55 crore was prepared without conducting detailed survey and field

<sup>62</sup> Agreement No. 05/2013-14 (earth work for construction of LBC from RD 9,000 m to RD 9,810 m and RD 13,515 m to RD 20,070 m and RBC from RD 0 m to RD 30,200 m)

<sup>63</sup> The USR stipulates that the quantity of utilisable rock to be recorded in MAS account shall be 1.3 times of the quantity paid in excavation.

investigation. The estimate was prepared on *pro rata* basis, without any justification, by working out quantity of each item for the canal length of 30 metre and then multiplying it by the length of canal to arrive at the total quantity of work. The CE, SE, EE, SDO and draftsman were responsible for violating the MPWD manual as the estimates were certified by them.

As a result of preparation of estimates without detailed survey, unwarranted items were included in the estimates, as detailed in **Table 3.1.10**.

**Table 3.1.10: Details of unwarranted provisions in the estimates**

Codal Provision	Audit findings
Para 4.9.7.1.3 of the Irrigation Specifications of WRD provides that tamping is to be provided in locations where compaction of the earthfill material by means of roller is impracticable or undesirable.	Provision of ₹ 48.24 lakh for compaction of earthwork with rollers was included in the estimate for entire canal length. The estimate simultaneously included provision of ₹ 1.08 crore for tamping in the entire length of canal, which was unwarranted in view of the Irrigation Specifications.
Para 25.3.1.4 and 25.3.1.5 of the Irrigation Specifications provides for execution of CNS material depending on the swelling pressure of expansive soil. Thus, swelling pressure test should be conducted for assuring the necessity of CNS.	Provision of filling foundation with hard moorum <sup>64</sup> as CNS were made in entire length of canal without ascertaining its necessity by conducting swelling pressure tests. As a result, the estimate included works of CNS amounting to ₹ 15.07 crore though the CNS was not required for available strata in the section of canal.
As per clarification of E-in-C (February 2012), LDPE film is not to be used at places where CC lining is done by paver machine.	Unwarranted provision of ₹ 2.86 crore for LDPE film was made in the estimate for entire canal even though the lining was provisioned through paver machine.

The inclusion of unwarranted items of ₹ 19.01 crore for tamping, CNS and LDPE film in the turnkey contract resulted in incorrect technical sanction by CE. Further, the actual execution of these items could not be assured due to non-recording of the detailed measurement in MB.

In the exit conference (October 2017), PS, WRD accepted the fact and stated that action had already been initiated and detailed reply would be submitted. Incidentally, after this being pointed out in Audit, WRD issued charge sheet (September 2017) to SE, EE and SDO for preparation of estimate on *pro rata* basis and for inclusion of unwarranted items. However, departmental enquiry against SE and EE was closed (March 2018). Further reply of WRD was awaited (May 2018).

### 3.1.7 Supply of drinking water from Pench Dam

One of the objectives of the project was to provide 7.40 MCM drinking water to Chhindwara and Seoni districts. Audit scrutiny revealed that the Major Project Control Board had allocated (April 2017) six MCM annual water to Municipal Council, Chhindwara for supply of drinking water. However, no allocation was made for Seoni district.

Municipal Council, Chhindwara was responsible for construction of necessary infrastructure for drinking water supply, viz., construction of intake well and other civil and mechanical works. The work order for this work was issued in July 2017 with scheduled completion of the project in July 2019.

On this being pointed out in Audit, WRD accepted (April 2018) the fact.

<sup>64</sup> Moorum is a type of soil which consisted powdered rock with or without boulders.

### 3.1.8 Summary of conclusions

- Pench Diversion Project, which was taken up in 1987-88 and undergone several time extensions, was still lagging behind. Due to delays in construction of canal system, the benefit of water available in the dam could not reach the cultivators. The creation and utilisation of IP was also affected due to low priority on construction of distribution network.
- The project could not be included under AIBP during the years 2012-13 to 2016-17 due to delays on the part of WRD in providing requisite information to GoI. As a result, WRD could not ensure the release of proportionate central assistance under AIBP.
- Despite slow progress in construction works, penalty was not imposed and time extensions were granted to contractors in routine manner without adequate analysis for the reasons of delays. WRD had to eventually rescind three out of six contracts for canal construction in August 2017 and December 2017. However, SE unauthorisedly revoked one termination order, besides indecisiveness of field level departmental officers (CE, SE and EE) in retendering the work further delayed the canal works.
- Departmental officers violated provisions of the MPWD manual. Technical sanction was granted without detailed surveys and investigation, which led to inflated estimation of the project. The payments were made to turnkey contractors without recording detailed measurement in MB. Prescribed records for internal control and monitoring of works were not maintained.
- The provision of agreement was also unauthorisedly revised in favour of contractors. Instances of non-adherence to agreement clauses and provisions of schedule of rates were also noticed.
- The construction of Seoni Branch Canal was executed with the reduced bank top width in violation of the prescribed technical specification. Audit noticed substandard and defective works, which were neither rectified by contractors nor by WRD.

### 3.1.9 Summary of recommendations

- *WRD should review all cases of delays in construction of canals to fix the accountability of contractors and penalty may be imposed as per provisions of agreements. WRD should also review all instances of inaction/failure to levy penalty by departmental officers for appropriate departmental action. WRD should also review the irregular revocation of contract's termination order in the construction of Dhamaniya and tail distributary from a vigilance angle.*
- *WRD should ensure timely construction of distribution system of canals under Pench Diversion Project and fix the accountability for non-inclusion of appropriate clause in the agreement for simultaneous execution of main canal and distribution networks.*



- *WRD should ensure that detailed measurements of the works, including those of hidden items are recorded in turnkey contracts and payment to contractors should not be passed without due verification.*
- *WRD should take appropriate departmental action on the officers responsible for undue favour to contractors.*
- *WRD should ensure that provisions relating to rectification of defects within the stipulated period are scrupulously followed.*
- *WRD should fix the accountability of departmental officers for non-maintenance of records prescribed under the MPWD manual and for failure to extend bank guarantee.*

## 3.2 Audit Paragraphs

Compliance audit of transaction of the Government Departments, their field formulation brought out instances of lapses in management of resources and failures in the observance of the norms of propriety and economy. These have been presented in the succeeding paragraphs.

### FOREST DEPARTMENT

#### 3.2.1 Cost overrun due to delayed execution of compensatory afforestation

**Principal Chief Conservator of Forest delayed the inclusion of the compensatory afforestation works under Rajiv Sagar Irrigation Project in Annual Plan of Operations despite availability of sufficient funds in State Compensatory Afforestation Fund Management and Planning Authority, which resulted in delayed commencement of afforestation work and increase in cost by ₹ 2.00 crore.**

As per State Compensatory Afforestation Fund Management and Planning Authority (State CAMPA<sup>65</sup>) guidelines issued (July 2009) by Ministry of Environment and Forests (MoEF), Government of India (GoI), money available with the State CAMPA is to be utilised for development, maintenance and protection of forests and wildlife management as per approved Annual Plan of Operations (APOs). State Level Executive Committee, headed by Principal Chief Conservator of Forest (PCCF) at Department level, is responsible for preparation of the APO and its submission to Steering Committee at Government level before the end of December for each financial year so as to obtain their concurrence for release of funds from MoEF (Ad-hoc CAMPA<sup>66</sup>). After receipt of money, State CAMPA shall release funds to the field officers in predetermined instalments as per the APO finalised by the Steering Committee.

GoI accorded (May 2008) in principle approval for diversion of 473.310 hectare of forest land for construction of Rajiv Sagar Irrigation Project (Bawanthadi) of Water Resources Department (WRD), Government of Madhya Pradesh (GoMP). As per the GoI sanction, read with corrigendum (March 2009), the compensatory afforestation was to be raised and maintained over 119.938 hectare of degraded forest land at the cost of user agency (WRD). Based on the labour rate that prevailed in March 2009, the Divisional Forest Officer (General) Balaghat South (DFO) demanded (March 2009) ₹ 1.38 crore from WRD for compensatory afforestation for seven years.

Scrutiny of records of Forest Department and DFO, Balaghat revealed that though the entire amount of ₹ 1.38 crore was deposited by WRD in August 2009, and final approval of GoI for land diversion was received in April 2010, the PCCF (CAMPA) did not commence the compensatory afforestation works. The project was included in the APO 2013-14 after delay of two years. Audit

<sup>65</sup> State CAMPA administers the amount received from the Adhoc CAMPA and utilise the monies collected for undertaking compensatory afforestation, conservation and protection of forests, wildlife conservation and protection and other related activities.

<sup>66</sup> Adhoc CAMPA was constituted by the Hon'ble Supreme Court of India vide order dated 5<sup>th</sup> May 2006 for management of monies received towards compensatory afforestation, net present value, etc.

noticed that sufficient funds were available in the account of State CAMPA during 2010-11 to 2012-13, ranging from ₹ 23.54 crore to ₹ 69.48 crore. The reasons for delayed inclusion of this project in APO, despite availability of funds in State CAMPA and deposit of money by the user agency (WRD), was not available in the records of the Department.

