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Report of the Comptroller and Auditor General of India on Performance and Compliance Audits for the year ended 31 March 2021

SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Jharkhand

Report No. 1 for the year 2023

Report of the
Comptroller and Auditor General of India
on
Performance and Compliance Audits
for the year ended 31 March 2021

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Preface

PREFACE

The Report for the year ended 31 March 2021 has been prepared for submission to the Governor of Jharkhand under Article 151 of the Constitution of India.

This Report contains significant results of audit of departments of the Government of Jharkhand under General, Social and Economic sectors including State Public Sector Enterprises.

The instances mentioned in this Report are among those which came to notice in the course of test audit for the period 2020-21 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 2020-21 have also been included, wherever necessary.

Audit has been conducted in conformity with the Auditing Standards and Regulations on Audit and Accounts issued by the Comptroller and Auditor General of India.

Chapter 1
Overview

CHAPTER 1: OVERVIEW

1.1 Introduction

This Report covers matters arising out of the Performance/ Compliance Audit of some State Government departments and their Autonomous Bodies. The primary purpose of this Report is to bring to the notice of the Legislature the important results of audit. Findings of audit are expected to enable the Executive to take corrective action as also to frame policies and directives that will lead to improved financial management of the organisations contributing to better governance.

The Report has been organised in six chapters as under:

Chapter 1 contains the profile of the Auditee departments with a brief profile of the expenditure for the last five years, the Authority for audit, audit jurisdiction, planning and conduct of audit, response of the Government to various audit products *viz*., Inspection Reports, individual observations/ paragraphs, Performance Audits (PAs), Detailed Compliance Audits (DCAs), follow up action on Audit Reports, *etc*., and significant audit observations included in this Audit Report.

Chapter 2 contains observations relating to Performance Audit on 'Efficacy of implementation of the 74th Constitutional Amendment Act'.

Chapter 3 contains observations relating to Compliance Audit on Management of the sewerage and drainage system in Ranchi city.

Chapter 4 contains observations relating to Compliance Audit on Rejuvenation and Conservation of the Harmu River.

Chapter 5 contains observations relating to Compliance Audit on Material Management and Inventory Control in Jharkhand *Bijli Vitran Nigam* Limited (JBVNL).

Chapter 6 contains three individual observations/ paragraphs relating to Compliance Audit.

1.2 Profile of the Auditee Departments and the Audit Universe

I. As per the Budget, the Government of Jharkhand released funds under 60 grants (during 2020-21), related to its various Departments. The audit universe under the Principal Accountant General (Audit), Jharkhand (PAG), comprises of 5,797 units of various levels related to 60 Grants. There are 34 Departments in the Government of Jharkhand which fall under the audit jurisdiction of PAG. It also includes 76 bodies/ authorities which are either substantially financed from the Consolidated Fund of the State or audit of which has been entrusted by the Government under various sections of the Comptroller and Auditor General's (CAG's) (Duties, Powers and Conditions of Service) Act, 1971 (DPC Act).

II. Besides, there are Government Companies and Government controlled other Companies of the Government of Jharkhand (GoJ) within the audit jurisdiction of the Comptroller and Auditor General of India (CAG). These State Public Sector Enterprises (SPSEs) were established to carry out activities of a commercial nature and to contribute to the economic development of the State. Here the term State Public Sector Enterprises (SPSEs) encompasses those Government companies in which the direct holding of GoJ is 51 *per cent* or more and subsidiaries of such Government companies. There are no Statutory Corporations in Jharkhand.

As on 31 March 2021, there were 31 SPSEs (including 03 inactive SPSEs) in Jharkhand. The working SPSEs registered an annual turnover of ₹ 5,103.43 crore *i.e.,* decrease of 0.09 *per cent* in 2020-21 over 2019-20[1] as per their latest finalized accounts as on 31 March 2022. This turnover was equal to 1.61 *per cent* of State Gross Domestic Product (GSDP) for the year 2020-21 (₹ 3,17,079 crore). The working SPSEs incurred a loss of ₹ 2,649.97 crore as per their latest finalised accounts. There are three inactive SPSEs[2], having an investment of ₹ 51.51 crore, towards capital (₹ 1.10 crore) and long-term loans (₹ 50.41 crore) which constitute inactive investment as the SPSEs are not contributing to the economic growth of the State. However, initiation of the winding up process of two SPSEs has been approved by their Boards[3].

The list of departments and Autonomous Bodies/ Authorities/ Companies under the audit jurisdiction of the PAG is shown in ***Appendix 1.1***.

The trend of expenditure, in the major departments under the audit jurisdiction of the PAG, during 2016-17 to 2020-21 is shown in **Table 1.1**.

Table 1.1: Trend of expenditure of Departments with annual expenditure exceeding ₹ 100 crore

(₹ in crore)

Sl. No.	Name of the Department	2016-17	2017-18	2018-19	2019-20	2020-21
1	Finance	10,483.99	13,626.92	14,003.18	15,660.37	15,686.99
2	School Education and Literacy Development	6,672.94	6,490.86	6,392.84	7,864.45	8,304.41
3	Home, Jail and Disaster Management	3,993.96	5,129.55	5,632.55	6,502.39	7,216.87
4	Energy	3,017.15	6,345.77	4,155.2	3,148.42	6,846.78
5	Rural Development	4,000.74	3,836.63	4,708.14	4,868.98	6,018.08
6	Health, Medical Education and Family Welfare	2,468.93	2,847.19	3,382.55	3,128.30	4,061.85
7	Women, Child Development and Social Security	2,531.64	2,539.69	2,582.92	3,912.46	3,777.78
8	Road Construction	4,521.03	5,328.1	4,098.29	3,921.38	3,491.79
9	Urban Development and Housing	2,878.86	3,028.35	1,986.42	2,559.20	2,912.09
10	*Panchayati Raj*	1,674.67	1,578.46	875.27	2,482.11	1,857.49
11	Higher and Technical Education	1,331.88	1,681.00	1,583.84	1,918.40	1,665.10
12	Rural Works	3,660.17	2,737.81	4,323.44	2,525.28	1,663.49

[1] *Turnover of working SPSEs as per their latest finalised accounts upto December 2021 was ₹ 5,626.05 crore.*

[2] *Karanpura Energy Limited (KEL), Patratu Energy Limited (PEL) and Jharbihar Colliery Limited (JCL)*

[3] *KEL: 5th AGM (15 September 2017), JCL: 15th meeting (15 May 2016) and 16th meeting (2 February 2018)*

Sl. No.	Name of the Department	2016-17	2017-18	2018-19	2019-20	2020-21
13	Agriculture, Animal Husbandry and Co-operative	2,245.54	2,022.42	1,667.69	2,611.77	1,646.90
14	Water Resources	1,840.13	2,094.91	1,883.63	1,722.65	1,421.55
15	Food, Public Distribution and Consumer Affairs	1,171.29	944.16	1,030.86	1,134.72	1,380.71
16	Drinking Water and Sanitation	1,526.82	2,055.91	1,765.3	1,180.18	1,278.86
17	Scheduled Tribe, Scheduled Caste, Minority and Backward Class Welfare	1,581.35	1,357.11	1,547.94	1,378.32	1,188.34
18	Forest, Environment and Climate Change	496.04	591.21	525.07	714.44	725.80
19	Law	308.34	377.33	440.66	458.52	446.42
20	Labour Employment Training and Skill Development	194.93	168.22	179.84	161.24	294.26
21	Building Construction	540.41	637.05	496.32	549.55	256.68
22	Industries	297.64	248.78	314.59	276.47	220.09
23	Tourism, Art Culture, Sports and Youth Affairs	207.66	217.08	249.09	212.43	179.90
24	Information and Public Relation	139.05	194.75	170.77	201.18	130.79
25	Information Technology and e-Governance	150.38	74.25	145.48	153.57	122.51
26	Planning and Development	273.12	346.53	559.87	270.39	108.25
27	**Others**[4]	249.72	267.25	331.00	580.47	359.41
Total		**58,458.38**	**66,767.29**	**65,032.75**	**70,097.64**	**73,263.19**

Source: *Appropriation Accounts 2016-17 to 2020-21*

1.3 Authority for audit

Authority for audit by the CAG is derived from Articles 149 and 151 of the Constitution of India and the CAG's (Duties, Powers & Conditions of Service) Act, 1971 (DPC Act). CAG conducts audit of expenditure of State Government Departments under Section[5] 13 of the DPC Act. CAG is the sole auditor in respect of Autonomous Bodies, which are audited under sections 19 (2), 19 (3)[6] and 20 (1)[7] of the DPC Act. In addition, CAG also conducts audit of other Autonomous Bodies which are substantially financed by the Government under Section[8] 14 of DPC Act.

Further, a Government Company or any other Company owned or controlled, directly or indirectly, by the Central Government, or by any State Government or Governments or partly by Central Government and partly by one or more State Governments, is subject to audit by the CAG.

For Audit of Public Sector Enterprises, the process of audit of Government Companies is governed by relevant provisions of Sections 139 and 143 of the

[4] *Others include (i) Cabinet Election Department (ii) Personnel, Administrative Reforms and Rajbhasha Department and (iii) Cabinet Secretariat and Vigilance Department.*

[5] *Audit of (i) all expenditure from the Consolidated Fund of State, (ii) all transactions relating to the Contingency Fund and Public Account and (iii) all trading, manufacturing, profit & loss accounts, balance-sheets & other subsidiary accounts.*

[6] *Audit of accounts of Corporations (not being Companies) established by or under law made by the State Legislature in accordance with the provisions of the respective legislations or as per request of the Governor of the State in the public interest*

[7] *Audit of accounts of any body or authority on the request of the Governor, on such terms and conditions as may be agreed upon between the CAG and the Government*

[8] *Several non-Commercial Autonomous/ Semi-Autonomous Bodies, established to implement Schemes for employment generation, poverty alleviation, spread of literacy, health for all and prevention of diseases, environment, etc., and substantially financed by the Government, are audited under Section 14*

Companies Act, 2013. Further, as per sub-section 7 of Section 143 of the Companies Act, the CAG may, in case of any company covered under sub-section 5 or sub-section 7 of Section 139, by an order, conduct test-audit on the accounts of such company, if considered necessary. The provisions of Section 19A of the DPC Act shall apply to such Audit. An audit of the financial statements of a company in respect of the financial years up to 31 March 2014 shall continue to be governed by the provisions of the Companies Act, 1956.

Principles and methodologies for various audits are prescribed in the Regulations on Audit & Accounts (Amendments), 2020 and Auditing Standards issued by the Indian Audit & Accounts Department.

Appointment of Statutory Auditors of Public Sector Enterprises

The financial statements of the Government Companies are audited by Statutory Auditors, appointed by CAG as per the provisions of Sections 139 (5) or 139 (7) of the Companies Act, as applicable, who shall submit a copy of their audit report, including the financial statements of the Company, to the CAG, under Section 143(5) of the Act. These financial statements are subject to supplementary audit to be conducted by CAG within 60 days from the date of receipt of the audit report under the provisions of Section 143 (6) of the Act.

1.4 Planning and conduct of Audit

PA/ DCA/ individual Compliance Audits are conducted as per the Annual Audit Plan (AAP). Units for individual Compliance Audit are selected on the basis of risk assessment of the Apex units, Audit Units and Implementing Agencies involving matters of financial significance, social relevance, internal control systems, past instances of defalcation, misappropriation, embezzlement, *etc*., as well as findings of previous Audit Reports.

Inspection Reports are issued to the heads of Units after completion of audit. Based on replies received, audit observations are either settled or further action for compliance is advised. Important audit findings are processed further as individual observations/ paragraphs for inclusion in the Audit Report. PAs/ DCAs/ paragraphs are prepared on issues of significance. Selection of issues are done following the analogy explained above.

Formal replies furnished by departments are carefully considered while finalising the materials for inclusion in the Audit Report. Audit Reports are laid before the State Legislature under Article 151 of the Constitution of India.

During 2020-21, Principal Accountant General (Audit), Jharkhand conducted a Performance Audit on 'Efficacy of implementation of the 74th Constitutional Amendment Act', two Compliance Audits on 'Management of the sewerage and drainage system in Ranchi city' and 'Rejuvenation and Conservation of the Harmu River' (Urban Development and Housing Department) and individual compliance audit of 112 units under 12 departments. Besides, Compliance

Audit on Material Management and Inventory Control by Jharkhand *Bijli Vitran Nigam* Ltd. (JBVNL), a State Public Sector Enterprise, was also conducted.

1.5 Lack of response of Government to Audit

Response of the Government to Inspection Reports

Principal Accountant General (Audit), Jharkhand, conducts audit of Government departments to check for compliance to rules and regulations in transactions and to verify the regularity in maintenance of important accounting and other records as per the prescribed rules and procedures. After these audits, Inspection Reports (IRs) are issued to the Heads of Offices inspected with copies to the next higher authorities. Important irregularities and other points detected during inspection, which are not settled on the spot, find place in IRs. Serious irregularities are brought to the notice of the Government by the Office of the PAG.

As per the Regulations on Audit & Accounts (Amendments), 2020, the Officer in charge of the auditee entity shall send the reply to an Inspection Report (IR) within four weeks of its receipt. On intimation of any major irregularity[9] by the PAG, the Government shall undertake *prima facie* verification of facts and send a preliminary report to the PAG confirming or denying facts within three weeks of receipt of intimation. Where the fact of major irregularity is not denied by the Government in the preliminary report, the Government shall further send a detailed report to PAG within two months of the preliminary report indicating the remedial action taken to prevent recurrence and action taken against those responsible for the lapse.

Besides the above, the Finance Department of Government of Jharkhand also issued instructions departments, from time to time, for prompt response to the IRs issued by the PAG, to ensure timely corrective action.

A six-monthly report, showing the pendency of IRs, is sent to the Principal Secretary/ Secretary of the respective Department, to facilitate monitoring and settlement of outstanding audit observations in the pending IRs.

A detailed review of IRs issued up to March 2021 to 29 departments, revealed that 33,654 paragraphs, contained in 4,937 IRs, were outstanding for want of suitable compliance, as on 31 March 2022. Of these, even initial replies had not been received in regard to 26,615 paragraphs, contained in 3,698 IRs.

[9] *Major irregularity means (a) an instance of suspected material fraud or collusion or corruption coming to notice in audit, or (b) an irregularity of a serious nature involving public funds, particularly that relating to mismanagement, loss, waste, nugatory expenditure or loss of revenue, serious breakdown/violation of internal controls, etc.*

Table 1.2: Outstanding IRs and paragraphs (issued up to 31 March 2021) as on 31 March 2022

Sl. No.	Period	No. of outstanding IRs	No. of outstanding paras
1	2020-21	148	1,365
2	1 year to 3 years	722	5,509
3	3 years to 5 years	1,343	7,190
4	More than 5 Years	2,724	19,590

The Audit Committee, comprising of the Principal Secretary/ Secretary or/ and any nodal officer of the Administrative Departments and representatives of Audit, meets, from time to time, upon mutual convenience, for expeditious settlement of outstanding Inspection Reports/ Paragraphs. However, no Audit Committee meeting was held by any of the Departments during April 2020 to March 2021.

It is recommended that Government should ensure that a procedure is put in place for: (i) action against officials failing to send replies to IRs/ paragraphs as per the prescribed time schedule, (ii) recovery of losses/ outstanding advances/ overpayments etc., in a time-bound manner and (iii) holding at least one Audit Committee meeting for each Department, every quarter.

1.6 Response of departments to Draft Audit Paragraphs and Detailed Compliance Audit Paragraphs

The Regulations on Audit and Accounts (Amendments), 2020 stipulate that responses to Draft Audit Paragraphs proposed for inclusion in the Report of the Comptroller and Auditor General of India should be sent within six weeks.

Draft Paragraphs and Performance Audit Reports/ Detailed Compliance Audit Paragraphs are forwarded to the Principal Secretaries/ Secretaries of the concerned departments as well as to the Finance Department, drawing attention to the audit findings and requesting them to send response within the prescribed time. It is also brought to their personal attention that in view of the likely inclusion of such paragraphs in the Audit Reports of the Comptroller and Auditor General of India which are placed before the Legislature, it would be desirable to include their comments on these audit findings.

Draft Paragraphs and Performance Audit/ Detailed Compliance Audit Paragraphs proposed for inclusion in this Report were forwarded to the Principal Secretaries/ Secretaries of the concerned Departments and to the Finance Department between January 2022 and May 2022 through official/ Demi-official letters addressed to them by name. The concerned departments had sent reply to four out of the seven Individual/ Detailed Compliance/ Performance Audit paragraphs featured in the Audit Report. Responses of the Department/ Auditee units as well as replies to initial audit memos, wherever received, have been suitably incorporated in the Report.

Status of Audit of Accounts

Submission of accounts by SPSEs

Accounts for the year 2020-21 were required to be submitted by all the SPSEs by 30 September 2021. As of 31 December 2021, of the 31 (08 Power Sector and 23 Non-power sector) SPSEs under the purview of CAG, three[10] SPSEs had submitted their accounts for the year 2020-21. Out of these, only one SPSE had submitted its accounts on or before 30 September 2021 and two SPSEs had submitted their accounts between 01 October 2021 and 31 December 2021, for audit.

Timeliness in preparation of accounts by SPSEs

Details of arrears in submission of accounts of SPSEs as of 30 September of the following year for each of the last five financial years ending 31 March 2021, are given below:

Table 1.3: Position relating to submission of accounts by the working SPSEs

Sl. No.	Particulars	2016-17	2017-18	2018-19	2019-20	2020-21
1	Number of SPSEs	27	29	30	31	31
2	Number of accounts submitted during the current year	32	28	21	23	27
3	Number of SPSEs which finalised accounts for the current year	4	4	3	1	3
4	Number of previous year accounts finalised during current year	28	24	18	22	24
5	Number of SPSEs with arrears in accounts	23	25	27	30	28
6	Number of accounts in arrears	69	68	77	84	88
7	Extent of arrears (in years)	1 to 08 years	1 to 09 years	1 to 09 years	1 to 10 years	1 to 11 years

Source: *Based on accounts of SPSEs received during the period January 2021 to December 2021*

During the period from 01 January 2021 to 31 December 2021, the SPSEs had finalised 27 annual accounts, comprising three accounts for 2020-21 and 24 accounts for previous years. Thus, 88 accounts of 28 SPSEs were in arrears. The administrative departments have the responsibility to oversee the activities of these entities and to ensure that the accounts are finalised and adopted by these SPSEs within the stipulated period. The Chief Secretary to the Government of Jharkhand is informed regarding arrears in accounts.

In the absence of finalisation of accounts for 2020-21, as well as earlier years, and their subsequent audit in 88 accounts of 28 SPSEs, no assurance could be given as to whether the investments and expenditure incurred had been properly accounted for and the purpose for which the amount was invested was achieved. The Government investments in these SPSEs, therefore, remained outside the oversight of the State Legislature to that extent.

[10] *(i) Jharkhand Police Housing Corporation Limited; (ii) Jharbihar Colliery Limited; and (iii) Patratu Energy Limited.*

1.7 Follow-up on Audit Reports

Discussion of Audit Reports by Public Accounts Committee:

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 they were taken up for examination by the Public Accounts Committee (PAC) or not. The departments were to furnish detailed Action Taken Notes (ATNs), duly vetted by Audit, indicating the remedial action taken or proposed to be taken by them. The Audit Reports on GSES for the years 2008-09 to 2018-19 have 215 outstanding paragraphs. Of these, PAC has taken up 73 paragraphs for discussion and made one recommendation in respect of paragraph 1.3.6.1 of the Audit Report 2008-09. However, no ATN on this sub-paragraph has been received.

Further, the Audit Reports of 2000-01 to 2007-08, which were left to the departments for follow-up, had 201 outstanding paragraphs of which 94 paragraphs were taken up for discussion by PAC. Against this, PAC had made recommendations in respect of seven paragraphs and eight sub-paragraphs of which, ATNs were received in respect of two paragraphs and six sub-paragraphs as detailed in **Table 1.4**.

Table 1.4: Status of PAC discussion

Status	Audit Report (Civil) for the year 2000-01 to 2007-08	Audit Report (Civil) for the year 2008-09 to 2018-19
No. of outstanding Audit paras	201	215
Taken up by PAC for discussion	94	73
Not taken up for PAC discussion	107	142
Recommendation made by PAC	07 Paras and 08 sub-paras	01 sub-para
ATN received	02 Paras and 06 sub-paras	Nil
Action taken by the department	02 Paras and 06 sub-paras	Nil

Discussion of Audit Reports by Committee on Public Undertakings

The Committee on Public Undertakings (CoPU) was apprised of the pendency of Audit Report Paragraphs in the meeting held on August 2018. Further, CoPU in its three meetings (in 2018-19), discussed five paras relating to Audit Reports 2008-09, 2011-12, 2012-13, 2013-14 and 2015-16; in two meetings (in 2019-20), it discussed seven paras relating to Audit Reports 2005-06, 2008-09, 2012-13, 2013-14 and 2015-16; and three paras relating to Audit Reports 2007-08, 2008-09 and 2011-12, were discussed in 2020-21.

Compliance to Reports of PAC/ CoPU

Out of nine recommendations, in respect of paragraphs pertaining to four departments, *i.e.* (i) Forest, Environment and Climate Change (ii) Mines and Geology (iii) Home, Jail and Disaster Management and (iv) Industry in five CoPU reports for the years 2006-07, 2007-08, 2009-10, 2010-11 and 2012-13

presented to the State Legislature during 2013-21, no Action Taken Note (ATN) had been received from SPSEs.

1.8 Significant Audit Observations in this Report

The present Report contains one Performance Audit Paragraph, three Detailed Compliance Audit Paragraphs and three individual observations/ paragraphs arising out of Compliance Audits.

The significant observations contained in this Report are discussed in brief in the following paragraphs.

Performance Audit Paragraphs

Efficacy of implementation of the 74th Constitutional Amendment Act

A Performance Audit on '***Efficacy of implementation of the 74th Constitutional Amendment Act'*** covering the period 2016-17 to 2020-21 was taken up, which revealed the following:

Elections were due for periods, ranging from 18 to 50 months, in 15 ULBs and the Administrators or the Special Officers were looking after the functions of these ULBs.

(Paragraph 2.2.2)

Standing Committees had not been constituted in two test-checked ULBs at all, whereas they had not been constituted in four selected ULBs for one term. Besides, there were abnormal delays in constitution of Standing Committees in two test-checked ULBs. Ward Committees had not been constituted, in six out of 10 test-checked ULBs having 131 wards. Subject Committees had also not been constituted in any of the four test-checked Municipal Corporations.

(Paragraph 2.2.5)

Draft Development Plans were not prepared by the District Planning Committees of ULBs in the test-checked districts.

(Paragraph 2.2.6)

The State Finance Commissions were constituted with delays and faced constraints in its functioning due to lack of full time Chairperson and administrative staff. Only one out of four SFCs could submit its recommendations.

(Paragraph 2.2.7)

Functional posts had not been created for seven ULBs even after 39 to 64 months of their notification (between August 2016 and September 2018) as of December 2021. Further, there were 421 (47 per cent) vacant posts in the test-checked ULBs as on March 2021.

(Paragraph 2.2.8)

Out of 18 functions transferred to ULBs, 10 functions were being fully performed by ULBs, six functions were being partially performed by them and the ULBs had no role in performing the remaining two functions.

(Paragraph 2.3.1)

The ULBs were dependent on financial assistance from the Central/State Government for their functioning, as the proportion of their own revenue was low, as compared to their total receipts. Only five out of 10 ULBs could meet their establishment expenditure from their own revenue.

(Paragraph 2.4.1)

Detailed Compliance Audit Paragraphs

Management of the sewerage and drainage system in Ranchi city

Compliance Audit on '***Management of the sewerage and drainage system in Ranchi city***', covering the period June 2006 to 2020-21, revealed the following:

The Sewerage and Drainage project in Ranchi city, initiated in June 2005, could not be completed in more than 17 years (August 2022) and the timeline for completion was extended from September 2017 to March 2019 and thereafter to January 2023, defeating the primary objective of the project. The Department also awarded the work to an inexperienced and ineligible contractor, in violation of tender conditions, which worsened the project woes.

(Paragraphs 3.1 and 3.2.3.1)

Consultancy charges amounting to ₹ 16.04 crore, paid for preparation of the Detailed Project Report (DPR) by the consultant, proved wasteful as the DPR did not serve the intended purpose in zone-I of the Project since a fresh survey had to be conducted to work out new alignments (with new estimates). The DPR has also not been used for taking up any work in the remaining three zones, and the tender for fresh survey/updation of the DPR was under process.

(Paragraph 3.2.1)

Ranchi Municipal Corporation's tender for the project extended favour to the contractor (Joint Venture (JV) of M/s Jyoti Build Tech Pvt. Ltd. (Lead Partner) and M/s Vibhor Vaibhav Pvt. Ltd.). The lead partner of the JV contractor did not have the requisite experience and financial capacity to meet the tender eligibility conditions and had submitted forged and fabricated documents to qualify for the tender.

During execution of work, the contractor failed to provide the required manpower and machinery at the work site, made slow progress and stopped the work, despite grant of time extension twice (September 2018 and March 2019). Consequently, RMC terminated the contract in October 2019.

(Paragraph 3.2.3.1)

The contractor was paid mobilisation advance at the rate of 15 *per cent* against the provision of five *per cent* which resulted in excess payment of ₹ 35.93 crore. One instalment of the mobilisation advance, amounting to ₹ 18 crore was granted without securing it by Bank Guarantee (BG)/other instrument. The BG for this instalment was submitted by the contractor after 10 months of payment of the advance.

The other two instalments amounting to ₹ 36 crore were granted against BGs issued by an institution which was not a scheduled or nationalised bank authorised to issue BG for the project work.

(Paragraph 3.2.3.3)

RMC made excess payments to the contractor during the execution phase. These were made without submission of design and drawing of all the components of the Sewage Treatment Plant (₹ 4.22 crore), lump-sum payment without adhering to payment milestone for Sewage Pumping Station (₹ 75.40 lakh) and on account of inflated measurement of items of drain work (₹ 1.98 crore).

The expenditure of ₹ 47.93 lakh, incurred on partial execution of storm water drains, was wasteful, as the fragmented sections of the constructed drains were not linked to any drain network and they were found filled with the wastewater of septic tanks. The construction of these drains had been taken up without approval of the designs by the competent authority and they had been abandoned since then.

(Paragraph 3.2.3.4)

Rejuvenation and Conservation of Harmu River

Compliance Audit on '***Rejuvenation and Conservation of the Harmu River***', covering the period *June 2014 to March 2022*, revealed the following:

The State Government had not planned the project according to procedures laid down under the National River Conservation Plan (NRCP) guidelines (such as, preparation of City Sanitation Plan, quantification of sewage generation *etc*.) despite the advice of IIT, Mumbai. As a result, Government of India had turned down the request of the State for Central funding under NRCP, amounting to ₹ 55.03 crore, depriving the State of Central assistance for the project.

(Paragraphs 4.2 and 4.2.1)

Against 14 major inlets terminating into the Harmu river at different locations, only nine inlets were connected to the sewer network. Discharge from the connected inlets, carrying sewage, was found falling into the river even during the dry season, owing to defective design. The remaining five unconnected inlets were directly discharging sewage into the river. In addition, 56 minor inlets, left unconnected to the sewer network, were also discharging sewage into the river.

(Paragraphs 4.4.1 and 4.5.2)

The sewerage network was designed for channelising only 22.15 million litres per day (MLD) sewage, for the ultimate year 2048, against the estimated sewage generation (year 2048) of 47.12 MLD, as calculated by Audit.

(Paragraph 4.5.2)

The project was designed on the basis of reduced catchment area of 8.49 sq. km., against the total catchment of 22.59 sq. km. of the river, in violation of the

Central Public Health and Environmental Engineering Organisation (CPHEEO) Manual. Additional Sewerage Treatment Plant (STP) of 10.5 MLD capacity, required to treat the extra sewage generated from the additional catchment, could not be constructed, due to non-availability of land.

(Paragraphs 4.5.1 and 4.5.3)

As against the approved eight STPs with a total capacity of 11.50 MLD, only seven STPs, with a total capacity of 10 MLD, were functioning and processing 2.898 MLD sewage per day, instead of the installed capacity of 10 MLD.

(Paragraph 4.6.2)

The river cross-sections were designed (ranging between 15.45 m^2 and 33.25 m^2) with reduced value of coefficient of runoff, on the basis of flood discharge for a return period of 25 years, instead of 100 years. Though several cross-sections were widened (between 23.18 m^2 and 49.43 m^2) subsequently, on the basis of flood discharge for a return period of 50 years, the design discharge of the river (between Muktidham and meeting point with Subarnarekha river) was understated, in comparison to the actual discharge. This poses a risk of substantial damage to the entire cross-section of the river, in the event of actual flood discharge.

(Paragraph 4.5.4)

The purpose of construction of the storm-water drainage system along both sides of the river (10.4 km stretch), was not achieved. The drains were blocked with silt, mud and solid deposits *etc*., and were found discharging sewage into the river (between Amaravati bridge and STP-5).

(Paragraph 4.6.3)

The project objectives of transforming the river into a vibrant water asset with clean water could not be achieved. Water quality tests, carried out by the contractor, after completion of the project, indicated that sewage water had been flowing in the river. Quality test of water flowing in the Harmu river, conducted (April 2022) by Audit, through MECON Limited, revealed presence of faecal coliform, among other pollutants.

(Paragraph 4.6.5)

Measures for the sustainability of the operation and maintenance (O & M) activities were not planned. As against ₹ six lakh per year, allocated for the daily operation of sewage lifting pumps, for the seven STPs (total capacity 10 MLD), JUIDCO had been incurring electric charges at the rate of around ₹ 33 lakh per year. This made the O & M of the project unsustainable, without additional government financing. Generation of revenue, to meet the O & M costs, for ensuring the sustainability of the project, as envisaged in the NRCP guidelines, had not been explored and was not in place.

(Paragraph 4.7)

Material Management and Inventory Control in Jharkhand Bijli Vitran Nigam Limited

Compliance Audit on '***Material Management and Inventory Control in Jharkhand Bijli Vitran Nigam Limited***', covering the period from 2017-18 to 2020-21, revealed the following:

The provisions in the Work and Procurement Manual, with regard to timely preparation and approval of annual budgets, were not followed by the Company resulting in shortfalls in the release and utilisation of funds. Thus, JBVNL could not effectively implement works which would have upgraded the assets created for electricity distribution in the State.

(Paragraph 5.7.1)

The Company delayed the finalisation of tenders and did not adhere to the provisions of JPP in the procurement process, hence it could not pass on benefits to the local MSEs. The procurement process was marred by procurement of inefficient DTs, procurement on nomination basis and procurement of Aluminium Conductor Steel Reinforced (ACSR) conductors and poles without conducting tests and inspections.

(Paragraph 5.8)

The Company did not ensure a separate dedicated cadre for the effective management of the Stores and did not conduct physical verification of the stores annually. There were errors in accounting of inventories and deficiencies in the receipt of dismantled materials as well as issue of materials. The functioning of the Transformer Repair Workshops was deficient as they failed to ensure recovery of transformer oil and the discarded coil as per norms. The Company also failed to dispose of scraps and evolve an MIS for efficient monitoring and management of inventory.

(Paragraph 5.9)

Construction works of PSSs were incomplete and materials procured/ issued for these remained idle. The Company failed to recover and utilise the material related to terminated contracts and to reconcile issued materials *vis-à-vis* executed quantity.

(Paragraph 5.10)

Individual observations/ Paragraphs

The Executive Engineer, Road Division, Ranchi did not adhere to the conditions of contracts in effecting adjustments and recoveries while making interim payments to the contractor. Security deposit of ₹ 3.95 crore was prematurely refunded and recovery/ adjustment of ₹ 11.17 crore could not be made even after a lapse of more than five years of completion of work.

(Paragraph 6.1)

Commencement of bridge work over Bhorongdih Nala on Bundu-Rahe Road by the Executive Engineer, Road Construction Division, Ranchi (*Gramin*),

without acquisition of land for approach roads resulted in the constructed bridge lying idle for more than six years rendering expenditure of ₹ 1.24 crore unfruitful.

(Paragraph 6.2)

The Chief Engineer, Central Design Organisation, Road Construction Department, did not sanction the provision for land acquisition initially though it was included in the original estimate. Later on, the departmental engineers delayed submission and approval of the revised estimate which led to non-completion of a High-level bridge over Baxa river for more than eight years rendering the expenditure of ₹ 97.04 lakh unfruitful.

(Paragraph 6.3)

Chapter 2

Performance Audit on Efficacy of implementation of the 74th Constitutional Amendment Act

CHAPTER 2
URBAN DEVELOPMENT AND HOUSING DEPARTMENT

Performance Audit on 'Efficacy of implementation of the 74th Constitutional Amendment Act'

Executive summary

The Constitution (Seventy Fourth Amendment) Act, 1992, provided constitutional status to Urban Local Bodies (ULBs), and authorised State Legislatures to enact laws to endow Municipalities with powers and authority, to enable them to function as institutions of self-government. The Act also authorised the State Legislatures to make provisions for devolution of powers and responsibilities, in relation to 18 specific functions, to be devolved to the ULBs.

A Performance Audit (PA) on 'Efficacy of implementation of the 74th Constitutional Amendment Act (74th CAA)' was conducted to assess whether: (i) the ULBs had been adequately empowered by the State Government to discharge their functions effectively (ii) appropriate institutional mechanisms were available with the ULBs for effective discharge of their functions and (iii) the ULBs had adequate resources for discharging the devolved functions.

There were 50 ULBs in Jharkhand (as on 31 March 2021), of which 10 ULBs were selected for the Performance Audit. In compliance with the 74th CAA, four State Finance Commissions (SFCs) had been constituted by the State Government after bifurcation (November 2000) from erstwhile Bihar. In the first three SFCs, the post of Chairperson was vacant for periods ranging from 95 to 594 days, whereas the Chairman of the fourth SFC (constituted in July 2019) had not been appointed (as of October 2022). Further, the State Government had not ensured posting of regular office staff, as per the sanctioned strength. As a result, two SFCs *i.e.,* the second SFC (covering the period January 2009 to January 2014) and the third SFC (covering the period January 2014 to January 2019), covering a span of 10 years, could not submit their recommendations. Based on the recommendations (April 2009) of the first SFC (constituted in January 2004), the State Government enacted the Jharkhand Municipal Act (JMA), 2011, in February 2012, which empowered Municipalities to perform the 18 specified functions. A parastatal body, *viz.* Jharkhand Urban Infrastructure Development Company Limited (JUIDCO), was also established in July 2013, for developing urban infrastructure.

Though the JMA, 2011, was enacted, it was not supported by the devolution of all the functions and creation of appropriate institutional mechanisms. Out of the 18 functions, while the ULBs were solely responsible for 10 functions, they had no role in two functions, and had a partial role in six functions, due to lack of manpower, technical expertise and other resources. Elections were

not conducted in 15 ULBs for 18 to 50 months after: (i) dissolution of their Boards or (ii) issue of notification for constitution of the ULBs by the State Government. Four to 14 ULBs were deprived of 14th FC grants amounting to ₹ 253.46 crore during 2015-16 to 2019-20, due to not conducting elections in time. No Standing and Ward Committees had been constituted in two and six ULBs, respectively, out of the 10 test-checked ULBs. Subject Committees had also not been constituted in the four test-checked Municipal Corporations. Though District Planning Committees were set up, they did not prepare Draft Development Plans with inputs from the ULBs, as envisaged. The ULBs were also facing an acute shortage of staff. Jharkhand Urban Infrastructure Development Company Ltd. (JUIDCO), the parastatal body, received nearly 98 *per cent* of the developmental funds, for creating urban infrastructure, directly from Urban Development and Housing Department (UD&HD), Government of Jharkhand and as such, the ULBs did not have much of a role in funding and monitoring works executed by JUIDCO.

The ULBs were collecting only three out of nine types of taxes, mentioned under the JMA, meant for augmentation of resources of the ULBs, due to the failure of the State Government to frame Rules in this regard. ULBs did not revise rates of taxes and user charges as of March 2021, though they were to be revised within a span of three to five years as per JMA, 2011. They were largely dependent on financial assistance from the Central and State Governments, even to meet their establishment expenses. Further, they were incurring expenditure, either without preparing annual budgets, or by preparing unrealistic budgets, as the actual receipts and expenditure were less, by 72 *per cent* and 67 *per cent,* respectively, as compared to the budgeted receipts and expenditure. Also, they could utilise only 24 to 47 *per cent* of the funds available with them. The collection efficiency of property tax and water user charges was only 23 and eight *per cent* respectively, during the Financial Years (FYs) 2016-17 to 2020-21, compared to the total demand raised in the 10 test-checked ULBs. Solid waste user charges and water user charges collected were not sufficient even to meet the operation and maintenance/collection costs, in the 10 test-checked ULBs. Though the office of the Director of Local Fund Audit was established in November 2014, for the examination and audit of accounts of the ULBs, it could not function properly, due to shortage of staff and the absence of specific Rules and Regulations.

Thus, the objective of the 74th CAA, *viz*. enabling Municipalities to function as institutions of self-government, by endowing powers and authority in relation to 18 identified functions to be devolved, was far from having been achieved.

In response, the Government accepted the issues highlighted by Audit and assured that necessary corrective measures would be initiated to overcome the

same, in order to achieve the objectives envisaged in the 74th Constitutional Amendment Act (CAA).

To achieve these objectives, we recommend that:

- *Election of the ULBs may be conducted at the earliest and the formation of key committees, viz. Ward Committees, Standing Committees and Subject Committees, may be ensured*
- *District Planning Committees may ensure the preparation of Draft Development Plans, with inputs from the ULBs*
- *The State Finance Commission may be strengthened, with a full-time Chairperson, members and administrative staff*
- *ULBs may be provided the necessary support, viz. skilled manpower and other resources, to ensure that they have autonomy in performing the functions assigned to them*
- *Necessary rules may be framed to ensure levy and collection of all types of municipal taxes.*
- *Compilation of separate accounts for the ULBs and preparation of realistic budgets by all the ULBs may be ensured*
- *Government should ensure revision in rates of taxes and user charges, to enhance the resources of ULBs, and also ensure smooth collection of user charges; and*
- *Regular audit of the ULBs may be conducted, by the Director of Local Fund Audit.*

2.1 Introduction

2.1.1 The 74th Constitutional Amendment Act

The Constitution (Seventy Fourth Amendment) Act, 1992 (74th CAA), which came into effect on 1 June 1993, provided constitutional status to Urban Local Bodies (ULBs), by introducing a new part, *viz.* Part IXA (the Municipalities), in the Constitution. Article 243W of the Constitution authorised the State Legislatures to enact laws to endow Municipalities, with powers and authority as may be necessary, to enable them to function as institutions of self-government and make provisions for devolution of powers and responsibilities, in relation to matters listed in the Twelfth (12th) Schedule, which enumerates 18 identified functions to be devolved to the ULBs, as discussed in ***Paragraph 2.3.1***.

2.1.2 Trend of urbanisation in Jharkhand

As per Census 2011, 79.33 lakh people (24 *per cent* of the total population of 3.29 crore) live in urban areas in Jharkhand. The growth rate of the urban population, in the decade 2001-2011, was 32.36 *per cent*. Further, as per the population projection of the Census, the urban population of the State was projected as 99.38 lakh, as on March 2021, with a growth rate of 25.27 *per cent,* in the decade 2011-21. Accordingly, the ULBs have an important role to play

in handling the challenges faced by Urban Jharkhand, such as public health, water supply, poverty alleviation, waste management *etc*.

2.1.3 Profile of ULBs

There were 50 ULBs in Jharkhand, as on 31 March 2021, categorised on the basis of their population, as shown in **Table 2.1**.

Table 2.1: Category-wise ULBs in Jharkhand

Category	Nomenclature		Population	Number of ULBs
Larger Urban Area	Municipal Corporations (M. Corpn.)		1.5 lakh and above	09
Smaller Urban Area	Municipal Councils (MCs)	Class 'A'	One lakh and above and less than 1.5 lakh	01
		Class 'B'	0.40 lakh and above and less than one lakh	19
Transitional Area	Nagar Panchayats (NPs)		0.12 lakh and above and less than 0.40 lakh	20
	Notified Area Committees			01
			Total	**50**

Source: *JMA, 2011 and Annual Report 2020-21 of UD & HD*

The ULBs are governed by the Jharkhand Municipal Act (JMA), 2011. Each ULB has been divided into wards, which are determined and notified by the State Government, for the purpose of election of Councillors. All the ULBs, except the Notified Area Committee (NAC), Jamshedpur, have a body, *viz*. Council, consisting of Councillors and other members. The daily operations of the NAC at Jamshedpur are looked after by a Special Officer, posted by the Urban Development and Housing Department (UD&HD), Government of Jharkhand. Further, the Gomia Municipal Council was notified in September 2018 and remained functional till December 2020, when it was de-notified.

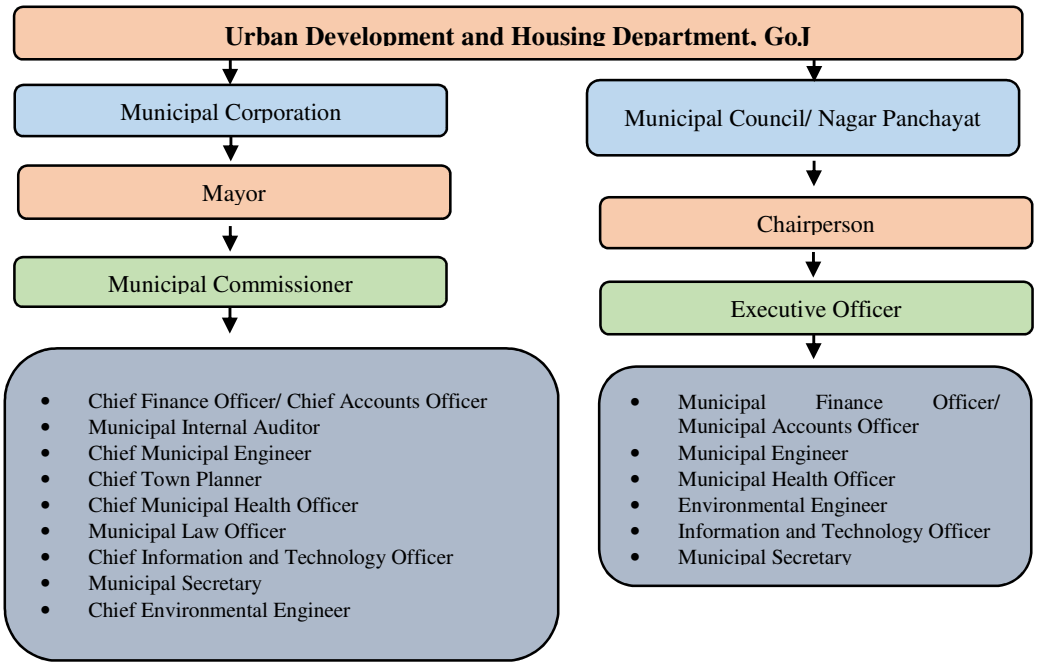
2.1.4 Organisational structure

The ULBs are under the administrative control of the Urban Development and Housing Department (UD&HD), Government of Jharkhand (GoJ). The Directorate of Municipal Administration (DMA) functions as an interface between the UD&HD and the ULBs. The State Urban Development Agency (SUDA), constituted in May 2008, for slum area improvement, is presently engaged in the implementation of some Central schemes, survey of households, assessment and collection of property tax, water user charges and other municipal taxes.

The Municipal Commissioners in the Municipal Corporations, and the Executive Officers in the Municipal Councils and Nagar Panchayats, are appointed by the State Government and have executive powers for carrying out the administration of the ULBs, subject to the provisions of JMA, 2011, and rules made thereunder.

The Mayor/Chairperson, elected by the people, presides over the meetings of the Council. The organisational structure, in regard to the functioning of the ULBs in the State, is indicated in **Chart 2.1**.

Chart 2.1: Organisational Structure/Organogram



Further, Jharkhand Urban Infrastructure Development Company Limited (JUIDCO), established in July 2013, is a parastatal, which assists the UD&HD in developing urban infrastructure.

2.1.5 Audit Objectives

The objectives of the Performance Audit (PA) were to assess:

- Whether the ULBs have been empowered, by the State Government, to discharge their functions effectively, through creation of appropriately designed institutions/institutional mechanisms
- The effectiveness of the ULBs in the discharge of functions stated to have been devolved; and
- Whether the ULBs have been empowered to access adequate resources, for discharge of the functions stated to have been devolved to them.

2.1.6 Audit Criteria

The audit criteria were derived from the following:

- Constitutional (Seventy Fourth) Amendment Act, 1992 (74th CAA)
- Jharkhand Municipal Act (JMA), 2011
- Jharkhand Municipal Accounts Manual (JMAM), 2012 and the provisions thereunder
- Jharkhand Municipal Election and Appeal Rules, 2012

- Central/State Finance Commissions Reports; and
- State Government orders, notifications, circulars and instructions, issued from time to time.

2.1.7 Audit Scope, coverage, and methodology

A Performance Audit (PA) on the 'Efficacy of implementation of the 74th Constitutional Amendment Act (CAA)', covering the period from FY 2016-17 to FY 2020-2021, was conducted during October 2020 to December 2021, at the UD&HD and the selected ULBs. Out of 50 ULBs**,** 10 ULBs, *viz.* four[1] out of nine Municipal Corporations, three[2] out of 20 Municipal Councils and three[3] out of 20 Nagar Panchayats, were selected through the Simple Random Sampling Method, with population, as per the 2011 census, as the size measure. Evidence was gathered through issue of questionnaires, formats, and study of files. The audit methodology involved the analysis of documents and responses to audit queries.

While assessing the status of devolution of powers, in regard to the 18 functions enumerated in the 12th Schedule of the Constitution, two functions, *viz.* (i) water supply and (ii) solid waste management, were selected to assess the adequacy of the capacity and resources of the ULBs, for fulfilling their obligations in regard to these functions. Implementation of the recommendations of the Central Finance Commissions (CFCs)/State Finance Commissions (SFCs), and provisions of the JMA, 2011, were also analysed, to assess the municipal resources available with the ULBs, such as development funds/grants, municipal taxes and user charges.

An entry conference was held on 31 August 2021, with the Secretary, UD&HD, wherein the scope, methodology, objectives and criteria of audit, were discussed. An exit conference was also held on 22 August 2022, with the Secretary, to discuss the audit observations. Views of the Department, expressed during the exit conference, along with the replies furnished in August 2022, have been suitably incorporated in the Report.

2.2 Institutional mechanisms for the empowerment of Urban Local Bodies

The State Government empowered Municipalities to perform 18 functions, described in the 12th Schedule of the Constitution, by enacting the JMA, 2011, in February 2012. The discharge of these functions can be effective only when appropriate institutions are established. The 74th CAA introduced certain provisions in regard to the composition and institutional mechanism of Municipalities. The State Government introduced these provisions vide JMA, 2011, as depicted in **Table 2.2**.

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[1] *Deoghar, Dhanbad, Medininagar and Ranchi.*
[2] *Godda, Phusro and Simdega.*
[3] *Basukinath, Hussainabad and Khunti.*

Table 2.2: Comparison of State level legislations with the provisions of the 74th CAA

Provisions introduced under the 74th CAA	Requirement as per provision of Constitution of India	Similar provisions in JMA, 2011
Article 243Q	Constitution of Municipalities: Three types of municipalities, *viz*. Nagar Panchayats for transitional areas, Municipal Councils for smaller urban areas, and Municipal Corporations for larger urban areas.	Section 3
Article 243R	Composition of Municipalities: All the seats in a Municipality are to be filled in by direct elections, and by persons with special knowledge in municipal administration, nominated by Government. The Legislature of a State may, by law, provide for representation to the Municipality, Members of Parliament and Legislative Assembly, whose constituencies lie within the municipal area, and Members of the Council of State and State Legislative Council, who are registered as electors within the city.	Sections 15, 16 and 26
Article 243S	Constitution and composition of Wards Committee: This provides for the constitution of Wards Committees in all municipalities, with a population of three lakh, or more.	Section 34
Article 243T	Reservation of seats: The seats to be reserved for SC/ST, women and Backward classes, are to be filled in by direct election.	Section 16
Article 243U	Duration of Municipalities: The Municipality has a fixed tenure of five years, from the date of its first meeting, and re-election is to be held within six months of the end of tenure.	Section 20
Article 243Y read with Article 243I	Finance Commission: State Government shall constitute a Finance Commission for: Reviewing the financial position of the Municipalities and taking such steps that help in improving the financial condition, of the Municipal bodies. Distributing the net proceeds of the taxes, fees, tolls and duties that are charged by the State Government, between the State and the Municipalities. Allotting the funds to the municipal bodies in the State from the Consolidated Fund of the State.	Section 97
	The Governor shall cause every recommendation made by the Commission under this article, together with an explanatory memorandum as to the action taken thereon, to be laid before the Legislature of the State.	No such provision in JMA, 2011
Article 243ZD	Committee for District Planning: Constitution of District Planning Committee at the district level. Composition of District Planning Committees. Preparation of draft development plans and submission to the State Government.	Section 383
Article 243ZE	Committee for Metropolitan Planning: Provision for constitution of Metropolitan Planning Committee (MPC), in every Metropolitan area, with a population of 10 lakhs or more.	Section 384

Source: *74th CAA & JMA, 2011*

The institutional mechanism of Municipalities in Jharkhand, compared to those envisaged in the provisions of the 74th CAA and JMA, 2011, are discussed in the succeeding paragraphs.

2.2.1 Constitution of Municipalities

Under Article 243 Q of the Constitution, an Urban Local Body (ULB) is defined as an institution of self-government. Section 3 of JMA, 2011, provides that the State Government may, after having regard to population of any local area, density of population, the percentage of employment in other than agricultural activities in such area, the economic importance of such area *etc.,* by notification, declare any area[4], a larger urban area (Municipal Corporation), or a smaller urban area (Municipal Council), or a transitional area (Nagar Panchayat). Under Section 14 of JMA, 2011, the State Government shall undertake a review of the existing municipalities, wherever it considers necessary, and upgrade them, having regard to the peri-urban areas and the outgrowths of the existing ULBs.

During the period between FYs 2016-17 to 2020-21, the State Government notified (between August 2017 and September 2017) two Municipal Councils (Giridih and Medininagar) and one Notified Area Committee (Mango), as Municipal Corporations; the existing Jugsalai Municipality as a Municipal Council (August 2017); and seven[5] new Nagar Panchayats (between August 2016 and September 2018).

2.2.2 Election and formation of councils

Article 243U (3)(a) of the Constitution, read with Section 20 of JMA, 2011, stipulates a fixed tenure of five years for Municipalities, from the date of its first meeting. In case of notification of new ULBs and dissolution of existing ULBs, elections are to be held within six months, from the date of such notification or dissolution.

- The State Election Commission (SEC) conducted (March and April 2018) elections, for Mayors, Deputy Mayors, Chairpersons, Vice-chairpersons and Councillors and formed councils in 34 ULBs[6], during FYs 2016-17 to 2020-21.
- In a newly created (29 August 2016) Nagar Panchayat (Barharwa), election was conducted (April 2018) after 18 months, instead of being conducted within six months, from the date of notification.
- Elections in eight[7] ULBs, tenures of which were expiring in June 2020, were proposed in May-June 2020. However, the elections were deferred (May 2020) by SEC, due to the COVID-19 pandemic. As such, elections in these ULBs had remained due, for more than 18 months, as of December 2021. In these ULBs, the Municipal Commissioners/Executive Officers were notified (June 2020) as

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[4] *Provided that the local area has acquired importance and urban characteristics, such as the availability of market facilities, established industries or potentialities to attract industries or commerce or education. Health care or other such infrastructures, for economic and industrial growth, may also be considered.*

[5] *Bachra, Badaki Saraiya, Barharwa, Dhanwar, Domchanch, Hariharganj and Mahagama.*

[6] *Five Municipal Corporations, 16 Municipal Councils and 13 Nagar Panchayats.*

[7] *Three Municipal Corporations (Chas, Deoghar and Dhanbad), three Municipal Councils (Bishrampur, Chakradharpur and Jhumritilaiya) and two Nagar Panchayats (Koderma and Manjhiaon).*

Administrators, to exercise the powers and functions of ULBs, under Section 16 (8) of JMA, 2011.

- In five[8] newly created (between April 2018 and September 2018) Nagar Panchayats, elections were due for more than 39 to 44 months, as of December 2021, from the dates of their notifications. Elections for these ULBs were proposed in May-June 2020, but were deferred (May 2020) by SEC due to the COVID-19 pandemic. However, reasons for not conducting elections before the pandemic, were not found on record.
- Two ULBs, Mango and Jugsalai, were notified (August 2017), as Municipal Corporation and Municipal Council, respectively, but elections had not been held for more than 50 months, as of December 2021, as the population of backward classes in these ULBs could not be ascertained, for identifying reserved seats.
- As per the recommendations of the 14th FC, grants were to be released to duly constituted ULBs, *i.e.* where elections had been held and elected bodies were in place. Further, grants were to be released in the ratio of population (90 *per cent*) and area (10 *per cent*) of the ULBs.

It was seen in audit that four to 14 ULBs were deprived of 14th FC grants amounting to ₹ 253.46 crore[9], during FYs 2015-16 to 2019-20, as elections were not held in these ULBS.

Thus, elections were due for periods, ranging from 18 to 50 months, in 15 ULBs and the Administrators or the Special Officers were looking after the functions of these ULBs. Besides, the ULBs were deprived of 14th FC grants amounting to ₹ 253.46 crore, due to not conducting elections in time.

The Secretary, UD&HD, accepted the facts and stated (August 2022) that action had been initiated by the Department/State Election Commission, for early elections in the 15 ULBs.

2.2.3 Composition of Municipalities

As per Article 243R of the Constitution, read with Section 15 of JMA, 2011, a Municipality consists of elected Councillors, co-opted members[10], Members of Legislative Assembly (MLAs) and Members of Parliament (MPs), representing the constituencies, which comprise, wholly or partly, the Municipal area.

Audit observed that, in the 10 test-checked ULBs, Councillors did not co-opt members having special knowledge or experience in municipal administration, and members belonging to the minority community, as envisaged in JMA, 2011.

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[8] *Bachra, Badaki Saraiya, Dhanwar, Hariharganj and Mahagama.*

[9] *2015-16: 4 ULBs - ₹ 28.61 crore, 2016-17: 8 ULBs - ₹ 46.03 crore, 2017-18: 9 ULBs - ₹ 50.16 crore, 2018-19: 14 ULBs - ₹ 63.61 crore, 2019-20: 8 ULBs - ₹ 65.05 crore (calculated on the basis of population and area)*

[10] *Members, including women having special knowledge or experience in municipal administration, and members, including women, belonging to the minority communities, with preference to communities having no representation in the Council, co-opted by the Councillors. Co-opted members do not have the right to vote.*

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs would be directed to co-opt members having special knowledge or experience in municipal administration, as well as members belonging to the minority community.

2.2.4 Reservation of seats in election

Article 243T of the Constitution stipulates reservation of seats for Scheduled Castes (SC), Scheduled Tribes (ST) and Women, for direct elections. Section 16 of JMA, 2011, read with Rule 5 of Jharkhand Municipal Election and Appeal (JMEA) Rules, 2012, provides that, in every Council, as nearly as possible, but not exceeding 50 *per cent* of the total seats of elected members, shall be reserved for SCs, STs, Backward Classes (BCs) and women. Reservation was to be given based on population of SCs, STs and BCs in that Municipality. In reserving seats, first, second and third priority were to be given to SC, ST and BC, respectively, proportionate to their population, including 50 *per cent* for women, in each category.

Audit observed that the reservation criteria, including that regarding representation of women, were adhered to, in the election of Councillors. For instance, out of 20 wards in Simdega, one seat/ward was reserved for SCs, against their population of 4.48 *per cent*; nine seats/wards for STs, including four seats/wards for women, against their population of 46.39 *per cent;* and the remaining 10 seats/wards for Others (un-reserved), including five seats/wards for women, in the election held in April 2018. No seat was reserved for the BC category, as the reservation limit of 50 *per cent* had been reached, on giving first and second priority to the SCs and STs, respectively.

2.2.5 Key committees

2.2.5.1 Standing Committee

As per Section 24 of the JMA, 2011, ULBs are required to constitute Standing Committees, which shall consist of: (a) the Mayor, the Deputy Mayor and the Chairpersons of Zonal Committees[11], in case of a Municipal Corporation (b) the Chairperson, the Vice-Chairperson and five elected Councillors, to be elected by the Council, in case of a Municipal Council and (c) the Chairperson, the Vice-Chairperson and three elected Councillors, to be elected by the Council, in case of a Nagar Panchayat. The functions of the Committee include consideration of budgets, as well as audit reports, and action thereon. The Mayor/ Chairperson is required to act as the Presiding Officer of the Standing Committee and the Municipal Commissioner/Executive Officer is responsible for implementing the resolutions of the Committee.

[11] *Zonal Committees are to be constituted by the Government, under Section 49 of JMA 2011, comprising the territorial areas of such number of wards, as may be notified within the Municipal Corporation. Each Zonal committee is to consist of not less than five contiguous wards. The power and functions of the Zonal Committees shall be such, as may be notified by the Government.*

Audit observed non-constitution or delay in constitution of Standing Committees, in the 10 test-checked ULBs, as shown in **Table 2.3**.

Table 2.3: Status of constitution of Standing Committees

Sl. No.	Name of ULB	Period of Board	Date of constitution of Standing Committee	Number of meetings during FYs 2016-17 to 2020-21
1.	Deoghar M.Corpn.	2015-16 to 2019-20	09/04/2016	07
2.	Dhanbad M. Corpn.	2015-16 to 2019-20	01/07/2015	31
3.	Khunti NP	2013-14 to 2017-18	Not constituted	
		2018-19 to 2022-23	12/02/2021	01
4.	Medininagar M.Corpn.	2013-14 to 2017-18	Not constituted	
		2018-19 to 2022-23	01/03/2019	05
5.	Phusro MC	2013-14 to 2017-18	Date not available	11
		2018-19 to 2022-23	01/07/2019	
6.	Ranchi M. Corpn.	2013-14 to 2017-18	02/12/2013	04
		2018-19 to 2022-23	10/09/2018	05
7.	Simdega MC	2013-14 to 2017-18	Not constituted	
		2018-19 to 2022-23	30/07/2018	02
8.	Hussainabad NP	2013-14 to 2017-18	Not constituted	
		2018-19 to 2022-23	26/06/2021	Nil
9.	Basukinath NP	2013-14 to 2017-18 and 2018-19 to 2022-23	Not constituted	
10.	Godda MC			

Source: *Information provided by test-checked ULBs*

It can be seen from the **Table 2.3** that Standing Committees had not been constituted in two ULBs (Basukinath and Godda) at all, whereas they had not been constituted in four ULBs (Khunti, Medininagar, Simdega and Hussainabad) for one term, *i.e.* FYs 2013-14 to 2017-18. Delays, ranging from 32 months to 37 months, were also seen in constitution of the Standing Committees in two other ULBs (Khunti and Hussainabad), for the term of FYs 2018-19 to 2022-23. In the absence of Standing Committees, their functions were carried out by the Municipal Boards, in the test-checked ULBs.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs had been directed (June 2022) to constitute the Standing Committees.

2.2.5.2 Wards Committee

Article 243S of the Constitution provides for constitution of Wards Committees, consisting of one or more wards, within the territorial area of a Municipality, having a population of three lakhs or more. However, as per Section 34 of JMA, 2011, Wards Committees[12] are to be constituted for each ward of the Municipality, and are to be co-terminus with the term of the Council. The Committees were to prepare Annual Development Plans, showing the estimated expenditure, under Section 381 of JMA, 2011.

Audit observed that two (Dhanbad and Ranchi) out of the 10 test-checked ULBs, had population of more than three lakh. Wards Committees had been constituted in four out of 55 wards of Dhanbad, for the term 2015-16 to 2019-20, whereas no such Committees were constituted in Ranchi, which had 53 wards,

[12] *Consists of the Councilor of the ward, Area Sabha representative and not more than ten persons representing the civil society from the ward nominated by the Council.*

for the terms 2013-14 to 2017-18 and 2018-19 to 2022-23. Moreover, 41 Wards Committees had been constituted in two test-checked ULBs (Deoghar: 36 and Simdega: 5) having 56 wards (Deoghar: 36 and Simdega: 20), whereas there were no Wards Committees in six[13] test-checked ULBs, having 131 wards. Thus, the objective of facilitating community participation in local governance was defeated. The functions of the ward committees were carried out by the councillors, in the test-checked ULBs.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs had been directed (June 2022) to constitute the Wards Committees.

2.2.5.3 Subject Committee

As per Section 46 of JMA, 2011, a Municipal Corporation or a Class-A Municipal Council[14], may, from time to time, constitute Subject Committees, consisting of elected councillors[15], to deal with matters relating to: (a) water-supply (b) drainage and sewerage (c) solid waste management (d) urban environment management and land use control (e) poverty and slum services (f) education and health and (g) welfare of SCs, STs, BCs, Women and Children. The term of each Subject Committee will be for two years.

Audit observed that Subject Committees were not constituted, in any of the four test-checked Municipal Corporations (Dhanbad, Deoghar, Medininagar and Ranchi). In the absence of such committees, the decisions on these subjects were taken by the Municipal Boards, in the test-checked ULBs.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs had been directed (June 2022) to constitute the Subject Committees.

2.2.6 District and Metropolitan Planning Committee

As per Articles 243ZD and 243ZE of the Constitution, the State Government is to constitute a District Planning Committee (DPC), at the district level, to consolidate the plans prepared by the local bodies in the district and to prepare a Draft Development Plan (DDP) for the district as a whole. It is also required to constitute a Metropolitan Planning Committee (MPC), in every Metropolitan Area, to prepare a DDP for the Metropolitan Region as a whole. Sections 383 and 384 of JMA, 2011, stipulate that the DPC and MPC shall prepare a comprehensive DDP in regard to matters of common interest[16] between the Panchayats and the Municipalities.

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[13] *Basukinath: 12, Godda: 21, Khunti: 19, Hussainabad: 16, Medininagar: 35 and Phusro: 28.*

[14] *A local body having population of one lakh and above and less than one lakh and fifty thousand.*

[15] *Seven members in case of Municipal Corporation and five members in case Class 'A' Municipal Council.*

[16] *Spatial planning; sharing of water and other physical and natural resources; integrated development of infrastructure; environment conservation; and extent and type of available resources, whether financial or otherwise.*

Audit observed that though DPCs were in existence, in all the test-checked districts, linked to the test-checked ULBs, they had not called for submission of Plans from the respective ULBs, for consolidation and preparation of DDPs. Further, two test-checked ULBs (Dhanbad and Ranchi) had population of more than one million and attracted the status of a metropolitan city. However, both of these were yet to be notified as metropolitan cities, for constitution of MPC.

The Secretary, UD&HD accepted the facts and stated (August 2022) that instructions would be issued to the DPCs/ ULBs for DDPs. However, issue of notification of MPC for Ranchi and Dhanbad Municipal Corporations would be considered later.

2.2.7 State Finance Commission

Article 243Y of the Constitution stipulates that the Governor of the State shall constitute a Finance Commission, within one year from the commencement of the Act, and, thereafter, at the expiration of every fifth year, to review the financial position of the municipalities, and to make recommendations to the Governor regarding distribution of taxes, duties, fees etc., between the State and ULBs, determination of taxes, duties, fees etc., grants-in-aid to ULBs and the measures needed to improve the financial position of the ULBs. Further, the Ministry of Panchayati Raj, Government of India (GoI), issued (April 2009) guidelines to appoint full time Chairpersons for the State Finance Commissions (SFCs). In addition, the 14th Finance Commission recommended (December 2014) strengthening of SFCs, with proper administrative support and adequate resources, for ensuring their smooth functioning.

Audit noticed delays and gaps in constitution of the SFCs, as well as lack of administrative support to them, as discussed in the succeeding paragraphs.

2.2.7.1 Delays in constitution of SFCs

After bifurcation (November 2000) of the State of Jharkhand from erstwhile Bihar, four SFCs were constituted in Jharkhand, each comprising of a chairperson, two other members and an *ex-officio* Secretary. Details of terms of the SFCs are shown in **Table 2.4**.

Table 2.4: Constitution of SFCs in Jharkhand

SFC	Due dates for constitution of SFCs with reference to the first SFC	Dates of constitution of the SFCs	Delays in constitution of the SFCs	Period covered
First	Not applicable*	28/01/2004	----	28/01/2004 to 27/01/2009
Second	28/01/2009	19/12/2009	10 months	28/01/2009 to 27/01/2014
Third	28/01/2014	08/04/2015	14 months	28/01/2014 to 27/01/2019
Fourth	28/01/2019	23/07/2019	5 months	28/01/2019 to 27/01/2024

Source: *Data provided by SFC*

**The State of Jharkhand was created on 15 November 2000 after bifurcation from Bihar.*

It can be seen from **Table 2.4** that the first SFC had been constituted after three years of creation of the State, and the subsequent SFCs were constituted after gaps of five to 14 months, from the date of expiry of the terms of the previous SFCs.

2.2.7.2 Appointment of Chairperson, members, and administrative staff

Audit observed that the posts of Chairpersons of SFCs had remained vacant for long periods, as shown in **Table 2.5**.

Table 2.5: Number of Chairpersons of SFCs appointed and periods when the post was vacant

SFC	Total number of Chairpersons appointed	Period for which post was vacant	Vacant period in days
1st SFC	7	01/10/2004 to 15/07/2005	288
		17/08/2007 to 02/03/2008	199
		17/07/2008 to 31/10/2008	107
		Total	**594**
2nd SFC	5	01/09/2009 to 24/10/2009	54
		01/07/2011 to 10/08/2011	41
		Total	**95**
3rd SFC	4	02/04/2018 to 27/01/2019	**301**
4th SFC	Vacant	28/01/2019 to 31/12/2021	**1,069**

Source: *Information provided by Planning and Finance Department*

It can be seen from **Table 2.5** that the post of Chairperson had remained vacant for 95 to 594 days, in the first three SFCs. The Chairperson of the 4th SFC had not been appointed, as of December 2021. No information was found on records regarding the appointment, if any, of the two other members, in any of the four SFCs.

Further, Audit scrutiny revealed that the State Government had sanctioned (September and November 2004) 12 temporary posts for two years, which were extended up to 27 January 2009. However, 15 posts were sanctioned (June 2015) for two years, and 15 posts (September 2019) for seven months. As such, the State did not ensure posts of regular office staff for running the office of the SFCs. Posting of regular office staff, as per sanctioned strength, was also not ensured, as only three staff[17] were posted till April 2009, and an Accounts Clerk was engaged on deputation basis, in June 2011. Information regarding the staff position (as of December 2021) was not furnished to Audit. The Chairpersons of different SFCs pointed out (November 2013, May 2015, and December 2017) shortage of staff as the reason behind the ineffective functioning of the SFCs and non-preparation of Reports.

Thus, the SFCs constituted in Jharkhand faced constraints in their functioning, due to the posts of Chairpersons remaining vacant for long periods of time, and non-appointment of administrative staff.

[17] *One Personal Assistant (retired on 31 March 2009), one Assistant, and one Typist-cum-Data Entry Operator (outsourced but vacant since June 2017).*

2.2.7.3 Working of SFCs

As per Article 243Y, read with Article 243I, of the Constitution, the Governor shall cause every recommendation, made by the State Finance Commission, together with an explanatory memorandum, as to the action taken thereon, to be laid before the legislature of the State.

Three SFCs completed their tenure from January 2004 to January 2019. However, only the 1st SFC submitted its recommendations (April 2009) to the Governor. Details of the recommendations and the action taken by the Government, are shown in **Table 2.6**.

Table 2.6: Recommendations of the first SFC, with action taken

Sl. No.	Recommendations	Action taken by the State Government
1.	Enactment of a new Jharkhand Municipal Act, containing a 'Municipal Financial Schedule', with a Schedule listing out various functions assigned to the municipalities.	JMA, 2011, was enacted (February 2012), listing 197 activities/ functions assigned to ULBs, under the Schedule of Section 455.
2.	Evolve a suitable structure and staffing pattern for ULBs within 90 days.	The Municipal Cadre was created in May 2010. Further, the State Town Planning Service Rules and Jharkhand Municipal Service Rules, were framed (March 2014), for manning different pools.
3.	Create a distinct pool of Administrative, Accounts and Engineering personnel for ULBs.	
4.	Till creation of Municipal Financial Schedule, provision of a per capita Core Municipal Services Provision Grant of ₹ 375 in FY 2009-10, with annual growth rate of 10 *per cent* in the subsequent four years, in lieu of taxes not assigned and shared with ULBs.	The State Government releases development grants to ULBs, based on populations and areas, in the ratio 90:10. In addition, the State releases 40 *per cent* loan and 30 *per cent* grants for salary.
5.	Create an Umbrella of Local Self Government Department with one Minister and one Principal Secretary.	UD&HD, headed by the Minister-in-Charge of Urban Development/ Local self-government, is in place.
6.	Create a "Jharkhand Urban Development Fund" for Urban Infrastructure Development Projects.	During the FYs 2016-17 and 2017-18, an annual budget provision of ₹ one crore was made towards the Jharkhand State Development Fund. In FY 2018-19, a provision of ₹ 50 crore was made towards the Jharkhand State Infrastructure Development Fund. No provision was made during FYs 2019-20 and 2020-21. However, the budget provisions remained unspent.

It was observed that UD & HD did not lay the explanatory memorandum, in regard to the action taken on recommendations, before the legislature of the State, as this provision had not been included in JMA, 2011. Further, ULBs were not implementing all the assigned activities, due to non-existence of the related rules, as discussed in ***Paragraph 2.3.1***. They were largely dependent on financial assistance from the State Government, due to non-framing of rules regarding the levy and collection of municipal taxes, as discussed in ***Paragraph 2.3.2***.

In response to the audit observations regarding delays in constitution of the SFCs, appointment of its Chairperson, members and administrative staff and working of the SFCs, the Secretary stated (August 2022) that these issues were related to the Finance Department. The fact, however, remains that the

Department did not co-ordinate with the Finance Department, to ensure timely constitution and smooth functioning of the SFCs.

2.2.8 Manpower for ULBs

2.2.8.1 Creation of posts

The State Government assessed the requirement of staff for the ULBs, on the basis of population and created (between May 2010 and September 2018) 2,608 posts, under 11 cadres[18], for 43 ULBs, as shown in **Table 2.7**.

Table 2.7: Post of municipal cadres created up to March 2021

Sl. No.	Name of Cadre	For 10 Municipal Corporations including Jamshedpur NAC	For 20 Municipal Councils	For 13 Nagar Panchayats	Total
1.	Administration	60	40	13	113
2.	Engineering	268	160	78	506
3.	Public Health	274	320	154	748
4.	Revenue	141	109	39	289
5.	Accounts	85	77	26	188
6.	Horticulture	18	00	00	18
7.	Public Relations	15	00	00	15
8.	Legal	25	20	13	58
9.	Office Management	216	160	52	428
10.	Town Planning	94	78	37	209
11.	Veterinary	36	00	00	36
Total		**1,232**	**964**	**412**	**2,608**

Source: *Data provided by DMA*

It can be seen from **Table 2.7** that no posts had been created in the Horticulture, Public Relations and Veterinary cadres, for Municipal Councils and Nagar Panchayats. Further, no posts had been created for seven[19] ULBs (notified between August 2016 and September 2018), even after 39 to 64 months of their creation (as of December 2021).

The Secretary, UD&HD accepted the facts and stated (August 2022) that creation of posts for the mentioned ULBs was under process.

2.2.8.2 Shortage of staff

Audit observed that, due to shortage of regular manpower and increase in the workload of the ULBs, DMA initially created (between February 2010 and March 2019) 134 posts of City Manager, for three years, on contract basis. The available manpower, including City Managers, against the sanctioned strength, as on 31 March 2021, in the 10 test-checked ULBs, was as shown in **Table 2.8**.

[18] *Including Officers and staff from Indian Administrative Service, Jharkhand Administrative Service, State cadre, State Account Audit Service and Municipal cadre.*
[19] *Bachra, Badki Saraiya, Barharwa, Dhanwar, Domchanch, Hariharganj and Mahagama.*

Table 2.8: Sanctioned strength and vacancies in the test-checked ULBs

Sl. No.	Name of ULB	Human Resources (As on 31/03/2021)				Vacancy
		Sanctioned strength[20]	Men-in-position			
			Permanent	Contractual/ Deputation	Total	
1.	Basukinath NP	34	5	2	7	27
2.	Deoghar M. Corpn.	119	97	17	114	5
3.	Dhanbad M.Corpn.	230	124	45	169	61
4.	Godda MC	50	12	11	23	27
5.	Hussainabad NP	34	6	6	12	22
6.	Khunti NP	23	0	7	7	16
7.	Medninagar M. Corpn.	54	12	14	26	28
8.	Phusro MC	51	6	12	18	33
9.	Ranchi M.Corpn.	243	53	21	74	169
10.	Simdega MC	50	1	16	17	33
Total		**888**	**316**	**151**	**467**	**421**

Source: *Data provided by test-checked ULBs*

It can be seen from **Table 2.8** that there were 421 (47 *per cent*) vacant posts, as on 31 March 2021.