The DFO started the compensatory afforestation work for the project in the year 2014-15 and incurred ₹ 1.31 crore till October 2017. During the execution of works, the Chief Conservator of Forest revised (April 2016) the project cost to ₹ 3.63 crore for ten years compensatory afforestation in view of the labour rates notified for the year 2014 and 2015. Thus, delay in commencing the compensatory afforestation works led to increase in project cost by ₹ 2.00 crore<sup>67</sup>.

In the exit conference (December 2017) the ACS, Forest Department stated that the Department was not receiving adequate funds as and when demanded under 'Compensatory Afforestation'. Therefore, there was delay in taking up of such works and the taking up of work would have been delayed even if the project was included in APO 2010-11.

The reply is an afterthought and not acceptable, as no reasons were found recorded for exclusion of the compensatory afforestation works of Rajiv Sagar Irrigation Project (Bawanthadi) from the APO after its sanction by GoI. Further, the Department had savings ranging from ₹ 23.54 crore to ₹ 191.20 crore in State CAMPA account during 2010-11 to 2016-17. GoI had also been regularly observing that the Department was not utilising the funds released to it under 'Compensatory Afforestation' during the previous years.

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<sup>67</sup> As per revised estimate of May 2016, the cost of project was ₹ 3.63 crore for ten years which included ₹ 0.25 crore for last three years. Thus, the cost of project for seven years was ₹ 3.38 crore and the extra cost due to revised estimate = ₹ 3.38 crore – ₹ 1.38 crore = ₹ 2.00 crore.

**HORTICULTURE AND FOOD PROCESSING DEPARTMENT****3.2.2 Blocking of funds under horticulture schemes**

**Directorate of Horticulture and Farm Forestry released funds to implementing agencies for implementation of three horticulture schemes without assessing actual requirement of funds, which resulted in blocking of funds amounting to ₹ 10.63 crore as on March 2017, besides non-recovery of interest of ₹ 3.85 crore earned on unspent balances by these implementing agencies. On this being pointed out in Audit, Department recovered unspent amount of ₹ 8.92 crore from implementing agencies under two schemes.**

Directorate of Horticulture and Farm Forestry (Directorate) implemented two State schemes relating to food processing through Madhya Pradesh State Agro Industries Development Corporation Limited (MPSAIDC) and one scheme for development of cold chain infrastructure through Madhya Pradesh Agricultural Marketing Board. Audit scrutiny of implementation of these schemes revealed that funds were released under these schemes without assessing actual requirement of funds resulted in blocking of funds, as discussed in succeeding paragraphs:

- ***Scheme for Establishment of Fruit Based Wine/Food Park***

The Directorate released ₹ 5.04 crore (annual release of ₹ 72.00 lakh over 2008-15) to MPSAIDC towards development of necessary infrastructure<sup>68</sup> for fruit based wine/food park in the State under Public Private Partnership (PPP) model. Government of India also released (October 2010) ₹ 20.00 lakh to MPSAIDC for preparation of detailed project report (DPR) for food park. Out of these releases, MPSAIDC incurred ₹ 16.19 lakh (February 2010 and May 2010) on preparation of detailed project report (DPR), which was approved (July 2011) by State Level Empowered Committee. In the above context, the audit observed as follows:

- ❖ MPSAIDC selected three sites at Bhopal, Ratlam and Harda for the development of food park. However, no further progress was made under the scheme as no proposals were received for PPP. Finally, MPSAIDC informed (February 2014) the Directorate that there was no justification for development of food park in the changed scenario, as the Government was allotting land to industries for developing food processing units in industrial areas. However, Directorate did not take any decision on the continuance of scheme.
- ❖ During 2009-10 to 2015-16, MPSAIDC incurred expenditure of ₹ 31.83 lakh on preparation of DPR, printing of request for proposals, demarcation of boundary wall for the Ratlam food park, etc. As per the scheme guideline, MPSAIDC was required to submit the details of expenditure incurred after its certification by a Chartered Accountant. However, certified accounts of the expenditure under the scheme were not submitted to the Directorate.

On this being pointed out by Audit, MPSAIDC informed (May 2018) that the expenditure was not got certified by Chartered Accountant in view of less expenditure which was incurred through account payee cheque. The reply is not acceptable, as the non-submission of

<sup>68</sup> Cold storage, water treatment plant, godowns and milk chilling plants, etc.

certified accounts to the Directorate was in contravention of scheme guidelines.

Thus, Directorate released ₹ 5.04 crore to MPSAIDC from 2008-09 to 2014-15 without assessing the actual requirement of funds and available unutilised balance with MPSAIDC. Further audit scrutiny of records of MPSAIDC revealed that it was investing its excess funds in the form of fixed deposits in Banks and thus, earned interest ₹ 2.61 crore<sup>69</sup> on the cumulative outstanding balances of funds released by the Directorate between 2008-09 and 2016-17.

On this being pointed out in Audit, the unspent amount of ₹ 4.92 crore<sup>70</sup> was recovered by the Directorate in September 2017. However, the interest of ₹ 2.61 crore was not recovered.

The Horticulture and Food Processing Department stated (March 2018) that funds would be released in future for other projects.

Fact remains that the Directorate released funds under the scheme to MPSAIDC without ascertaining actual requirement of the fund resulting in blocking of funds, besides the interest of ₹ 2.61 crore on these excess releases had not been recovered.

- ***Scheme for Development of Food Processing Industries under Industrial Promotion Policy***

GoMP introduced (February 2008) scheme for development of Food Processing Industries under Industrial Promotion Policy 2004 for providing financial assistance to entrepreneurs engaged in food processing sector. MPSAIDC was appointed as the nodal agency for implementing this scheme. The entrepreneurs were required to apply to District Trade and Industries Centre (DTIC) and the assistance amount would be sanctioned after verification of proposal by a committee headed by District Collector. Sanctioned amount would be deposited in the account of applicant by DTIC after obtaining the amount from MPSAIDC.

Audit observed that the Directorate released funds to MPSAIDC every year in a routine manner, as detailed in **Appendix 3.2**. Out of 12.73 crore<sup>71</sup> released during the period 2008-17, the cumulative unspent balance at the end of each year ranged from ₹ 21 lakh to ₹ 7.51 crore. The entire release of ₹ 0.41 crore for SC category and ₹ 1.29 crore for ST category during the years 2008-16 remained unutilised as on March 2018, as DTIC could not identify the entrepreneurs under these categories. Further scrutiny revealed that Directorate did not monitor the scheme as MPSAIDC was not forwarding the monthly progress report as required under the scheme guidelines.

Thus, failure of the Directorate to take into account unutilised balance at the end of each year under the scheme led to accumulation of fund at the level of MPSAIDC. Since MPSAIDC was investing its excess fund in fixed deposits, the interest on the cumulative outstanding balances at end of each year during

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<sup>69</sup> Calculated on unutilised balances at the end of each year at the minimum rate of interest earned by MPSAIDC during the year.

<sup>70</sup> ₹ 4.92 crore includes an amount of ₹ 20.00 lakh provided by the GoI for preparation of DPR.

<sup>71</sup> ₹ 11.03 crore for General category, ₹ 0.41 crore for SC category and ₹ 1.29 crore for ST category.

2008-17 worked out to ₹ 1.24 crore<sup>72</sup>. The Directorate did not recover the unspent fund and interest thereon from MPSAIDC.

The Horticulture and Food Processing Department stated (March 2018) that MPSAIDC had been directed to refund the balance to the State Government.

- ***Promotion of Integrated Cold Chain Infrastructure Development under Post Harvest Management***

The scheme was introduced by GoMP in the year 2011-12 with an objective to develop integrated cold chain infrastructure under post-harvest management so as to increase shelf life of horticultural crops and to promote inter and intra state export which would enable the farmers to get right value for their horticulture crops. MP State Agricultural Marketing Board (Board) was appointed as the nodal agency for implementation of the scheme. As per scheme guidelines 75 per cent of unit cost was to be provided from the State plan head and remaining 25 per cent was to be borne by the Board. The inspection of units developed under scheme was to be done by the senior technical officers of the Department.

Audit scrutiny revealed that Directorate provided (March 2012) ₹ 50.00 lakh for preparation of detailed project report (DPR) on the basis of demand of the Board. The Directorate further released (June 2012) ₹ 3.50 crore for construction of cold chain infrastructure at Indore and Jabalpur without ensuring the status of preparation of DPR. Further scrutiny revealed that the Directorate did not follow up the matter with the Board and there was no record as to whether any expenditure was incurred by the Board on preparation of DPR and development of infrastructure.

The Horticulture and Food Processing Department replied (March 2018) that correspondence was being made with Board to refund the amount. The Directorate further informed (June 2018) that ₹ 4.00 crore had been returned by the Board in April 2018.

Thus, the progress of scheme was never watched by the Directorate after release of funds to the Board and the objective of the scheme to develop integrated cold chain infrastructure under post-harvest management could not be achieved. Besides ₹ 4.00 crore remained idle with the Board for six years.