Further, as per section 55 of JMA, 2011, read with Rule 2 of the Jharkhand Municipal Accounts Rules, 2012, the Chief Accounts Officer (CAO) of a Municipal Corporation should be an officer from the office of the Accountant General or a Senior Officer of the Finance or Accounts Department of the State Government. Similarly, the Government should appoint Accounts Officers (AO) in the Municipal Councils (MCs) and Nagar Panchayats (NPs). The CAO/AO is the head of the Accounts Department of the ULB and is responsible for accounting of Income and Expenditure and Assets and Liabilities of the ULB. The CAOs/AOs are required to examine the entries and the closing balance in the Cash Book on a daily basis and to check all bills.

The Government sanctioned (September 2018) posts of one CAO and one AO, for each Municipal Corporation and one AO for each MC/NP. However, these posts were vacant in the 10 test-checked ULBs, including three Municipal Corporations, as of March 2021. In the absence of permanent CAOs/AOs, the accounts of the test-checked ULBs were being maintained by the Deputy Municipal Commissioner in Municipal Corporations and by Accountants, engaged on contractual basis, in MCs/NPs.

Thus, the ULBs were facing acute shortage of staff and the devolution of functions remained ineffective due to this.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the Jharkhand Staff Selection Commission had issued (July 2022) advertisements for regular appointment of 1,300 posts in the 50 ULBs of the State.

[20] *Sanctioned strength includes posts of City Managers also (eight each in Dhanbad M. Corpn. and Ranchi M. Corpn., five each in Deoghar M. Corpn. and Medininagar M .Corpn. and two each in the remaining test-checked ULBs)*

2.2.9 Parastatal and its functions

Considering the lack of technical efficiency for centralised formulation, execution, and maintenance of schemes by the ULBs, a parastatal, named the Jharkhand Urban Infrastructure Development Company Limited (JUIDCO), was notified (July 2013), by the State Government, under the Companies Act, 1956, for planning, execution, and monitoring of basic infrastructure, in the urban areas of Jharkhand. Principal Secretary, UD&HD, GoJ, is the *ex-officio* Chairman-cum-Managing Director of JUIDCO.

Works relating to the development and strengthening of urban infrastructure, such as roads with drains; water supply and sewerage; solid waste management (SWM) projects; public amenities, including public parks; urban greenery; conservation of water bodies; and housing in the urban areas, including those for the urban poor, are entrusted to JUIDCO. The State Government releases funds to JUIDCO directly, or through the ULBs, for execution of these development works. JUIDCO was also entrusted (November 2015) works related to monitoring of schemes, costing more than ₹ 50 lakh, for which funds had been provided to the ULBs. After completion of the works, JUIDCO is required to transfer the assets so created, to the ULBs.

During the period between FY 2016-17 to FY 2020-21, JUIDCO undertook 29 development works[21] under the State Plan, one work (water supply) aided by the World Bank and 32 works under Central schemes[22]. Audit observed that JUIDCO had received funds, amounting to ₹ 43.56 crore (2 *per cent*) through the ULBs and ₹ 2,240.25 crore (98 *per cent*) directly from the UD&HD, during the period from FY 2016-17 to FY 2020-21. As such, the ULBs did not have much of a role in funding and monitoring works executed by JUIDCO.

Conclusion

Elections were due in 15 ULBs, for more than 18 to 50 months, despite the ULBs having been notified/ dissolved by the State Government, from time to time. Four to 14 ULBs were deprived of 14th FC grants, amounting to ₹ 253.46 crore, during 2015-16 to 2019-20, due to not conducting elections in time. There were no Standing and Ward Committees in two and six ULBs respectively, out of 10 test-checked ULBs. Subject Committees had also not been constituted in the four test-checked Municipal Corporations. The State Government had constituted three State Finance Commissions (SFCs), for the period from January 2004 to January 2019. However, two SFCs covering the period from January 2009 to January 2019, did not submit their recommendations to the State Government, due to shortage of administrative staff. Though District Planning Committees were set up, they did not prepare Draft Development Plans, with inputs from the ULBs. The ULBs were facing acute shortage of staff,

[21] *Sixteen urban water supply schemes and 13 buildings.*
[22] *Twelve schemes of the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), 13 schemes of the Pradhan Mantri Awas Yojana (PMAY) and seven schemes of the Namami Gange Project.*

for making the devolution of functions effective. JUIDCO, the parastatal body, received nearly 98 per cent of the development funds, for creation of urban infrastructure, directly from the UD&HD, and, as such, the ULBs did not have much of a role in funding and monitoring development works executed by JUIDCO.

Recommendations

- *Election of ULBs may be conducted at the earliest and the formation of key committees, viz. Ward Committees, Standing Committees and Subject Committees, may be ensured;*
- *The District Planning Committees may ensure preparation of Draft Development Plans, with inputs from the ULBs;*
- *The State Finance Commissions may be strengthened, by appointment of full-time Chairperson, Members and administrative staff;*
- *Deployment of adequate manpower in the ULBs may be ensured.*

2.3 Status of devolution of functions

The 74th CAA left the extent of devolution of powers to the State Legislatures. The major elements of devolution are transfer of functions, funds and functionaries, to ULBs.

The extent of empowerment of the ULBs and the status of implementation of various functions; levy and collection of taxes; and the extent of water supply and waste management functions performed by them, are discussed in the succeeding paragraphs.

2.3.1 Autonomy of ULBs in discharging functions

The 74th CAA introduced provisions, in regard to powers of self-governance, to Municipalities, through Articles 243W and 243X. The State Government introduced similar provisions through JMA, 2011, as detailed in **Table 2.9**.

Table 2.9: State legislation *vis-à-vis* the provisions of the 74th CAA

Provisions introduced under 74th CAA	Requirement, as per provisions of the Constitution of India	Similar provisions in JMA, 2011
Article 243W	*Powers, authority, and responsibilities of the Municipalities:* All municipalities would be empowered with such powers as may be necessary to enable them to function as effective institutions of self-government. The State Government shall entrust the municipalities with such powers and authority to enable them to carry out the responsibilities in relation to the 12th Schedule.	Sections 25, 34, 46, 70, 383 and 384
Article 243X	*Power to impose taxes by, and funds of the Municipalities:* Municipalities would be empowered to levy and collect taxes, fees, duties *etc.* Grants-in-aid would be given to the Municipalities from the State Budget. Constitution of funds for crediting and withdrawal of moneys by the Municipality	Sections 98, 152, 154-159

Further, as per Section 590 of JMA, 2011, the State Government may, by notification, make rules for carrying out the purposes of this Act. As per Section 592, the municipality may, from time to time, make regulations, not inconsistent

with the provisions of this Act, or the rules made thereunder, for the purpose of giving effect to the provisions of this Act.

Audit observed that the State Government had empowered ULBs for discharging all the 18 functions as mentioned in the 12th schedule of the 74th CAA, vide Section 70 of JMA, 2011. However, Audit noticed the existence of other Government Departments/Agencies that were discharging the functions/responsibilities expected to have been devolved to the ULBs, as detailed in **Table 2.10**.

Table 2.10: Extent of autonomy over discharge of functions by the ULBs

Sl. No.	Functions	Activities	Actual status of implementation
Functions where ULBs have full jurisdiction			
1.	Burials and burial grounds, cremations, cremation grounds and electric crematoriums.	Construction and O&M of crematoriums and burial grounds and electric crematoriums.	ULBs were discharging all these activities.
2.	Slum improvement and up-gradation	Identifying beneficiaries Providing Affordable Housing Up-gradation of houses	ULBs were discharging all these activities by identifying beneficiaries for affordable housing and construction/upgradation of houses.
3.	Regulation of slaughterhouses and tanneries	Ensuring quality of animals and meat Disposal of waste O & M of slaughterhouses	ULBs were discharging all these activities through issue of licenses to slaughter houses, construction and implementation of waste management therein.
4.	Cattle pounds; prevention of cruelty to animals	Catching and keeping strays Sterilisation and anti-rabies vaccination Ensuring animal safety	ULBs were discharging all these activities.
5.	Provision of urban amenities and facilities such as parks, gardens, playgrounds	Creation of parks and gardens Operation and Maintenance	ULBs were discharging both these activities, through construction and operation of parks and gardens.
6.	Urban poverty alleviation	Identifying beneficiaries Livelihood and employment Creating vending zones for Street vendors	ULBs were discharging all these activities, through identification of beneficiaries and implementation of poverty alleviation programs.
7.	Vital statistics, including birth and death registration	Coordinating with hospitals/ crematoriums *etc.,* for obtaining information Maintaining and updating database in this regard.	ULBs were maintaining databases of births and deaths and issuing birth and death certificates.
8.	Public amenities, including street lighting, parking lots, bus stops and public conveniences	Installation and maintenance of streetlights Deciding and operating bus routes Creation and maintenance of parking lots Creation and maintenance of public toilets	ULBs were discharging all these activities.
9.	Urban planning, including town planning	Master Planning/Development Plans/Zonal Plans Enforcing master planning regulations Enforcing building bye-laws and licenses	The UD&HD was approving the Master Plans and the related Regulations and the ULBs were enforcing them.

Sl. No.	Functions	Activities	Actual status of implementation
10.	Regulation of land-use and construction of buildings	Regulating land use	ULBs were discharging all these activities.
		Approving building plans/high rises	
		Demolishing illegal buildings	
Functions jointly performed by ULBs and State Government Departments			
11.	Roads and bridges	Construction and maintenance of roads	*ULBs:* Construction and maintenance of roads, bridges, drains, flyovers, and footpaths, within the jurisdiction of ULBs. *Road Construction Department*: Responsible for road works, including maintenance of State Highways and Major District Roads, within ULBs.
		Construction and maintenance of bridges, drains, flyovers and footpaths	
12.	Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded	Identifying beneficiaries	*Social Welfare Department:* Implementation of social welfare schemes related to SC/ST and tribal development. *ULBs:* Implementation of Central and State schemes related to housing and welfare for the urban poor, including the handicapped and mentally retarded.
		Providing tools/benefits, such as tricycles	
		Housing programs	
		Scholarships	
13.	Planning for economic and social development	Program implementation for economic activities	*ULBs*: Implementation of schemes of housing, employment, health, education, and basic necessities. *Social Welfare Department:* Implementation of welfare schemes for SC/ST and other weaker sections, for their socio-economic and educational advancement.
14.	Water supply for domestic, industrial, and commercial purposes	Distribution of water	*Drinking Water and Sanitation Department (DW&SD):* Construction of water supply projects as well as their operation and maintenance, in addition to water supply within the ULBs. *ULBs*: Provision of water supply connections and collection of water charges.
		Providing connections	
		Operation & Maintenance (O&M)	
		Collection of charges	
15.	Public health, sanitation, conservancy and solid waste management	Maintaining hospitals, dispensaries	*Department of Health and Family Welfare:* Provision of health care services in urban areas, through hospitals and dispensaries. *ULBs:* Assisting the Health Department in running the immunisation/ vaccination programmes; cleaning and disinfection of localities affected by infectious diseases; solid waste management; and control of public parks.
		Immunisation/Vaccination	
		Registration of births and deaths	
		Cleaning and disinfection of localities affected by infectious diseases	
		Solid waste management	
		Control and supervision of public markets	
16.	Promotion of cultural, educational and aesthetic aspects.	Schools and education	(i) School Education & Literacy Department and (ii) Tourism, Art, Culture, Sports & Youth Affairs Department, are responsible for these activities.
		Fairs and festivals	
		Cultural buildings/institutions, Heritage	The Tourism, Art, Culture, Sports & Youth Affairs Department, along with ULBs, undertake these activities.
		Public space beautification	ULBs were undertaking this activity.
Functions with no role for ULBs			
17.	Urban forestry, protection of the environment and promotion of ecological aspects.	Afforestation	These activities were vested with the Forest, Environment and Climate Change Department.
		Greenification	
		Awareness drives	
		Protection of the environment and promotion of ecological aspects	
		Maintenance of natural resources like water bodies *etc.*	

Sl. No.	Functions	Activities	Actual status of implementation
18.	Fire Services	Establishing and maintaining fire brigades. Providing fire NOC/approval certificate in respect of high-rise buildings	This function was vested with the Home, Jail and Disaster Management Department.

Source: *Information provided by UD&HD*

As shown in **Table 2.10**, out of the 18 functions mentioned in the 12th Schedule of the 74th CAA, 10 functions were being fully performed by ULBs, six functions were being partially performed by them, and ULBs had no role in performing the remaining two functions. Audit further observed that out of these 18 functions, only 'water supply' had been transferred to ULBs through departmental notification. ULBs were performing other functions, which had been entrusted (before bifurcation from erstwhile Bihar) to them, under the Bihar and Orissa Municipal Act, 1922. The position, in regard to the 10 test-checked ULBs was similar, though the operation and maintenance of water supply projects was being carried out by two of the test-checked ULBs (Deoghar and Simdega).

The Secretary, UD&HD accepted the facts and attributed (August 2022) lack of manpower, technical expertise and resources with the UD&HD/ULBs, as the reasons for delegation of these functions/activities to different specialised agencies/departments. The fact, however, remains that the Department had not been able to arrange adequate manpower, expertise and resources, even after ten years of the enactment of JMA, 2011.

2.3.2 Role of ULBs in AMRUT

GoI launched (June 2015) the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) to provide basic services, such as water supply, sewerage, urban transport to households, and to provide amenities in cities, to improve the quality of life of citizens, especially the poor and the disadvantaged. Seven[23] cities were covered under AMRUT, in Jharkhand.

Under AMRUT, 46 schemes[24] were taken up between the FYs 2015-16 and 2019-20, at an estimated cost of ₹ 1,591.05 crore. Out of 46 schemes, 34 parks, with an estimated cost of ₹ 52.73 crore, had been constructed by the ULBs. The remaining 12 schemes, estimated at ₹ 1,538.32 crore, had been allotted to JUIDCO, by the State Government. Out of the 12 schemes, one scheme was complete, whereas 11 schemes with an estimated cost of ₹ 1534.81 crore, were in progress, with expenditure of ₹ 545.30 crore, as of March 2021.

The Secretary, UD&HD stated (August 2022) that JUIDCO had been regularly monitoring various schemes of water supply, sewerage and septage, in coordination with the ULBs and other stakeholders. The reply is not convincing,

[23] *Adityapur, Chas, Deoghar, Dhanbad, Giridih, Hazaribag and Ranchi.*
[24] *Six schemes relating to urban water supply, one relating to sewerage, four relating to septage and 35 parks.*

as the ULBs did not have much of a role in funding and monitoring works executed by JUIDCO, as discussed in ***Paragraph 2.2.9***.

2.3.3 Role of ULBs in Smart City Mission

The objective of the Smart City Mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of smart solutions. It is a centrally sponsored scheme where GoI and State are to share funds in the ratio of 50:50. A Special Purpose Vehicle (SPV), having nominees of the Central Government, the State Government and ULBs on its Board, is to be set up, to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the smart city development projects.

In Jharkhand, the capital city Ranchi, was selected under the Mission. An SPV, Ranchi Smart City Corporation Limited (RSCCL), was formed (August 2016), under the Companies Act, 2013, with an equity capital of ₹ 200 crore. As per resolution of the SPV, all the powers of the Ranchi Municipal Corporation (RMC) and the powers of the State Government, relating to smart city projects, as given in JMA, 2011, were to be exercised by RSCCL.

Audit observed that RSCCL took up 12 projects of land development, transport facility, water supply, street lighting, waste water management, civic and command centres *etc*., costing ₹ 934.51 crore and incurred expenditure of ₹ 798.34 crore on these projects (as of January 2023). Of these 12 projects, four projects were complete and the remaining projects were on the verge of completion, with physical progress ranging between 92 and 98 *per cent*. Six projects of solid waste management, public transport, parks and river front development, costing ₹ 148.03 crore, were either in the DPR stage, or were to be started after completion of major construction works.

2.3.4 Water Supply

As per section 70 of JMA, 2011, Water supply, for domestic, commercial, and industrial purposes, is a core function of the ULBs. The 14th FC had recommended (December 2014) that basic services related to water and sanitation, including drinking water, must be provided to all.

Audit observed that the Drinking Water & Sanitation Department (DW&SD) was mainly responsible for supply of water in urban areas. Piped water supply was, however, not available in 16 out of the 50 ULBs. As on March 2021, only 1.80 lakh (23 *per cent*) out of 7.80 lakh urban households, had piped water supply. Out of the 1.80 lakh households with water supply, 29,798 (17 *per cent)* connections were metered.

In the 10 test-checked ULBs, the coverage of piped water supply ranged between six and 48 *per cent.* In four[25] of these ULBs, the coverage was less than

[25] *Deoghar, Godda, Phusro and Simdega.*

10 *per cent*. Further, against 21,497 metered connections in the 10 test-checked ULBs, 21,481 connections were in Ranchi.

Thus, the ULBs were yet to provide piped drinking water to a large number of households. Moreover, JUIDCO and DW&SD had taken up 23 and seven water supply projects, respectively, during FYs 2016-17 to 2020-21, which were in progress, as of December 2021.

The Secretary, UD&HD stated (August 2022) that the Department had taken action for *cent per cent* coverage of water supply to households through various schemes. The reply is not convincing, as it does not specify details of schemes being referred to, even though the audit observation was based on scrutiny of all the schemes taken up by JUIDCO and DW&SD. Other agencies were not found to have been involved in the execution of water supply schemes.

2.3.5 Solid Waste Management

As per Section 251 of JMA, 2011, the municipality shall, within the municipal area, be responsible for implementation of the rules made by the Central Government, to regulate the management and handling of municipal solid wastes and for development of any infrastructure for collection, storage, transportation, processing, and disposal of solid wastes.

Audit observed that 36 Solid Waste Management (SWM) projects initiated (March 2017 to August 2020), in 45 out of the 50 ULBs in the State had been: (i) in progress in 28 ULBs (ii) under tendering in seven ULBs (iii) in the Detailed Project Report (DPR) stage in seven ULBs. Further, consultants had been appointed to frame DPRs for three ULBs.

Thus, SWM projects, required for scientific disposal of municipal waste, were not functional in any of the ULBs. In the 10 test-checked ULBs, the ULBs were carrying out door-to-door collection of waste and dumping the waste in open spaces identified for the purpose. Segregation of waste was, however, not being done. It was also seen that the ULBs were not collecting bio-medical waste. Photographs of some of the incomplete SWM projects and open dumping sites are given below.

Picture 2.1: Incomplete SWM projects and open dumping sites

Incomplete compressed bio-gas plant at Jhiri, Ranchi.

Incomplete solid waste treatment plant at Deoghar.

Municipal waste dumping site at Jhiri, Ranchi.

Municipal waste dumping site at Medininagar.

The Secretary, UD&HD accepted the facts and stated (August 2022) that action had been taken by the Department for early completion of SWM Projects in all ULBs.

Conclusion

The State Government enacted the Jharkhand Municipal Act (JMA), 2011, to comply with the provisions of the 74th Constitutional Amendment Act and enable the ULBs to function as institutions of self-government. JMA was, however, not supported specifically by devolution of all functions and creation of appropriate institutional mechanisms. Out of 18 functions required to be devolved, ULBs were solely responsible for only 10 functions; had no role in two functions; and had partial role in six functions. ULBs were collecting only three out of the nine types of taxes mentioned under JMA, 2011, meant for augmentation of the resources of the ULBs, as the State Government had not framed the required Rules. Piped water supply was being provided only to 23 per cent of the total urban households. Solid Waste Management projects were not operational in any of the ULBs, as a result of which, waste was being disposed of in open places, without segregation.

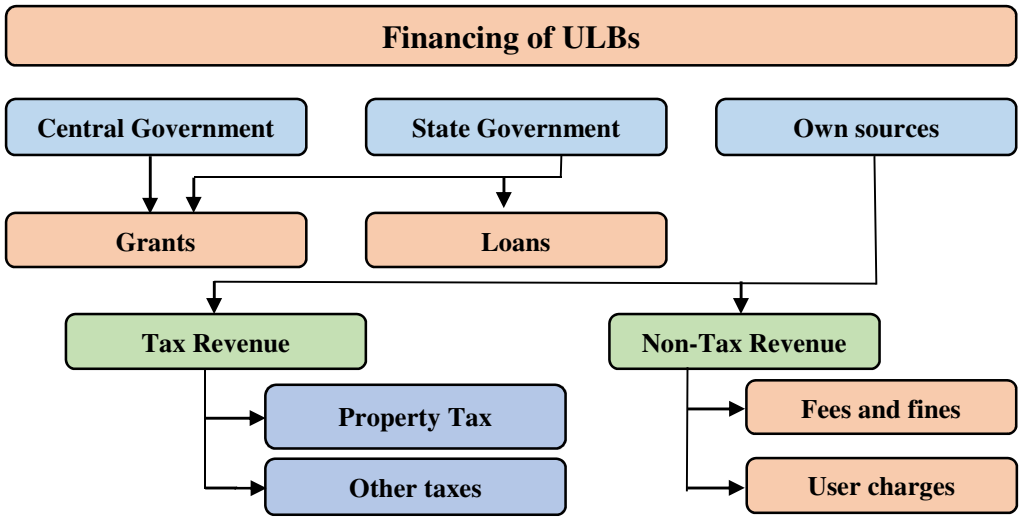
Recommendations:

- *Necessary support, viz. adequate and skilled manpower and other resources, may be provided to the ULBs, to ensure their autonomy in performing the functions assigned to them; and*
- *Necessary Rules may be framed, to ensure levy and collection of all types of municipal taxes by the ULBs.*

2.4 Financial resources of Urban Local Bodies

The Financial resources of ULBs include revenue, grants and loans, as shown in **Chart 2.2** below.

Chart 2.2: Financing of ULBs



2.4.1 Financial resources of ULBs

The State Government provided recurring loans and grants to ULBs, for salary, and also provides non-recurring grants for developmental expenditure. Besides grants and loans to ULBs, UD&HD incurred expenditure for creation of urban infrastructure, through its own budget. However, UD&HD did not compile separate accounts, showing the expenditure against the grants and loans given to ULBs. The budget allocations and expenditure, including the grants and loans given to the ULBs, as also the savings there against, during the FYs 2016-17 to 2020-21, are given in **Table 2.11**.

Table 2.11: Budget allocation, expenditure and savings of ULBs

(₹ in crore)

Particulars		Financial Year					Total
		2016-17	2017-18	2018-19	2019-20	2020-21	
Budget Allocation	Establishment	436.71	192.03	157.20	215.69	226.36	1,227.99
	Development	2,705.11	3,108.57	2,912.74	2,956.84	2,948.61	14,631.87
Total		**3,141.82**	**3,300.60**	**3,069.94**	**3,172.53**	**3,174.97**	**15,859.86**
Expenditure	Establishment	275.01	178.31	129.89	187.33	192.61	963.15
	Development	2,567.23	2,853.73	2,351.16	2,733.58	2,948.61	13,454.31
Total		**2,842.24**	**3,032.04**	**2,481.05**	**2,920.91**	**3,141.22**	**14,417.46**
Savings	Establishment	161.70	13.72	27.31	28.36	33.75	264.84
	Development	137.88	254.83	561.58	223.26	0.00	1,177.56
Total		**299.58**	**268.55**	**588.89**	**251.62**	**33.75**	**1,442.40**

Source: *Data provided by UD&HD*

The 10 test-checked ULBs, incurred an expenditure of ₹ 5,243.69 crore, during the FYs 2016-17 to 2020-21, against the total receipts of ₹ 5,450.86 crore, as shown in **Table 2.12**.

Table 2.12: Comparison of own revenue with total receipts in the test-checked ULBs

(₹ in crore)

Sl. No.	Name of ULBs	Own revenue	Total receipt	Expenditure on establishment	Total Expenditure	Percentage of own revenue to total receipts	Percentage of own revenue to establishment expenditure
1.	Basukinath NP	22.59	126.49	29.70	135.31	17.86	76.06
2.	Dhanbad M.Corpn.	130.51	1289.47	186.16	1035.02	10.12	70.11
3.	Deoghar M.Corpn.	64.77	505.20	108.45	481.12	12.82	59.72
4.	Godda MC	12.74	184.92	11.77	172.16	6.89	108.24
5.	Hussainabad NP	2.32	62.07	2.72	56.38	3.74	85.29
6.	Khunti NP	8.53	105.38	6.68	89.26	8.09	127.69
7.	Medininagar M.Corpn.	22.48	177.82	22.36	114.68	12.64	100.54
8.	Phusro MC	6.89	111.15	10.47	84.49	6.20	65.81
9.	Ranchi M.Corpn.	427.27	2759.11	264.61	2973.38	15.49	161.47
10.	Simdega MC	14.05	129.25	13.67	101.89	10.87	102.78
Total		**712.15**	**5,450.86**	**656.59**	**5,243.69**	**13.06**	**108.46**

Source: *Data provided by test-checked ULBs*

It can be seen from **Table 2.12** that:

- The percentage of own revenue ranged between four and 18 *per cent* (approx.) of the total receipts.
- Only five out of the 10 test-checked ULBs could meet their establishment expenditure from its own revenue.
- Only the Ranchi Municipal Corporation could contribute substantially to developmental expenditure from their own revenue.

Thus, the ULBs were dependent on financial assistance from the Central/State Government for their functioning, as the proportion of their own revenue was low, as compared to their total receipts.

The Secretary, UD&HD accepted the facts and stated (August 2022) that action would be taken for compilation of accounts, showing expenditure against grants and loans given to ULBs. He further stated that revenue of ULBs, from their own sources, would be increased, to contribute towards developmental expenditure.

2.4.2 Central grants

Article 280 (3)(C) of the Constitution mandates the Central Finance Commission (CFC) to recommend measures to augment the Consolidated Fund of a State, to supplement the resources of the municipalities, based on the recommendations of the respective SFCs.

The Fourteenth Finance Commission (14th FC) recommended a General Basic Grant (BG) and a General Performance Grant (PG), to ULBs, as a percentage of the divisible pool[26] account. Allocation and release of 14th FC grants (FY 2015-16 to FY 2019-20) have been depicted in **Table 2.13**.

[26] *The 'divisible pool' refers to the taxes of the Central Government that it should share with the State Governments, in accordance with the recommendations of the Finance Commissions.*

Table 2.13: Allocation and release of 14th FC grants during FYs 2015-16 to 2019-20

(₹ in crore)

Financial year	Allocation			Released			Short
	BG	PG	Total	BG	PG	Total	
2015-16	183.74	0.00	183.74	169.62	0.00	169.62	14.12
2016-17	254.42	75.09	329.51	222.41	69.85	292.26	37.25
2017-18	293.95	84.97	378.92	237.83	67.97	305.80	73.12
2018-19	340.05	96.50	436.55	280.04	0.00	280.04	156.51
2019-20	459.48	126.35	585.83	378.38	0.00	378.38	207.45
Total	**1,531.64**	**382.91**	**1,914.55**	**1,288.28**	**137.82**	**1,426.10**	**488.45**

Source: *Data provided by UD&HD*

It can be seen from **Table 2.13** that there was short release of grants, amounting to ₹ 488.45 crore, including PG of ₹ 245.09 crore. Reasons for short receipt of grants were not found on record. It was also seen that the State Government had requested (August 2020) GoI, to release the arrear of grants.

2.4.3 Budget estimation by ULBs

Sections 108 to 111, of JMA, 2011, envisage that the executive head of a ULB shall prepare a budget estimate for the ensuing year. The Mayor/Chairperson is required to present the budget estimates to the Standing Committee, before 15th of February in each year, for sanction. After sanction by the Standing Committee, the Council is to consider and sanction the budget estimate, by 15th March in each year, and forward the budget to the Directorate of Municipal Administration (in case of Municipal Councils and Nagar Panchayats) and to the State Government (in case of Municipal Corporations). The budget estimates, received by the State Government or DMA, are to be returned to the ULBs, before 31st March of the year, with or without modifications of the provisions relating to grants, by the State Government.

Audit noticed that the budgets of the UD&HD had been prepared scheme-wise, without separately showing the grants to be released to the ULBs. It was also seen that the 10 test-checked ULBs either did not prepare budgets, or prepared unrealistic budgets, as discussed in the succeeding paragraphs.

2.4.3.1 Budget estimates not prepared

As per Rule 45 of the Jharkhand Municipal Accounts Manual (JMAM), 2012, no expenditure is to be charged against the municipal fund, until and unless the expenditure is covered by a budget grant.

Audit observed that, five out of the 10 test-checked ULBs, had incurred expenditure without preparing budget estimates, in some financial years, as detailed in **Table 2.14**.

Table 2.14: Non-preparation of budget estimates and expenditure incurred

(₹ in crore)

Sl. No.	Name of ULB	Financial years for which budgets were not prepared	Expenditure without budget provision
1.	Simdega MC	2016-17	16.54
2.	Khunti NP	2016-17 and 2020-21	25.41
3.	Phusro MC	2016-17	9.55
4.	Hussainabad NP	2016-17,2019-20 and 2020-21	34.38
5.	Basukinath NP	2016-17	9.90
Total			**95.78**

Source: *Data provided by test-checked ULBs*

As can be seen from **Table 2.14,** five ULBs had incurred expenditure of ₹ 95.78 crore, without budget. This also showed that the State had released grants without ensuring the preparation of budgets by ULBs. Thus, proper budgetary control was not ensured, either by the State Government or by the ULBs.

The Secretary, UD&HD stated (August 2022) that instructions would be issued to the ULBs, for preparation of budgets every year.

The fact, however, remains that the five test-checked ULBs had incurred expenditure of ₹ 95.78 crore in contravention of JMAM, 2012.

2.4.3.2 Unrealistic budgeting

Budget is a financial plan, describing the proposed expenditure and the means of financing the same. It consists of the estimated receipts and expenditure for the financial year. Further, it should be realistic and close to the actual trends of the previous years.

Audit observed wide variations in the budget estimates and actuals, in the 10 test-checked ULBs, as shown in **Table 2.15.**

Table 2.15: Variations in budget estimates and actuals, in test-checked ULBs

(₹ in crore)

Sl. No.	Name of ULBs	Financial years	Receipts				Expenditure			
			Budget	Actuals	Variations	Per cent variation	Budget	Actuals	Variations	Per cent variation
1.	Basukinath NP	2017-18 to 2020-21	167.23	113.97	53.26	31.85	146.90	125.40	21.50	14.64
2.	Deoghar M.Corpn.	2016-17 to 2020-21	2,345.68	505.20	1,840.48	78.46	2,327.91	481.12	1,846.79	79.33
3.	Dhanbad M.Corpn.	2016-17 to 2020-21	5,313.84	1,289.47	4,024.37	75.73	5,053.53	1,035.02	4,018.51	79.52
4.	Godda MC	2016-17 to 2020-21	241.17	185.53	55.64	23.07	217.83	142.62	75.21	34.53
5.	Hussainabad NP	2017-18 to 2018-19	44.89	19.67	25.22	56.18	44.61	31.25	13.36	29.95
6.	Khunti NP	2017-18 to 2019-20	82.99	69.85	13.14	15.83	82.17	63.85	18.32	22.30
7.	Medninagar M.Corpn.	2016-17 to 2020-21	515.02	177.81	337.21	65.48	383.03	125.59	257.44	67.21
8.	Phusro MC	2017-18 to 2020-21	102.23	95.43	6.80	6.65	124.08	74.93	49.15	39.61
9.	Ranchi M. Corpn.	2016-17 to 2020-21	10,368.81	2,759.11	7,609.70	73.39	7,242.51	2,973.39	4,269.12	58.95
10.	Simdega MC	2017-18 to 2020-21	282.08	215.11	66.97	23.74	259.71	176.61	83.10	32.00
Total			**19,463.90**	**5,431.15**	**14,032.79**	**72.10**	**15,882.28**	**5,229.78**	**10,652.50**	**67.07**

Source: *Data provided by test-checked ULBs*

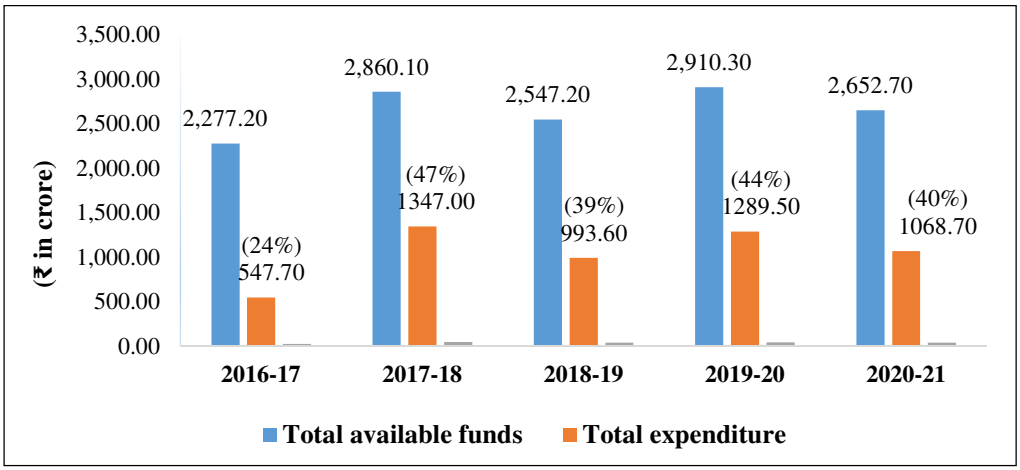
It can be seen from **Table 2.15** that actuals were lower by 72 *per cent,* in case of receipts, and by 67 *per cent*, in case of expenditure, as the estimations made, were not realistic. Working papers, relating to budgets, were not furnished to Audit. As such, Audit could not analyse the reasons for preparation of the unrealistic budget estimates.

The Secretary, UD&HD accepted the facts and stated (August 2022) that instructions would be issued to ULBs, for preparation of realistic budgets.

2.4.3.3 Under-utilisation of funds

A comparison of the total expenditure, incurred by the 10 test-checked ULBs, during FYs 2016-17 to 2020-21, against the total available funds, including the unspent balance of ₹ 1,381.31 crore, as on March 2016, showed that the ULBs had, on an average, been able to utilise only about 40 *per cent* of the available funds, in each financial year, as shown in **Chart 2.3**.

Chart 2.3: Total available funds and total expenditure of 10 test-checked ULBs during FY 2016-17 to FY 2020-21



(Source: Data provided by the test-checked ULBs)

It can be seen from **Chart 2.3** that, in the ten test-checked ULBs, the percentage of expenditure, in each of the FYs from 2016-17 to 2020-21, ranged between 24 *per cen*t and 47 *per cent* of the funds available. It was also seen that the unspent balance stood at ₹ 1,583.95 crore, as on March 2021.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs would be directed to minimise their unspent balances and properly utilise the available funds.

2.4.4 Own revenue of ULBs

Article 243X of the Constitution, read with Section 152 of JMA, 2011, empowered the ULBs to levy and collect 13 types of taxes[27] to augment their own resources.

Audit observed that, while water tax had been included in the composite property tax, through an amendment made in JMA, 2011, with effect from FY 2015-16 onwards, toll tax and surcharge on entertainment tax had been subsumed in the Goods and Services Tax (GST) and the tax on trade and profession was being collected by the Department of Commercial taxes.

[27] *1. Property/Holding tax (including Cess) on lands and buildings 2. Tax on vacant land 3. Surcharge on transfer of lands and buildings 4. Tax on deficit in parking spaces in any non-residential building 5. Water tax 6. Fire tax 7. Tax on advertisements, other than advertisements published in newspapers 8. Surcharge on entertainment tax 9. Surcharge on electricity consumption within the municipal area 10. Tax on congregations 11. Tax on pilgrims and tourists 12. Toll tax 13. Tax on Trade and Profession.*

Moreover, the test-checked ULBs were imposing and collecting only three[28] out of the remaining nine types of taxes, due to the stated (November 2021) reason of non-framing of rules by the State Government, in regard to the levy and collection of six[29] types of taxes.

The Secretary, UD&HD accepted the facts and stated (August 2022) that action would be taken, for framing of Rules, for collection of the remaining taxes.

2.4.5 Property tax

As per Section 153 of JMA, 2011, a Jharkhand Property Tax Board was to be created to: (i) enumerate, or cause to enumerate, all properties in the municipalities in the State and develop a database (ii) review the property tax system and suggest suitable basis for valuation of properties (iii) design and formulate transparent procedure for valuation of properties (iv) ensure transparency in the valuation process etc. The 13th CFC had also recommended (December 2009) setting up of a State Level Property Tax Board, to assist municipalities in putting in place an independent and transparent procedure for assessing property tax.

Audit observed that UD&HD had notified (May 2014) the 'Constitution of Jharkhand Property Tax Board and Appeal Rules, 2013'. However, the Board had not been constituted. UD&HD stated (January 2021) that the provision relating to the Jharkhand Property Tax Board had been deleted by an Amendment in the Act. Further, the Jharkhand Municipality Property Tax (Assessment, Collection and Recovery) Rules, 2013, had been notified (February 2014), for fixing the annual rents of properties situated within the municipalities, and for levying property tax on different kinds of properties (residential, non-residential, commercial, and industrial). As per Rule 6, municipalities are required to fix the per square feet rent of holdings, with the approval of the State Government, considering their location, types of structures *etc*., as determined by the State Government, from time to time.

It was, however, seen that, despite the existence of these rules, municipalities did not perform these activities, and the State Urban Development Agency (SUDA) continued to remain responsible for the survey, assessment and collection of property tax, and to perform these functions through private agencies.

2.4.5.1 Collection of Property tax

As per Section 152 (8) of JMA, 2011, municipalities were to revise the rate of tax on Annual Rental Value (ARV), once in five years or earlier, with the prior

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[28] *1. Property/Holding tax (including Cess) on lands and buildings 2. Tax on vacant land and 3. Tax on advertisements, other than advertisements published in newspapers.*

[29] *1. Surcharge on transfer of lands and buildings 2. Tax on deficit in parking spaces in any non-residential building 3. Fire tax 4. Surcharge on electricity consumption within the municipal area 5. Tax on congregations and 6. Tax on pilgrims and tourists.*

approval of the State Government. Further, as per the recommendation of the 13th Finance Commission, the collection efficiency of property tax should reach at least 85 *per cent* of the demands raised on assessable properties.

Audit observed that municipalities had neither revised the annual rents of properties situated within their jurisdiction, nor had they revised the rate of tax on ARV, for more than six to ten years, as of March 2021, despite provisions in the Jharkhand Municipality Property Tax (Assessment, Collection and Recovery) Rules, 2013 and JMA, 2011.

The position of year-wise demand and collection of property tax, in ULBs, between FYs 2016-17 to 2020-21, is shown in **Table 2.16**.

Table 2.16: Demand and collection of property tax during FYs 2016-17 to 2020-21

(₹ in crore)

Financial Year	No. of ULBs	Demand	Collection	*Percent* collection
2016-17	41	404.61	76.42	18.90
2017-18	41	435.51	98.22	22.60
2018-19	41	454.77	100.06	22.00
2019-20	42	478.43	108.18	22.60
2020-21	50	169.44	64.81	38.20
Total		**1,942.76**	**447.69**	**23.04**

Source: *Data provided by SUDA*

It can be seen from **Table 2.16** that the total collection was 23 *per cent* of the demand, with improvement in the collection efficiency being seen over the years. However, it was much lower than the recommended collection efficiency of 85 *per cent*.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs would be directed to enhance the collection of property tax, to match the recommended collection efficiency of 85 *per cent.*

2.4.6 Assigned revenue

As per Section 162 of JMA, 2011: (i) the State Government may impose a duty on transfer of immovable property in a municipal area and (ii) duty imposed by the Indian Stamp Act, 1899, on instruments of sale, gift, mortgage, of immovable property situated within the limits of a municipality, may be increased by two *per cent* on the value of property, and on the secured amount[30], in case of usufructuary mortgages[31]. All collections resulting from the said increase were to be credited to the municipal fund, after deduction of incidental expenses.

Audit observed that the two *per cent* stamp duty on transfer of land and property in municipal areas, which was being realised earlier, had been abolished (May 2004) through a notification, issued by the Revenue, Registration and

[30] *Secured amount is the mortgage money payable within a specified period to the mortgagor by the mortgagee on account of Usufructuary mortgage.*

[31] *Usufructuary mortgage is a type of mortgage where the mortgagor delivers the possession and right to enjoy an income of and from the property to the mortgagee.*

Land Reforms Department (RRLRD). However, despite provision in JMA, 2011, the State Government did not initiate action to impose additional duty on sale, gift and mortgage within the municipal areas.

The Secretary, UD&HD stated (August 2022) that necessary action would be taken to amend the existing provision. The fact, however, remains that the Department did not initiate action to impose additional duty, despite provisions in JMA, 2011.

2.4.7 Water user charges

As per Section 154(i) of JMA, 2011, ULBs are empowered to levy and realise water user charges. UD&HD, through a Resolution (May 2016), implemented the Jharkhand Water User Charge Policy, 2016, for urban areas. As per the Policy, water user charges, recovered from the consumers, must produce revenue equal to the financial cost of the service, to discourage the ULBs to divert or consume resources, meant for other services or sectors, on water supply. Further, the State Government framed (May 2016) the Jharkhand Water User Charge Policy, 2016, for imposition, fixing of rates and collection of SWM user charges.

Audit observed that the rates of water user charges had not been revised by the State Government till 31 March 2021. The position of demand and collection of water user charges, during FYs 2016-17 to 2020-21, in 34 ULBs, where piped water supply existed, is given in **Table 2.17**.

Table 2.17: Demand and collection of water user charges, during FYs 2016-17 to 2020-21

(₹ in crore)

Financial year	Demand	Collection	*Percent* collection of total demand
2016-17	108.45	9.79	9.0
2017-18	126.14	10.32	8.2
2018-19	143.54	12.88	9.0
2019-20	154.50	11.99	7.8
2020-21	174.55	10.28	5.9
Total	**707.18**	**55.26**	**7.8**

Source: *Data provided by SUDA*

It can be seen from **Table 2.17** that collection was very low, compared to the demand. In the 10 test-checked ULBs, the collection was ₹ 46.21 crore (nine *per cent*), against the demand of ₹ 531.05 crore, during the FYs 2016-17 to 2020-21. Further, the collection was 59 *per cent* of the operation and maintenance (O&M) costs of ₹ 78.64 crore ***(Appendix 2.1)*****,** which indicated that financial costs of the service could not be met from the revenue collected.

The Secretary, UD&HD accepted the facts and stated (August 2022) that the ULBs would be directed to enhance the collection of water user charges, to meet the cost of water supply services.

2.4.8 Solid Waste Management user charges

Section 154 (ii) of JMA, 2011, provides for levy of Solid Waste Management (SWM) user charges, for provision of civic services, *i.e.* collection,

transportation and disposal of solid wastes. As per Section 252 of JMA, 2011, the SWM user charges are to cover the costs on account of O&M of SWM. Further, the State Government framed (March 2016) the SWM Service Charge Rules, 2016, for imposition, fixing of rates and collection of SWM user charges, which were to be enhanced by 10 *per cent* every three years.

Audit observed that the rates of SWM user charges had not been revised by the State Government (as of March 2021). However, the position of collection of solid waste user charges, by the ULBs of the State, during FYs 2016-17 to 2020-21 is given in **Table 2.18**.

Table 2.18: Collection of Solid Waste user charges, by ULBs, during FYs 2016-17 to 2020-21

Financial year	No. of ULBs in existence	No. of ULBs collecting solid waste user charges	No. of ULBs not collecting solid waste user charges	Amount collected (₹ in crore)
2016-17	45	02	43	0.14
2017-18	45	12	33	5.47
2018-19	51[32]	24	27	6.02
2019-20	51	25	26	5.35
2020-21	51	26	25	7.50
Total				**24.48**

Source: *Data provided by SUDA*

It can be seen from **Table 2.18** that the coverage of ULBs, for collection of SWM user charges, improved over the years. However, collection was yet to be started in 24 out of the 50 (excluding Gomia) ULBs in the State, despite collection of solid waste being carried out, in these ULBs. As such, these ULBs were deprived of a source of revenue.

Audit further observed that the collection of SWM user charges was much lower than the O&M costs in the 10 test-checked ULBs, during The FYs 2016-17 to 2020-21, as shown in **Table 2.19**.

Table 2.19: O&M costs and collection of SWM user charges, in test-checked ULBs, between FYs 2016-17 and 2020-21

(₹ in crore)

Particulars	2016-17	2017-18	2018-19	2019-20	2020-21	Total
Total Collection	2.02	4.60	5.07	6.51	5.25	**23.45**
O&M costs	15.72	46.31	54.89	58.26	55.11	**230.29**
Collection against O&M costs (in *per cent)*	12.85	9.93	9.24	11.17	9.53	**10.18**

Source: *Data provided by test checked ULBs*

It can be seen from **Table 2.19** that the average collection was only around 10 *per cent* of the O&M costs during the FYs 2016-17 to 2020-21. Reasons for the low collection of user charges were not found on records.

The Secretary, UD&HD accepted the facts and stated (August 2022) that all the ULBs would be directed to collect Solid Waste Management user charges and to enhance their collections to meet the costs of Solid Waste Management services.

[32] *Including the Gomia Municipal Council, which was de-notified in December 2020.*

2.4.9 Local Fund Audit

In the light of recommendations of the 13th Finance Commission, the Governor of Jharkhand entrusted (October 2011) the CAG to provide Technical Guidance and Support (TGS) to the primary external auditors (in this case, the Director of Local Fund Audit (DLFA), under the Department of Finance, GoJ) and to test-check the accounts of Local Bodies (LBs). Further, as per Section 4 of the Jharkhand Local Fund Audit (Amendment) Act, 2012, CAG is to provide TGS, over the proper maintenance of accounts and audit thereof, of LBs. Section 4 of the Act also provides for examination and audit of accounts of LBs, by the DLFA, through its auditors, or through the Chartered Accountants, engaged by the State Government.

Audit noticed that the State Government created (March 2013) 22 posts[33] for the office of the DLFA and appointed the DLFA as the primary external auditor for LBs, in November 2014. The posts so created did not include posts of auditors. However, 10 auditors of the Finance Department were deputed (August 2016), to the office of the DLFA, for conducting audit of LBs. The DLFA conducted audit of 40 ULBs in FY 2016-17 and six ULBs in FY 2020-21. No audit was taken up during FYs 2017-18 to 2019-20, due to the stated reason of shortage of auditors. Further, only two officials (Director and one Assistant) were working in the office of the DLFA, as on March 2022, against the 22 posts that had been sanctioned. It was further seen that Rules and Regulations, for carrying out this audits, as also the TGS Manual for audit of LBs, were yet to be framed by the State Government (July 2022). Thus, the office of the DLFA was not fully functional, for taking up the audit works of LBs.

Conclusion

UD & HD had not compiled separate accounts for the ULBs. The ULBs were largely dependent on financial assistance from the Central and State Governments, even for meeting their establishment expenses. They were either incurring expenditure without preparing annual budgets, or were preparing unrealistic budgets, as the actuals receipts were less by 72 per cent and the actual expenditure by 67 per cent, in comparison to the budgeted receipts and expenditure. Further, they could utilise only 24 to 47 per cent of the funds available with them. The collection efficiency of property tax and water user charges was only 23 per cent and eight per cent, respectively, during the FYs 2016-17 to 2020-21, as compared to the total demand raised in the 10 test-checked ULBs. Collection of solid waste user charges and water user charges were not sufficient to meet the operation and maintenance/collection costs in the 10 test-checked ULBs. Despite this, ULBs had not revised the rates of taxes and user charges (as of March 2021), even though they were to be revised within a span of three to five years, as per JMA, 2011. Though the office

[33] *Director (1), Joint Director (2), Section Officer (2), Private Secretary (1), Assistant (4), Personal Assistant (2), Computer Operator (3), Clerk (2), Driver (3) and Peon (2).*

of the DLFA was created in November 2014, for examination and audit of the accounts of ULBs, it could not function properly, due to shortage of staff and absence of specific Rules and Regulations.

Recommendations

- ***Government should ensure compilation of separate accounts for the ULBs and preparation of realistic budgets by all ULBs.***
- ***Government should ensure revision in rates of taxes and user charges, to enhance the resources of ULBs, and also ensure smooth collection of user charges.***
- ***DLFA should ensure regular audit of ULBs.***

Chapter 3

Audit on Management of the Sewerage and Drainage System in Ranchi city

CHAPTER 3
URBAN DEVELOPMENT AND HOUSING DEPARTMENT

Audit on Management of the Sewerage and Drainage System in Ranchi city

Executive summary

A project for setting up a Sewerage and Drainage System in Ranchi city was planned by the Urban Development and Housing Department, Government of Jharkhand with the objective of intercepting and preventing direct discharge of untreated household septic tank effluents, through the existing street drains, into the ponds, nallahs and rivers around the city. The system, once set-up, was designed to limit contamination and pollution of ground and surface water in the municipal area.

In view of the extensive delays in completion of the project and continuous media reports in this regard, audit of the project was taken up, with the objectives of assessing whether: (i) selection and approval of the sewerage and drainage project was done keeping in view the future development of the city (ii) the project was executed economically, as per codal provisions, with due regard to quality, workmanship and timeliness and (iii) monitoring and inspection were conducted at different levels, for effective implementation of the project.

Audit was conducted between March 2021 and January 2022 by examination of records in the Urban Development and Housing Department and the Ranchi Municipal Corporation (RMC), covering the period from June 2006 to March 2021.

Audit findings

The Sewerage and Drainage project in Ranchi city, initiated in June 2005, could not be completed in more than 17 years (August 2022) and the timeline for completion was extended from September 2017 to March 2019 and thereafter to January 2023. This defeated the primary objective of the project.

Though the survey work had been done in FY 2006-07 and the DPR had been approved in December 2007, the State Government decided (July 2011) to execute the project more than three years later and, that too, without identifying the source of funds. The project approval was given only for Zone-I in September 2014 and the work commenced in September 2015. Thus, the Department took almost eight years from the date of survey, to commence the work in Zone-I.

Necessary approvals in phases led to project bottlenecks as in the intervening period the original survey for the project alignments was literally redundant due to construction of new roads, buildings, changes in ground levels, encroachments of right of way of approved alignment by local residents, emergence of new habitations etc. This extended the completion period of the

project for Zone-I by almost two decades. In the remaining three zones, the project had not been taken up.

Consultancy charges, amounting to ₹ 16.04 crore, paid for preparation of the DPR by the consultant (M/s Meinhardt Singapore Pvt. Ltd.), proved wasteful as the DPR did not serve the intended purpose in Zone-I of the Project, after a fresh survey was conducted to work out new alignments (with new estimates). The DPR had also not been used to take up any work in the remaining three zones and tender for fresh survey/updating the DPR has been called for. The State Cabinet had also accorded financial sanction of ₹ 31.17 crore for selection of consultant for updating/revising the DPR of Ranchi Sewerage and Drainage (2006) Project including integration with Ranchi Sewerage Zone I work.

RMC's tender for the project extended favour to the contractor (JV of M/s Jyoti Build Tech Pvt. Ltd. (Lead Partner) and M/s Vibhor Vaibhav Pvt. Ltd.). The lead partner of the contractor did not have the requisite experience and financial capacity to meet the tender eligibility conditions and had submitted forged and fabricated documents to qualify for the tender. During execution of work, the contractor failed to provide the required manpower and machinery at the work site, made slow progress and stopped the work unilaterally, despite grant of time extension twice (September 2018 and March 2019). RMC terminated the contract in October 2019.

In violation of JMAM 2012, the contractor was paid mobilisation advance at the rate of 15 per cent against the provision of 5 per cent which resulted in excess payment of ₹ 35.93 crore. One instalment of the mobilisation advance amounting to ₹ 18 crore was granted without securing it by Bank Guarantee (BG)/other instrument. The BG for this instalment was submitted by the contractor after 10 months of payment of the advance. The other two instalments amounting to ₹ 36 crore were granted against BGs issued by "Chartered Mercantile MB Ltd, Lucknow". Audit sent the copies of these BGs to RBI for verification. RBI intimated (December 2021) that they do not have any information about this institution which issued the said BGs. Thus, it was neither a scheduled or nationalised bank authorised to issue BG for the project work.

RMC made excess payments to the contractor during the execution phase. These were made without submission of design and drawing of all the components of Sewage Treatment Plant (₹ 4.22 crore), lump-sum payment without adhering to payment milestone for Sewage Pumping Station (₹ 75.40 lakh) and on account of inflated measurement of items of drain work (₹ 1.98 crore).

The expenditure of ₹ 47.93 lakh on partial execution of storm water drains was wasteful as the fragmented sections of constructed drains were not linked to any drain network and found filled with wastewater of septic tanks. The

construction of these drains was taken up without approval of designs by the competent authority and abandoned since then.

Recommendations

1. The Department may coordinate with all stakeholders to obtain the project appraisal, mandatory clearances and sanctions in a timebound manner.

2. Processing of DPR for Zones II, III and IV and integrating it with the ongoing project in Zone-I should be carried out on high priority.

3. The Department should fix responsibility for the irregularity in processing award of the tender for the work, in favour of the lead partner (M/s Jyoti Build Tech Pvt. Ltd.) of the joint venture, who was otherwise ineligible for the tender.

4. The Department should take legal action against the contractor (M/s Jyoti Build Tech Pvt. Ltd.), for submitting forged and fabricated documents to obtain the tender.

5. The grant of excess mobilisation advance to the contractor, in violation of norms needs to be investigated and responsibility fixed, in this regard.

In the exit conference, the Secretary, Urban Development and Housing Department, Government of Jharkhand accepted (August 2022) the audit findings and the audit recommendations.

3.1 Introduction

Government of Jharkhand (GoJ), Urban Development and Housing Department (Department), invited (June 2005) a tender for selection of consultant for providing project management consultancy (PMC) services, including engineering design and construction supervision, for setting up a Sewerage and Drainage system in Ranchi city. The project envisaged an efficient and effective sewage collection mechanism from households, through a network of trunk and branch[1] sewers, treatment and disposal system, complemented by a grid of storm water drains.

The objective of establishing the system was to intercept and prevent direct discharge of untreated household septic tank effluents, through the existing street drains, into the ponds, *nallahs* and rivers such as *Jumar*, *Harmu*, *Subarnarekha* and their tributaries around the city. The system, once set-up, was designed to limit contamination and pollution of ground and surface water in the municipal area.

In view of the extensive delays in completion of the project and continuous media reports in this regard, audit of the project was taken up, with the objectives of assessing whether: (i) selection and approval of the sewerage and drainage project was done keeping in view the future development of the city

[1] *Lateral, Collector and Sub-Trunk sewers*

(ii) the project was executed economically, as per codal provisions, with due regard to quality, workmanship and timeliness and (iii) monitoring and inspection were conducted at different levels, for effective implementation of the project.

The Secretary of the Department was responsible for overall execution of the project, through the Ranchi Municipal Corporation (RMC). Audit was conducted between March 2021 and January 2022 by examination of records in the Department and RMC, covering the period from June 2006 to March 2021.

An entry conference was held (August 2021) with the Secretary of the Department, in which the audit objectives, criteria[2], scope and methodology were discussed. An exit conference was held (August 2022) with the Secretary of the Department, in which the audit findings were discussed. The Secretary agreed with the audit findings and accepted all the audit recommendations, except for recommendations relating to punitive actions on the officials involved in award of tender of balance work of the project, on the ground that corrective actions to address the irregularities in disposal of tender had been taken.

A brief outline of the developments that took place in the course of implementation of the project, since it was envisaged, is given in the succeeding paragraphs.

The Department engaged (June 2006) M/s Meinhardt Singapore Pvt. Ltd., for providing Project Management Consultancy (PMC) services, at a consultancy fee of ₹ 21.40 crore[3], revised[4] (December 2015) to ₹ 17.56 crore, for establishment of the system. Audit could not evaluate the fairness of the tendering process and selection of the consultant, as the tender evaluation documents were not provided to Audit, though called for (July 2021 and December 2021). Audit was informed (December 2021) by the Department that the tender and related files, for selection of the consultant, had been handed over (December 2020) to the Anti-Corruption Bureau (ACB), for investigation into alleged irregularities in the selection of the consultant. The ACB had not submitted (February 2022) any report in this regard.

The consultant submitted (December 2007) a Detailed Project Report (DPR) of the sewerage and drainage system, by dividing it into four zones (I, II, III

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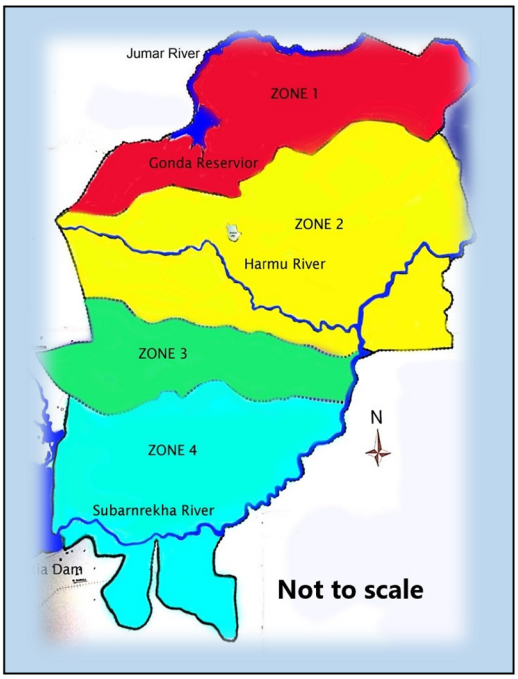
[2] *(i) Jharkhand Municipal Accounts Manual (JMAM), 2012 (ii) Jharkhand Public Works Accounts and Department Code (iii) Manuals on sewerage and drainage, issued by the Central Public Health and Environment Engineering Organisation (CPHEEO) (iv) Guidelines issued under the National River Conservation Plan (NRCP) and (v) Instructions issued by Central/ State Pollution Control Boards*

[3] *Consultancy fee for design phase: ₹ 16.04 crore (which included topographical survey, soil investigation, preparation of DPR, detailed engineering designing, cost estimation, bid management work such as preparation of bid document, evaluation of tender etc.) and for construction phase: ₹ 5.36 crore (which included certification of measurement/ quantity, supervision of work, quality assurance and timely execution of project)*

[4] *For providing construction supervision only in Zone-I, instead of in all the four zones*

and IV), based on topographical parameters[5], at a project cost of ₹ 1,649.82 crore. Based on a cabinet decision (July 2011) to take up construction of the project through the RMC, under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), the State Government[6] forwarded (February 2012) the project proposal to the Ministry of Urban Development (MoUD), Government of India (GoI), for approval. In the light of an appraisal note by the Central Public Health and Environment Engineering Organisation (CPHEEO), MoUD, GoI ratified (January 2013) the project for ₹ 1,519.25 crore.

However, GoI sanctioned (January 2014) the project work only in Zone I, at a cost of ₹ 302.26 crore, by keeping it within the funds available under JNNURM for Jharkhand. The State Government decided (January 2014) to take up the project in the remaining three zones (II, III and IV) at a cost of ₹ 1,216.99 crore, through externally aided funds.



Based on the old alignments/surveys conducted in FY 2006-07 and without factoring in the possible effects of rapid urbanisation of the city in about eight years on the prospects of executing the project, the construction work in Zone I was put (March 2015) to tender and awarded (October 2015) to a contractor (Joint Venture (JV) of M/s Jyoti Build Tech Pvt. Ltd. and M/s Vibhor Vaibhav Infra Pvt. Ltd.), for ₹ 359.25 crore. The work included construction of a sewer network, Sewage Treatment Plant (STP), Sewage Pumping Station (SPS), storm water drains and operation and maintenance of the STP and SPS for five years ***(Appendix 3.1)***.

An agreement was executed (October 2015) between the Municipal Commissioner, RMC and the JV contractor, for completing the project by September 2017. It was subsequently extended (August 2018) to March 2019. RMC terminated (October 2019) the contract, due to slow progress of work by the contractor. At the time of termination (October 2019) of the contract, only 23 *per cent* of the work, valued at ₹ 84 crore, had been completed.

The scope of work was reduced and the balance work was awarded (February 2021) to another contractor (M/s LC Infra Pvt. Ltd.), at a cost of

[5] *Slope, water bodies and location of treatment/ final disposal point*
[6] *State Level Steering Committee under JNNURM*

₹ 218.87 crore, for completion by March 2023. It was, however, seen that only 11 *per cent* of work, valued at ₹ 24 crore, had been executed till February 2022.

The supervision of the construction phase of the project was carried out by M/s Meinhardt Singapore Pvt. Ltd., from October 2015 to September 2017, for which RMC made payment of ₹ 1.05 crore. RMC did not extend the PMC service beyond September 2017, on ground of increase in the cost of supervision by the consultant. RMC retendered (December 2017) the construction supervision services and awarded (January 2018) the work to another consultant (M/s WAPCOS Ltd, a Government of India enterprise), for ₹ 1.46 crore[7], for two years, from February 2018 to January 2020.

Audit findings

3.2 Consultancy services

3.2.1 Wasteful expenditure of ₹ 16.04 crore on consultancy services

M/s Meinhardt Singapore Pvt. Ltd. conducted the project survey in FY 2006-07 and submitted (December 2007) the DPR of the project, by dividing it into four zones (I, II, III and IV). The Chief Engineer of the Department approved (December 2007) the DPR and the State Government forwarded (February 2012) it to GoI, for approval under JNNURM. GoI approved (January 2013) only the Zone I portion of the project.

For execution of the project in Zone I, the Department took almost eight years to commence (October 2015) the work, from the year of survey (done in FY 2006-07). However, the rapid urbanisation of the city (which saw increase in population, emergence of new habitations *etc*.) in these intervening years and the feasibility of executing the project on the basis of old alignments, were not factored in. The Department had also not asked the consultant to conduct any fresh survey of the municipal area and geo-technical investigation, except for revising the population projections, as per Census 2011, on the advice of CPHEEO.

As a result, the contractor, awarded the work of execution of the project, was unable to correlate the DPR data (provided by the consultant- M/s Meinhardt Singapore Pvt. Ltd.) with the actual ground conditions on account of construction of new roads, buildings, changes in ground levels, encroachments of right of way of approved alignment by local residents, emergence of new habitations *etc*. The Department was, therefore, compelled to entrust the contractor with undertaking a fresh survey and redesigning of the sewerage network.

[7] *Consultancy fee rates of WAPCOS Ltd for PMC services were ₹ 62.95 lakh plus GST (@ 18 per cent) per annum*

RMC executed (April 2018) a supplementary agreement, valued at ₹ 1.41 crore, for the revised survey and redesign of the sewer with the contractor (JV of M/s Jyoti Build Tech Pvt. Ltd. and M/s Vibhor Vaibhav Infra Pvt. Ltd.). The contractor was paid (April 2018) ₹ 1.21 crore for the work relating to survey and redesign, which involved, *inter alia*, extension of the sewerage network to 280 km, from the earlier approved length of 192 km.

Though the State Government decided (January 2014) to take up the project in the three remaining zones (II, III and IV) through externally aided funds, tenders for selection of a consultant, for conducting a fresh survey and updating the DPR in these three zones, were invited (December 2021) after almost seven years. No works had been taken up in these zones, till the completion of audit (February 2022).

Thus, the DPR (prepared by M/s Meinhardt Singapore Pvt. Ltd.) had not served the intended purpose in Zone I of the project, since a fresh survey had to be conducted to work out new alignments (with new estimates). The DPR has also not been used for taking up any work in the remaining three zones, and the tender for fresh survey/updation of the DPR was under process (August 2022). The State Cabinet had also accorded (14 September 2022) financial sanction of ₹ 31.17 crore, for selection of consultant for updating/revising the DPR of Ranchi Sewerage and Drainage (2006) Project, including integration with the Ranchi Sewerage Zone I work. Hence, the expenditure of ₹ 16.04 crore, incurred on consultancy charges for preparing the DPR, proved wasteful.

The Department accepted (June 2022) the audit findings and stated that steps were being taken to get the DPR of Zones II, III and IV of the project prepared by another agency of the Department (JUIDCO[8] Ltd.), for integration with Zone I of the project.

Recommendation 1: *The Department may coordinate with all stakeholders to obtain the project appraisal, mandatory clearances and sanctions in a timebound manner.*

3.2.2 Preparation of DPR

(i) Lower estimation of sewage generation

Estimation of sewage generation is done on the basis of population projections. Para 2.6.2 of the CPHEEO Manual stipulates that the forecast of population can be derived by any suitable method, such as the arithmetic or geometric progression method, graphical projection or incremental increase method. The density/ distribution of the population so arrived at, between different areas, is then worked out on the basis of relative probability of

[8] *Jharkhand Urban Infrastructure Development Company Limited (JUIDCO)- a state PSU, under the administrative jurisdiction of the UD&HD*

expansion in each zone, taking into account the Master Plan of the city prepared by the town planning authorities.

In the DPR, the consultant (M/s Meinhardt Singapore Pvt. Ltd.) had worked out[9] (based on Census 2011) generation of 230 MLD sewage, by the year 2046, even though the Ranchi Master Plan, prepared in 2012 (for the period 2012-2037), had projected generation of 391.55 MLD sewage (based on Census 2011), by the year 2037.

Audit scrutiny revealed that the consultant had not mentioned the method adopted for population projection, based on which the sewage generation had been calculated[10]. Further, the DPR had not factored in distribution of the projected population, in different areas, based on the Floor Area Ratio (FAR[11]) for residential and commercial buildings, as mentioned in the Ranchi Master Plan (2012-37), in arriving at the figure for sewage generation. As a result, there was lower projection (by 41 *per cent*) of sewage generation in the DPR, *vis-à-vis* the Master Plan of the city.

The Department did not instruct the consultant to reconcile these differences with the Master Plan, before according Administrative Approval to the project (in Zone I) in September 2014. This is fraught with the risk that the capacity of sewer lines, pumping stations and STP, for Zone I, may not be sufficient to dispose off the sewage generated, even in the intermediate year 2031.

The Department stated (June 2022) that vetting of the design and drawing of the contractor was included in the scope of work of the PMC and the matter would be enquired from the consultant.

The reply is not acceptable, as the Department had not reconciled the differences in the estimated sewage generation, with the data of the Ranchi Master Plan, in line with the CPHEEO Manual, before granting TS and AA to the project and proceeded with the work, based on projection of lower sewage generation.

(ii) Sewage pumping station with capacity lower than required

As per para 2.5 of the CPHEEO Manual, the design period of a sewage pumping station (SPS), from the base year[12], should be 30 years.

In the DPR, the consultant had recommended (December 2007) setting up of an SPS of 10.2 MLD capacity. RMC executed (September 2015) an agreement with the contractor, for construction of an SPS of 10.2 MLD capacity, at a cost of ₹ 5.80 crore (on turnkey basis). The SPS was to be constructed for lifting

[9] *In 2013, after CPHEEO instructed the State Government to update the projections, based on Census 2011*

[10] *80 per cent of water supply, at the rate of 135 LPCD plus 5 per cent infiltration*

[11] *FAR refers to the relationship between the area upon which a building is constructed and the building floor area that is usable or is allowed to be used. FAR is calculated as the Total building floor area/ gross plot area. In the Ranchi Master Plan (2012-37), the maximum value of FAR was fixed as 2.5 for municipal areas and 3 for commercial areas.*

[12] *'Base year' refers to the year in which the system would become operational*

the sewage coming from the municipal areas of Wards 32 to 35, towards the main trunk line.

Audit examination revealed that the required capacity of the SPS should have been at least 14.91 MLD, based on the population projections (done by the consultant) of Ward 32 to 35, as shown in **Tables 3.1 and 3.2**:

Table 3.1: Population projections for Ward 32 to 35

Population	Year 2016 (Base year)	Year 2031 (Intermediate year)	Year 2046 (Design year)
Wards 32 to 35	95,572	1,13,299	1,31,463

The calculation for the required capacity of the SPS is shown in **Table 3.2**.

Table 3.2: Calculation for required capacity of SPS

Design year (30 years from base year 2016)	2,046
Population	1,31,463
Rate of water supply	135 litres per capita per day
Total water supply per day (in Wards 32 to 35)	1,77,47,505 litres/ day
Average sewage generated[13] (80 *per cent* of water supply)	1,41,98,004 litres /day
Total sewage generated (including infiltration 5 *per cent*)	1,49,07,904 litres/ day
Thus, required capacity of SPS in MLD	14.91 MLD

The contractor completed the civil work of the SPS and received payment of ₹ 3.89 crore (February 2022). Thus, the capacity of the constructed SPS was lower than the required capacity by 4.71 MLD, which may result in malfunctioning of the system whenever it is put to use.

The Department stated (June 2022) that the capacity of the SPS had been kept at 15.776 MLD (Average flow) and 34.496 MLD (Peak flow) in the design report.

The reply is not acceptable, as, in the agreement (February 2021) of the balance work with the contractor, the capacity of SPS was mentioned as 10.2 MLD. Hence, the design report for 15.776 MLD (at average flow) and 34.496 MLD (at peak flow) was irrelevant, as the work of the SPS was taken up for execution only for a capacity of 10.2 MLD.

(iii) Incorrect layout of the main trunk line in submerged areas

In the DPR, the consultant (M/s Meinhardt Singapore Pvt. Ltd.) designed the alignment of the main trunk line of 11.736 km[14] alongside the river *Jumar*. The layout of the main trunk and network lines was shown on Government land, in the approved DPR. The Chief Engineer (RMC) did not cross-verify the drawing and design layout of the main trunk and network lines with the work site, before granting TS.

The new consultant (WAPCOS Ltd.) pointed out (May 2020) that the trunk line may get submerged in river water during the rainy season and suggested

[13] *In the approved DPR, the per capita wastewater flow was assumed as 80 per cent of the water supply (135 litres per capita per day).*
[14] *NP3 RCC pipes of diameter 1000 mm and 1200 mm*

that a survey needed to be undertaken, for rerouting the trunk line, to avoid water submergence and trunk line bed erosion.

Audit scrutiny revealed that, for rerouting the trunk line, acquisition of private land was required. However, this could not be done, as neither had a provision been made for such acquisition in the approved DPR, nor had action been taken by the Department for acquisition of the required land (as per records produced to Audit).

Audit also conducted (20 October 2021) a joint physical verification of the work sites, with the officials of RMC, and noticed that the main trunk line had not been laid in a stretch of eight km. The pipes were found lying idle at the work site **(Picture 3.1)**. Thus, about 115 km (60 *per cent* of the total network of 192 km) of the sewerage network would not be linked with the STP.

Picture 3.1: Incomplete main trunk line near Lem-Bergain bridge- Jumar river (20 October 2021)

The Department accepted (June 2022) the audit observation and stated that the land required for laying the remaining trunk line, along with estimation of the additional structures to counter the submergence of trunk line, was being worked out.

(iv) Inadequate survey by the consultant

In the DPR, some scattered areas/ pockets of Ranchi had been identified as being low-lying. The ground levels of these areas were reported as being lower (varying up to even four to five metres) than the proposed level of the main sewer lines. The consultant mentioned that these small clusters would not be linked to the main sewer lines, to avoid excessive deepening of the sewer line or putting multiple intermediate pumping stations (IPS) to counter the depth of the sewer.

Audit observed that the consultant did not mention the exact location of these low-lying areas and the number of households that would be excluded from the proposed sewerage network. The DPR proposed onsite sanitation (septic tanks with soak pits) for the households in these areas, excluding them from the coverage of the sewerage system.

Further, during execution of work (August 2021), the contractor had pointed out the requirement of additional six IPSs. Details regarding their location,

capacity, hydraulic design, area of land required *etc*., were not furnished to Audit, despite requisition (December 2021).

Thus, the DPR, prepared with riders, limited the overall objective of setting up the sewerage and drainage system for the entire city.

The Department stated (June 2022) that the project had been initiated on the basis of an old DPR (2006-07) and, during execution, resurvey was done and IPS was provided. The fact, however, remains that details of the low-lying areas of Ranchi and the methodology for connecting households in these areas to the sewerage system of Zone I was not included in the DPR.

Recommendation 2: *Processing of DPR for Zones II, III and IV and integrating it with the ongoing project in Zone-I should be carried out on high priority.*

3.2.3 Implementation of the Project

3.2.3.1 Tendering

As per the tender documents, contractors, either single or having joint venture (JV), who wish to bid for the project, were required to, *inter alia*, (i) possess experience in laying sewerage/storm water pipelines in a minimum length of 150 kms (ii) have done similar works, of minimum value of ₹ 100 crore in a single contract (iii) possess experience in designing, constructing and commissioning of STP, of 30 MLD capacity, in a single contract and (iv) have average financial turnover of ₹ 302 crore, in the last three financial years.

The tender was to be evaluated by the Procurement Committee[15] (PC), comprising the Mayor as chairperson and the Municipal Commissioner, Chief Engineer, Deputy Municipal Commissioner and Chief Accounts Officer, as members.

The PC held (April 2015) a pre-bid meeting with 10 willing bidders, in which the threshold limit of average financial turnover, in the last three financial years, was reduced from ₹ 302 crore to ₹ 242 crore.

Audit observed that four[16] firms participated in the tender. The Committee opened (May 2015) the technical bids and forwarded them to the PMC (M/s Meinhardt Singapore Pvt. Ltd.) for evaluation and preparation of comparative statements. The PMC opined (May 2015) that all the four firms were technically qualified, but noted that one firm[17] had not disclosed mandatory information on the status of black-listing by any Government organisation or public sector undertaking. The PC disqualified (June 2015) the said firm and declared the remaining three firms (all JVs) as being technically compliant.