### **3.2.3 Irregular release of funds**

**Directorate of Horticulture and Farm Forestry released excess financial assistance of ₹ one crore to MP State Co-operative Dairy Federation Limited (MPSCDFL) in violation of the guidelines of National Mission on Food Processing. Besides, the failure of the Directorate to ensure utilisation before release of subsequent instalments of financial assistance during March 2014 to May 2015 led to accretion of unutilised fund of ₹ 2.97 crore with MPSCDFL.**

National Mission on Food Processing (NMFP), a Centrally Sponsored Scheme, was launched by Government of India (GoI) during 12<sup>th</sup> Five Year Plan (2012-17) to promote technology up-gradation, establishment of food processing industries and establishment of preservation infrastructure for non-horticulture produce. As per the scheme guidelines (August 2012),

<sup>72</sup> Cumulative interest calculated on the basis of lowest rate of interest of each year earned by the MPSAIDC on fixed deposits from banks.

financial assistance at the rate of 50 per cent of the total project cost for development of infrastructure<sup>73</sup>, subject to maximum of ₹ 10 crore could be provided in three instalments to the individual entrepreneurs, partnership firms, registered society, co-operatives societies, companies and corporation. The guidelines of the scheme were revised in July 2013 and the quantum of assistance under the scheme was reduced to 35 per cent, subject to maximum of ₹ five crore. GoI further directed (July 2013) that applications received upto 31 March 2013 were to be sanctioned financial assistance according to pre-revised guidelines of August 2012.

Applicants seeking financial assistance were required to submit their applications to the Director of Horticulture and Farm Forestry Directorate with required documents and the Directorate would submit the same to State Level Empowered Committee (SLEC) for approval. After approval of SLEC, the Directorate would release the first instalment of grant to the applicants. The second and third instalments of grant was to be released only after submission of utilisation certificate indicating that the previous grants has been utilised. The Director of Horticulture and Farm Forestry Directorate (Directorate) was designated as the State Mission Director (SMD) and was responsible for execution of the scheme in the State.

Audit scrutiny revealed that SLEC approved (February 2014) financial assistance of ₹ 3.35 crore<sup>74</sup> to MPSCDFL<sup>75</sup>, being the 50 per cent of total project costs for establishment of cold chain, value addition and preservation infrastructure of non-horticulture produce in Indore and Bhopal. Accordingly, the Directorate disbursed (February 2014 to May 2015) financial assistance of ₹ 3.35 crore in three instalments for both projects. In this context, audit observed the following:

- The proposal for financial assistance under the NMFP was received in the Directorate from MPSCDFL in January 2014 and approved by SLEC in February 2014. Therefore, the projects were eligible for 35 per cent financial assistance in view of revised NMFP guidelines issued in July 2013. Thus, failure of the Directorate to comply with the revised guidelines of NMFP resulted in granting of excess financial assistance of ₹ 1.00 crore to MPSCDFL.
- The Directorate released (March 2014) the second instalment of ₹ 83.83 lakh (Bhopal Project: ₹ 33.83 lakh and Indore Project: ₹ 50 lakh) without submission of utilisation certificate from MPSCDFL for the first instalment (February 2014) of ₹ 83.83 lakh (Bhopal Project: ₹ 33.83 lakh and Indore Project: ₹ 50 lakh). Similarly, the third instalments of ₹ 0.68 crore for Bhopal project and ₹ 1.00 crore for Indore project were released in May 2015 without submission of utilisation certificates from MPSCDFL for previous grants, which was in violation of NMFP guidelines. MPSCDFL informed (January 2018) Audit that the Indore project was in tendering stage. Further, MPSCDFL could utilise ₹ 38.42 lakh on Bhopal project till November 2017. Thus, the release of second and third instalments of ₹ 2.51 crore to MPSCDFL

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<sup>73</sup> Cold chain, value addition and preservation infrastructure of non-horticultural produce.

<sup>74</sup> ₹ 2.00 crore for Indore project and ₹ 1.35 crore for Bhopal project.

<sup>75</sup> MPSCDFL is a registered co-operative society registered under MP Cooperative Act, 1960. The share capital of Government of India is 6.93 per cent and State Government is 49.21 per cent.

was premature, as entire released fund of ₹ 2.00 crore for Indore project and ₹ 0.97 crore for Bhopal project remained unutilised as on January 2018.

- Physical verification and concurrent evaluation as per the scheme guidelines was not conducted by the SMD at any stage of the project work and the status of project was not ascertained at Directorate level.

In the exit conference (January 2018) Principal Secretary, Horticulture and Food Processing stated that on the date of approval from SLEC the applicable rates should have been considered, but being a Government Agency, relaxation was accorded. Later on, the Government replied (March 2018) that the original proposals of Bhopal and Indore projects were received before 14 March 2013, and revised proposals were received on 08 January 2014 and 19 December 2013 respectively which were under process for sanction. Further, a committee under the chairmanship of Additional Director were also formed (March 2017) for physical verification, which was still in progress.

The reply is an afterthought and is not acceptable, as there was no documentary evidence available either for receipt of application before 14 March 2013 or for sanction of relaxation for financial assistance. It was also confirmed by the Directorate (May 2018) that the original proposals of MPSCDFL, for Bhopal and Indore projects, received before March 2013 were not available. Moreover, pre-mature release of second and third instalments to MPSCDFL resulted in accumulation of ₹ 2.97 crore with MPSCDFL.



## NARMADA VALLEY DEVELOPMENT DEPARTMENT

### 3.2.4 Non-imposition of penalty for delays and irregular payment of mobilisation advance

**In the work of Nagod branch canal with distributary systems, Narmada Valley Development Authority did not impose penalty of ₹ 13.14 crore for delays attributable to the contractor. The contractor was also granted mobilisation advance of ₹ 2.30 crore in violation of the agreement, besides the interest of ₹ 2.17 crore on mobilisation advance was also not recovered.**

Narmada Valley Development Authority (NVDA) awarded (May 2012) the work of Nagod (Satna) branch canal with distributary systems from RD km 33.30 to RD km 55.60 under the Bargi Diversion Project on turnkey contract basis to a contractor<sup>76</sup> at a cost of ₹ 131.43 crore with the condition to complete work within 30 months (November 2014). The financial progress in the work was ₹ 18.85 crore up to November 2014 and ₹ 34.70 crore up to November 2016. No further payment was made thereafter.

Scrutiny of records (March 2017) of Executive Engineer (EE), Narmada Development Division No.7, Satna revealed the following:

#### *Non-imposition of penalty*

- As per Clause 115.1 of the agreement, in the event of any shortfall in financial progress of work by more than 10 *per cent* of the respective six month slab, penalty<sup>77</sup> for delays shall be imposed on the contractor at rate of 0.2 *per cent* per week of initial contract value till shortfall is made up and shall be deducted from the intermediate payments. Delay in completion of work beyond 25 *per cent* of initial contract period due to contractor's fault may cause for termination of the contract and forfeiture of all security deposit and performance securities.

Scrutiny of records revealed that the financial progress in the work was 14.34 *per cent* during the agreement period. Due to slow progress in work attributable to contractor, penalty at the rate of 0.2 *per cent* per week was imposed (November 2014). Subsequently, EE proposed (February 2015) for exemption of penalty on appeal of contractor for waving off the penalty as contractor is partially responsible for delay. However, in the analysis of reasons for delays in works submitted (July 2015) to Chief Engineer (CE), Superintendent Engineer (SE) concluded that contractor was responsible for delay in execution of works. The component wise delays attributable to contractor were – delay in preparation and submission of land acquisition cases (18 months), delay in submission of drawings and designs (12 months), delay in execution of earth work (18 months) and delay in construction of structures (23 months). This analysis was forwarded (July 2015) by CE to NVDA for approval of the time extension reserving the right to impose the penalty and also with the recommendation to keep in abeyance the penalty imposed on the contractor.

Audit observed that NVDA granted (18 August 2015) the first time extension from November 2014 to November 2016 with the condition that the

<sup>76</sup> M/s. Ramkey Infrastructure Limited, Hyderabad

<sup>77</sup> At the rate of 0.2 *per cent* per week of initial contract value, limiting the cumulative penalty to 10 *per cent* of the contract value

Department reserved the right to impose the penalty and no price escalation was payable on the works executed during the first time extension. NVDA also ordered recovery of 0.2 *per cent* of additional security deposit from the contractor. However, for reasons not on record, NVDA did not impose penalty on the contractor and ignored the substantial delays attributable to contractor. Non-imposition of penalty of ₹ 13.14 crore<sup>78</sup> for delays attributable to contractor at the time of granting first time extension resulted in undue benefit of ₹ 11.55 crore<sup>79</sup> to the contractor.

#### ***Irregular payment of mobilisation advance and delayed recovery***

- As per Clause 113.6 (A) of the contract, mobilisation advance not exceeding five *per cent* of the contract price shall be paid to contractor during the first twelve months from the date of work order. The first instalment (maximum of two *per cent*) of contract price will be paid within seven days of the date of work order and subsequent instalments were payable on furnishing proof of having incurred adequate expenditure towards mobilisation.