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[15] *Set up as per the Jharkhand Municipal Act, 2011/ JMAM, 2012*

[16] *(1) M/s L&T- Eco Protection Engineers (JV) (2) M/s Simplex-GECPL (JV) (3) M/s Jyoti Build Tech-Vibhor Vaibhav Infra Pvt. Ltd (JV) and (4) M/s SSG Infratech-Abhyudaya Housing (JV)*

[17] *M/s Simplex-GECPL (JV)*

Audit further observed that the PC forwarded the documents of these three firms to the Department, for obtaining approval for opening of financial bids. The technical cell of the Department disqualified one[18] of the three firms on the ground of absence of one year's experience in operations and maintenance. Resultantly, only two firms remained in the tender.

(i) Award of tender to an ineligible and inexperienced contractor

The PC opened (July 2015) the financial bids of the two firms and the rate quoted by M/s Jyoti Build Tech Pvt. Ltd. and M/s Vibhor Vaibhav Pvt. Ltd. (JV) was reported as the lowest. The Municipal Commissioner, RMC, awarded (July 2015) the tender at ₹ 359.25 crore (18.85 *per cent* above the BOQ) to the JV and executed (September 2015) an agreement for completion of the work in 24 months (*i.e.*, by September 2017).

Audit examination of the tender files revealed the following:

- M/s Vibhor Vaibhav Pvt. Ltd. (JV partner) informed (August 2019) the Municipal Commissioner, RMC that M/s Jyoti Build Tech Pvt. Ltd. (Lead Partner) had obtained the tender in the name of the JV by submitting forged and fabricated documents of their firm, as they had neither participated in the tender for the work, nor did they have any connection with the sewerage and drainage project for Ranchi.

- The lead partner of the JV had submitted a joint venture agreement (dated 25 April 2015) with M/s Vibhor Vaibhav Infra Pvt. Ltd. to participate in the tender for the work. In the said agreement papers, the General Managers (GMs) of both the individual firms had signed. Audit noticed that the signature of the Director of M/s Vibhor Vaibhav Infra Pvt. Ltd., who reportedly had issued an authorisation letter to its GM for signing the joint venture agreement, did not match with his signature recorded in the balance sheets (for the financial years 2011-12 to 2013-14) of the firm. These papers were found attached with the bid documents, but were ignored by the PC/PMC, while evaluating the tender.

- After award of work in the name of the JV, neither the registered copy of the JV agreement, nor of the incorporation of the JV as a company under the Companies Act, 2013, was submitted by the firms. RMC had also not insisted upon the production of these documents before execution of the agreement.

- Though the tender was awarded to the JV, the bid guarantee of ₹ 3.02 crore, in the form of bank guarantee (BG), was submitted (April 2015) by M/s Jyoti Build Tech Pvt. Ltd., instead of the JV. Further, the performance securities, valued at ₹ 14.94 crore, in the form of BGs, were also submitted in the name of M/s Jyoti Build Tech Pvt. Ltd. instead of the JV.

[18] *M/s SSG Infratech-Abhyudaya Housing (JV)*

- Identification documents (such as the Employee Id-Card, Aadhar Card, Voter Card, Driving License, Passport *etc*.) of the GM of M/s Vibhor Vaibhav Infra Pvt. Ltd., who had purportedly signed the JV agreement, were not found attached with the bid documents. Thus, the identity of the person who had signed the JV agreement was not ascertainable from Government records.

- M/s Jyoti Build Tech Pvt. Ltd. did not possess the requisite experience in designing, constructing and commissioning an STP of 30 MLD capacity in a single contract, whereas M/s Vibhor Vaibhav Infra Pvt. Ltd. had set up a 56 MLD STP. Thus, M/s Jyoti Build Tech Pvt. Ltd. became eligible in the technical evaluation, on the strength of the JV partner.

- As against the requirement of average financial turnover of ₹ 242 crore, in the last three financial years, in civil engineering works, the average financial turnover of M/s Jyoti Build Tech Pvt. Ltd. was only ₹ 157.11 crore. The firm had qualified in the tender on the strength of the average financial turnover of M/s Vibhor Vaibhav Infra Pvt. Ltd., which was ₹ 88.32 crore in the last three financial years (as both put together became ₹ 245.43 crore).

- The agreement for execution of the project was signed (September 2015) by the Municipal Commissioner, RMC, with a purported representative of the JV contractor. However, neither was any authorisation for this person, for signing the agreement on behalf of the JV, found in the tender files of the work, nor was it produced to Audit.

These deficiencies were visible upfront in the bid documents submitted by the lead partner of the JV. However, the PC and PMC did not flag these issues, for the Department to take an informed decision of and to dispose the tender fairly. Hence, the tender seems to have been managed on the strength of fake documents in favour of the contractor, who was otherwise ineligible, inexperienced and had not complied with tender requirements.

During the execution phase, the contractor failed to provide required manpower and machinery at the work site, made slow progress and stopped the work, despite grant of time extension twice (September 2018 and March 2019). Consequently, RMC terminated (October 2019) the contract with the contractor.

The Department stated (June 2022) that preparation of the bid documents, bid evaluation report and agreement documents, was the responsibility of the PMC (M/s Meinhardt Singapore Pvt. Ltd.) and PC had accordingly, awarded it the work.

The reply is not correct, as the PMC and members of the PC jointly decided the tender, in favour of an ineligible and inexperienced contractor, on the strength of the tender documents of his partner, who had denied submission of such papers. Hence, the members of the PC cannot be absolved of their

responsibility in deciding upon the tender in a manner that was not in accordance with rule provisions.

Recommendation 3: *The Department should fix responsibility for the irregularity in processing award of the tender for the work, in favour of the lead partner (M/s Jyoti Build Tech Pvt. Ltd.) of the joint venture, who was otherwise ineligible for the tender.*

Recommendation 4: *The Department should take legal action against the contractor (M/s Jyoti Build Tech Pvt. Ltd.), for submitting forged and fabricated documents to obtain the tender.*

(ii) Unfair award of tender for balance work

RMC approved (April 2020) the estimate for the balance work of the project, for ₹ 209.05 crore[19] and put it to tender in May 2020. As only a single bid was received, the work was tendered again in September 2020.

As per the tender document, any contractor (single or JV) applying for the tender was to: (i) possess experience in designing, constructing and commissioning a 30 MLD capacity STP in a single contract and (ii) have successfully operated and maintained STP of minimum 20 MLD based on any modern technology, for at least one year. In the event of the participating contractor being a JV firm, the lead member should have held the required experience for an STP, failing which the partner of the JV should have had the required experience in a single contract.

Audit noticed that two contractors (one as JV- M/s LC Infra-SNET Ranchi JV and the other- M/s Eagle Infra Pvt. Ltd.) had participated in the tender. The PC (comprising of the Municipal Commissioner, Dy. Municipal Commissioner, Chief Engineer and Chief Accounts Officer of RMC) evaluated (December 2020) the technical bids and declared both of them as being technically qualified. Audit scrutiny of documents, attached with the bids of these two contractors, revealed the following:

- M/s LC Infra Project Pvt. Ltd., Ahmedabad had participated in the tender as a JV[20] with a firm *namely*, M/s SN Enviro Tech Pvt. Ltd., New Delhi, on the basis of a JV agreement (September 2020), having the JV name- M/s LC Infra-SNET Ranchi JV.

- The bid security of ₹ 2.10 crore (by BG) had been submitted in the name of M/s LC Infra-SNET Ranchi JV.

- Neither did the lead partner of the JV (M/s LC Infra Pvt. Ltd.) have experience in designing, constructing and commissioning an STP of 30 MLD capacity in a single contract nor had it successfully operated and maintained

[19] *Excluding the balance work of storm water drains*

[20] *In the joint venture, the first party M/s LC Infra Pvt. Ltd. was the lead partner, with 80 per cent stake and the second party, M/s SN Enviro Tech Pvt. Ltd., was a JV member, with 20 per cent stake.*

an STP of minimum 20 MLD capacity. The other JV partner had the required experience, making it eligible, in terms of the tender conditions.

- In the comparative statement (CS) prepared (15 October 2020) by the PC, both the contractors (M/s LC Infra-SNET Ranchi JV and M/s Eagle Infra Pvt. Ltd.) were stated as having qualified. However, in the minutes (December 2020) of the technical evaluation, the PC recorded the name of the lead partner of the JV alone i.e., M/s L C Infra Project Pvt. Ltd., as having qualified for the tender, along with M/s Eagle Infra Pvt. Ltd.

- RMC forwarded (21 December 2020) the misleading details (*i.e.*, the lead partner having qualified, instead of the JV), to the Director, State Urban Development Authority (SUDA[21]), UD&HD, GoJ, for approval.

- Though these irregularities (CS papers; application of JV for the tender, but only the name of lead partner being forwarded) were apparent from the attached records, Director, SUDA, approved (December 2020) the technical evaluation carried out by RMC.

- RMC opened (December 2020) the financial bids and found the rate quoted by the JV (M/s LC Infra-SNET Ranchi JV) as being the lowest. However, in the minutes of the financial evaluation report, RMC recorded the name of only the lead partner (M/s L C Infra Project Pvt. Ltd.) of the JV, as having quoted the lower price.

- RMC recommended (December 2020) the tender in favour of the lead partner of the JV, to the Director, SUDA, for approval.

- Director, SUDA, who claimed to have examined and verified the financial evaluation report of RMC, approved (January 2021) the selection of the lead partner (M/s LC Infra Project Pvt. Ltd.) as the successful bidder, instead of the JV (M/s LC Infra-SNET Ranchi JV) which had participated in the tender.

- RMC executed (February 2021) an agreement with M/s LC Infra Project Pvt. Ltd. (instead of with the JV), for ₹ 218.87 crore.

- The performance guarantee of ₹ 4.38 crore, in the form of BG, was submitted in the name of the lead partner alone and not of the JV.

Thus, the tender of the balance work of the project was awarded to favour the ineligible lead partner of the JV, and not the JV itself, which was eligible, in terms of the tender conditions.

On this being reported by Audit (December 2021), RMC issued (March 2022) a corrigendum, stating that the name of M/s LC Infra Projects Pvt. Ltd. (lead partner) in the agreement (February 2021) was corrected as M/s LC Infra SNET Ranchi (JV). Based on this, the Department stated that the name of only

[21] *Established (May 2008) under a Resolution of the Department, to provide policy inputs to the State Government, for various programmes of the Central/State Government.*

the lead partner, instead of the JV, had been mentioned in the tender committee proceedings, due to typing error, which stood corrected.

Audit, however, noted that:

(i) the name of only the lead partner had been mentioned in all the documents, such as the technical evaluation, financial evaluation, work order and the agreement with the contractor.

(ii) on the date (February 2021) of the agreement, the JV was not in existence, as it had been incorporated only on 25 March 2022, after one year of the agreement and after being flagged by Audit. Hence, issue of a mere corrigendum, to justify (on the pretext of error) the award of work to a non-existent entity, with retrospective effect, was not in order.

(iii) GST registration and PAN of the JV were obtained after Audit had flagged the issue.

In the exit conference (August 2022), the Secretary of the Department assured that a circular will be issued immediately, at the Government level, for regulating tenders given to JV contractors. The Secretary also assured that the circular will direct all the Heads of Departments/ Heads of Office/ Tender disposal committees/ Officers signing agreements, to ensure that JVs are duly incorporated and registered in all respects, as well as properly documented, before agreements are signed for tenders awarded.

3.2.3.2 Execution of agreement with contractors

As per Rule 89 of the JMAM[22] 2012, the terms of the contract must be precise and definite and there must be no room for ambiguity or misconstruction therein. Standard forms of contracts (such as F-2 contract, SBD) are to be adopted, wherever possible, else, legal and financial advice is to be taken in drafting contracts, before they are finally entered into.

Agreement favouring the contractor

Audit compared the agreement clauses of the project with the provisions of JMAM, 2012 and noticed significant departure from norms favouring the contractor as detailed in **Table 3.3:**

Table 3.3: Comparison between provisions of JMAM, 2012 and agreement clauses

Sl. No.	Clauses of JMAM 2012	Clauses of agreement dated 30 September 2015	Audit comments
1.	**Para 4.8.6 (c) Performance security deposit** The amount of performance security shall be five *per cent* of contract price in the form of bank guarantee from a scheduled bank in favour of Municipal Commissioner valid up to 28 days after the date of	**General condition of contract** Initial security deposit at the rate of two *per cent* to be paid in the form of DD/pay order/ bank guarantee of nationalised bank drawn in favour of Ranchi Municipal Corporation payable at Ranchi.	Three *per cent* less provision of initial security deposit favoured the contractor.

[22] *Implemented in all ULBs of Jharkhand, vide notification 604 dated 08 October 2012, of UDD, GoJ*

	expiry of the defect liability period as applicable.		
2.	**Para 4.8.6 (d) Retention money** This shall be deducted at the rate of six *per cent* from each bill subject to a maximum of five *per cent* of the final contract price. 50 *per cent* of the amount retained shall be paid to the contractor on completion of the whole work and the balance 50 *per cent* on expiry of defect liability period, provided the engineer has certified that all defects notified by the engineer have been corrected.	**General condition of contract** Security deposit at the rate of three *per cent* of tender value to be deducted from subsequent bills.	Less provision of security deposit by two *per cent* from the bills favoured the contractor.
3.	**Para 4.8.6 (h) Mobilisation advance** In respect of contracts above ₹ 45 lakh, mobilisation advance at the rate of five *per cent* of the contract price for equipment and materials was payable for civil works against bank guarantee of similar amount from a scheduled bank.	**General condition of contract** The employer will pay mobilisation advance at the rate of 15 *per cent* of the tendered value, interest free, to the contractor to assist in defraying the initial expenses that will necessarily be incurred by the contractor for mobilisation and design, on submission of an unconditional and irrevocable bank guarantee of nationalised or scheduled bank in amounts equal to the advance payment.	Excess provision of mobilisation advance by 10 *per cent* resulted in undue favour to the contractor.
4.	**Para 4.8.6 (i) Liability on Termination** In the event of termination because of fundamental breach of contract by the contractor, provision for additional cost for completion of works shall be 20 *per cent* of unexecuted works to be adjusted from the final payment of the contractor. **Rule 86 of JMAM, 2012** In the event of rescission of the contract, the whole security deposit shall stand forfeited.	In the event of termination of contract, provision was made only for forfeiture of security deposit. No provision was made for recovery of additional cost for completion of the balance work.	Provision of recovery of additional cost for completion of work was not included in the contract, though it was necessary for safeguarding the interest of RMC/ Government, in the event of breach of contract by the contractor. This diluted the failure clause and resulted in undue favour to the contractor.

As a result of dilution of the JMAM clauses, Audit observed that:

- Mobilisation advance of ₹ 35.93 crore was paid in excess over that admissible to the contractor, in disregard of the codal provisions, as discussed in ***paragraph 3.2.3.3***.

- An amount of ₹ 73.81 crore could not be recovered (detailed in ***Appendix 3.2)*** from the defaulting contractor, upon execution of another contract for the balance work (after termination of original contract). Of these, the escalated cost of ₹ 69.40 crore[23] could have been adjusted by RMC, had a provision for recovery of additional cost, for completion of work in the event of termination of the contract, been included in the terms and conditions of the contract.

The Department stated (June 2022) that the DPR had been approved by the State Cabinet and the draft agreement had been vetted by the legal cell of RMC.

The reply is not acceptable, as the agreement clauses were drafted in favour of the contractor in a significant departure from the provisions made in JMAM, 2012, which were mandatorily to be complied with by all ULBs in the State.

3.2.3.3 Inadmissible grant of mobilisation advance

Para 4.8.6 (h) of JMAM, 2012, stipulates payment of mobilisation advance at the rate of five *per cent* of the contract price, against submission of Bank Guarantee (BG) of similar amounts (equivalent to the value of mobilisation advance), from a scheduled bank, for contracts above ₹ 45 lakh.

Further, the Central Vigilance Commission, had also issued (April 2007) guidelines for grant of mobilisation advance to contractors. These are as under:

- Interest free mobilisation advance should be discouraged, but, if the management feels its necessity in specific cases, it should be clearly stipulated in the tender document and its recovery should be time-bound and not linked with the progress of work.

- BGs, equivalent to the amount of each instalment of recovery of the advance should be taken in parts, against the mobilisation advance.

- Mobilisation advance should preferably be given in instalments and subsequent instalments should be released after getting satisfactory utilisation certificates from the contractor for the earlier instalments.

- The amount of mobilisation advance, interest to be charged, if any, its recovery schedule and any other relevant details, should be explicitly stipulated in the tender document, upfront.

- The relevant format for submitting the BGs should be provided in the tender document and should be enforced strictly. Authenticity of such BGs should invariably be verified from the issuing bank, confidentially and independently, by the concerned organisation.

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[23] *Agreed cost of work excluding drain work = ₹ 230.15 crore; Actual work done by the contractor = ₹ 80.68 crore; Cost of balance work, excluding drain work = ₹ 149.47 crore; Agreed value of balance work with new contractor = ₹ 218.87 crore; Escalated cost of balance work= ₹ 69.40 crore*

The agreement executed (September 2015) by RMC, with the contractor, provided for (i) payment of interest free mobilisation advance to the contractor, at the rate of 15 *per cent* of the tendered value, for defraying the mobilisation and design expenses and (ii) submission of BG, equal to the amount of mobilisation advance, issued from a nationalised/ scheduled bank located at Ranchi.

Audit observed that RMC had flouted the provisions of JMAM, 2012, CVC guidelines and agreement clauses, in granting mobilisation advance to the contractor, as detailed below:

(i) Contrary to the admissible provisions, RMC had paid mobilisation advance at the rate of 15 *per cent,* amounting to ₹ 53.89 crore (between October 2015 and December 2015), in three instalments[24], to the contractor, without obtaining utilisation certificates for the previous instalments. This resulted in excess payment of mobilisation advance of ₹ 35.93 crore to the contractor.

(ii) As per agreement with the contractor, the time frame for recovery of the advance was linked to the progress of work done by the contractor. The recovery was to begin only after the execution of 15 *per cent* of work and end by the time 70 *per cent* of the work was completed (*i.e.*, by January 2017). As of January 2017, however, mobilisation advance of only ₹ 10 lakh had been adjusted against payment of the first Running Account (RA) bill to the contractor.

- RMC did not liquidate the BGs, although this was to be done in terms of the agreement, to recover the unadjusted balance of advance amounting to ₹ 53.79 crore, in January 2017.

- In October 2019, RMC terminated the agreement due to fundamental breach of contract by the contractor. Till then, mobilisation advance of ₹ 17.88 crore, out of ₹ 53.89 crore, had been recovered from the contractor. The balance mobilisation advance of ₹ 36.01 crore could not be adjusted/ recovered.

(iii) RMC took BGs from the contractor, to secure the mobilisation advance, as shown in **Table 3.4:**

Table 3.4: BGs for securing mobilisation advance

Sl. No.	Issuing Bank	BG No.	Amount (in ₹)	Date of issue
1.	Chartered Mercantile M B Ltd. Lalbagh, Lucknow	2745/CMB/2016-17	18,00,00,000	Not mentioned
2.	Chartered Mercantile M B Ltd. Lalbagh, Lucknow	2746/CMB/2016-17	18,00,00,000	Not mentioned
3.	Indian Overseas Bank, New Delhi	274571116000021	18,00,00,000	25/11/2016
		Total	**54,00,00,000**	

[24] *₹ 18 crore on 16 October 2015, ₹ 18 crore on 4 December 2015 and ₹ 17.89 crore on 31 December 2015*

Audit examination revealed the following:

- A BG of ₹ 18 crore was issued by the Indian Overseas Bank, New Delhi in November 2016, *i.e.* after more than 10 months of payment of the mobilisation advance. Thus, RMC had granted the advance, without securing it by any BG, in violation of JMAM 2012, CVC guidelines and the agreement clause.

- Two BGs for a total amount of ₹ 36 crore, submitted by the contractor and accepted by RMC, had not been issued by any nationalised/scheduled bank, but by an institution *viz*., "Chartered Mercantile M B Ltd. Lalbagh, Lucknow". Examination of these BGs by Audit revealed that:

✓ The designation and identification number of the authorised signatory who had issued the BGs was not mentioned;

✓ The issue date of the BGs was not mentioned;

✓ The name and contact details of the controlling office, for verification of BGs, were not mentioned;

✓ The official email id and telephone number of the issuing branch were not mentioned; and

✓ RMC had not verified the BGs from the bank which had reportedly issued these, before admitting them, in violation of codal provisions and instructions of the State Government in this regard.

Audit sent copies of the BG to the Reserve Bank of India (RBI) to verify their authenticity. The RBI intimated (December 2021) Audit that they did not have any information about the entity which had issued the BGs, as per their records.

Thus, "Chartered Mercantile M B Ltd Lalbagh, Lucknow", not being a bank or financial institution, as per RBI records, was not authorised to issue any BGs and, hence, the BGs shown as having been issued by the entity were fake. As a result of submission of fake BGs by the contractor and their acceptance by RMC, ₹ 6.30 crore (after adjustment of all deposits of the contractor) could not be recovered from the contractor, upon termination (October 2019) of the contract ***(Appendix 3.2)***.

The Department stated (June 2022) that the BGs of Chartered Mercantile MB Ltd. had been returned to the contractor and six other BGs, issued by M/s Bombay Mercantile Cooperative Bank Ltd., were submitted by the contractor, which RMC had verified (December 2015), through email. The Department also stated that interest free mobilisation advance, though provided in the agreement, was offset by recovery of an additional amount of ₹ 5.74 crore, retained as keep back against interest of the mobilisation advance, for delays in execution of the project.

The reply is not acceptable, in view of the following:

- Copies of these six BGs were neither provided to Audit, nor were they attached with the reply. This was also conveyed to the Secretary of the Department, during the exit conference (22 August 2022).
- Scrutiny of payment files of the work revealed that RMC, while making payments (RA bills) (February 2018) to the contractor against work done, had mentioned about the BGs issued by Chartered Mercantile MB Ltd. Lucknow, as a security for payment of the mobilisation advance.
- On termination of the contract by RMC, the contractor (Jyoti Build Tech Pvt Ltd.) moved the National Company Law Tribunal, for relief. Notes of the reply petition (March 2020), prepared by RMC, bear reference to the submission of BGs issued by Chartered Mercantile MB Ltd., Lucknow.
- Recovery of the mobilisation advance was to be completed by January 2017. Due to delay in the execution of work, the Municipal Commissioner (RMC) imposed (May 2017) interest, at the rate payable by banks on term deposits, and recovered ₹ 5.74 crore from the bills paid to the contractor. This interest amount was the revenue of the RMC and cannot be treated as an adjustment against the outstanding principal amount of mobilisation advance.

Hence, payment of mobilisation advances to the contractor, on fake BGs and the subsequent stand of RMC of replacing those BGs with new ones, without any documentary evidence, needs further investigation.

Recommendation 5: *The grant of excess mobilisation advance to the contractor, in violation of norms needs to be investigated and responsibility fixed, in this regard.*

3.2.3.4 Execution of work

As per the agreement, the construction work commenced in September 2015 and was terminated by RMC in October 2019. The following deficiencies were noticed in the execution of work:

(i) Excess payment of ₹ 4.97 crore on STP and SPS works

Scrutiny of the project documents, relating to the agreement between RMC and the contractor[25], revealed that the work, *inter alia*, included construction of one STP of 37 MLD capacity and one SPS of 10.2 MLD capacity, on turnkey basis, as detailed in **Table 3.5**:

[25] *JV of M/s Jyoti Build Tech Pvt. Ltd. and M/s Vibhor Vaibhav Infra Pvt. Ltd.*

Table 3.5: Components to be executed under the sewerage and drainage project

Sl. No.	Component	Total agreement value (₹)	Remarks
1	Designing, supply, construction, erection and commissioning of Sewage Treatment Plant (STP) of 37 MLD capacity, based on modern technology	42.00 crore	Turnkey basis
2	Five years operation & maintenance of STP	4.21 crore	Turnkey basis
3	Designing, supply, construction, erection, commissioning Sewage Pumping station (SPS) of 10.2 MLD capacity	5.80 crore	Turnkey basis
4	Five years operation & maintenance of SPS	0.28 crore	Turnkey basis

RMC terminated (October 2019) the agreement, after payment of ₹ 18.08 crore (43 *per cent*) for execution of work relating to the STP and ₹ 3.89 crore (67 *per cent*) for execution of work relating to the SPS, without recording detailed measurements in the MBs. These outflows also included payments for survey and soil investigation, as well as submission and approval of designs of the STP and SPS.

The PMC (M/s Meinhardt Singapore Pvt. Ltd.) had recommended (September 2017) a payment milestone, based on which RMC had made payments to the contractor, as detailed in **Table 3.6**.

Table 3.6: Comparison between the provisions and the actual payments made to the contractor

Component	Recommended schedule of payment by PMC (In *per cent*)	Amount paid to contractor as per MB till October 2019	
		In *per cent*	Amount in ₹
Sewage Treatment Plant			
Submission of survey and soil testing report	5	12.5	5,25,00,000
Submission and approval of design	5		
On supply of item	25	Nil	Nil
Completion of excavation	5	5	2,10,00,000
Lean concrete and foundation	25	24.75	10,39,50,000
Walls casting	20	0.8	33,60,000
Roof level	5	Nil	Nil
On testing and commissioning	5	Nil	Nil
After 1 month of commissioning	5	Nil	Nil
Total	**100**	**43.05**	**18,08,10,000**

Audit examination revealed the following:

- As against the recommendation (by the PMC), lump sum payment of 10 *per cent* of the total agreement value, for submission and approval of the design for the STP, RMC paid 12.5 *per cent,* amounting to ₹ 5.25 crore.

- The PMC did not mention the price breakup for designing of each component of the STP, which involved civil work (hydraulic as well as structural design for main pumping station, primary treatment unit, SBR basin, chlorine contact tank, chlorination room, sludge pump house, sludge sump,

centrifuge house, blower room, internal roads, compound wall *etc*.) and electro-mechanical works.

- The contractor only submitted the hydraulic flow diagram, plant layout and piping/ instrumentation diagram. These were approved (May 2017) by the Chief Engineer, RMC.

- The contractor did not submit the design and drawings of civil works[26] (except in regard to the SBR basin) or of the electro-mechanical works. This fact had also been pointed out (April 2020) by M/s WAPCOS Ltd. (PMC), at the time of preparation of BOQ for the left out work, upon termination of the contract. RMC again awarded (February 2021) the design work, to the new contractor[27].

- In the agreement for the balance work, M/s WAPCOS Ltd. (PMC) mentioned (May 2021) the component-wise price breakup (in *per cent*) for execution of work relating to the STP (including design work) on turnkey basis.

- Though the contractor (M/s Jyoti Build Tech. Pvt. Ltd.) had submitted designs for a few components of the STP and received payments thereagainst, Audit could not work out the excess payments made under the original agreement, as the PMC had not mentioned the component-wise price breakup for designing of the STP. However, applying the percentage fixed for designing the same STP by WAPCOS in the earlier agreement, Audit worked out that the defaulting contractor (M/s Jyoti Build Tech. Pvt. Ltd.) was eligible for only ₹ 1.03 crore, for designing of one component (SBR basin), instead of ₹ 5.25 crore for designing the STP ***(Appendix 3.3)***. Thus, ₹ 4.22 crore was paid in excess to the contractor, which stands recoverable. Further, the role of the officials involved in passing the bills and releasing payments to the contractor, needs to be investigated.

- For the execution of SPS works, the payment milestones prepared by the PMC and the actual payments made to the contractor, are shown in **Table 3.7**.

Table 3.7: Payment milestones *vis-à-vis* the actual payments to the contractor

Component	Recommended schedule of payment by PMC (In *per cent*)	Amount paid to contractor as per MB till October 2019	
		In *per cent*	Amount in ₹
Sewage Pumping Station			
Submission of survey and soil testing report	5	7	40,60,000
Submission and approval of design	5		
Completion of excavation	5	2	11,60,000
On supply of item	25	Nil	Nil
lean concrete and raft	20	24	1,39,20,000

[26] *For the main pumping station, primary treatment unit, chlorine contact tank, chlorination room, sludge pump house, sludge sump, centrifuge house, blower room, internal road, compound wall etc.*
[27] *M/s LC Infra Pvt. Ltd.*

Component	Recommended schedule of payment by PMC (In *per cent*)	Amount paid to contractor as per MB till October 2019	
		In *per cent*	Amount in ₹
Construction walls up to top	25	34	1,97,20,000
On casting of Slab	5	Nil	Nil
On testing and commissioning	5	Nil	Nil
After one month of commissioning	5	Nil	Nil
Total	**100**	**67**	**3,88,60,000**

Audit noticed that RMC paid 24 *per cent,* instead of 20 *per cent,* for 'lean concrete and raft' works, to the contractor. Similarly, for 'construction of walls up to top', 34 *per cent,* instead of 25 *per cent* of the total lump sum cost, was paid, without any measurement and justification. This resulted in excess payment to the contractor, amounting to ₹ 75.40 lakh.

The Department stated (June 2022) that, for turnkey projects, there are no provisions for recording measurements for making payments. The bills for STP and SPS were paid on the basis of the percentages of different components, provided in letter no. MSPL/S&D/RAN 47 dated 01 December 2016, after verification by PMC.

The reply is not acceptable, as, in the MB, letter[28] no. MSPL/S&D/RAN 231 dated 06 September 2017, had been recorded, for making payments in regard to different components. This letter mentioned 20 *per cent* of the total lump sum cost for the component 'lean concrete and raft' and 25 *per cent* of the total lump sum cost for the component 'construction of walls up to top', as pointed out by Audit. Hence, the excess payment stands recoverable.

(ii) Excess payment of ₹ 1.98 crore on drain works

In regard to construction of the storm water drain, provision had been made in the estimate for execution of *'PCC M15 in normal mix in foundation for drain and culvert with approved quality of stone chips and clean coarse sand including shuttering, etc*.'

Audit observed that the contractor had executed drain works in a length of 1.49 kms, which involved 99.38 cubic metres of this item, at the rate of ₹ 5,000 per cubic metre. Against this, 3,957.59 cubic metres of the item had been recorded (in RA bill nos. 11 to 14 and 17) in the measurement book, without any justification or approval of the competent authority.

Recording of inflated measurement of 3,957.59 cubic metres (over the approved quantity of 99.38 cubic metres) of the drain item resulted in excess payment of ₹ 1.98 crore to the contractor which stands recoverable. The role of the officials involved in passing the bills and releasing payments to the contractor needs to be investigated.

[28] *PMC (M/s Meinhardt Singapore Pvt Ltd) had issued (September 2017) this letter, to RMC, for setting payment milestones for different components of the STP and SPS. While making payments to the contractor, RMC engineers made reference to this letter, in the measurement books.*

The Department stated (June 2022) that all payments had been approved by the CE, RMC, who was competent to sanction the deviations under the project.

The reply is not acceptable as: (i) the section of storm water drain where these excess quantities were utilised, was not mentioned, nor was it provided to Audit and (ii) file approval of the excess quantity, by the competent authority, if any, was not provided to Audit.

(iii) Wasteful expenditure of ₹ 47.93 lakh on storm water drains

As per the agreement, 207 km of storm water drains, along with culverts, was to be constructed at a cost of ₹ 129.10 crore[29]. Audit observed that:

- The contractor submitted (November 2018) L section drawing of only 1.49 km out of 207 km, at seven[30] locations, which was also not approved by the CE, RMC. No reason for keeping the approval on hold was available in record, or intimated to Audit.

- The contractor constructed (November 2018) the storm water drain in a total length of 1.49 km at seven locations and received payment of ₹ 47.93 lakh from the RMC. These fragmented sections of drains, which ranged between 34.5 metres and 596 metres at different locations, were not connected to any bigger drain network and, thus, served no purpose.

- Audit conducted (October 2021 and November 2021) joint physical verification (with the officials of RMC) of the drains, in 956 metres (out of the total constructed length of 1490 metres), at two[31] out of seven locations and noticed the following:

Picture 3.2 Dismantled storm water drain at Harihar Singh Road (20 October 2021)

➢ At Harihar Singh road, the pre-casted drain, in a length of 360 metres, was dismantled (October 2021), as a new work of improvement and construction of drains, costing ₹ 1.35 crore, was being done by RMC, at the same site. On enquiry by Audit, the contractor of the said new drain work stated that the earlier constructed pre-casted drain (length 360 metres) was of no use in the new work.

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[29] *For construction of storm water drains: ₹ 120.38 crore, storm pipes: ₹ 1.65 crore and culverts: ₹ 7.07 crore*

[30] *Radha Nagar (Panchsil Nagar)-194 m; Indira Nagar-76.15 m; Tetad Toli, Bariyatu-34.5 m; Ekta Nagar-178 m; Booty Basti-596 m; Harihar Singh Road-360 m and Vidyapati Nagar-49.5 m*

[31] *Harihar Singh Road and Booty Basti*

➢ At Booty Basti, no pre-screening arrangement for solid wastes was found in the storm water drain and water logging was noticed at the drain ends. Moreover, this drain was not connected to any drain network and waste water from septic tanks was flowing into the open storm water drains, making them polluted. Thus, the drain was not only a waste of public resources but also a health hazard.


Picture 3.3 and 3.4: Storm water drain structure in Booty Basti and scattered solid wastes along the sides of the drain (22 November 2021)

- After termination (October 2019) of the contract, RMC executed (February 2021) a fresh agreement, with a new contractor, for execution of the balance work under the sewerage and drainage project, but the unexecuted part of the storm water drain work was not included.

Thus, expenditure of ₹ 47.93 lakh, incurred on partial execution of storm water drains, was wasteful, as the fragmented sections of constructed drains were not linked to any drain network and they were found filled with the wastewater of septic tanks. The construction of these drains had been taken up without approval of the designs by the competent authority and they had been abandoned since then.

The Department stated (June 2022) that, due to construction of drains by other departments (such as Road Construction, Zila Parishad *etc*.), RMC had decided to construct the drains only in places affected by water logging.

The reply is not acceptable, as the drains taken up for construction in the entire stretch were in seven fragmented sections and were subsequently not included in the agreement entered into for execution of the balance work. Further, there was nothing on record regarding the execution of any such drain works by other departments.

(iv) Deficiencies in the hydraulic design of the sewer network

As per para 3.15 of the CPHEEO Manual, the velocity in the sewer should be such that the suspended materials in the sewage are not silted, *i.e.* the velocity should cause automatic self-cleaning effect. If depositions take place and are not removed, free flow will get obstructed, causing further deposition leading to complete blocking of the sewer. Details of the design velocities, to be ensured in the gravity sewer, are shown in **Table 3.8**:

Table 3.8: Design velocities for gravity sewer

Sl. No.	Criteria	Values
1	Minimum velocity at initial peak flow	0.6 meter/ second
2	Minimum velocity at ultimate peak flow	0.8 meter/ second
3	Maximum velocity	3.0 meter/ second

A pilot networking project, in a 3.8 km stretch in Zone I was done in April 2016. Audit scrutiny of hydraulic design of this 3.8 km stretch revealed that in 3.173 km (out of 3.8 km stretch), involving DWC pipes of diameter 150 mm, 200 mm and 250 mm connecting 124 manholes, the actual velocity of sewage was between 0.42 m/sec and 0.58 m/sec, which was less than the minimum velocity of 0.6 m/sec required to cause automatic self-cleaning of the sewer.

Moreover, RMC could not produce any evidence (such as site order book *etc*.) of any hydraulic test, conducted after completion of networking of this pilot project. Thus, silting of suspended materials and blockage of sewer flow in this stretch could not be ruled out, as the self-cleaning sewage velocity was not attained.

Audit observed that the total length of sewer network in the project was revised to 280 km. RMC provided drawings of the manhole number and distance, pipe diameter and slopes, invert levels and ground levels, along with the alignment of network, as approved (August 2016) by CE, RMC. However, the hydraulic design of the entire network of 280 km (except the pilot stretch of 3.8 km), which was essential to examine adherence to the provisions of the CPHEEO manual, for attaining the minimum self-cleaning velocity, was not produced to Audit, though requisitioned between July 2021 and October 2021. Thus, RMC could not produce any evidence to prove that the hydraulic design of the project network is CPHEEO compliant and will attain self-cleaning sewage velocity.

The Department stated (June 2022) that investigation in this regard was being conducted by WAPCOS Ltd. (PMC).

(v) Other project irregularities

Audit noticed the following other irregularities in the implementation of the project:

- For laying of network pipes and manholes under the project, no objection certificates (NOCs) was required from various authorities such as NHAI and Road Construction Department (RCD), for roads falling in their jurisdiction. The details of these roads are shown in **Table 3.9**.

Table 3.9: Roads for which NOCs were required

Sl. No.	Name of the authority	Name of road stretch	Approximate Length (in km)
1	NHAI	Ratu to Pandra	6.25
2		Piska More to Katahal More	
3	RCD	Karamtoli to Borya	12.46
4		Karamtoli to Booty More	
5		Ratu road to Kanke block	
6		Booty to Zumar bridge	2.69
		Total	**21.40**

Audit noticed that EE, RMC, had issued letters to these authorities, between May 2021 and October 2021, for providing NOCs, but the same were still pending from these authorities (as of August 2022). Pending NOCs may delay execution of the balance work. The Department, therefore, needs to coordinate with NHAI and RCD, for obtaining the NOCs.

The Department stated (June 2022) that steps were being taken to get the required NOCs.

- At the time of termination (October 2019) of the agreement, a total of 3,049 manholes had reportedly been constructed at a cost of ₹ 11.80 crore. After execution of agreement for balance work, the new contractor informed (August 2021) RMC that 272 out of 3,049 manholes were not found during survey of the sewerage network. The contractor requested for a joint survey, with RMC and PMC officials, to ascertain the existence of these manholes.

However, the joint survey report, if any, had not been furnished to Audit till the date of the exit conference (August 2022). During joint physical verification (November 2021), along with RMC and M/s WAPCOS (PMC) authorities, it was observed that, in a stretch of 200 metres at Booty Basti, Ranchi, four out of six manholes were not visible, as these were reported to have been covered up by newly constructed PCC roads.

No reply was furnished by the Department in this regard.

(vi) Delayed acquisition of land for STP

Rule 132 of the JPWD code stipulates that no work should be initiated on land which has not been duly made over by the responsible civil officer.

Audit observed that construction of the STP, in Zone I at Kishunpur, required acquisition of private land in the Bargain circle. The Department accorded (May 2015) administrative approval for acquisition of the land and released ₹ 50.40 crore to RMC. However, the said land at Kishunpur could not be acquired, due to refusal of the concerned land owners to part with their private agricultural land.

RMC identified (June 2016) another land, measuring 8.89 acre, in Lem village, which involved acquisition of 4.09 acre of private land. RMC transferred (June 2017 and October 2018) the compensation amount of ₹ 26.75 crore to the District Land Acquisition Officer, Ranchi, and the land was acquired and handed over to RMC in August, 2020. This delayed commencement of the civil work of the STP by two years.

The Department accepted (June 2022) that acquisition of land for construction of STP was delayed.

Chapter 4

Audit on Rejuvenation and Conservation of the Harmu River

CHAPTER 4
URBAN DEVELOPMENT AND HOUSING DEPARTMENT

Audit on Rejuvenation and Conservation of the Harmu River

Executive Summary

A project for rejuvenation and conservation of the Harmu river (10.4 km of its urban stretch), with the objectives of transforming the river into a vibrant water asset, with sparkling clean water, increased water intake and carrying capacity; and development of riverfront and enhancement of public amenities, was sanctioned (August 2014) by the Urban Development and Housing Department (Department), Government of Jharkhand. The work of the urban stretch was completed (October 2018) at a cost of ₹ 92.78 crore. As of November 2022, the project was under the operation and maintenance phase.

In view of the continuing media coverage about the unsatisfactory condition of the Harmu river, despite execution of the rejuvenation and conservation works, audit of the project was taken up to assess whether: (i) the project of rejuvenation and conservation of Harmu river was properly planned and executed, to achieve the objective of transforming the river into a vibrant water asset with clean water, by controlling its pollution (ii) post-execution operation and maintenance of the project was ensured and (iii) activities relating to monitoring and inspection were prescribed and conducted, as required.

Audit was conducted between March 2021 and April 2022, by test-check of records of the Department and Jharkhand Urban Infrastructure Development Company (JUIDCO), covering the period from June 2014 to March 2022.

Audit findings

- *The project objectives of transforming the river into a vibrant water asset with clean water could not be achieved. Water quality tests, carries out by the contractor, after completion of the project, indicated that sewage water had been flowing in the river. Quality test of water flowing in the Harmu river, conducted (April 2022) by Audit, through MECON Limited, revealed presence of faecal coliform, among other pollutants.*

- *A committee, comprising the Engineer-in-chief, Water Resources Department; Birla Institute of Technology (BIT), Mesra; BIT, Sindri, and the National Environmental Engineering Research Institute (NEERI), Nagpur, had reported (July 2019) that the works carried out under the project had failed to achieve the intended objectives and had produced no visible results.*

- *The State Government had not planned the project according to procedures laid down under the National River Conservation Plan (NRCP) guidelines (such as, preparation of City Sanitation Plan, quantification of sewage generation etc.) despite the advice of IIT, Mumbai. As a result,*

Government of India had turned down the request of the State for Central funding under NRCP, amounting to ₹ 55.03 crore, depriving the State of Central assistance for the project.

- *Against 14 major inlets terminating into the Harmu river at different locations, only nine inlets were connected to the sewer network. Discharge from the connected inlets, carrying sewage, was found falling into the river even during the dry season, owing to defective design. The remaining five unconnected inlets were directly discharging sewage into the river. In addition, 56 minor inlets, left unconnected to the sewer network, were also discharging sewage into the river.*

- *The sewerage network was designed for channelising only 22.15 million litres per day (MLD) sewage, for the ultimate year 2048, against the estimated sewage generation (year 2048) of 47.12 MLD, as calculated by Audit.*

- *The project was designed on the basis of reduced catchment area of 8.49 sq. km., against the total catchment of 22.59 sq. km. of the river, in violation of the Central Public Health and Environmental Engineering Organisation (CPHEEO) Manual. Additional Sewerage Treatment Plant (STP) of 10.5 MLD capacity, required to treat the extra sewage generated from the additional catchment, could not be constructed, due to non-availability of land.*

- *As against the approved eight STPs with a total capacity of 11.50 MLD, only seven STPs, with a total capacity of 10 MLD, were functioning and processing 2.898 MLD sewage per day, instead of the installed capacity of 10 MLD.*

- *The river cross-sections were designed (ranging between 15.45 m^2 and 33.25 m^2) with reduced value of coefficient of runoff, on the basis of flood discharge for a return period of 25 years, instead of 100 years. Though several cross-sections were widened (between 23.18 m^2 and 49.43 m^2) subsequently, on the basis of flood discharge for a return period of 50 years, the design discharge of the river (between Muktidham and meeting point with Subarnarekha river) was understated, in comparison to the actual discharge. This poses a risk of substantial damage to the entire cross-section of the river, in the event of actual flood discharge.*

- *The purpose of construction of the storm-water drainage system along both sides of the river (10.4 km stretch), was not achieved. The drains were blocked with silt, mud and solid deposits etc., and were found discharging sewage into the river (between Amaravati bridge and STP-5).*

- *Solid waste management, along the Harmu river, was poor. During joint site verification, most of the area around the river was found filled with mud and piles of garbage.*

- *Satellite images of different stretches of the river, during the last 12 years (October 2009 to June 2021), revealed a gradual decline in the green cover around the river, with the passage of time. The satellite images also revealed changes in the course of the river, reduction in the width of the river by 18.70 metres at Karma Chowk Bridge near Muktidham, encroachment of the riverfront etc.*

- *Measures for the sustainability of the operation and maintenance (O & M) activities were not planned. As against ₹ 6 lakh per year, allocated for the daily operation of sewage lifting pumps, for the seven STPs (total capacity 10 MLD), JUIDCO had been incurring electric charges at the rate of around ₹ 33 lakh per year. This made the O & M of the project unsustainable, without additional government financing. Generation of revenue, to meet the O & M costs, for ensuring the sustainability of the project, as envisaged in the NRCP guidelines, had not been explored and was not in place.*

Recommendations

1. Government may undertake a detailed study on reviving the origin and catchment area of the Harmu river; revise the estimation for storm water; and formulate a comprehensive policy, which clearly recognises urban runoff as a potential source of water for the Harmu river.

2. Government may revise the estimation of sewage quantities generated, considering the present and future growth of the population and prepare a plan of action, within a definite time frame, to prevent sewage from flowing into the river.

3. Government may urgently take steps to rectify the defects in the design and carrying capacity of the underground sewer system and consider the construction of additional STPs.

4. The Department may survey and work out the quantity of: (i) sewage being discharged, from all the identified major and minor inlets (ii) sewage being passed into the sewerage network (iii) sewage getting into the STPs and (iv) sewage flowing directly into the river, instead of being routed through the sewerage network. The Department may also examine the duration for which these STPs should be in operation, for ensuring the required filtration of the sewage.

5. Government may take steps to educate the urban population, living alongside the Harmu river, on the adverse effects of the unauthorised discharge of sewage into the river and explore the possibility of involving Residential Welfare Associations/Non-Government Organisations, for effective management of solid waste. The Department may also draw up a plan urgently, to resolve the problems arising due to improper management of solid waste, in and around the river, by involving RMC.

6. Government may, in coordination with RMC, take necessary action to identify and evict all encroachments on the river banks and its tributaries and maintain the stipulated buffer zone. For this purpose, periodical inspection of the river sites and tributaries and proper surveillance mechanisms, preferably in coordination with the Command, Control and Communication Centre (C4) at Smart city Ranchi, may be established.

7. The Department may ascertain the exact date of commencement of O & M, so that the five-year period can be reckoned. The exact period of trial run, commissioning and operation, may be confirmed and fixed. The Department may immediately switch over to LT electric connection, to make O & M viable and also explore the possibility of levying user charges against property connections.

4.1 Introduction

Harmu, a tributary of the Subarnarekha river, originates in a small hilly region near *Hehal*, Ranchi. It flows for 17.8 km (Rural stretch: 7.4 km and Urban Stretch: 10.4 km), and has a catchment area[1] of 30.670 sq. km (8.080 sq. km rural stretch and 22.590 sq. km urban stretch) before meeting the Subarnarekha river, near *Namkum*, Ranchi. The rapid urbanisation of Ranchi city created problems, such as the excessive influx of sediments from the catchment area, as well as the discharge of untreated sewage and solid waste, into the river; and encroachment of land along the river banks *etc*., resulting in deterioration of the water quality of the river.

A High-Level Monitoring Committee, headed by the Chief Secretary, Government of Jharkhand, had sanctioned (March 2014) the work of rejuvenation, construction of STPs and beautification of the Harmu river, in a stretch of two km, by utilising the 13th Finance Commission grant, at an estimated cost of ₹ 15 crore, for execution through Jharkhand Urban Infrastructure Development Company (JUIDCO). During the review (June 2014) of departmental schemes, the Chief Minister of Jharkhand had issued instructions to clean the Harmu river and construct STPs in a stretch of nine km.

The Urban Development and Housing Department (Department) appointed (June 2014) a consultant (M/s Tandon Urban Solutions Pvt. Ltd[2].), for the preparation of a Detailed Project Report (DPR) and Project Management Consultancy (PMC) services, for the rejuvenation and conservation of the Harmu river. The objectives of the project were to transform the river into a vibrant water asset with sparkling clean water, increased water intake and carrying capacity; development of the riverfront and enhancement of public amenities.

[1] *The area from which rain flows into a river, lake or reservoir.*
[2] *TUSPL*

The Consultant submitted (July 2014) the DPR comprising two phases (phase I for the urban stretch in a length of 10.4 kms at an estimated cost of ₹ 86.15 crore and phase II for the rural stretch of 7.4 kms at an estimated cost of ₹ 1.29 crore), indicating a total cost of ₹ 87.44 crore. On the request of the Department, the Indian Institute of Technology (IIT), Mumbai, carried out a technical appraisal of the DPR (for the urban stretch), on payment of a consultancy fee of ₹ 11.31 lakh. IIT, Mumbai, sent (August 2014) its technical appraisal report on the DPR, with the following observations:

- The DPR needed to be modified, keeping in view the guidelines of the National River Conservation Directorate (NRCD)[3].
- For the sewage collection system, the actual catchment area (22.59 sq. km.), that would be producing and discharging sewage into the Harmu river, should be considered.
- The actual runoff coefficient, as envisaged in the CPHEEO Manual and IRC-Special Publication (SP) 13, needed to be applied for city pavements, instead of the weighted average runoff coefficient.
- Novel ideas needed to be introduced, to divert dry weather flow to the sewerage system and storm-water (flowing in *nallas* and storm-water drains) to the river, during the rainy season.

The DPR for both the phases was accorded (August 2014) technical sanction (TS) for ₹ 87.44 crore by the Chief Engineer (CE), Technical Cell, of the Department. However, the issues flagged by IIT, Mumbai, had not been addressed before granting the TS. The project was to be executed by JUIDCO Ltd. The works proposed to be carried out under phase I and phase II, and its present status, are detailed in **Table 4.1**:

Table 4.1: Activities, timeline and present status of the project (phase I and II)

Phase	Activities	Timeline	Status (as of April 2022)
Phase I	Bank protection and river boundary, Sewerage system along the river, Low-cost sanitation, Storm water drainage system, Environment Management Plan, Pathways, plantation and elevated pathways, Public Participation and Awareness including information signage.	To be completed by 31 October 2018.	Completed in October 2018. Presently, under O & M.
Phase II	Weir with sluice gates in rural stretch, boundary wall in urban stretch, management of solid waste in rural and urban stretch	DPR to be finalised by May 2016.	Only Feasibility Report submitted. DPR not finalised, due to frequent revisions in the scope of work.

[3] *NRCD is located within the Ministry of Environment, Forest & Climate change, (henceforth, 'Ministry') Government of India. The Directorate provides financial assistance under the National River Conservation Plan (NRCP), to State Governments/Local Bodies, to set up infrastructure for pollution abatement of rivers, in identified polluted river stretches, based on proposals received from State Governments/ Local Bodies.*

Leaving the rural stretch, JUIDCO invited (December 2014) tender for the work of urban stretch (Phase I) and awarded (February 2015) it to a contractor (M/s Eagle Infra India Ltd.), for ₹ 85.43 crore (9.97 *percent* above the BOQ[4] value of ₹ 77.69 crore). JUIDCO executed (February 2015) an agreement with the contractor, for the completion of the project, by August 2017.

In the work order (February 2015), JUIDCO instructed the contractor to obtain approval (vetting) of the drawing and designs of the project work, from IIT, Mumbai, or any other recognised technical body. The work order further stipulated that all the necessary design and drawings, which were in the scope of work of the contractor, were to be approved by JUIDCO, as per site conditions, before execution of works. In addition, the contractor inked (June 2015) a Memorandum of Understanding with NEERI, Nagpur, for technical support (as knowledge partner) to the project.

The DPR was subsequently revised (February 2018) to ₹ 101.60 crore and completion of the project was extended up to October 2018, due to delay in handing over of the work site and execution of additional items. A supplementary agreement for ₹ 7.01 crore was also executed (September 2018), with the contractor, to cover payments of extra items and approved deviations.

The work of the urban stretch was completed on 31 October 2018, at a cost of ₹ 92.78 crore (₹ 86.26 crore as contractor's payment, ₹ 5.52 crore as centage to JUIDCO, and ₹ one crore as utility shifting and electricity bills). As of November 2022, the project was under the operation and maintenance stage.

Meanwhile, JUIDCO engaged (February 2016) another consultant (M/s IK Worldwide) for preparation of DPR and PMC services, for Phase II (rural stretch) of the project, afresh, including rectification works of Phase I. The DPR was not finalised (April 2022), even after a lapse of more than five years, due to frequent revisions in the scope of work. The consultant was paid (October 2016) ₹ 48 lakh (against total payable consultancy fee of ₹ 1.60 crore) for submitting a Feasibility Report.

Audit was conducted from March 2021[5] to April 2022, by test-check of records at the Department and JUIDCO, covering the period from June 2014 to March 2022, to ascertain whether: (i) the project of rejuvenation and conservation of the Harmu river was properly planned and executed, to achieve the objective of transforming the river into a vibrant water asset with clean water, by controlling its pollution (ii) post-execution operation and maintenance of the project was ensured; and (iii) activities relating to monitoring and inspection were prescribed and conducted, as required.

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[4] *Bill of Quantity*

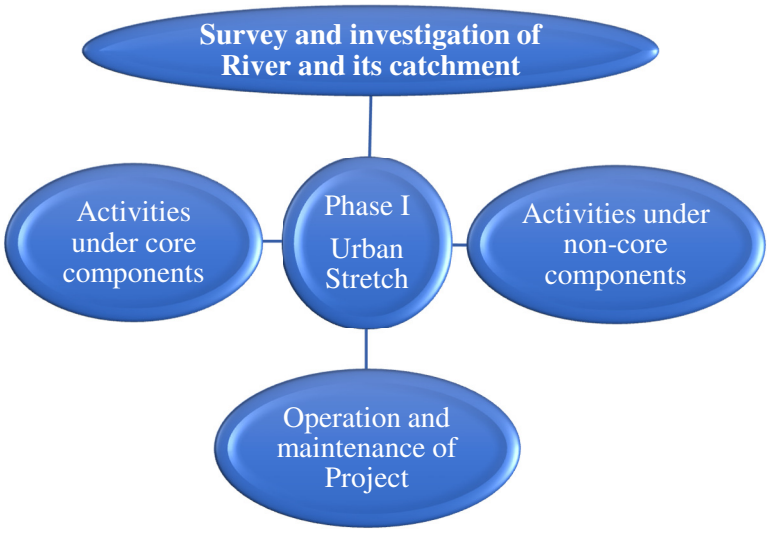
[5] *Excluding COVID restrictions imposed by the State Government from April 2021 to July 2021*

Entry (August 2021) and Exit (August 2022) Conferences were held with the Secretary of the Urban Development and Housing Department, to discuss the audit objectives, criteria[6], scope, methodology and audit findings. At the Exit Conference, the Secretary of the Department was briefed about the unabated flow of sewage water into the Harmu river, even after the completion of the rejuvenation and conservation project. The Secretary accepted the facts and agreed with the audit findings in the report. The Secretary also accepted all the audit recommendations and assured that remedial measures would be taken in this regard, in consultation with NEERI, Nagpur, which had been engaged as the knowledge partner of the project.

Audit findings

4.2 Planning

As per the technically sanctioned DPR of Phase I, rejuvenation and conservation of the river in the urban stretch was planned as under:



Activities, under the core and non-core components, were further planned to be taken up, as shown in **Table 4.2**.

Table 4.2: Components of the rejuvenation and conservation work of the Harmu river

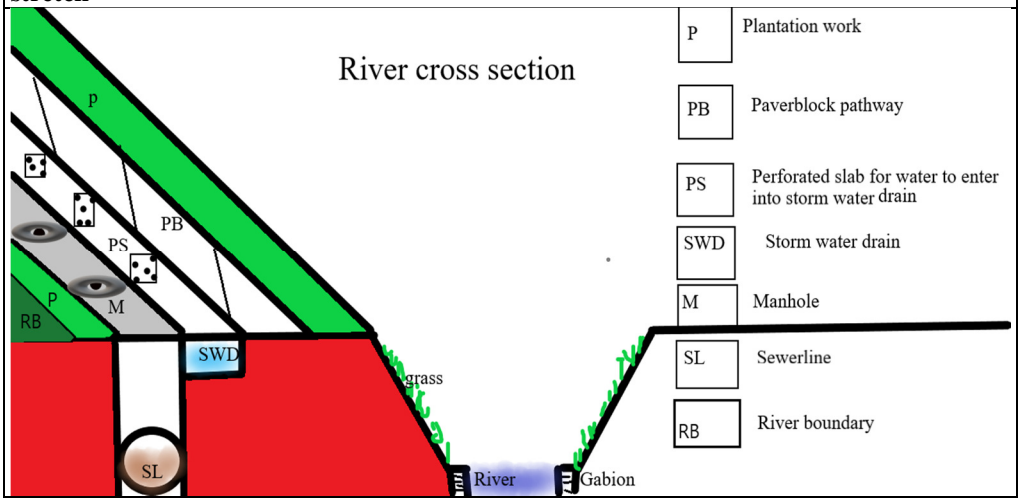
Core Components	Works to be done
Bank protection and river boundary	• Construction of gabion. • Construction of river boundary, with bollard and hedges.
Sewerage system along the river	• Improvement of six inlets, for channelising sewage into the underground sewerage collection network. • Construction of underground sewerage collection network, for interception and collection of sewage flowing through six inlets, sewage produced in riverside houses (250 metres on each side, covering a catchment area of 5.200 sq. km) and sewage generated in 33 low-cost toilet blocks.

[6] *(i) Manuals on sewerage and drainage issued by CPHEEO (ii) Jharkhand Public Works Accounts and Department Code (iii) Indian standard Codes (iv) Guidelines of Indian Road Congress on Urban Drainage (v) Guidelines issued under the National River Conservation Plan (NRCP) and (vi) Instructions issued by Central/ State Pollution Control Boards.*

Core Components	Works to be done
	• Construction of property connections from riverside houses. • Construction of nature-based Sewage Treatment Plants, for treatment of sewage flowing in the underground sewerage network. • Installation of solar street lighting poles, for area lighting around the operational area of the STPs.
Low-cost sanitation	• Construction of low-cost sanitation toilets, transformer, HT line and high yield drilled tube wells.
Storm water drainage system	• Construction of stormwater drainage system, for preventing solid waste and debris from getting into the river
Environment Management Plan	• Preparation of environment statement and analysis of samples, during the construction and operation phases.
Non-Core Components	**Works to be done**
Pathways, plantation and elevated pathways	• Construction of paver-block pathways. • Plantation of trees in bamboo guards. • Construction of elevated pathways for crossing the river.
Public Participation and Awareness including information signage	• Installation of retro-reflective signs, direction and place identification signs. • Organisation of seminars, workshops, educational material, banners *etc*.

Audit noticed that, neither the core nor the non-core components of the DPR, had any provision for creating a sustainable water source for the river, which is the main driver for rejuvenation of any water body. The pictorial representation of the cross-section of the Harmu river, in the urban stretch (prepared by Audit and authenticated by JUIDCO), along with the proposed execution of works, is shown in **Picture 4.1**:

Picture 4.1: Pictorial representation of the Harmu river cross-section in the urban stretch



The Department had submitted (November 2014) a proposal to take up the project, under the National River Conservation Plan (NRCP) of the Ministry of Environment, Forest and Climate Change, Government of India. Prior to the proposal, IIT, Mumbai, had advised (August 2014) the State Government to modify the DPR, as per NRCP guidelines. This was, however, not complied with. The NRCD rejected (March 2015) the proposal, as the project had not been planned in keeping with the guidelines of NRCP.

As a result, GoI did not accept the proposal for central funding under NRCP. Hence, the State Government could not avail the opportunity of Central assistance of ₹ 55.03 crore. In the absence of central assistance, the State Government sanctioned the entire cost of the project (except for ₹ 15 crore, sanctioned from 13 FC grants) under the State funds.

4.2.1 Planning deficiencies

River conservation projects are regulated by guidelines issued (December 2010) under the NRCP. The activities included under the NRCP, *inter alia*, cover components such as interception and diversion of raw sewage flowing into the river, construction of STP for treating the diverted sewage, low-cost sanitation works, river front development *etc*.

As per Annexure I of the NRCP guidelines, GoI considers River Action Plans or River Conservation Projects, on the basis of pre-feasibility report estimates, prepared by the concerned State Governments. After a project is approved *in-principle*, DPRs are to be prepared, with firmed up cost estimates for all components of the work. These DPRs are appraised and approved by the Ministry, following which administrative approval and financial sanctions are issued. The project costs, except for O & M cost which is to be solely borne by the concerned State Governments, are to be shared between the Central and State Governments in the ratio of 70:30. The guidelines further stipulate that the preparation of DPRs, for pollution abatement of rivers, should involve the following:

(i) Preparation of City Sanitation Plan (CSP), to convert the polluted stretch of a river, to a stretch having the desired quality of water.

(ii) Pre-feasibility/ Feasibility Report (FR) of sewerage schemes, to select the most suitable system for pollution abatement.

(iii) The DPR of sewerage schemes should ensure full coverage of the town, on the basis of detailed survey, investigation and engineering design, based on the standard procedures laid down in the CPHEEO Manual.

The above provisions were not followed by the Department while planning the project and the deviations, noticed by Audit, are as under:

✓ As per the guidelines, the FR of the project and CSP were to be submitted first and approved by the Ministry, before submission of the DPR. The FR needed to explain, in detail, the various alternatives considered for pollution abatement of the river and their cost comparison, along with justification for the selection of the alternative finally chosen. However, the State Government did not submit any FR and CSP to the Ministry before sending the DPR. This prevented the Ministry from getting assurance about the various alternatives considered by the State Government and the one finally chosen with justification. Accordingly, the Ministry informed the State

Government that the guidelines of NRCP were not adhered to before preparing the DPR.

✓ Basic details of sewage generation in the city, existing sewerage and STP facilities, gaps in sewage treatment capacity, quantity of sewage being drained into the river *etc*., though required, were not given in the project proposal. Also, the proposal submitted to the Ministry had little or no information about the mechanism to tackle the sewage load from Ranchi city, based on the existing and proposed sewerage system and STPs.

✓ The project proposal lacked details on river water quality data, indicating the pollution levels in the Harmu river, and the likely deterioration in the river water quality, due to sewage discharge.

✓ The sustainability of the project would depend on the generation of revenue, to meet the O & M costs of assets under the project. The proposal, however, did not have any O & M Cost Recovery Plan.

✓ Commitment of the State Government, to bear 30 *per cent* of the project cost, as well as the full O & M cost, was not provided.

The Department stated (July 2022) that the Rejuvenation and Conservation of the Harmu river project had been taken up considering the coverage in the proposed scope of the Sewerage and Drainage project of Ranchi, by the Ranchi Municipal Corporation (RMC).

The reply is not convincing, as: (i) RMC had not prepared any city sanitation plan for integrated disposal (existing and futuristic) of sewage for the entire city (ii) construction of the sewerage and drainage system though, taken up by RMC in Zone I of the city, had not been completed (April 2022), while, for the other zones, including where the Harmu river is located, no project for sewerage and drainage had been taken up (iii) the DPRs for the rejuvenation and conservation of the Harmu river and the sewerage and drainage projects, had been prepared and approved separately and were not integrated in any manner, which led to the rejection of the project, under NRCP Scheme, by the GoI.

During the exit conference (August 2022), the Secretary accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project, by NEERI.

4.3 Tendering and Project Supervision

4.3.1 Selection of contractor on the basis of experience certificate of a sub-contractor not involved in the work

As per condition 4.5 (c) of the Notice Inviting Tender (NIT), the contractor on its own, or identified subcontractor, was required to possess experience in the design, construction, and commissioning of STP (capacity of one MLD or

more), in phytorid[7] technology, or any such *in situ,* nature-based treatment process.

Scrutiny of the comparative statement prepared by JUIDCO showed that bids had been received from two contractors (M/s Jyoti Build Tech and M/s Eagle Infra India Ltd.). In the technical evaluation, the tender committee of JUIDCO disqualified M/s Jyoti Build Tech, due to non-submission of Form of Bid, bank solvency certificate and experience certificate (one MLD) of the identified subcontractor, as required in the tender conditions. However, the tender committee did not recommend re-tender and awarded (February 2015) the contract to the lone bidder, M/s Eagle Infra India Ltd., for ₹ 85.43 crore (9.97 *per cent* above the BOQ), on the Design, Build, Operate and Transfer (DBOT) model. The work included the execution of the project, followed by operation and maintenance for five years.

Audit examination of the tender files and bid documents, submitted by the successful bidder, revealed that the contractor (M/s Eagle Infra India Ltd.) did not have experience, either in phytorid technology, or in any nature-based treatment process, and had been considered qualified in the tender on the strength of experience certificate[8] of a subcontractor (M/s Inderdeep Construction Company, Ulhasnagar).

However, the contractor did not engage the said subcontractor, for executing the STP work and laying the sewer lines. This was confirmed to Audit by the concerned Project Engineers in JUIDCO, in reply to an audit questionnaire. Thus, the tender clause, which allowed contractors to bid for the tender on the strength of experience of identified subcontractors, was misused to bag the tender. Hence, an inexperienced and ineligible contractor was awarded the project work. This vitiated the entire tender process and requires further investigation.

The Department stated (July 2022) that the construction of STPs was done under the supervision of NEERI, which had patent over the phytorid technology. Further, in the exit conference (August 2022), the Secretary accepted the audit findings and stated that appropriate action would be taken in keeping with the audit recommendations and through an impact study of the project by NEERI.

The fact, however, remains that: (i) the overall supervision of the work by NEERI did not absolve the Department of its obligation to ensure that the contractor to whom the work was to be awarded complied with the tender requirements and (ii) the impact study of the project by NEERI was aimed at assessing the overall project outcome, besides measures for addressing the

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[7] *Phytorid technology, developed and patented by NEERI, Nagpur, works on the basis of natural method of treatment of sewage, using constructed wetlands.*

[8] *Three MLD capacity in soil bio-technology, claimed to have been done by the sub-contractor in Titiwala, Maharashtra, against which an experience certificate was issued by the Kalyan Dombivali Municipal Corporation.*

project shortcomings, but was, in no way, intended to set right the lapses in contract management.

4.3.2 Project Supervision

As per the DPR, the project work was to be supervised by the entities mentioned in **Table 4.3**.

Table 4.3: Entities mandated with supervision of the project

Entity	Contractual obligation	Audit observation
M/s Tandon Urban Solutions Pvt. Ltd., Mumbai (TUSPL)	Agreement (June 2014) between the Directorate of Municipal Administration and the Consultant	As per clause 2 (c) of the Agreement, the consultant was required to provide, in addition to the preparation of DPR, PMC services for the project, which included supervising the progress of work, in three visits, during the entire project execution period.
National Environmental Engineering Research Institute (NEERI), Nagpur	Memorandum of Understanding (June 2015) between NEERI and the Contractor.	NEERI was to provide an appropriate team to render technical guidelines *etc*., till successful completion of the project; supervise the execution of all works awarded under the MoU; provide supervision services for maintenance (for a period of two years, after the six months guarantee period, on completion of the project on need basis); and provide technical inputs *etc.,* for all the phases.

Audit scrutiny revealed the following:

(i) Though the agreement provided for PMC services by the Consultant through three supervisory visits of the works, the Consultant informed (April 2015) the Secretary of the Department that these visits would not be sufficient, and instead, stressed for full time supervision of the project, on the ground of the nature of the work being highly technical, such as laying sewer systems, improvement of storm water inlets, proper channelisation of the river *etc*. However, JUIDCO did not avail any supervision services by the Consultant during the construction phase of the works, for reasons not available on records in JUIDCO or the Department. The Department also did not respond to audit queries (December 2021) in this regard.

(ii) JUIDCO also did not avail of the supervision services of NEERI, during the maintenance phase of the project, after the end (April 2019) of the defect liability period.

Audit observed that, post-completion, the project had been suffering from continuous discharge of untreated sewage into the river (***paragraph 4.5.2, 4.6.1, 4.9***), deficiencies in the functioning of the STPs (***paragraph 4.6.2***), damaged storm-water drains (***paragraph 4.6.3***), poor solid waste management (***paragraph 4.6.4***), unabated encroachments, river fencing getting uprooted in the absence of any surveillance mechanism of river area (***paragraph 4.6.7***), poor water quality (equivalent to sewage water) in the river (***paragraph 4.6.5 (iii)***) *etc*. These operational failures indicate that the decision of the Department, in not availing of the PMC services (of TUSPL) during the construction phase, and supervision services (of NEERI), during the operation phase, adversely affected the project outcomes.

The Department stated (July 2022) that TUSPL did not offer a realistic scope of supervision of the project. The design and construction of STPs had been done by NEERI, which had a patent over phytorid technology and the services of NEERI could not be availed of during the O&M phase, due to travel restrictions under the COVID protocol.

The reply is not convincing, as the Department had not, in principle, agreed to the proposal of the Consultant for full time supervision of the project. Hence, in the absence of required consent from the Department, submission of detailed scope of supervision by the Consultant seems unrealistic. Further, in the exit conference (August 2022), the Secretary of the Department, accepted the audit findings and stated that appropriate action would be taken.

4.4 Survey and investigation

In the approved DPR, ₹ 43.92 lakh had been allocated for undertaking the survey and investigation. These included conducting a survey[9] of the river; hydrological studies (by taking measurements of the water levels at 500 metres intervals and taking 'current meter' observations[10] of the river); reporting (by printing of drawing on AutoCAD and preparation of area contour plan); geotechnical studies (through trial bores); and sampling of the river water (three samples at varying depths, at every 500 metres interval).

Scrutiny of the Measurement Books (MBs) of the concerned work, revealed that the components of the survey and investigation, except geotechnical and water sampling, were shown as having been completed in March 2016, but the recording of dimensions of river cross-sections at different intervals (500 metres, 50 metres etc.) had not been done. As a result of not conducting a proper survey of the cross-sections of the actual river course, the constructed portion of the river cross-sections (constructed without proper survey, identification of different inlets *etc*.) were damaged during the monsoon season (July 2016 and July 2017) near *Mukhtidham* (***paragraph 4.5.4***). The deficiencies noticed in regard to survey and investigation, are detailed below.

4.4.1 Identification of river inlets

The IRC: SP: 50-2013 (Guidelines on Urban Drainage) stipulates that serious efforts should be made for identification and separation of sewerage drains and storm-water drains, to prevent sewage from flowing into storm-water drains, in any part of the urban area, in order to avoid serious damage to the environment.

IRC: SP: 50-2013 also classifies storm-water drains into three categories: primary drains, secondary drains and tertiary drains. 'Primary drains' are

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[9] *Taking cross-sections, by use of the Differential Global Positioning System (DGPS), on either side, 100 metres from the river; stream canal, roads etc., at intervals of 500 metres, including within river sections and within banks; and at 50 metres intervals on critical locations of the entire stretch of the river and transmission mains.*

[10] *'Current meter' records velocity*

natural drainage systems, connecting a series of major water bodies, till their termination in particular catchment areas. They originate as tributaries of a river basin and receive water from one or more watershed regions, through secondary drainage networks, tertiary drainage networks or directly from roadside drains, during their course of flow.

Audit noticed that the consultant, while preparing the DPR, had mentioned the existence of only six inlets[11] that were terminating into the Harmu river, at different locations. However, during survey and investigation, the contractor, who had reportedly verified the cross-sections of the entire stretch of the river, at every 500 metres interval and at every 50 metres at critical locations, did not make mention of any additional inlets or drains, opening into the river. As mentioned in the DPR, the project works were taken up, based on the volume of discharge from these six inlets.

The Department, however, observed (July 2016 and 2017) heavy discharges in two consecutive rainy seasons, from eight additional major inlets[12], which had neither been reported by the consultant (in the DPR), nor by the contractor (during the survey and before the execution of the project works).

Audit observed (using *Google Earth* images) that all these 14 inlets had been in existence before the preparation of the DPR and the failure to include eight of these, by the consultant (in the DPR) suggested that the consultant had not undertaken the required survey. Further, the CE of the Department had not applied the required checks before approving the DPR, as discussed in the case study below.

Case Study 4.1

Audit examined the topography around the Harmu river, using a Google Earth image of 19 May 2004. It was noticed that two primary inlets near *Muktidham,* having coordinates $23^0$21'56.10"N and $85^0$18'32.23"E, were terminating into the Harmu river. These are marked as Inlet-1 and Inlet-1A, in the Google map below.

Picture 4.2: Satellite image (May 2004) of inlet 1 and inlet 1A

[11] *Inlets 1, 2, 3, 4, 5 and 6*

[12] *Inlets: 1A (between chainage 1900-2040 metres); 3A, 3B, 3C (between chainage 2040 -4068 metres); 6A,6B,6C and 6D (between chainage 6550-8500 metres)*

Though both the inlets were clearly visible in the Google map of 2004, the consultant identified only Inlet-1 in the DPR and not Inlet-1A. The CE, who had approved the DPR and granted TS, also did not verify the same. Even the contractor, who had reportedly conducted the survey and investigation, did not mention the existence of Inlet-1A. Inlet-1A was subsequently factored into the revised design, in February 2018, after it had caused heavy inflow and damage to the river embankments.

The CE subsequently considered (2018) these eight major inlets as tributaries to the Harmu river and as primary storm-water drains. The design was accordingly revised (February 2018), factoring in all these 14 inlets as the primary sources of discharge into the river. Audit observed that these inlets had been found carrying mixed discharge (sewage along with storm-water), in violation of IRC provision SP: 50-2013.

Meanwhile, NEERI had also conducted an inspection (September 2016) of the entire urban stretch of the Harmu river and had identified 56 minor *nallas,* in addition to these 14 major inlets. Though these *nallas* were found to have been discharging untreated sewage directly into the river, none of the *nallas* was factored into the revised design.