Clause 113.6 (B) further stipulates that the deductions of mobilisation advance shall be made after payment of 10 *per cent* of contract value or on completion of 20 *per cent* of initial contract period (six months), whichever is earlier, so that full recovery to be effected before completion of 80 *per cent* of initial contract period (24 months). As per Clause 113.6 (E) (ii) (b), if completion period is extended due to fault on the part of the contractor, then interest<sup>80</sup> will be charged on the amount of the advances pending recovery.

Audit observed that the contractor was paid mobilisation advance of ₹ 6.57 crore in four instalments as given in **Table No. 3.2.1**.

**Table 3.2.1: Mobilisation advance paid to the contractor**

(₹ in lakh)

Date of payment of mobilisation advance	Amount of mobilisation advance paid	Percentage of mobilisation advance paid	Amount for which utilisation submitted	Date of utilisation certificate
30.05.2012	262.86	2 <i>per cent</i>	Not applicable	
14.09.2012	164.29	1.25 <i>per cent</i>	310.00	10.09.2012
09.11.2012	131.43	1 <i>per cent</i>	Not submitted	
14.08.2013	98.57	0.75 <i>per cent</i>	150.00	14.08.2013
<b>Total</b>	<b>657.15</b>	<b>5 <i>per cent</i></b>	<b>460.00</b>	

As detailed above, the third instalment of mobilisation advance of ₹ 1.31 crore was paid without furnishing any proof of having incurred adequate expenditure towards mobilisation. Subsequent payment of fourth instalment of ₹ 98.57 lakh was paid after 12 months from the date of work order, which was in violation of the terms and conditions of contract. Besides, the release of fourth instalment was also not justified in view of available balance of ₹ 98.58 lakh with the contractor against earlier released mobilisation advance.

<sup>78</sup> 10 *per cent* of ₹ 131.43 crore (contract amount) being the maximum leviable under clause 115.1 of the agreement.

<sup>79</sup> ₹ 13.14 crore *minus* ₹ 1.59 crore (recovered as extra deposit for delay recovered during the period June 2014 to November 2016).

<sup>80</sup> At the rate of Prime Lending Rate (PLR) of State Bank of India on the date of floating the tender (March 2011) plus three *per cent* i.e. at the rate of 16 *per cent* per annum.

Thus, SE and EE made irregular payment of the third and fourth instalments of mobilisation advance ₹ 2.30 crore to the contractor.

Audit further observed that against ₹ 6.57 crore mobilisation advance paid, NVDA could recover ₹ 3.18 crore only up to last running account bill (November 2016). Thus, mobilisation advance of ₹ 3.39 crore remained unrecovered. The interest of ₹ 2.17 crore leviable<sup>81</sup> on unrecovered mobilisation advance was also not recovered (March 2018), as detailed in **Appendix 3.3**. Thus, failure of EE to recover the interest on mobilisation advance resulted in undue financial benefit to the contractor.

On this being pointed out, the Narmada Valley Development Department stated (August 2017) that mobilisation advance would be recovered, with the progress of work. Besides, the decision on extension was under consideration, the interest on balance would be recovered, if required.

The matter was again referred to the Government (February 2018) and the reply was awaited. However, examination of further information from EE (May 2018 and June 2018) revealed that the contract was terminated by SE in March 2018. While NVDA invoked (February 2018) the Bank Guarantee of ₹ 6.57 crore against the mobilisation advance, it came to notice that City Civil Court Hyderabad vide its order dated 20 August 2015 had imposed restriction on invoking bank guarantee and prohibited any coercive action against the contractor. Thus, the recovery of outstanding mobilisation advance and interest became uncertain.

## WATER RESOURCES DEPARTMENT

### 3.2.5 Extra cost due to award of work to ineligible contractor

**Failure of the CE (Dhasan Ken Kachar, Sagar) in complying with the instructions of Major Project Control Board for verification of pre-qualification documents led to entering into agreement with an ineligible contractor for construction of earthen dam of Pawai Medium Irrigation Project. The agreement was subsequently terminated and re-tendering of the work resulted in extra cost of ₹ 11.08 crore, out of which extra cost of ₹ 7.47 crore was already incurred on the work as on March 2018.**

In order to reduce the time lag and simplify the procedure of tendering, Water Resources Department (WRD) introduced (2011) the process of centralised tender processing through e-tendering for which a Tender Cell, headed by CE (Procurement) was established in the office of Engineer-in-Chief. As per the prescribed procedure for e-tendering, the data, document and affidavit were to be uploaded by bidder through digital signature and only these documents were to be considered while finalising the bidder's eligibility for the tender. These documents may be verified, if required. However, the technical offers of contractors may be accepted without waiting for the result of document verification, unless other bidders participating in the bid complained that a particular contractor had submitted incorrect information. The financial bid of technically qualified bidders were to be accepted by an empowered

<sup>81</sup> There was a delay of five months and six days on the part of Department. Thus the interest on mobilisation advance was calculated after 80 per cent of initial contract period (16 May 2014) plus five months and six days i.e., from 23 October 2014.

committee<sup>82</sup>.

WRD invited (August 2013) e-tender for the work of construction of earthen dam of Pawai Medium Irrigation Project with estimated cost of ₹ 64.13 crore. Out of three bidders, the offer of L-1 bidder (M/s Rajkamal Builders Pvt. Ltd.) for ₹ 67.24 crore<sup>83</sup> was accepted (September 2013) by the empowered committee<sup>84</sup> of Major Project Control Board (MPCB<sup>85</sup>). Accordingly, the agreement was executed and work order was issued (27 September 2013) by Executive Engineer (EE), Water Resources Division, Pawai, Panna.

Audit scrutiny of records of EE, Pawai, Panna revealed that the eligibility certificate of the contractor was got verified (February 2014) by EE, Pawai, as WRD had found (February 2014) the eligibility certificate of M/s Rajkamal Builders to be fake in another work of Mohanpura Dam. Subsequently the eligibility certificate submitted for Pawai Dam work was also found fake (March 2014). Therefore, the contract was terminated (April 2014) by the EE. The earnest money and performance security of the contractor amounting to ₹ 1.00 crore was forfeited.

Further scrutiny revealed that the sanction communicated (September 2013) by MPCB for acceptance of tender had specifically directed the CE, Dhasan Ken Kachar, WRD, Sagar to verify pre-qualification documents<sup>86</sup> submitted by the contractor in all respect before entering into the agreement. However, CE (Dhasan Ken Kachar) did not conduct any verification before execution of the agreement with M/s Rajkamal Builders.

CE (Procurement) informed (November 2017) Audit that in view of the affidavits of bidders, the information submitted by them were considered as correct and price bid was accepted. CE (Procurement) further stated that CE (Dhasan Ken Kachar) was directed to verify the documents. Thus, neither CE (Procurement) nor CE (Dhasan Ken Kachar) verified the documents submitted by the bidder before entering into agreement with M/s Rajkamal Builders.

The contractor had not executed any work at the time of termination and no payment was made. For rearranging the work, fresh tender was invited in December 2014 and Department awarded (March 2015) the work to another contractor at a cost of ₹ 79.13 crore, which was 14.45 *per cent* above estimated cost (USR 2009).

Had the instruction of MPCB been followed by the CE (Dhasan Ken Kachar), the L-1 contractor would have been ineligible for the agreement and work would have been awarded to L-2 contractor who had quoted ₹ 68.05 crore<sup>87</sup>. Thus, the failure of CE (Dhasan Ken Kachar) to verify the pre-qualification

<sup>82</sup> For estimated cost of work between ₹ 20 lakh and ₹ 7.50 crore by the empowered committee is headed by Engineer-in-Chief, WRD. For estimated cost of work above ₹ 7.50 crore, the empowered committee is constituted at State Government level.

<sup>83</sup> L-1 (4.85 *per cent* above), L-2 (6.12 *per cent* above) and L-3 (12 *per cent* above) the estimated cost at Unified Schedule of Rates (USR) 2009 issued by WRD.

<sup>84</sup> The meetings of *Sadhikar Samiti* (empowered committee) was attended by Additional Chief Secretary, Food, Civil Supplies and Consumer Protection; Principal Secretary, Planning Department, Principal Secretary, WRD/Narmada Valley Development Department; Secretary, Department of Finance; CE, BODHI, WRD.

<sup>85</sup> MPCB, presided by Chief Minister, is a control board for execution of major irrigation multipurpose projects of the State selected by the State Government.

<sup>86</sup> Pre-qualification documents included details of contractor's eligibility in respect of experience, financial and physical turnover etc.

<sup>87</sup> 6.12 *per cent* above USR 2009.

documents of M/s Rajkamal Builders before entering into agreement led to extra cost of ₹ 11.08 crore<sup>88</sup>. The new contractor has executed the work amounting to ₹ 116.36 crore up to 35<sup>th</sup> running account bill so far (March 2018). As a result, the extra cost on work as on March 2018 was ₹ 7.47 crore<sup>89</sup> excluding the forfeited deposits ₹ 1.00 crore of the contractor.