Thus, approval of the faulty design twice, by the Chief Engineer of the Department, without including eight major inlets, before the commencement of the project work, and 56 minor inlets, in the revised estimate despite the inlets having been reported by NEERI, proved detrimental to the achievement of the project deliverables. A four-member Committee[13] had inspected (July 2019) the project post-completion and reported that the project works had failed to achieve the desired goals and were unable to produce visible results (***paragraph 4.9***).

4.4.2 Assessment of discharges from inlets

As per para 3.10 of the CPHEEO manual, non-sewered areas are required to have a set of drains, where the generated sewer is to flow out. Assessment of flows in drains can be made through a variety of methods[14].

Audit observed, from the concerned files in JUIDCO, that the theoretical assessment of discharges from inlets/drains, for dry and peak periods, had not been verified practically (by any of the prescribed methods), either by the Consultant (during the preparation of the DPR), or by the Contractor (during the survey and investigation phase of the construction). As a result, NRCD (GoI) turned down the project proposal under NRCP, citing the absence of details about the: (i) actual sewage generation in the city (ii) existing sewerage

[13] *Headed by the Engineer-in-Chief, WRD and representatives of the Civil Engineering Departments from BIT, Mesra; BIT Sindri and NEERI, Nagpur.*

[14] *Para 3.1 of the CPHEEO Manual prescribes the float method, V notch method, the rectangular weir method, Palmer Bowlus flume, the Venturi Pipe or the Dall Tube, for measurement of flow in sewers/ drains.*

and STP facilities (iii) gaps in sewage treatment capacity and (iv) the quantity of sewage being drained into the river etc. (***paragraph 4.2***). However, the project works had been executed without addressing these issues.

Audit further observed that a Committee[15] had conducted an inspection (July 2019) of the project post-completion and recommended that the storm water and sewage quantities be estimated afresh, considering the present population and future growth, in the Harmu river basin. The Committee also reported that: (i) only minimal quantities of wastewater were being collected and treated at present, with the existing STPs in the Harmu river project (ii) many major drains were discharging raw wastewater into the river and (iii) urgent attention was required to accomplish the goal of clean water in the Harmu river (***paragraph 4.9***).

4.4.3 Inadequate survey work

Audit observed wide variation in the DPR provisions, for laying the sewer network (initially 19,249.80 m, but subsequently reduced to 17,494.67 m), and property connections (initially for 2,100 houses, but subsequently reduced to 933 houses), *vis-à-vis* the revised provisions, due to hard rocks found along 2.97 km (near the *Tapovan* stretch) and absence of inhabitants along 2.73 km (near STP 8) of the river stretch.

This indicated that no proper survey had been conducted, either by the consultant (before preparing the DPR), or by the contractor (under the survey and investigation components of the project), before commencing the project works. This resulted in sewage flowing directly into the river, as sewer lines could not be laid in these stretches, in the approved alignment.

The Department stated (July 2022) that the additional inlets were to be taken care of under the Sewerage and Drainage project of Ranchi, which, once set up, would prevent the flow of sewage into the Harmu river.

The reply is not convincing, as all the 14 major inlets were reported as natural drainage systems of the Harmu river by the consultant (who had prepared the DPR), and by NIT, Jamshedpur, in the revised DPR, under the rejuvenation and conservation project. Further, no Sewerage and Drainage project had been planned or executed, for checking the sewage flowing from these 14 inlets, into the Harmu river.

During the exit conference (August 2022), the Secretary accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

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[15] *Headed by the Engineer-in-Chief, WRD and representatives of the Civil Engineering Departments of BIT, Mesra; BIT Sindri and NEERI, Nagpur*

4.5 Design and drawing of project works

The contractor got the design of various components of the project approved (vetted) by three institutions ***(Appendix 4.1)*** *viz*. IIT, Mumbai (October 2015); BIT, Mesra (January 2016) and NIT, Jamshedpur (between December 2016 and November 2017). Audit noticed that BIT, Mesra had only provided a vetting report on the STP, with comments, but had not approved the design. In reply, Management of JUIDCO stated that, after incorporating the suggestions of BIT, Mesra, the design of the STP was approved by JUIDCO. Audit noticed the following deficiencies in the designing of various components of the project works:

4.5.1 Assessment of catchment area of the river

IIT, Mumbai, was associated with the project at two stages: (i) in the first stage, for providing technical appraisal of the DPR and (ii) in the second stage, for vetting the approved drawings and design prepared by the contractor, before commencement of the execution phase.

During the technical appraisal (August 2014) of the DPR, IIT, Mumbai recommended that the actual catchment area (22.59 sq. km.), that would be producing and discharging sewage into the Harmu river, should be considered for the calculation of sewage generation. However, when the contractor sent the drawing and design to IIT, Mumbai, for vetting, the catchment area of the river was reduced to 8.49 sq. km. (5.20 sq. km. for sewage produced from the riverside houses in 250 metres on either side of the river and 3.29 sq. km. for catchment of inlets), by IIT, Mumbai, in the final vetted report (October 2015), with a rider that the other parts of the city would be covered under different programmes on sanitation and sewage collection.

Audit observed that the Department (through RMC) had taken up (March 2015) a project for the construction of sewerage and drainage system in Zone I of Ranchi city, while the Harmu river lies in Zone II. The work of Zone I had not been completed and time extensions had been given (till February 2023). In the remaining three zones of the city, no works for sewerage and drainage had been taken up, till the completion of audit (April 2022). Thus, the city had no sewerage network, for intercepting and channelising the sewage generated from households, and preventing it from being discharged into the Harmu river.

Though the Department was aware of the fact that no operational sewerage and drainage system existed in Ranchi city, the approval for the lower catchment area (8.49 sq. km. instead of 22.59 sq. km. on the recommendation of IIT, Mumbai) had led to the estimation of discharge only from the limited catchment of 8.49 sq. km. into the river. However, the unabated flow of sewage into the river, through untapped inlets spread over the entire catchment of the river (22.59 sq. km.) caused severe damage during the rainy season (July 2016 and July 2017), exposing the deficiencies in fixing the river

catchment, as well as in the synchronisation of the rejuvenation works of the river, with the sewerage and drainage works undertaken by the Department. Subsequently, the catchment area was increased to 19.51 sq. km. by the contractor, which was approved by NIT, Jamshedpur, between December 2016 and April 2017.

The Department stated (July 2022) that the rejuvenation and conservation project was scoped based on the catchment area of 8.49 sq. km., on the premise that the Sewerage and Drainage Project would be treating the sewage generated (14.10 sq. km.) outside the catchment area of 8.49 sq. km.

The reply is not convincing, as the Department had not planned any integrated sewerage system for the city. The conception of rejuvenation and conservation of the Harmu river, by limiting it to 8.49 sq. km. and by claiming that the sewage generation, in the remaining 14.10 sq. km. of the catchment area of the river, would be taken care of through another project (Sewerage and Drainage Project), was not backed by any evidence, such as DPR *etc*. Further, it was in contravention of the CPHEEO Manual, which stipulates designing the sewer capacity based on the total tributary area (22.59 sq. km.).

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.5.2 Designing of sewer networks

As per the CPHEEO Manual, the design period of conventional sewers should be 30 years from the base year. *Paragraph 3.5* of the Manual requires that, for the purpose of hydraulic design, estimated peak flows be adopted. Considering the design life of 30 years (with the base year being 2018 and the ultimate year being 2048), the sewerage system for the Harmu river should be designed taking the ultimate year as 2048.

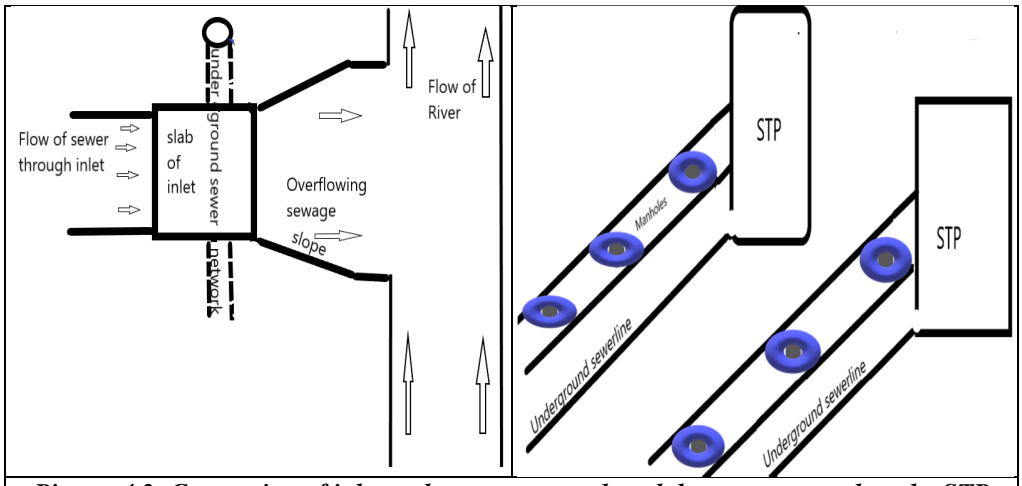
IIT, Mumbai, vetted the hydraulic design of the underground sewerage system, considering the inflow of sewage produced from riverside houses, six inlets and 33 toilet blocks and estimated (October 2015) 22.15 MLD of peak sewage generation, that would be directly discharged into the Harmu river for the ultimate year 2048. Based on these discharges, IIT, Mumbai, recommended 18,985 metres (17,254 metres of 300 mm diameter pipes and 1,731 metres of 450 mm diameter pipes) of sewer line (excluding manholes), in the underground sewerage network. These suggestions were approved by the Project Director (Technical), JUIDCO, and the works were executed based on these designs. However, the works of the river cross-section were damaged, due to heavy discharges during the rainy season (July 2016 and July 2017), in which eight additional major inlets, contributing to the discharges, were

noticed. Hence, the design was revised by the contractor and vetted by NIT, Jamshedpur, between December 2016 and April 2017.

Audit observed that, in the revised design, the catchment area of these inlets (14 inlets) was increased from 3.29 sq. km. to 14.31 sq. km. and the peak sewage discharge for the ultimate year was increased from 22.15 MLD to 47.12 MLD[16]. However, NIT, Jamshedpur, did not factor in the corresponding impact of the increase in sewage, on the width of the entire sewerage system (20.8 km long), except for a stretch of 150 metres[17].

This showed that a proper survey and investigation had not been carried out, before and after designing the sewerage network and the commencement of the work. The design vetted (with a rider) by IIT, Mumbai, was not examined, by the CE of the Department, before granting approval. The impact of the additional sewage discharge, on the dimensions of the sewerage network, left out by NIT, Jamshedpur, was also not examined by the CE of the Department. Thus, the CE of the Department failed to exercise mandatory checks, which led to a series of omissions and deficiencies ***(paragraphs 4.5.1, 4.5.3 and 4.6)*** in the design, drawing, construction and functioning of the project.

Audit noticed from concerned files that only nine[18] (out of the 14 major inlets) were connected to the sewer line, for disposal of sewage to STPs, for treatment. A pictorial representation (prepared by Audit) of the connection of inlets to the sewer line and the sewer line to STPs, is shown in **Picture 4.3**.



Picture 4.3: Connection of inlet to the sewer network and the sewer network to the STP

The connection of the inlet to the sewer network was designed to pass through a hump-like structure, so that excess discharge (*i.e.* discharge more than the capacity of the sewer line) from the inlets would cross the hump and fall directly into the river. The design was adopted to protect the sewer network from excessive flow of storm water in the rainy season.

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[16] *Sewage flowing through inlets: 32.43 MLD, Sewage produced from riverside houses (250 metres on either side of river): 12.97 MLD and Sewage produced from the proposed 33 toilet blocks: 1.72 MLD*

[17] *Near Muktidham, between manholes 63 and 67, where the width of the sewer line was increased from 350 mm to 800- 900 mm, for connection to STP 1*

[18] *1, 1A, 2, 3, 3A, 3B, 3C, 5 and 6*

Audit observed, from the files of the concerned works and during site verification of these inlets with the engineers of JUIDCO that discharge from nine of the 14 major inlets was overflowing the hump structure, even during the dry season (March 2021) and falling into the river. The remaining five major inlets[19] remained unconnected to the sewer line and were directly discharging sewage into the river. This indicated that the design of the sewerage network and its structures was faulty and could neither intercept the sewage from the inlets, nor prevent it from falling into the river.

Two case studies of major inlets (one connected to the sewer network and the other not connected to any sewer network) are presented below, to indicate how the inlets actually functioned, after they were put into operation, subsequent to completion of the project work, in October 2018.

Case Study 4.2

During joint physical verification (March 2021), Audit noticed that two primary storm water drains (categorised as Inlets 1 and 1A) were intercepted near *Muktidham* of the Harmu river and were connected to the underground sewer network (left side chainage 0-2050 metres). The excess sewage (*i.e.* sewage exceeding the capacity of the sewer network at the junction point of the inlet and the sewer network) from the drains was found directly flowing into the Harmu river, even during the dry season (March 2021). These drains originated near *Hehal pahar*, *Ratu road* and *Pahari Mandir,* respectively, and carried sewage, solid waste, *etc*., from a distance of about 1.300 km to 3.320 km (covering a catchment area of 4.3 sq. km.). As per Audit analysis, a four MLD dedicated STP was required ***(Appendix 4.2)*** for treating the sewage flowing through these drains. However, these drains were connected to STP 1 (1.5 MLD) through the underground sewer network, which was not sufficient to intercept the sewage and treat it before it was discharged into the river.

As a result, the excess sewage was being directly discharged into the Harmu river, without any treatment, despite the designs having been vetted by IIT, Mumbai; BIT, Mesra and NIT, Jamshedpur. This defeated the basic objective of rejuvenating and conserving the river.

Picture 4.4: Overflowing inlet 1 in the dry season (March 2021)

[19] *4, 6A, 6B, 6C and 6D*

Case Study 4.3

Argora Nalla (a primary drain, categorised as inlet 4), a tributary of the Harmu river, originates 9.17 km away from the Harmu river, near the *Argora bypass road* and meets the river near *Nibaranpur*. During joint physical verification (4 May 2022), Audit noticed that the junction point was located in the *Tapovan* stretch ***(Paragraph 4.6.1)***, where no underground sewer network had been constructed. In the absence of a sewer network, the drain was carrying sewage (0.47 MLD) from its catchment (0.64 sq. km.) and discharging it directly into the Harmu river. In addition, the *Argora nalla* had been encroached upon by unauthorised *khattals*[20], particularly in *Gouri Shankar Nagar*, Doranda, resulting in discharge of a significant quantity of cow-dung and other solid waste *etc*., directly into the *nalla*. The *Argora nalla* was carrying this untreated sewage to the Harmu river, contaminating its water. Government, therefore, needs to take urgent steps, to prevent discharge of sewage, dung, solid waste *etc*. into the storm water drains (*Argora nalla*) by taking steps to remove encroachments; ensure cleaning of the inlets at regular intervals; ensure monitoring of the area through satellite images; and consider constructing a STP on the *Argora nalla* itself, before it meets the Harmu river at *Tapovan*.

Picture 4.5: Discharge of sewage directly, through Inlet 4, into the Harmu river

The Department stated (July 2022) that, after implementation of the Sewerage and Drainage Project, the additional flow of sewage (*i.e.* sewage exceeding the design capacity) into the Harmu river would be restricted.

The reply is not convincing, as: (i) the Department did not provide any evidence that the Sewerage and Drainage Project has been designed to cater to the inflows from the natural inlets of the Harmu river (ii) additional STPs for the increased flow from additional inlets were proposed, in the Phase II DPR,

[20] *Sheds for cows and buffaloes*

but were dropped due to non-availability of land (iii) nine out of 14 major inlets were connected to the under-capacity sewerage system, which had been designed for connection of only six major inlets.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.5.3 Designing of STPs

4.5.3.1 Designing of under-capacity STPs

As per paragraph 2.5 of the CPHEEO Manual, the design period of an STP has to be for 15 years from the base year. As the base year of sewerage system of the Harmu river was 2018, the design of the STP should have been for the intermediate year 2033. The peak/ average sewage generation, for the intermediate year (2033), is shown in **Table 4.4**.

Table 4.4: Comparison of total sewage generation

Particulars	Calculated by Audit for the intermediate year (2033). Peak/average (in MLD) (*Appendix* 4.2)	Estimate vetted by IIT, Mumbai, for intermediate year (2033). Peak/average (in MLD)
Sewage flowing through inlets	26.41/13.20	6.08/3.02
Sewage likely to be produced from riverside houses (250 m on either side of river)	10.55/5.28	10.55/5.28
Sewage likely to be produced from the proposed 33 toilet blocks	1.72/1.72	1.72/1.72
Total	38.68/20.20	18.35 /10.02
Note- The main reason for difference in quantities of peak/average sewage generation was on account of factoring in catchment area of six inlets by IIT, Mumbai and 14 inlets by Audit.		

Audit noticed that the consultant, who had prepared the DPR, had recommended eight STPs, with a total capacity of 11.50 MLD. The contractor submitted this to BIT, Mesra, for vetting. In its initial vetting report (January 2016), BIT, Mesra, did not approve the design period, design basis and the method adopted by the consultant for working out the capacity of the STPs. BIT, Mesra, advised that these issues be checked by the client (JUIDCO).

Audit worked out the total capacity (due to increase in catchment area arising from recognition of eight additional inlets) of the STPs, that would be necessary, to treat the increased quantity of sewage and noticed that STPs, with a total capacity of 20.20 MLD (*i.e.,* an additional capacity of 8.70 MLD) were required, instead of 11.50 MLD, as approved in the DPR (based on consideration of six inlets only). JUIDCO also assessed (February 2018) the requirement of additional STPs of 10.5 MLD capacity (factoring in the additional inlets), but the proposal was dropped, due to non-availability of land.

Thus, due to the installation of under-capacity STPs, untreated sewage is being discharged directly into the river.

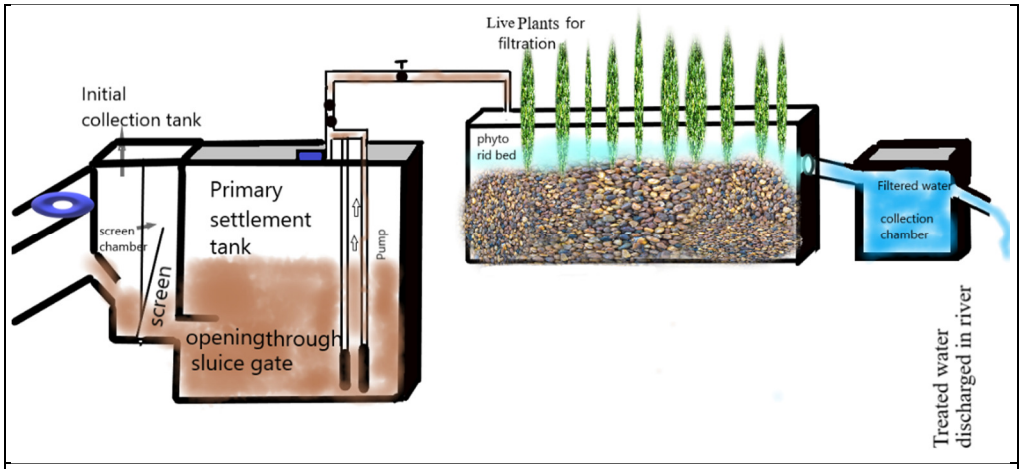
The Department stated (July 2022) that the additional inlets were to be taken care of under the proposed Ranchi Sewerage and Drainage Scheme and, once it becomes operational, the flow of sewage from the additional inlets would be taken care of.

The reply is not convincing, as (i) the additional STPs of 10.5 MLD capacity was dropped due to non-availability of land and not because of these being proposed to be taken care of by Ranchi Sewerage Scheme; (ii) the claim of the Department that the sewage from additional inlets would be taken care of through the Sewerage and Drainage Project, was not backed by any evidence, such as DPR *etc*. and (iii) the Department had not planned any integration between the Sewerage and Drainage Project and the Harmu River projects for the city.

In the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.5.3.2 Designing of the components of STPs

As per the approved design, the sewage, after flowing through the sewer network, is to be collected in the initial collection tank (ICT) of the STP. Thereafter, floating matter, such as sachets, plastic milk packets, grocery bags *etc*., are to be screened out in the screen chamber and the sewage is to enter the primary settlement tank (PST), through the sluice gate, where its retention time is 48 hours. Then, the sewage is to be pumped through the sewage lifting pumps, from the PST, to the phytorid bed, where it is to be retained for another 48 hours, for carrying out the process of filtration. Thereafter, the filtered water is to be collected in the collection tank, for chlorination. The treated water is to then be discharged into the river, or reused. Pictorial representation of the design of the STP, prepared by Audit, is shown in **Picture 4.6**.



Picture 4.6: Design of the STP

As per the CPHEEO Manual[21], for retention of wastewater for 48 hours in the Primary Settlement Tank (PST) and the Phytorid bed, the size of these two structures should be double of the per day filtration capacity of the STP. Thus, for treatment of 11.5 MLD of wastewater, as per the DPR, their capacity should be 23,000 cubic metres (m^3), for retention of 23 MLD (11.5 MLD*2) of wastewater for 48 hours.

(i) Under-capacity of PST and Phytorid beds of STP

In seven STPs (10 MLD capacity[22]), Audit noticed that, instead of providing Primary Settlement Tanks (PSTs) and phytorid beds of 20,000 m^3 each, for retaining wastewater, these structures were designed and constructed for a total capacity of 5,399.68 m^3 for PSTs and 7,734.24 m^3 for phytorid beds[23]. This resulted in designing of lower capacity of the PSTs (by 14,600.3 m^3) and phytorid beds (by at least 12,265.76 m^3), ultimately, resulting in reduction of retention hours. BIT, Mesra, also suggested increasing the capacity of PST and phytorid bed, in its initial vetting report, but this was not done. Thus, the STPs were not designed and constructed, as per the requirements specified in the CPHEEO Manual.

Audit conducted (October 2021) joint physical verification of STP-2 (capacity 1 MLD) and observed that it had two phytorid beds, each having a capacity of 571.20 m^3. The motor operator of STP-2 informed Audit, in the presence of the Project Engineer, that the pump (having capacity of 46 m^3 per hour) was being operated in three spells (8 to 9.30 AM in the morning, 12 PM to 1.30 PM in the afternoon and 4 to 5.30 PM in the evening). He further stated that, after operation of the motor for one and half hours, one phytorid bed gets filled.

Thus, in one and half hours, the motor could pump only 69 m^3 (46 m^3 x 1.5 hours) of wastewater, indicating that there was only empty space of 69 m^3 for sewage, with the rest being occupied by gravel, boulders, and plants. Further, within two to three hours, sewage passed from the first to the second phytorid bed of the STP, through gravity. Thus, the maximum retention time for wastewater, in the STP, was four and a half hours, in place of 48 hours. Further, STP-2 could filter only 0.207 MLD (69*3= 207 m^3 of water *i.e.,* 2,07,000 litre), instead of one MLD of wastewater per day.

Thus, the STPs were not working as designed, which was evident from the quality test report of the treated water, as discussed in ***Paragraph 4.6.2.4***.

(ii) Approval of under capacity collection tanks of STPs

BIT, Mesra, recommended, in its initial vetting report, that the capacity of the final collection tank (for treated water) should be 41.7 m^3/hour (41,700 litres

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[21] *Retention time= volume of tank (m^3)/sewage inflow (m^3/day)*
[22] *STP-3, having 1.5 MLD capacity, was not constructed, as no land was available*
[23] *Occupied by gravel, plants and empty space for wastewater*

per hour*24 hours= 1.0008 MLD), for an STP of one MLD capacity and 62.5 m^3/hour (62,500 litres per hour*24 hours= 1.5 MLD) for an STP of 1.5 MLD capacity.

On the contrary, JUIDCO approved 60 m^3 per hour, as the capacity of the final collection tank, for every STP. Thus, instead of 62.5 m^3 per hour for 1.5 MLD capacity (STP 1, 3 and 5) and 83.34 m^3/hour for 2 MLD (STP 4 and 6), a lesser capacity of 60 m^3 was approved, entailing the risk of overflow of treated water in the STP.

(iii) Absence of sludge management in the STPs

BIT, Mesra, stated that the design of the eight STPs did not have any scope for solid (sludge) management from the PST (primary treated sludge), the phytorid bed and from the collection tank.

During joint physical verification (October 2021), Audit noticed solid (sludge) deposits in chambers before STP-5 and in front of the screen chamber of STP-5, as shown in **Picture 4.7**.

Picture 4.7: Chamber before STP-5 and the screen chamber of STP-5, filled with solid deposits

The engineers, who accompanied Audit during the site verification, stated that these solid wastes were being cleaned regularly. However, the approved sludge management technique and the manner of disposal of the sludge, could not be explained to Audit.

During the exit conference (August 2022), the Secretary accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.5.4 Designing of river cross-sections and embankments

As per clause 3.2 (degree of protection) of IS 12094: 2000 (Guidelines for planning and design of river embankments), the height of the embankment and the corresponding cost and benefit-cost ratio should be worked out for various

flood frequencies[24], taking into account the damage likely to occur. The degree of protection which yields the maximum benefit-cost ratio should be adopted. Till such time as the details of all relevant parameters are available, embankment schemes should be prepared for flood frequency of 100 years, for works pertaining to protection of towns.

Audit noticed that the consultant/contractor had not calculated the benefit-cost ratio for designing the embankments of the Harmu river, and, instead of taking into account a flood frequency of 100 years, the river cross-section (chainage 0-10,400 metres) was designed for a return period[25] of 25 years. After damage of the river reaches[26] during two consecutive monsoon seasons, the river cross-sections of the damaged reaches, along with downstream reaches[27], were redesigned at a cost of ₹ 10.58 crore, which included widening of stretches by gabion work, boulder pitching and crated apron in the riverbed, based on a return period of 50 years. Even in the revision, the flood frequency of 100 years was not considered, in violation of the specified norms.

JUIDCO reported that the main damage, particularly riverbed scouring and bed erosion, had resulted from heavy discharge from the inlets and flood flow of the river. Audit analysis revealed the following shortcomings in the designing of the river cross-sections.

4.5.4.1 Designing of narrow river cross-sections

Cross-sections of the Harmu river was designed to accommodate the dry weather flow, monsoon flow and flood discharge[28] for a rainfall of 25 years return period. The design was made on the premise that the cross-sections of the river should be able to safely accommodate any discharge equivalent to the highest ever flood discharge noticed during the last 25 years.

To ensure this, IIT Mumbai, used the rational formula[29] for estimation of flood discharge, which, denotes the run-off from the river catchment[30]. This was arrived at by the multiplication of three factors- the coefficient of runoff[31], catchment area and rainfall intensity[32].

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[24] *Flood frequency means a period of years, based on a statistical analysis, during which a flood of a stated magnitude may be expected to be equaled or exceeded.*

[25] *The probability of occurrence of the highest flood in a period of 25 years.*

[26] *Damage of chainage: 1900 -2040 metres in July 2016 and 2069 -4068 metres in July 2017*

[27] *Chainage 1900- 2040 metres, 2040 -2180 metres, 2069 -4068 metres, 4630 -4883 metres, 6950- 7800 metres, 7800 -8500 metres*

[28] *The volume of water flowing through a river channel*

[29] *A method for calculating flood discharge through runoff from catchment Q= 10 CiA, where Q= Runoff from catchment in m^3/hour, C: Runoff co-efficient, i= intensity of rainfall, A= area of drainage, in hectare.*

[30] *Runoff from the catchment is that portion of precipitation, which drains over the ground and reaches the river. It depends upon the coefficient of runoff.*

[31] *As per Para 3.9 of the CPHEEO manual and IRC-SP-13-2004, it is the imperviousness of the drainage area (which restricts absorption of water by the ground) to allow the water to flow through the ground into the river. It varies from 0.10 to 0.90, for sparsely to densely built-up areas, in the river catchment.*

[32] *Rainfall intensity= Total rainfall (in centimeter)/Time interval of rainfall*

IIT, Mumbai, in a meeting (July 2014) with the CE of the Department and the Consultant (TUSPL), stated (July 2014) that the coefficient of run-off (for storm water) should be 0.95, in a developed area. However, in the final vetted (October 2015) report, IIT, Mumbai, reduced the coefficient of runoff to 0.29, based on the weighted average, on the premise that, in the river stretch, the urban area was very less, compared to other areas. Further, the vetting was made with a rider that, with the increase in urbanisation, the value of the coefficient of runoff may change, and JUIDCO should revise it accordingly, after 10 to 15 years.

Audit noticed that the observation of IIT, Mumbai, was not backed by any specific rationale, as 10.4 km (catchment 2,259 Ha.) of the river stretch (out of 17.8 km length of the river) was inside the urban area (comprising mostly of city pavements, *i.e.,* concrete structures), for which a weighted average (for soil comprising of a mixed nature[33] having different coefficient of runoff) was not required. The coefficient of runoff, therefore, should have been worked out on the basis of the nature of the soil, the extent of urbanisation and concrete structures, for different chainages.

Comparison of the actual design discharge of the river, calculated in the vetting report of IIT, Mumbai, and the calculations of design discharge later forwarded (July 2017) to NIT, Jamshedpur, by JUIDCO (based on the data of consultant- IK Worldwide, engaged for preparation of the DPR of Phase II of the project) for vetting, are shown in **Table 4.5**.

Table 4.5: Comparison between the discharge of river, calculated in the vetting report of IIT, Mumbai, and the calculations of design discharge forwarded to NIT, Jamshedpur, by JUIDCO

Chainage[34] (m)	Design Discharge in m^3/sec			
	(25-year return period)		50-year return period	100-year return period
	IIT, Mumbai (report)	Calculations of design discharge forwarded to NIT by JUIDCO		
843m before 0m	24.34	56.26	64.99	73.73
0	30.07	-	-	
2050	32.94	84.38	97.49	110.60
Chainage 10,400[35]	64.11	177	206	235

As may be seen from the table, the design discharge for the 25-year return period, calculated by IIT, Mumbai, was far below the calculations of design discharge forwarded by JUIDCO to NIT, Jamshedpur. Based on these understated discharges, IIT, Mumbai, proposed narrow river cross-sections (ranging between 15.45 m^2 and 33.25 m^2) for the 10.4 km urban stretch of the river. Accordingly, the river cross-sections were damaged in different

[33] *As per IRC -SP 13, run-off co-efficient of soil comprising of - bare rock and city pavement is 0.90; plateau (0.70-0.80), clayey soil (0.50-0.60), loam (0.30-0.40) and sandy soil (0.10-0.20)*
[34] *An imaginary line used to measure distance.*
[35] *Chainage 10,400 denotes the end point of the Harmu river.*

stretches during the monsoon season, when they were subjected to heavy flood discharge.

Audit noticed that the river cross-sections in the damaged stretches, as well as downstream stretches, were subsequently increased, to a significant extent, by NIT, Jamshedpur, in different reaches (ranging from 23.18 m^2 to 49.43 m^2), as detailed in ***Appendix 4.1***.

4.5.4.2 Revision of river cross-sections

The basis of design discharges, sent to NIT, Jamshedpur, by JUIDCO, was the design discharges calculated by M/s IK Worldwide (another consultant appointed for the preparation of the DPR of Phase II in the rural stretch). Audit noticed that M/s IK Worldwide had calculated the design discharge at three locations. Scrutiny of the co-ordinates of these locations revealed that the first location was at 843 metres before the zero point of urban stretch, the second location was near *Muktidham* and the third location was at the endpoint of the river. NIT, Jamshedpur, wrongly interpreted these locations and considered discharges of the first location (843 metres before the zero point of the urban stretch) for revision of the river cross-sections near *Muktidham* (which was 2,893 metres away from the point that had mistakenly been reckoned).

This led to further understating of the design discharge (50-year return period), as the different reaches (as shown in **Table 4.5**) were designed for a lesser discharge, *vis-à-vis* the actual discharge, as indicated in **Table 4.6**:

Table 4.6: Designing of river section by NIT, on the basis of understated discharge (50-year return period

Chainage	Tentative location	Actual discharge[36]	Discharge considered	Designed discharge	Area of cross-section	Width of channel
In metres		In (m^3/sec)			in m^2	in metre
2100	Near *Muktidham*	97.49	65	77.96	23.18	4.50
2130		97.49	65	83.54	24.95	5.0
2769-4068	between the Harmu bypass bridge and the meeting point with the Subarnarekha river	120	64.99	65.07	20.01	3.0
4068-6440		155	102.00	102.01	27.11	4.0
6440 -7818		170	118.00	118.02	40.00	6.0
7818-10400		206	137.00	137.10	49.19	7.0

During joint physical verification (25 October 2021) by Audit, with the engineers of JUIDCO, a stretch of the redesigned river cross-section on the left side of the river was found to have been damaged (approximately 100 metres of riverbank between inlet 6B and 6C), as shown in **Picture 4.8**. The Project Manager, who accompanied Audit for the site verification, stated that heavy discharges from inlets during the rainy season had caused the damage.

[36] *River/Flood discharges, which were to be considered by NIT, Jamshedpur, based on a return period of 50 years.*

Picture 4.8: Damaged riverbank on the left side, between inlets 6B and 6C

Thus, the designing of the river sections, based on understated discharges, resulted in the creation of narrow river sections. As a result, the entire river section (as mentioned in **Table 4.6**) is fraught with the risk of damage, in the event of maximum discharge for a 50/100-year period.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.5.4.3 Narrowing of the river width

Clause 3.3.1 of IS 12094:2000 (Guidelines for planning and design of river embankments) stipulates that, as far as possible, embankments should be aligned on the ridge of the natural banks of the river, where land is high and soil is suitable for the construction of embankments. The alignment should be determined in such a way that the high-velocity flow, which can erode the embankment material, is sufficiently distant from it. Hydraulic models are useful guides in this regard.

Details/information, on the actual cross-section of the river that had initially been surveyed, were not furnished to Audit. In the absence of the actual cross-section, Audit compared the satellite images of the river, prior (November 2004) to the rejuvenation work, with images after the completion (June 2021) of the work.

The comparison revealed that the natural course of the river was reduced substantially (by 18.70 metres), at the *Karma chowk* bridge, near *Muktidham,* through mechanical interventions, as could be seen in the satellite images (**Picture 4.9**).

Date of image: 28 November 2004, before rejuvenation of the river (Average width: 28 metres)

Date of image: 3 June 2021, after rejuvenation of the river was completed (Average width: 9.30 metres)

Picture 4.9: Satellite images of the river (Geographical co-ordinates: 23°21' 52.15''N and 85°18'29.75"E, Karma chowk bridge near Muktidham), showing reduction in the width of the river (in a stretch of 110 metres), from 28 metres to 9.30 metres

Thus, after the completion of the project, the average width of the river became narrower, when compared to its width prior to taking up the project. One of the major reasons, as noticed by Audit, was the designing of narrow river cross-sections, as discussed in ***paragraphs 4.5.4.1 and 4.5.4.2***.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

Recommendation 1: *Government may undertake a detailed study on reviving the origin and catchment area of the Harmu river; revise the estimation for storm water; and formulate a comprehensive policy, which clearly recognises urban runoff as a potential source of water for the Harmu river.*

Recommendation 2: *Government may revise the estimation of sewage quantities generated, considering the present and future growth of the population and prepare a plan of action, within a definite time frame, to prevent sewage from flowing into the river.*

Recommendation 3: *Government may urgently take steps to rectify the defects in the design and carrying capacity of the underground sewer system and consider the construction of additional STPs.*

4.6 Construction and functioning of the project components

4.6.1 Underground sewerage system

As per the DPR, an underground sewerage system was to be constructed, on both sides of the river (20.8 km), at a cost of ₹ 13.73 crore, to intercept sewage from riverside houses, low-cost sanitation toilet blocks, as also the sewage flowing through the six identified inlets, into the Harmu river. The sewage produced from these sources was to be taken to STPs for treatment and discharged into the Harmu river.

Audit observed that the length of the underground sewer system and the number of property connections were reduced, for reasons indicated in **Table 4.7**.

Table 4.7: Changes in the quantity of items in the underground sewerage system

Particulars	As per DPR	As per the revised DPR	Actual	Unit	Remarks
300 mm pipe	17,730.95	15,682.68	15,600.5	Metre	Reduction due to the existence of hard rock
450 mm pipe	1,518.85	1,661.99	1661	Metre	
700-800 mm pipe	0	150	150	Metre	
Manholes	710	562	548	Number	
Property connections	31,500 (2,100 houses)	14,000 (933 houses)	13,985.61 (932 houses)	Metre	Absence of inhabitants in and around 3 km of the river stretch

The impact of these revisions on the project outcomes are discussed below:

(i) Sewage flowing directly into the river, in the absence of sewer lines

Out of 20.8 km, the sewage generated in 4,270 metres (chainage 2050-6320 metres) on the left side and 1,745 metres (495 metres between chainage 0-495 metres and 1,250 metres between 4750-6000 metres) on the right side, was not being treated in STPs, in the absence of an underground sewer network and non-establishment of STP-3.