On this being pointed out, WRD stated (March 2018) that for the purpose of simplification of the procedure in e-tendering, the correctness of documents and affidavits submitted by bidders were accepted. There was no case of incorrect certificates submitted by bidder, except this case pointed out by Audit. After termination of the agreement with M/s Rajkamal Builders, the tenders were invited in May 2014, June 2014 and August 2014. However, these tenders were cancelled due to receipt of bids at high rates or lack of competitiveness. The estimated cost of the work was revised in February 2015 and the bid of another contractor, M/s Sarthi Constructions Private Limited, amounting to ₹ 79.13 crore was accepted. WRD further stated that the extra cost computed by Audit was imaginary, as tenders invited at different point of time had been compared.

The reply is not acceptable, as Audit has compared the bids of L1 (M/s Rajkamal Builders) with L2 of the same tender process. Further, the failure of CE (Dhasan Ken Kachar) to comply with the direction of MPCB for examination of pre-qualification bid of M/s Rajkamal Builders led to entering into agreement with ineligible contractor. As a result, the contract could not be awarded to the second lowest bidder, which resulted in extra cost of ₹ 11.08 crore for construction of Pawai Dam as L2 of the first estimate was better than L1 of the revised estimate.

### **3.2.6 Extra cost in canal works of Pawai Medium Irrigation Project**

WRD awarded (September 2013) the work for construction of complete canal system including earth work, structure and lining of Pawai Medium Irrigation Project to a contractor at a cost of ₹ 74.21 crore (7.02 per cent above the estimates). The work was to be completed by September 2015. Time extension up to October 2017 was granted (November 2016) by CE, Dhasan Ken Kachhar, Sagar under force majeure clause. Further, time extension was under process (March 2018) in the office of Superintending Engineer.

Compliance audit of office of EE, Water Resources Division, Pawai, Panna district revealed the following:

#### **3.2.6.1 Extra cost due to failure of EE to ensure rectification in bill of quantity**

**Failure of EE, Pawai to ensure rectification in the bill of quantity (G-schedule of the contract) before entering into agreement resulted in extra cost of ₹ 1.34 crore on execution of M-10 grade canal lining which was paid at the higher rate applicable for M-15 grade canal lining.**

Audit noticed that the estimated cost of ₹ 69.34 crore for the canal work

<sup>88</sup> Cost of second tender ₹ 79.13 crore minus ₹ 68.05 crore (quoted rate of second lowest bidder in first tender).

<sup>89</sup> = ₹ 116.36 crore – {₹ 116.36 crore × 106.12/114.45} (as tender of L-2 bidder in first tender was 6.12 per cent above estimated rate and of new contractor was 14.45 per cent above estimate rate) - ₹ 1.00 crore (forfeited amount of earnest money and the performance security of contractor).

the estimated cost of ₹ 15.78 crore for M-15 grade (1:2:4)<sup>90</sup> Cement Concrete (CC) canal lining at the rate of ₹ 3836.72 per cubic metre (cum). However, the mixture for M-15 grade was incorrectly mentioned in the G-schedule (bill of quantity) of the published NIT (15 June 2013) as 1:3:6 (M-10) CC mix. Later on, EE Pawai requested (25 June 2013) CE (Procurement) for rectification of this mistake in the G-schedule of published NIT in departmental website, which was corrected in the NIT by CE (Procurement). However, the same EE, while executing the agreement (September 2013), did not ensure rectification of this mistake in G-schedule forming part of the agreement.

Consequently, the agreement for the construction of canal works provided for the execution of 41,123 cubic metre (cum) of canal lining in 1:3:6 CC mix. However, the payment was made for this item as rate applicable to 1:2:4 CC mix due to incorrect G-schedule of the agreement. This resulted in extra cost of ₹ 1.34 crore<sup>91</sup> on 16,329.41 cum of executed works till 48<sup>th</sup> running bill (June 2017).

Further scrutiny revealed that the discharge of Pawai canal was ranging from 8.65 to 9.96 cubic metre per second (cumec) and water depth was ranging from 1.95 to 2.0 metre. The Unified Schedule of Rates (USR) 2009 provided for 1:2:4 CC lining in case of canals having more than three cumec discharge with water depth more than one metre. Therefore, the execution of canal lining with 1:3:6 CC mix also resulted in substandard canal lining<sup>92</sup>.

On this being pointed out, WRD stated (March 2018) that the provision for M-10 CC lining was made in the G-schedule of the agreement and the payment was made to the contractor accordingly. It further stated that there was no effect on quoted rate due to any discrepancy in estimated rates.

The reply is not acceptable, as the agreement was entered into without rectification of mistake with reference to grade of CC lining in the G-Schedule though it was corrected in the NIT. This resulted in substandard CC lining and extra cost of ₹ 1.34 crore due to payment to contractor at a higher rate applicable for M-15 (1:2:4) grade CC lining, whereas the work actually executed was M-10 grade (1:3:6) CC lining.

### 3.2.6.2 Extra cost due to incorrect estimates of work

**Failure of Chief Engineer (Dhasan Ken Kachar, Sagar) to finalise technical estimates of the canal works before publishing NIT resulted in substantial increase in the estimated quantity during execution of works. A portion of the work was subsequently withdrawn from the contractor and re-awarded to another contractor at higher cost resulting in extra contractual obligation of ₹ 6.49 crore.**

According to para 2.028 of the Madhya Pradesh Works Department (MPWD) Manual, an officer according the technical sanction to an estimate is

<sup>90</sup> The grades of cement concrete indicate the designed compressive strength of cast in situ lining work. The nominal mix strength of M 15 is equivalent to 1:2:4 of cement, sand and metal whose strength is equal to 150 kg per square cm. For M 10 grade, the nominal mix is 1:3:6 whose compressive strength is not less than 100 kg per square cm.

<sup>91</sup> {₹ 3,836.72 (clubbed rate with M-15 CC) - ₹ 3,068.07 (clubbed rate with CC lining M-10)} = ₹ 768.65 × 16,329.41 cum plus 7.02 (tender percentage) = ₹ 1.34 crore

<sup>92</sup> M10 (1:3:6) CC lining is to be done for canal having discharge up to three cumec and less and depth of water less than one metre.

responsible for incorporating all the items required for inclusion in the estimate with reference to the drawing.

Audit noticed that the technical sanction of the estimated cost for the canal work was approved (January 2012) by CE Dhasan Ken Kachar, Sagar for ₹ 69.34 crore without finalisation of drawings and design of structures in the canal. The work was awarded (September 2013) to the contractor for ₹ 74.21 crore<sup>93</sup>. While the work was in progress (32 *per cent*), the Engineer-in-Chief (E-in-C) noticed (February 2015) during a meeting with representatives of the contractor that the estimated quantity of work was very less as compared to the actual work to be executed and the work would cost ₹ 128 crore as against the contract value of ₹ 74 crore.

Further scrutiny of records revealed abnormal increase in the quantities of various items of work, such as excavation (107 *per cent*), earth work (73 *per cent*), RCC works (137 *per cent*) and steel works (598 *per cent*). EE attributed (October 2017) these variations to increase in number of structures and change in bed width of canal after award of work. The reply is not acceptable, as these increase in quantity of works was due to failure of Sub Divisional Officer, EE, SE and CE to finalise the drawings and design of structures in the technical sanction.

In view of substantial increase in the cost of work, E-in-C directed (March 2015) the Superintending Engineer, Chhatarpur to withdraw a portion of work<sup>94</sup> from the contractor and invite separate tender for the same. Departmental enquiry was also ordered (March 2015) for negligence in preparation of the estimated cost of the work. The withdrawn work (estimated cost of ₹ 59.91 crore) was awarded (September 2015) to another contractor at a cost of ₹ 70.63 crore.

Thus, the overall contract amount of Pawai Medium Irrigation Project became ₹ 144.93 crore, which was 12.04 *per cent* above the estimated cost of ₹ 129.35 crore<sup>95</sup> (USR 2009) as against initial agreement with the original contractor at 7.02 *per cent* above the estimates (USR 2009). On this being pointed out by Audit, CE attributed (July 2017) the higher rate in case of withdrawn work to increase in rates of material, labour and machinery due to passage of two years after the previous NIT for the work.

The reply is not acceptable. The failure of CE to finalise technical estimates before publishing NIT led to extra contractual obligation of ₹ 6.49 crore<sup>96</sup> on the work, as it had to withdraw a portion of the work from the contractor after two years of agreement and the withdrawn work was subsequently awarded to another contractor at higher rate. Out of this, extra cost of ₹ 2.70 crore<sup>97</sup> was already incurred till 14<sup>th</sup> running bill of the second contractor (September 2017). Further, no departmental enquiry was initiated

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<sup>93</sup> 7.02 *per cent* above the estimated cost of ₹ 69.34 crore at USR 2009 of WRD.

<sup>94</sup> Feeder Canal from RD km 0.00 to RD km 11.95, Narainpura Minor, etc.

<sup>95</sup> Estimated cost of work (as per revised estimate) with first contractor (₹ 69.44 crore) plus estimated cost of work with second contractor (₹ 59.91 crore).

<sup>96</sup> Average tender *per cent* 12.04 minus 7.02 tender *per cent* of first work=5.02 *per cent* of total cost of work ₹ 129.35 crore.

<sup>97</sup> Difference of tender *per cent* of first work (7.02 *per cent* above) and tender *per cent* of second work (17.89 *per cent* above) = 10.87 *per cent* {₹ 59.91 crore (estimated cost of second work) × ₹ 29.28 crore (up to date payment of second work)/ ₹ 70.63 crore (contract cost of second work)}.

(as of January 2018) for fixing accountability for the negligence in preparation of estimate. On this being pointed out in Audit, E-in-C directed (January 2018) CE, Dhasan Ken Kachar, Sagar to examine the matter and fix the accountability.

The matter was referred to the Government (June 2017), and their reply was awaited (May 2018).

### **3.2.7 Extra cost due to application of incorrect rates for earth work**

#### **Adoption of incorrect rates for earth work of canal with lead resulted in extra cost of ₹ 7.05 crore on works of cement concrete lining of Tawa Project and Barna Project.**

A. WRD awarded (March 2014) the works of “cement concrete lining with paver machine” under Tawa Project for ₹ 89.97 crore, to be completed by March 2016.

As per item 415 (C) of USR 2009 of WRD (as amended in January 2010), the rates for earth work for maintenance and repairs, on bunds and on canal banks<sup>98</sup> including all lifts and lead is ₹ 38 per cubic metre.

Scrutiny of the records of CE, WRD, Hoshangabad revealed that the estimate of earth work was prepared<sup>99</sup> with the provision of excavation (USR 2009 item no. 401 b) and transportation of soil from spoil banks<sup>100</sup> with average lead<sup>101</sup> of 1.5 km (USR item 2903). As a result, the rate for execution of earth work was worked out to ₹ 73.18 per cubic metre, whereas the rate for this composite item in the USR {item no. 415 (C)} was only ₹ 38 per cum. Thus, adoption of incorrect rate in estimate and tender resulted in extra cost of ₹ 3.33 crore as detailed in **Appendix 3.4**.

On this being pointed out, the WRD stated (January 2018) that the canal was 42 years old and therefore canal section increased from 24.47 metre to 25.27 metre. Canal section was constructed in partial filling and cutting to bring the inner slope of canal section in designed section. As the earth was not available in filling reaches, earth was transported from spoil banks and provision for transportation of earth was made.

The reply is not acceptable, as the renovation of the widened canal section in Tawa Project was of the nature of repair and maintenance of canal and item 415 (C) of USR (as amended in January 2010) provides composite rate of earth work for repair and maintenance of canal including all transportation cost.

The matter was again referred to Government (February 2018); their reply was awaited (April 2018).

<sup>98</sup> In hearting or casing with approved soils, including dressing breaking of clods, cutting and finishing in required bed grade and side slopes of bund and canal.

<sup>99</sup> The estimate was prepared by EE, recommended by SE and sanctioned by CE.

<sup>100</sup> Surplus material from excavation is deposited outside on one or both side of the canal banks to form spoil banks.

<sup>101</sup> As per para 1.3 of subhead 1.0 of CPWD specifications, lead is the distance of carriage measured over the shortest practical route or route approved by Engineer-in-Charge along with the reasons.



**B.** WRD awarded (September 2013) the works of “renovation of existing canal lining, construction of CC lining, remodeling and raising of canal banks of Combined Main Canal (CMC) and Left Bank Main Canal (LBMC) and construction of service road over CMC and LBMC” of Barna Project for ₹ 32.18 crore.

As per item 415 (A) of USR of the WRD (as amended in January 2010), the rate for earth work for bunds is ranged from ₹ 31 to ₹ 64 per cubic metre depending upon distance of transportation of soil.

Scrutiny of the records of EE, Barna LBC Division, Bari, District Raisen revealed that the clubbed rate of earth work was prepared<sup>102</sup> with the provision of excavation (USR 2009 item no. 401 b) and transportation of soil with lead of 0.50 km to two km (USR 2009 item no 2903). Since the composite rate for the earth work was already available in the USR {item 415 (A) of USR}, the preparation of different clubbed rate for this item was incorrect and it resulted in extra cost of ₹ 3.72 crore to Government, as detailed in **Appendix 3.5**.

On this being pointed out, the Government stated (January 2018) that the work of raising of existing canal bank and renovation and strengthening of bank was carried out for increasing the discharge capacity of canal for additional 10,000 hectare command area. Item No. 415 (C) was applicable for construction of new canal. Excavated earth from housing was not sufficient for raising of canal banks and outer slope of canal. Maximum filling quantity is carried out from borrow area. The excess earth was not available nearby so the required earth was transported from borrow area for raising of canal banks. In canal excavation, the earth excavated from surplus reaches were utilised in adjoining deficit reaches so that the land acquisition for disposal of surplus earth and borrow area in deficit reaches was reduced to minimum. The average distance from borrow area to both ends of canal was approximately 7.45 kilometre. The Technical Sanction (TS) was accorded (February 2013) with consideration of USR 2009 for transportation of material beyond free lead. The lowest rate for earth work was as per TS accorded and the maximum of two km of lead was provided.

The reply is not acceptable, as item No.415 (C) of USR 2009 is applicable for earth work for maintenance and repairs on canal banks and not on construction of new canal. Further, item 415 (A) of USR, which provides a composite rate for earth work including all transportation cost of soil in case of new canal work, was applicable in this case as the work of raising of existing canal bank and renovation and strengthening of bank was carried out for increasing the discharge capacity of canal. Moreover, Audit has worked out the rate of earth work under item 415 (A) of USR with lift and lead beyond two kilometre, which is higher (₹ 64 per cum) than the rate payable for earth work (₹ 38 per cum) under item 415 (C) of USR.

The matter was again referred to the Government (February 2018); their reply was awaited (May 2018).

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<sup>102</sup> The estimate was prepared by EE, recommended by SE and sanctioned by CE.

### 3.2.8 Irregular payment to contractor

**Executive Engineer, Keoti Canal Division, Rewa did not regulate payment to the contractor as per the payment schedule under the agreement for construction of Bahuti canal, which resulted in irregular payment of ₹ 153.25 crore to the contractor without achieving milestones for creation of irrigation potential.**

The Department awarded (September 2013) the works of construction of Bahuti canal, which is off taking from Bansagar Dam, to a contractor for ₹ 428 crore on turnkey contract basis. The scope of work included completion and commissioning of earthen canal system and its distribution network from RD km 18.00 to RD km 74.00 (excluding tunnel portion) and lining of main canal and all distributaries, minor and sub-minors up to one cumec<sup>103</sup>. The work was scheduled to be completed by September 2016.

The work was divided into four milestones. Clause 12 of the Notice Inviting Tender (NIT), which was part of the contract and Section VI (milestone schedule) of the contract stipulated that the turnkey contractor as a milestone must ensure the planning of the construction of main canal, its distributaries and minors along with structure in such a way that by the end of second milestone of stipulated period about 35,000 hectares of command is fully developed, excluding lining. Similarly, by the end of third milestone, remaining 30,000 hectares of command is developed in all respects excluding lining of the third milestone but including lining work for second milestone. At the end of fourth milestone, all canal systems should be completed including lining of 30,000 hectares in all respects. The payment schedule (Appendix F of the contract) was also linked to phase wise development of command area of Bahuti canal, as detailed in **Table 3.2.2**.

**Table 3.2.2: Payment schedule for construction of Bahuti canal**

Stages of payments	Details of works to be executed	Percentage of bid amount
First stage	After survey, fixing alignment, design-drawing, etc.	one (revised by CE to two <i>per cent</i> in October 2014)
Second stage	After development of command area of 20,000 hectare complete in all respects by constructing complete canal system	25
Third stage	After development of command area of 20,000 hectare complete in all respects by constructing complete canal system	30
Fourth stage	After development of command area of 24,910 hectare complete in all respects by constructing complete canal system	39
Fifth stage	After commissioning and trial of constructed system and after defect liability period is over	five (revised by CE to four <i>per cent</i> in October 2014)

<sup>103</sup> Cubic metre per second (cumec) is the unit of discharge of water.

Scrutiny of records of Executive Engineer (EE), Keoti Canal Division, Rewa revealed that contractor could achieve only 35 *per cent* of physical progress by the end of stipulated completion date. The contractor was granted (November 2016) time extension up to December 2017 after reserving the right to impose penalty, as the grounds on which time extension was sought by contractor was not considered justifiable. However, none of the milestones was achieved till January 2018. The contractor was granted (April 2018) further time extension up to December 2018 after reserving right to impose penalty.

Further scrutiny revealed that the works of second milestone was commenced in January 2014. Subsequently, the works of third and fourth milestones were taken up in March 2015 without developing any command area under second milestone. At the time of commencement of the work of third and fourth milestones, 8.095 km of main canal (47 *per cent*) and 2.619 km of distributary/minor/sub-minors (one *per cent*) of second milestone were executed. The reason for such scattered execution of canal works, which was contrary to the stipulation of the agreement, and the authority which allowed to execute the works of second and third milestone were not available on record. Audit noticed that EE made payments to the contractor for canal works executed under each milestone, as detailed in the **Table 3.2.3**.

**Table 3.2.3: Status of works under Bahuti canal as on January 2018**

Stages of payments	Main canal (km)		Distribution system (km)		Payment made (₹ in crore)
	Designed	Achieved	Designed	Achieved	
First stage	survey, fixing alignment, design-drawing, etc.				7.92
Second stage	17.23	14.66	226.01	11.36	57.49
Third stage	17.23	15.18	226.01	61.55	82.80
Fourth stage	21.54	19.04	280.90	73.12	101.05

Thus, EE did not link payment to the contractor with the achievement of command area, as prescribed under the payment schedule of the contract. On this being pointed out, EE cited (June 2018) a letter from Chief Engineer (CE) (May 2017) providing the approval of payments for work done in subsequent milestones without achieving the first milestone. However, examination of the said letter revealed that CE had directed the EE to regulate payment as per payment schedule (Appendix F). Moreover, clause 16 of the agreement specifically provided that CE had no authority to amend the contract and the payment schedule (Appendix F) was the integral part of the contract. Thus, the reply of the EE is not acceptable.

The contractor was paid ₹ 249.26 crore (58 *per cent* of contract value) till January 2018 without even achieving second milestone of 20,000 hectare up to which only 26 *per cent* of contract amount was payable as per contract provisions. Keeping in view the creation of 14,800 hectare irrigation potential (22.80 *per cent*) as on January 2018, the contractor was eligible for payment of ₹ 96.01 crore<sup>104</sup>.

<sup>104</sup> ₹ 4.28 crore (for survey and investigation) + ₹ 91.73 crore (22.80 *per cent* of total payable amount of ₹ 402.32 crore for creation of irrigation potential of 64,910 hectares).

Thus, the failure of EE to adhere to the payment schedule of the contract resulted in irregular payment of ₹ 153.25 crore. This also defeated the objective of phase wise development of command area of Bahuti Canal and the expenditure on construction of main canal and distribution network remained unfruitful due to non-creation of irrigation potential.

The matter was referred to the Government (June 2017); their reply was awaited (May 2018).



**Bhopal**  
**The 18 August 2018**

**(BHAWANI SHANKAR)**  
**Accountant General**  
**(Economic and Revenue Sector Audit)**  
**Madhya Pradesh**

**Countersigned**



**New Delhi**  
**The 21 August 2018**

**(RAJIV MEHRISHI)**  
**Comptroller and Auditor General of India**

# Appendices

## Appendix 2.1

## Turnkey contracts and consultancy contracts for execution of works under OSP (canals)

(Reference: Paragraphs 2.1.5 and 2.1.7.1, Pages 7 and 9)

(₹ in crore)

Sl. No.	Name of Division	Name of Work	Agreement no.	Contract amount	Scheduled completion dates
<b>Turnkey Construction Contracts</b>					
1	Division 32, Barwaha and Division 8, Sanawad	Construction of OSP (canals) Phase-I on turnkey basis	01/2006-07	177.99	02.11.2008
2	Division 20, Mandleshwar	Construction of OSP (canals) Phase-II on turnkey basis	16/2007-08	193.00	26.09.2010
3	Division 30, Manawar	Construction of OSP (canals) Phase-III on turnkey basis	14/2007-08	310.20	27.02.2011
4	OSP Division, Dhamnod	Construction of OSP (canals) Phase-IV on turnkey basis from RD 0 to 58.281 km (Group-I)	15/2010-11	519.93	25.03.2014
5	Division 30, Manawar	Construction of OSP (canals) Phase-IV on turnkey basis from RD 58.281 km to 125 km (Group-II)	16/2010-11	349.30	25.03.2014
6	Division 32, Barwaha	Construction of NKSL project on turnkey basis (as detailed in <b>Para 2.1.7.4</b> )	01/2012-13	396.38	04.11.2013
<b>Consultancy contracts for canal works</b>					
7	Division 32, Barwaha	Consultancy Services for OSP (Phase-I)	01/2004-05	1.98	17.10.2008
8	Division 20, Mandleshwar	Consultancy Services for OSP (Phase-II)	5DL/2007-08	1.75	04.06.2010
9	Division 30, Manawar	Consultancy Services for OSP (Phase-III)	15DL/2007-08	4.50	27.02.2011
10	OSP Division, Dhamnod	Consultancy Services for OSP (Phase-IV) (Group-I)	11DL/2011-12	2.48	15.11.2014
11	Division 30, Manawar	Consultancy Services for OSP (Phase-IV) (Group-II)	12DL/2011-12	1.67	15.11.2014

**Appendix 2.2**

**Undue financial aid to the contractor for adopting lesser diameter pipe**

**(Reference: Paragraph 2.1.8.9, Page 25)**

**(Amount in ₹)**

Sl. No.	Particulars	As per Estimate	Actual	Difference
1	Inner diameter of pipe (in mm)	2,000.000	1,800.000	
2	Outer Diameter of pipe ( in mm)	2,028.000	1,828.000	
3	Inner Area of pipe (in sq mm)	31,41,592.700	25,44,690.087	
4	Outer Area of pipe (in sq mm)	32,30,173.048	26,24,473.975	
5	Cross sectional area of pipe (in sq. mm) (4 - 3)	88,580.348	79,783.888	
6	Cross sectional area of pipe (in sq. metre)	0.0885	0.0797	
7	Volume of one metre pipe (in cum)	0.0885	0.0797	0.0088
8	Volume of 46,921 metre pipe (in cum)	4,152.509	3,739.604	412.905
9	length of pipe (in metre), which could be made of 412.905 cum = (412.905/0.0797)		5,180.740	
10	Minimum Rate of steel per running metre (as per the running account bill of contractor)		40,000.000	
<b>Undue benefit (9×10)</b>			<b>20,72,29,600</b>	

**Appendix 2.3**  
**Execution of coping in lesser width**  
**(Reference: Paragraph 2.1.9.1, Page 26)**

Name of Canal	Reach in km	Discharge	Coping width to be provided (in metre)	Coping width executed (in metre)	Short execution in quantity (in cubic metre <sup>105</sup> )	Rate of concrete lining as per bill (₹ per cubic metre)	Undue advantage due to short execution (₹ in lakh)
OSP Canal Phase-I	Common Water Carrier: RD 0.100 to 12.393 (12,293 metre)	More than 10 cumecs	0.550	0.300	614.65	2,246.92	13.81
	RBC: RD 0 to 9.775 (8,259 metre excluding Narmada Aqueduct)	More than 10 cumecs	0.550	0.300	412.95	2,169.79	8.96
	LBC: RD 0 to 40.185 (40,185 metre)	More than 10 cumecs	0.550	0.300	2,009.25	2,448.92	49.20
	LBC: RD 40.185 to 64.110 (23,925 metre)	3 to 10 cumecs	0.350	0.300	239.25	2,448.92	5.86
OSP Canal Phase-II	RBC: RD 9.775 to 68.92 (58,140 metre)	More than 10 cumecs	0.550	0.300	2,907.00	3,227.72	93.83
OSP Canal Phase-III	RBC: RD 68.92 to 140.15 (71,230 metre)	More than 10 cumecs	0.550	0.300	3,561.5	3,463.686	123.36
	RBC: RD 140.150 to 162.70 (22,550 metre)	3 to 10 cumecs	0.350	0.300	225.50		7.81
OSP Canal Phase-IV (Group II)	ORBLC: RD 51.281 to 68.525 (17,244 metre)	7 to 10 cumecs	0.350	0.300	172.44	3,026.47	5.22
<b>Total</b>							<b>308.05</b>

<sup>105</sup> Length of canal × difference in coping width × thickness of CC lining (0.10 metre) × 2 (for both banks)



**Appendix 3.1**

**Extra cost on inadmissible lead of materials**

**(Reference: Paragraph 3.1.4.3, Page 42)**

	Rate adopted			Rate required to be adopted		
	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)
Canal lining in bed	34,081.78	3,106.00	10,58,58,009	34,081.78	3,106.00	10,58,58,009
Canal lining in slope	31,846.42	3,256.00	10,36,91,944	31,846.42	3,256.00	10,36,91,944
Safety ladder	1,227.84	3,219.00	39,52,417	1,227.84	3,219.00	39,52,417
Lead of cement 45 km	7,466.14	288.63	21,54,952	0	0	0
Lead of cement 30 km	7,355.37	225.18	16,56,282	0	0	0
Lead of sand 30 km	26,324.27	225.18	59,27,699	0	0	0
Lead of sand 20 km	2,552.64	177.45	4,52,966	0	0	0
Lead of metal 5 km	28,663.79	109.20	31,30,086	0	0	0
Lead of metal 25 km	28,418.46	223.70	63,57,210	0	0	0
Lead of water 2 km	67,156.10	55.00	36,93,586	0	0	0
PVC strip	2,73,292.80	96.00	2,62,36,109	2,73,292.80	96.00	2,62,36,109
Lead of PVC strip	49,193.60	2.00	98,387	49,193.60	2.00	98,387
<b>Total</b>	<b>67,156</b>		<b>26,32,09,647</b>	<b>67,156<sup>106</sup></b>		<b>23,98,36,866</b>
<b>Clubbed Rate for CC lining (Amount/ Quantity)</b>			<b>3,919.37 (A)</b>			<b>3,571.34 (B)</b>
<b>Difference in rate (A-B)</b>						<b>348.03</b>

<sup>106</sup> Quantity includes quantity of canal lining in bed, slope and of safety ladder.

## Appendix 3.2

Category wise release of funds to MPSAIDC in the Scheme for  
Development of Food Processing Industries

(Reference: Paragraph 3.2.2, Page 54)

(₹ in lakh)

Year	Opening Balance			Released			Utilised			Closing Balance		
	General	SC	ST	General	SC	ST	General	SC	ST	General	SC	ST
2008-09	0.00	0.00	0.00	47.00	5.00	16.00	47.00	0.00	0.00	0.00	5.00	16.00
2009-10	0.00	5.00	16.00	47.00	0.00	0.00	47.00	0.00	0.00	0.00	5.00	16.00
2010-11	0.00	5.00	16.00	47.00	5.00	16.00	47.00	0.00	0.00	0.00	10.00	32.00
2011-12	0.00	10.00	32.00	47.00	5.00	16.00	41.73	0.00	0.00	5.27	15.00	48.00
2012-13	5.27	15.00	48.00	47.00	5.00	16.00	47.00	0.00	0.00	5.27	20.00	64.00
2013-14	5.27	20.00	64.00	75.85	7.66	23.18	75.59	0.00	0.00	5.54	27.66	87.18
2014-15	5.54	27.66	87.18	76.09	7.66	23.18	82.72	0.00	0.00	-1.10	35.32	110.36
2015-16	-1.10	35.32	110.36	145.30	6.00	19.00	134.60	0.00	0.00	9.60	41.32	129.36
2016-17	9.60	41.32	129.36	570.88	0.00	0.00	0.00	0.00	0.00	580.48	41.32	129.36
2017-18	580.48	41.32	129.36	0.00	0.00	0.00	570.88	0.00	0.00	9.60	41.32	129.36
			<b>Total</b>		<b>1,273.80</b>			<b>1,093.52</b>			<b>180.28</b>	

**Appendix 3.3**

**Calculation of interest on balance amount of mobilisation advance**

**(Reference: Paragraph 3.2.4, Page 60)**

							(Amount in ₹)
Sl. no.	RA Bill sl. no.	Voucher. no./date	Mobilisation advance recovered	Balance amount of mobilisation advance	Interest leviable	Delay (in days)	Interest on pending amount of mobilisation advance
1	17	31/ 28.6.14	2,39,950	4,99,29,823	23.10.2014 to 21.04.2015	181	39,61,555.27
2	18	01/ 3.9.15	3,20,330	4,96,09,493	22.04.2015 to 02.09.2015	134	29,14,048.03
3	19	21/ 24.9.15	16,41,047	4,79,68,446	04.09.2015 to 23.09.2015	20	4,20,545.28
4	20	41/ 11.12.15	18,76,227	4,60,92,219	25.09.2015 to 10.12.2015	77	15,55,770.24
5	21	38/ 23.12.15	3,30,477	4,57,61,742	12.12.2015 to 22.12.2015	11	2,20,659.36
6	22	19/ 11.2.16	30,63,200	4,26,98,542	24.12.2015 to 10.02.2016	49	9,17,141.29
7	23	33/ 27.2.16	15,63,755	4,11,34,787	12.02.2016 to 26.02.2016	15	2,70,475.31
8	24	15/ 21.3.16	11,92,512	3,99,42,275	28.02.2016 to 20.03.2016	22	3,85,196.73
9	25	21/ 16.5.16	32,04,522	3,67,37,753	22.03.2016 to 15.05.2016	55	8,85,732.13
10	26	15/ 17.6.16	14,37,539	3,53,00,214	17.05.2016 to 16.06.2016	31	4,79,696.06
11	27	21/ 28.6.16	11,30,137	3,41,70,077	18.06.2016 to 27.06.2016	10	1,49,786.64
12	28	12/ 15.11.16	2,20,533	3,39,49,544	29.06.2016 to 14.11.2016	139	20,68,596.87
13	<b>As of March 2018</b>			3,39,49,544	16.11.2016 to 31.03.2018	501	74,55,877.94
<b>Total</b>							<b>2,16,85,081.15</b>

## Appendix 3.4

## Extra cost due to application of incorrect rates of earth work in Tawa Project

(Reference: Paragraph 3.2.7, Page 65)

(Quantities in cum and Amount in ₹)

USR Item No.	Item	Quantity	Clubbed rate as per estimate		Clubbed rate payable		
			Rate	Amount	Quantity	Rate	Amount
401 (b)	Excavation in hard soil including 50 m lead and 1.5 lift with dressing	16,79,570	26	4,36,68,820	16,79,570	38	6,38,23,660
418(a)	Watering of earthwork for compaction at optimum moisture content with lead of water up to 100 m	8,29,217	13	1,07,79,821	8,29,217	13	1,07,79,821
417(a)	Compaction of earthwork at optimum moisture content to dry density not below 90 <i>per cent</i> by light rollers i.e. by powered rollers or sheep foot earth masters of hand rammer excluding watering	8,29,217	12	99,50,604	8,29,217	12	99,50,604
2903(4)	(a) Quantity for Av lead 1.5 km.	8,29,217	70.56	5,85,09,551.52	0	0	0
<b>Total</b>		<b>16,79,570</b>		<b>12,29,08,796.52</b>	<b>16,79,570</b>		<b>8,45,54,085</b>
<b>Clubbed rate</b>				<b>73.18</b>			<b>50.34</b>
<b>Rate difference</b>							<b>22.84</b>
<b>Quantity of earthwork executed</b>							<b>12,53,314.33</b>
<b>Extra Cost</b>				<b>Quantity 12,53,314.33 cum×22.84 + 16.20 <i>per cent</i> above tender premium</b>			<b>3,32,63,062.58</b>

**Appendix 3.5**

**Extra cost due to application of incorrect rates of earth work in Barna Project**

(Reference: Paragraph 3.2.7, Page 66)

(Quantities in cum and Amount in ₹)

USR Item No.	Item	Quantity	Clubbed rate as per estimate		Clubbed rate payable		
			Rate	Amount	Rate	Amount	
401 (b)	Excavation in hard soil including 50 m lead and 1.5 lift with dressing	10,55,550.44	26	2,74,44,311.44	64	6,75,55,228.16	
2903(4)	<b>Lead of materials</b>			0.00			
	(a) Quantity for Av lead 0.5 Km.	2,63,887.61	62.64	1,65,29,919.89	0	0.00	
	(b) Quantity for Av lead 1.00 Km	5,27,775.22	66.6	3,51,49,829.65	0	0.00	
	(c) Quantity for Av lead 2.0 Km	2,63,887.61	74.52	1,96,64,904.70	0	0.00	
<b>Total</b>		<b>10,55,550.44</b>		<b>9,87,88,965.68</b>		<b>6,75,55,228.16</b>	
<b>Clubbed rate</b>			<b>93.59</b>		<b>64</b>		
<b>Rate difference</b>			<b>29.59</b>				
<b>Quantity of earthwork executed</b>			<b>9,23,303.068</b>				
<b>Extra Cost (A)</b>		<b>Quantity 9,23,303.068 cum×29.59 + 9.81 per cent above tender premium</b>				<b>3,00,00,682.60</b>	
401 (b)	Excavation in hard soil including 50 m lead and 1.5 lift with dressing	2,64,815.68	26	68,85,207.68	64	1,69,48,203.52	
418 (a)	Watering of earthwork for compaction at optimum moisture content with lead of water up to 100 m	2,66,306.22	13	34,61,980.86	13	34,61,980.86	
417 (a)	Compaction of earthwork at optimum moisture content to dry density not below 90 per cent by light rollers i.e., by non-powered rollers or sheeps foot earth masters or hand rammer (excluding watering)	2,66,306.22	8	21,30,449.76	8	21,30,449.76	
2903(4)	<b>lead of material</b>			0.00		0.00	
	(a) Quantity for Av lead 0.5 Km.	66,203.92	62.64	41,47,013.55	0	0.00	
	(b) Quantity for Av lead 1.00 Km	1,32,407.84	66.6	88,18,362.14	0	0.00	
	(c) Quantity for Av lead 2.0 Km	66,203.92	74.52	49,33,516.12	0	0.00	
	(B) Water for CMC and LBMC Av lead 0.5 Km)	2,66,306.22	4.5	11,98,377.99	4.5	11,98,377.99	
<b>Total</b>		<b>2,66,306.22</b>		<b>3,15,74,908.10</b>		<b>2,37,39,012.13</b>	
<b>Clubbed rate</b>			<b>118.57</b>		<b>89.14</b>		
<b>Rate difference</b>			<b>29.43</b>				
<b>Quantity of earthwork executed</b>			<b>2,23,469.135</b>				
<b>Extra Cost (B)</b>		<b>Quantity 2,23,469.135 cum×29.43 + 9.81 per cent above tender premium</b>				<b>72,21,870.58</b>	
<b>Total Extra Cost (A+B)</b>						<b>3,72,22,553.18</b>	

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