The sewage generated in these stretches was being directly discharged into the Harmu river. These stretches of the river are densely populated and generate huge quantities of sewage. NEERI proposed (September 2016) *in-situ* bioremediation/ phytoremediation treatment, for the unconnected portion of the *Tapovan* stretch, at a cost of ₹ 20.50 lakh. This had, however, not been done, till the conclusion of audit (March 2022).

(ii) Absence of alternative mechanism for intercepting sewage

Property connections for 2,100 riverside houses were initially proposed but were later extended to only 933 houses. JUIDCO stated that, out of the 20.8 km long sewer line, property connections were not provided: (i) in a stretch of 2,730 metres (between chainage 7550 and 10280 metres) on the right side, due to the area being uninhabited and (ii) 2,970 metres in the *Tapovan* stretch, due to the absence of an underground sewer network.

A four-member Committee, headed by the Engineer-in-Chief of the Water Resources Department, reported (July 2019) that only a few channels had been draining wastewater, from households to the STP, for treatment, while most of the channels were discharging raw wastewater directly into the river. This was also confirmed by Audit, during joint physical verification (March 2021 and October 2021) in those areas, where JUIDCO had claimed to have provided property connections (***paragraph 4.6.3***).

(iii) Inadequate capacity of sewer lines

As per the CPHEEO Manual, sewers are to be designed for flow, not exceeding 80 *per cent* of full pipe diameter, in order to ensure proper ventilation and prevent septic effects. The velocity of flow inside the sewer should be at least 0.6-0.8 metres/second, for maintaining a self-cleansing velocity, but should not exceed the maximum flow of 3 metres/second, to prevent scouring in the pipe. In keeping with these parameters, Audit analysed the capacity of the installed sewer pipes to handle the quantity of discharges from four inlets, in their respective stretches. The observations are detailed in **Table 4.8**.

Table 4.8: Comparison between the discharge from inlets and the carrying capacity of the sewer pipes

Inlets	Velocity of flow (m/sec)	Discharge (litre/ sec) in inlets	Diameter of pipe in which inlets connected (mm)	(Calculation[37] by Audit) Maximum carrying capacity of the sewer pipes at corresponding velocity (in litre/sec)		Connection of sewer network to STP No.
				100 *per cent* flow (per cent of discharge in the inlet)	80 *per cent* flow (per cent of discharge in the inlet)	
1, 1A	3.6-5.2	39,540	900	1,909.29 (4.84)	1,848.19 (4.67)	1
2	2.12	15,870	300	149.63 (0.94)	144.84 (0.91)	3
3	0.76	5,660	300	53.81 (0.95)	52.09 (0.91)	4

Data source: *Information provided by the contractor, to NIT, Jamshedpur, for calculation*

As may be seen from the table, the capacity of sewer lines, even at full capacity, was far below the requirement (ranging from 0.94 to 4.84 *per cent*), when compared to discharge from the inlets. Thus, the capacity of the underground sewerage network was far below the actual discharges in the inlets. As a result, the discharges from these inlets may potentially damage the network or directly flow into the river, defeating the objectives of the project of rejuvenating the river.

4.6.2 Working of STPs

As per the contract terms, eight STPs, with a total capacity of 11.50 MLD, costing ₹ 16.42 crore, were proposed for construction, on a turnkey basis. These STPs would receive sewage from the respective sections of the underground sewer network. Against these, seven STPs were constructed, at a cost of ₹14.14 crore, while one STP (STP-3) was left incomplete (since May 2017), after payment of ₹ 84.83 lakh, due to land dispute at the identified site. Audit examined the working of the constructed STPs and observed the following:

4.6.2.1 Operation of STPs for shorter duration

As per the design, the STP should be operational for 24 hours per day, so that the sewage collected in the Initial Collection Tank (ICT) is transferred to the Primary Settlement Tank (PST) and, from there, to the Phytorid bed, for

[37] *PiR^2V, where R is the radius. The velocity of flow in Inlets 1 and 1A was taken as 3 metres/second (non-scouring velocity), for the purpose of calculation.*

further treatment, through the sewage lifting pumps. The capacity and operational timings of the sewage lifting pumps, recommended in the design, are shown in **Table 4.9**:

Table 4.9: Recommended capacity of sewage lifting pumps in STPs

STP (MLD)	Number of pumps	Discharge capacity of pumps (in m^3/hour)	Discharge in (MLD) in 24 hours
1.5	(1 working +1 stand-by)	68.19	1.64
1	(1 working +1 stand-by)	45.46	1.09
2	(2 working +1 stand-by)	45.46	1.09*2=2.18

During joint physical verification (25 October 2021), with the engineers of JUIDCO, it was noticed that the sewage lifting pumps, of capacity 46 m^3/hour (one working and one stand-by), had been installed uniformly, in all the seven STPs, instead of being installed as per the recommended capacity and numbers.

After the project works were completed in October 2018, operation and maintenance activities had begun on 1 November 2018. Scrutiny of bills raised by the contractor, for operation and maintenance (November 2018 to March 2021), revealed that the daily overall operation of the pumps in each STP was for nine hours (the first pump for six hours in the forenoon and the second pump for three hours in the afternoon), instead of 24 hours. Thus, these seven STPs were filtering only 2.898 MLD (46,000 litres per hour*9 hours* 7 nos.) per day, as against the installed capacity of 10 MLD. This indicated two possibilities, first, that the sewage from inlets or other sources was not being channelised through the sewer network to the STP and was flowing directly into the river, or, second, the STPs were releasing sewage in very quick succession, without retaining it for the required filtration time of 48 hours, due to the lower capacity of the PST and phytorid bed. Both these scenarios were noticed by Audit, as brought out in ***paragraphs 4.5.2* and *4.5.3.2***. In addition, during the inspection by a Committee in July 2019, these scenarios were reported (***paragraph 4.9***).

The Department stated (July 2022) that the capacity of the STPs was 10 MLD for the ultimate year (2048). The reply was factually incorrect, as the STPs were designed for the intermediate year (2033) and JUIDCO itself had assessed (February 2018) the requirement of additional STPs of 10.5 MLD. Thus, the requirement of STPs, in the event of optimal sewage generation was inadequate and counterproductive to the project outcomes.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations, and through an impact study of the project by NEERI.

4.6.2.2 Non-functional STP

STP-8, with capacity of one MLD, was located between chainage 7550 metres and 10280 metres (right side) and the feeder sewer had no property connection or inlets (except a toilet block), due to its location in an uninhabited area. The toilet block, located in the same area, could also deliver only 0.015 MLD of sewage. Thus, the construction of STP-8, at a cost of ₹ 1.36 crore, without any inlet or property connections, except for a toilet block (producing 0.015 MLD sewage), could have been avoided. This would also have saved regular expenses on the operation and maintenance of live plants in the phytorid bed.

During joint physical verification (October 2021), the toilet block was found non-functional, as the motor installed for the operation of the tube well was not in working condition. When asked about the source of water for this STP, the senior supervisor of the contractor informed Audit that, during the dry season, the water did not reach the STP and in other seasons, groundwater automatically reaches the manhole of the sewer network.

The Department stated (July 2022) that STP-8 was constructed to meet the transitional demand and future growth in the adjoining area.

The reply is not convincing, as: (i) no property chamber or inlet has been connected to this STP, to back the claim of transitional demand (ii) the expenditure incurred on operation and maintenance of live plants for the non-functional STP-8 was wasteful and (iii) the idle and non-functional STP, constructed at a cost of ₹ 1.36 crore, had not been serving the intended purpose.

4.6.2.3 Incomplete and idle STP

As per the CPHEEO manual, land acquisition, for the sewerage system, should be done, in keeping with the design period of 30 years (*i.e.* for the ultimate year 2048).

Audit noticed that the construction of STP-3 (capacity 1.5 MLD) on the left bank, near Radisson Blue Hotel, was held up, due to land dispute. The STP was to be constructed at a cost of ₹ 1.82 crore.

The Jharkhand High Court, Ranchi, had stayed (May 2017) further construction on the disputed land. The project was considered complete (30 October 2018), despite the non-completion of STP-3. Works, amounting to ₹ 109.78 lakh, had been executed on the construction of STP-3, against which ₹ 84.83 lakh, had been paid to the contractor. This proved wasteful, as the incomplete structure was of no use and had remained abandoned since May 2017.

4.6.2.4 High pH, BOD and TSS, at STPs

As per the Agreement, the performance parameters, specified by the phytorid technology provider, should be maintained, in the form of records, by the

contractor, on a daily basis. No records of performance parameters were however being maintained, on a daily basis, by the contractor. Audit found that only a single test report (done on 24 September 2020) of the State Pollution Control Board was available on record. The samples for the test were taken at the inlets and outlets of different STPs. The results of the test were as under:

- The effluent values of total suspended solids (TSS), in all the seven STPs, was more than the permissible limits[38].

- The effluent value of the TSS of four STPs (Nos: 5, 6, 7 and 8) and Total Dissolved Solids (TDS) in two STPs (5 and 8), were more than the influent/inlet value. The TSS value at the influent level being less than that of the effluent level, indicates the addition of suspended solids inside the STPs. This needs to be verified by JUIDCO.

Audit also conducted the quality test of wastewater, at the inlets and outlets of two STPs (STP-1 and STP-2), through MECON Limited. The water samples were collected on 18 April 2022, by MECON Ltd. The test reports (02 May 2022), shown in **Table 4.10,** revealed the following:

Table 4.10: Test report of wastewater and treated water at two STPs

Location	Potential of Hydrogen (pH)	TSS	Biological Oxygen Demand (BOD)	Chemical Oxygen Demand (COD)	Faecal coliform
Units	-	mg/litre	mg/litre	mg/litre	MPN/100ml
Permissible limits	6.5-9.0	<50	<20	-	<1000
STP 1(inlet)	7.09	196	205	720	4000
STP 1 (outlet)	7.26	30	53	240	260
STP 2 (inlet)	6.85	154	243	1,040	4800
STP 2 (outlet)	7.34	120	97	960	550

The BOD level, at both the STPs, and TSS level at STP 2, was found higher than the permissible limits.

4.6.2.5 Non-functional Solar Lights around STPs

Sixty-four solar streetlights (eight for each STP), at a total cost of ₹ 99.45 lakh, were to be installed around the STPs, for area lighting. Of these, 15 lights were installed at other places, such as inlets, elevated pathways *etc*. Further, out of the 64 lights, only three solar lights were in working condition, while 61 solar lights that had been installed at a cost of ₹ 94.98 lakh, were non-functional, due to theft of batteries.

Recommendation 4: *The Department may survey and work out the quantity of: (i) sewage being discharged, from all the identified major and minor inlets (ii) sewage being passed into the sewerage network (iii) sewage getting into*

[38] *Based on phytorid design- TSS maximum level: between 20-30 mg/litre; test report: between 41 to 115 mg/litre*

the STPs and (iv) sewage flowing directly into the river, instead of being routed through the sewerage network. The Department may also examine the duration for which these STPs should be in operation, for ensuring the required filtration of the sewage.

4.6.3 Stormwater drainage

The stormwater drainage system was to be constructed, at a cost of ₹13.06 crore, on both sides of the river (10.4 km stretch), with a provision for silt trap and mechanical screens, for preventing solid waste and debris from getting into the river. Stormwater from drains was to be dispersed into the river, at 100 metres intervals, through dispersal outlets (a total of 208 outlets, of 10 metres length each, with a filtration chamber). A regime for cleaning the screens every day was also to be established.

Out of the 20.8 km stretch of the river (both sides), the stormwater drainage system was constructed in only 18.50 km, due to the existence of bridges. Audit conducted (March 2021 and October 2021) joint physical verifications to assess the functioning of these stormwater drains and noticed the following:

(i) The stormwater drain (250 metres) near *Muktidham* (between chainage 1845-1970 m) had been destroyed during a flood in July 2016 and had not been re-constructed till the conclusion of Audit (April 2022).

(ii) The stormwater drain between the Amaravati bridge and STP-5 was found filled with solid waste, sewage *etc*. and the outlets of these stormwater drains were found to be discharging sewage into the Harmu river, as shown in **Pictures 4.10 and 4.11**:

Picture 4.10: Outlet of storm water drain discharging sewage into the river

Picture 4.11: Stormwater drain filled with sewage

(iii) The stormwater drain between the Amaravati bridge and STP 6, along with its outlet, was not visible, as the entire stretch of this drain was covered by mud, deposits and silt. Thus, rainwater would be directly discharging into the Harmu river, carrying mud/silt, defeating the purpose of construction of the stormwater drain.

These were some of the sites visited by Audit in which the stormwater drains were found non-functional. The Department may carry out an extensive survey of the status of the entire stretch of the stormwater drains, to work out the modalities of making them functional.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.6.4 Solid Waste Management

In the approved DPR, provision was made for 40 community waste bins (₹ 10.14 lakh), two three-wheeler auto tippers (₹ 8 lakh) and four tricycles (₹ 0.82 lakh). During joint physical verification (October 2021) of different stretches of the Harmu river by Audit, with the engineers of JUIDCO, almost every stretch was found filled with solid waste. Dumping of solid waste was noticed on the way to and in the construction site of STP-3, near Radisson Blue Hotel. The engineers stated that the Ranchi Municipal Corporation (RMC) was using the place as a dumping yard for garbage. **Picture 4.12** shows the river and riverbank filled with solid waste.

Picture 4.12: Garbage dumped near STP-3

Further, Audit observed that no alternate arrangements had been made by JUIDCO, or by the Department, for the disposal of solid waste, which was found scattered at various places, in the absence of dedicated community waste bins. Further, most of the river stretches and its surrounding areas were so dirty (due to dumping yard of solid waste, operation of *khattals etc)* and it was unlikely that the proposal of keeping community bins, to collect waste, would serve the intended purpose.

During the exit conference (August 2022), the Secretary accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

Recommendation 5: *Government may take steps to educate the urban population, living alongside the Harmu river, on the adverse effects of the unauthorised discharge of sewage into the river and explore the possibility of involving Residential Welfare Associations/Non-Government Organisations, for effective management of solid waste. The Department may also draw up a plan urgently, to resolve the problems arising due to improper management of solid waste, in and around the river, by involving RMC.*

4.6.5 Environmental Management Plan

As per the approved DPR, the contractor, as well as the site-in-charge, would be responsible for implementing all the mitigation measures, during the construction and operation phase. Such measures included testing the quality of air, stack emission, noise level, water and wastewater, during the construction and operation phase. Based on the quality test reports, the contractor had to prepare three Environment statements each, for the execution and the operation phase.

The Contractor got the water quality, air quality, stack emission, noise level *etc*. tested by Ultimate Envirolytical Solutions, Raipur, and submitted three statements pertaining to the execution phase (testing of samples done in May 2016, October 2016 and April 2017) and one relating to the operation phase (in June 2020), for which ₹ 22.81 lakh was paid, to the contractor ***(Appendix* 4.3)**. Scrutiny of these statements revealed the following.

(i) Different rates for the same tests

The rates for conducting the same tests for the construction phase were five times higher than that for the operation phase, while for preparation of environment statements, it was four times higher during the construction phase, as shown in **Table 4.11** and detailed in ***Appendix 4.3***.

Table 4.11: Comparison of rates between the construction and operation phases

Quality checks	Rates (₹) in the construction phase	Rates (₹) in the operation phase
Water and wastewater quality	2,500	500
Stack Emission	2,500	500
Noise Level	1,000	200
Air quality	7,500	1,500
Environment statement	8,000	2,000

This resulted in a higher payment of ₹ 18.23 lakh to the contractor, for conducting the tests and preparing the environment statements in the construction phase. The Project Manager, JUIDCO, stated during the discussion, that the rates were as per the sanctioned DPR. However, no rationale was provided for these significant differences.

(ii) Verification of stack emission

'Stack emission' refers to the gases released into the air, from boiler stacks, chimneys or DG set stacks *etc*., from various industries, after the incineration process.

Audit noticed that there was no stack emission from the STPs (based on environment-friendly technology), or any other components of the project. Further, no chimney-based industry-emitting stacks existed within the periphery of the Harmu river. However, payment of ₹ 12.50 lakh was made to the contractor for checking stack emission. This was irregular and was done without any survey in this regard. The Project Manager, JUIDCO, stated (April 2022) that the rates allowed were as per the sanctioned DPR.

(iii) Quality test of river water

Reports of the tests conducted by the contractor showed that the quality of river water had remained unchanged during the execution phase and the operation phase. Further, the overall quality of the river water was highly polluted, almost equivalent to the pollution levels of sewage water. Audit also conducted (18 April 2022) quality test of the water flowing in the Harmu river, through MECON Limited, at three locations. The test results (02 May 2022) are given in **Table 4.12**.

Table 4.12: Quality test results of the Harmu river water, conducted by MECON Limited

Location	Ph	TSS	BOD	COD	Faecal coliform
Units	**-**	**mg/litre**	**mg/litre**	**mg/litre**	**MPN/100ml**
Permissible limits (Drinking water)	6.5-8.5	-	2		-
Permissible/Desirable limits (Outdoor bathing)	6.5-8.5	-	3		500 Desirable
Harmu river (near overbridge)	7.15	728	480	2,240	2,300
Harmu river (near Muktidham)	7.20	498	240	1,120	3,600
Harmu river (near Amrawati bridge) Chutia	7.41	332	265	1,360	1,840

As per the criteria for the categorisation of river monitoring locations, issued (June 2019) by the Central Pollution Control Board, the water quality data is required to be analysed and the primary mean or average of BOD and faecal coliform (FC) need to be estimated. Based on the total score estimated for the parameters BOD (weightage 70 *per cent*) and FC (weightage 30 *per cent*), the monitoring location is categorised as a pollution location[39]. Audit analysis of the data (given in **Table 4.12** above) of water quality of the three locations of the Harmu river, showed a total score[40] of 81.20[41], implying that all the above

[39] ***Total score: 81-100****: critically polluted, 61-80: severally polluted, 41-60: moderately polluted, 21-60: less polluted and ≤ 20: good or fit for bathing.*

[40] *BOD value: score* ***(> 48: 100****, 24-48: 80, 12-24: 60, 6-12: 40, <6: 20, FC value: score (> 5 lakh: 100, 50,000 to 5 lakh: 80, 5,000 to 50,000: 60,* ***500 to 5,000: 40*** *and <500: 20)*

[41] *BOD (100*0.70)+ FC (40*0.30) = 81.20*

locations of the Harmu river were critically polluted monitoring stations. This indicated that the resources invested by the State Government, in implementing the project, had not been used effectively and efficiently.

As there was no improvement in the quality of water, even after the reported rejuvenation and conservation of the river, the fundamental objective of the project, to make the Harmu river a vibrant water asset, was not achieved.

The Department stated (July 2022) that: (i) the project was designed for limited capacity, but the flow of sewage was more than the capacity of the sewerage system of the Harmu river (ii) after the completion of the Sewerage and Drainage Project of Ranchi, the river water quality will certainly improve.

In the exit conference (August 2022), the Secretary of the Department accepted the audit observations and expressed concern that, even after the rejuvenation and conservation of the Harmu river, sewage water had been flowing into the river. The Secretary further stated that appropriate action will be taken, in keeping with the audit recommendations, and through an impact study of the project by NEERI.

4.6.6 Plantation

To improve the environmental condition of the city, a provision for the plantation of 4,160 coconut tree saplings (each six feet high) was made in the Agreement. The survival rate of the trees after five years was fixed as being not less than 95 *per cent*. The work of the plantation was to be completed in eight months from the date of commencement (October 2015) of the work, *i.e.,* by June 2016.

Scrutiny of the MB and other related records revealed that, initially, 360 coconut tree saplings were planted, during March 2016 (from chainage zero at Ganga Nagar, to chainage 1035 at Karam Chowk bridge). However, on the suggestions[42] (August 2016) of the Principal Scientist, Indian Council of Agricultural Research (ICAR), Palandu, Ranchi, and the Divisional Forest Officer, Ranchi, 4,304 plants of 12 species were considered (September 2016) for being planted in place of the remaining 3,800 coconut trees, within the same cost.

Audit observed that a total of 4,624 saplings, valued at ₹ 94.49 lakh, were planted, against which payment of ₹ 49.77 lakh had been made to the contractor ***(Appendix* 4.4)**. Further payment of the balance amount was not made (March 2022). It was also noticed that the major plantation work (47 *per cent*) was carried out from August 2018 to October 2018, after the scheduled completion date (June 2016). However, the survival rates of trees/plants were not assessed by the contractor or JUIDCO, despite the fact that none of the coconut trees had survived. The Management, while

[42] *On grounds of non-suitability and non-sustainability of coconut trees, in and around the Harmu river*

confirming this, informed Audit that no inventory of existing plants was maintained, for the purpose of ascertaining their survival rates.

Audit analysed the plantation works near the Harmu river, during the last 12 years (October 2009 to June 2021), through satellite images of different stretches ***(Appendix 4.5)*** and noticed a gradual decline in the green cover, over the years, on the banks of the river. An instance of such deforestation, between Ganga Nagar (starting point of the urban stretch of the Harmu river) and Karamtoli chowk, in 2009, 2016 and 2021, is shown in **Picture 4.13** below.

Picture 4.13: Deforestation between Ganga Nagar and Karamtoli, during the rejuvenation of the Harmu river

Plantation in 2009

Very few trees were seen in 2016

Treeless stretch of the Harmu river in 2021

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

4.6.7 Encroachment along the river course

Audit examined the satellite pictures (for the period between November 2004 and June 2021) of the different stretches of the river and observed substantial changes in the course of the river, such as reduction in the river width **(paragraph 4.5.4.3)**, change in the river course, encroachment of the river

front (**Picture 4.14**) and emergence of land due to change in the course of the river (**Picture 4.15**).

Picture 4.14: Satellite images of the river (Geographical co-ordinates: 23^{0}21'14.51''N and 85^0 19' 2.41'' E), showing encroachment of land (approximately 1,844 sq metres)

The meandering flow of the river, prior to its rejuvenation (date of image: 28 November 2004)	***The meandering portion was straightened after rejuvenation of the river (date of image: 3 June 2021)***

Picture 4.15: Satellite images of the river (Geographical co-ordinates: 23.3416 north and 85.34272 east), showing emergence of land (approximately 1487 metre sq), due to mechanical straightening of the meandering portion

Meandering flow, before rejuvenation of the river (date of image: 28 November 2004)	***The meandering portion was straightened during rejuvenation of the river (date of image: 3 June 2021)***

The changes in the river course resulted in encroachment of the riverfront and the land adjoining the river course. The land, which emerged as a result of changes in the river course, and is seen vacant in **Picture 4.14**, is not protected either by JUIDCO or by RMC and may get encroached.

Audit noticed that ₹ 75.41 lakh had been provided in the estimate/ agreement, for protecting the river boundary in the entire stretch, through 6,934 bollards (at every three metres) and hedges, in 18,720 metres. Against this, ₹ 33.76 lakh was paid to the contractor, for fixing all the 6,934 bollards and 1,400

metres of hedges. However, during joint physical verification (March 2021 and October 2021) at Ganga Nagar, Audit did not find bollards and hedges, except for a few bollards in some stretches of the river. The engineers who accompanied Audit during the site visit stated that all the bollards had been uprooted by local people. Thus, the river could not be fenced and protected from encroachments, as planned.

Audit noticed that 47 cases of encroachment (unauthorised construction near the Harmu river) had been filed in the month of July 2021, in the court of RMC. No action taken, if any, was reported by RMC and shared with Audit.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

Recommendation 6: *Government may, in coordination with RMC, take necessary action to identify and remove all encroachments on the river banks and its tributaries and maintain the stipulated buffer zone. For this purpose, periodical inspection of the river sites and tributaries and proper surveillance mechanisms, preferably in coordination with the Command, Control and Communication Centre (C4) at Smart city Ranchi, may be established.*

4.6.8 Electric connections

As per the DPR, 15 low-cost sanitation (LCS) toilet blocks (revised from 33 to 15), with the provision of high-yield tube wells, a transformer for each block and High Tension Service (10 km), were to be constructed on the banks of the river. Audit examination revealed the following:

4.6.8.1 Inconsistent maximum demand of electricity for STP

According to the Jharkhand State Electricity Regulatory Commission, if the electric power demand is above 100 KVA, the consumer has to sign a contract with the Electricity Department, under High Tension Service (HTS). In the case of HTS, billing is done for the energy charge (based on the actual consumption recorded) and as well as demand charge (the maximum demand recorded during the month, or 75 *per cent* of the contract demand, whichever is higher). A penalty is also applicable for exceeding the contract demand.

JUIDCO had taken two HTS connections from JBVNL for the operation of STPs and LCS toilets. Scrutiny of the available electricity bills (nine months[43]) of the Harmu sub-division revealed inconsistencies in recording measurement of the maximum demand. It was noticed that the maximum demand ranged between four and eight KVA for six months, 20 to 60 KVA for two months and was abnormally high at 240 KVA in October 2021. The wide variations in maximum demand indicated the possibility of inconsistent operation of the

[43] *August 2020, May- July 2021, September 2021: 4KVA, April 2021: 8 KVA, August 2021: 20 KVA, March 2021:60 KVA and October 2021: 240 KVA*

STPs and LCS under this sub-division. These variations were not reconciled with JBVNL.

The Department accepted the facts and stated (July 2022) that reconciliation with JBVNL would be done, to resolve the issue of wide variations in the maximum demand.

4.6.8.2 Avoidable payment of delayed payment surcharge

As per instructions of the Jharkhand State Electricity Regulatory Commission, the due date for making payment of energy charges or other charges was 21 days after the issue date of the bill, failing which, the consumer was liable to pay a delayed payment surcharge (DPS).

Audit noticed that DPS of ₹ 17.66 lakh (21 *per cent* of the total bill amount of ₹ 84.71 lakh) was paid to JBVNL, along with payment of the electricity bill for the month of August 2020 (for the period from September 2018 to August 2020, for both connections), in February 2021. The payment of DPS was avoidable, had the energy charges been cleared in time.

The bill also included a fixed charge of ₹ 21.00 lakh, in place of the leviable amount of ₹ 27,562.50, for a second connection (from the Doranda sub-division). The bill was paid by JUIDCO without any reconciliation. JUIDCO stated that the amount charged in excess was being adjusted against future energy charges.

The Department stated (July 2022) that the delay was due to non-acknowledgement of payment responsibility by RMC. It was further stated that timely payment of energy charges would be ensured henceforth.

4.7 Operation and maintenance

As per clause 55 of the Agreement, the time of completion of the project was 30 months, including three months for the trial run and commissioning period. After the trial run period and successful commissioning of the project, the contractor was to carry out operation and maintenance (O & M) for five years. The entire project was to be handed over to the Department thereafter. An amount of ₹ 7.54 crore was provided in the DPR, for the O & M of the project.

Audit observed that, out of various project components, the commissioning certificate had been issued (24 April 2018) only for the seven STPs. In this regard, the following were noticed:

(i) As recorded in the MB, the project work had been completed on 30 October 2018, and the O&M reportedly (as mentioned in the MB) began on 1 November 2018. However, the contractor was paid ₹ 1.80 crore, for O & M services, for the period from November 2019 to February 2021.

(ii) The completion period of the project included three months trial run and commissioning period. But the O&M was reportedly taken up from the

next day of completion of the work *i.e.* from 1 November 2018. Thus, the period of trial run was not clear.

(iii) Scrutiny of DPR revealed that ₹ 7.54 crore had been earmarked for five O&M activities: ₹ 2.47 crore for manpower, ₹ 0.59 crore for the bioremediation process, ₹ 2.95 crore for phytorid technology, ₹ 1.21 crore for purchase of equipment and ₹ 32 lakh for transportation and fuel charges.

Audit noticed that, instead of taking measurements for each activity, JUIDCO had fixed[44] the O & M cost for each month at ₹ 13.96 lakh and payments were made accordingly. The Management of JUIDCO (May 2022) stated that the payment had been made as per the O & M Manual. However, the said manual was not furnished to Audit. Hence, activity-wise O&M could not be examined.

(iv) In the seven STPs (total capacity 10 MLD), ₹ 6 lakh per year was allocated for the daily operation of sewage lifting pumps. Against this, JUIDCO incurred electric charges, at the rate of around ₹ 33 lakh per year, for operation[45] of sewage lifting pumps of the STPs, operation of 15 tube wells and lighting of 15 LCS toilet blocks. The high energy charges were on account of high fixed (energy) charges, which were not required, as phytorid technology, used in the STPs involves minimum consumption of electricity.

(v) The accumulation of solid waste, non-improvement in river water quality and deficiencies in the functioning of the STPs showed that O & M activities need to be extensively reviewed.

The Department (July 2022), while agreeing to the audit findings, assured that the five years O & M service, provided by the contractor, as per the O & M manual, would be accounted for. Further, the Department would explore the possibility of migrating to LT connection, from HT connection, in consultation with JBVNL.

In the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations.

Recommendation 7: *The Department may ascertain the exact date of commencement of O & M, so that the five-year period can be reckoned. The exact period of trial run, commissioning and operation, may be confirmed and fixed. The Department may immediately switch over to LT electric connection, to make O & M viable and also explore the possibility of levying user charges against property connections.*

4.8 Execution of Phase II of the Project

JUIDCO executed (February 2016) an agreement with M/s IK Worldwide, for the preparation of DPR and PMC services, for Phase II of the project. The

[44] *Fixed per month cost of O & M activities (` 8.38 crore /60 months= ` 13.96 lakh)*
[45] *Payment of ₹ 80.57 lakh, for period November 2018-August 2020 (22 months), was made to JBVNL for the purpose.*

DPR was to be finalised within 12 weeks (by May 2016) from the date of agreement. Initially, Phase II was exclusively planned for the rejuvenation and conservation of the Harmu river in the rural stretch, but the scope was gradually increased between April 2017 and March 2019, with the inclusion of rectification work in the urban stretch. The scope of work in the urban stretch included the construction of standalone STPs, management of solid waste, tilting gates etc.

Audit observed from records that the said DPR had not been finalised, even after a lapse of more than five years (April 2022), due to frequent revisions in the scope of work. Against the total payable consultancy fee (for preparing the DPR) of ₹ 1.60 crore, ₹ 48 lakh had been paid (October 2016) to the consultant, for submitting a Feasibility Report.

During joint physical verification (March 2021) of the rural stretch, Audit noticed several *pucca* houses and *khattals,* in and around the river stream. The drains opening from these houses/*khattals* were found to be discharging untreated sewage and solid waste directly into the river.

Thus, the inordinate delay of around six years, in finalising the DPR led to non-rectification of the identified problems in the project work of Phase I, which was declared complete, without addressing the identified issues. Further, Phase II of the work could not be taken up, as the DPR was not prepared and the expenditure of ₹ 48 lakh on the consultancy services was unfruitful.

4.9 Monitoring and Inspection

The Department had set up (October 2014) a State Level Monitoring Committee (SLMC), for monitoring and ensuring the timely completion of the project. The Committee was to be chaired by the Development Commissioner, Jharkhand, and supported by seven members[46].

However, minutes of meetings, instructions given to JUIDCO or inspections undertaken by the Committee, were not found on record. The Project Manager, JUIDCO, stated, during the discussion (December 2021), that JUIDCO had not received any instructions from SLMC. Audit examination of records in JUIDCO revealed that four inspections had been undertaken by NEERI; CE WRD; BIT, Sindri and BIT Mesra. Their observations/ recommendations are shown in **Table 4.13**.

[46] *Secretary-UD & HD, Jharkhand, Secretary-Water resources Department, Chief Conservator of Forest, Head of Civil Engineering Department, IIT Mumbai, Head of Civil Engineering Department, BIT Mesra, representative of Director, NEERI and Chief Engineer, Technical cell, UD & HD, Jharkhand.*

Table 4.13: Details of inspections of the Harmu river

Institution/ Authority	Date of Inspection	Observations and Recommendations
Scientist-in-charge, NEERI	3 September 2016	Identification of 70 (14 major and 56 minor) nallas, discharging wastewater into the Harmu river. Bioremediation treatment of 14 major nallas and *in situ* bioremediation treatment of *Tapovan* stretch (approximately 2 km stretch unconnected to the sewerage network) required.
Director, NEERI, Nagpur	20 April 2017	One STP required before *Muktidham,* as the size of the Muktidham STP (STP 1) was insufficient to handle the load of incoming sewage from three nallas across the bridge.
Four member Committee headed by Engineer-in-Chief, WRD with representatives of BIT, Mesra, BIT, Sindri and NEERI, Nagpur	8 July 2019	Works carried out in Phase I failed to achieve goals, even after completion of project and unable to produce visible results. Detailed study of the Harmu river catchment area is required, for sustainable river water system, with special emphasis on reviving the origin of the river. Assessment and analysis of rainfall data for the last 66 years in the river basin is required to be done. New estimates must be obtained for stormwater and sewage quantities, considering the present and future growth of population in the Harmu river basin. Only minimal quantities of wastewater are being collected and treated with the existing STPs in the Harmu river project. There are many major drains which are discharging raw wastewater into the river and have been spoiling the project objectives. All these issues have to be taken into consideration for further work, as early as possible, to accomplish the goal of clean water in the Harmu river.
Chief Engineer, WRD	6 September 2019	Monitoring of solid waste thrown by locals in the river by installing CCTV cameras and creation of a dedicated solid waste management team.

In addition to the above observations/recommendations, Audit also observed the absence of a real-time surveillance mechanism of the river basin, by integrating it with the surveillance set-up of the Command, Control and Communication Centre (C4) in the Smart City. It was noticed that the Department had not taken the required remedial measures, on the advice of the above institutions/authorities. Further, the Department had also not complied with the deficiencies pointed out by NRCD, GoI, in the project proposal.

Audit noticed that a work order (March 2021) was issued to the Director, NEERI (at a cost of ₹ 21.78 lakh), for conducting a study on the technical and ecological impact of 'Rejuvenation and conservation of Harmu river', on the existing environmental condition of Ranchi city, besides an analysis of the project. However, NEERI expressed its inability (July 2021) to conduct such a study. The Department did not get the study and project analysis done by any other institution. Thus, the inspections done and professional inputs given for urgent revival measures of the project were not acted upon.

During the exit conference (August 2022), the Secretary of the Department accepted the audit findings and stated that appropriate action would be taken, in keeping with the audit recommendations and through an impact study of the project by NEERI.

Chapter 5

Audit on Material Management and Inventory Control in JBVNL

CHAPTER 5
ENERGY DEPARTMENT
JHARKHAND BIJLI VITRAN NIGAM LIMITED (JBVNL)

Audit on Material Management and Inventory Control in JBVNL

Executive Summary

Maintenance of an efficient power distribution network involves significant inputs in the form of material, and, as such, material management and inventory control are critical for any power distribution company. The Audit of material management and inventory control in Jharkhand Bijli Vitran Nigam Limited was taken up to assess: (i) whether an adequate system was in place to plan and execute procurement of material (ii) effective monitoring of procurement procedures was being carried out (iii) Inventory Control Mechanism of the Company was scientific and effective (iv) physical verification of inventory was being carried out and (v) obsolete stock were disposed of in time.

Audit covered the period from FY 2017-18 to FY 2020-21 and focused on the procurement of major items, which comprised almost 80 per cent of the stock value, and the existing inventory control system. The audit objectives, criteria, scope and methodology were explained to and the audit findings were discussed with the Principal Secretary, Energy Department, Government of Jharkhand (GoJ).

Audit observed that the Company did not adhere to the provisions of the Works and Procurement (W&P) Manual, it had adopted (March 2017), relating to preparing annual budgets in time which ultimately led to short release and short utilisation of funds. This also resulted in non-commencement of proposed works in time. The Company also did not adhere to the provisions of W&P Manual in deciding procurement tenders within the prescribed timeline, allowing sufficient bid period to get competitive offers and incorporating uniform guarantee clauses in notice inviting tenders (NITs). The provisions of Jharkhand Procurement Policy (JPP) regarding procurement of material from state Micro and Small Enterprises (MSEs) were not followed. Distribution Transformers (DTs), which were not energy efficient and did not meet the prescribed standards, were procured and installed. Meter accessories were procured on nomination basis and payment made to the vendors, without verifying the status of supply and installation. System meters were procured without prior site verification, as a result of which, they could not be utilised for more than three years. Procurement of aluminium conductor steel reinforced (ACSR) conductors and pre-stressed concrete (PSC) poles were made without conducting quality tests and inspections.

The Company failed to ensure real time material management through a well-developed Management Information System (MIS) and monitored the position of stocks over telephone. Sufficient manpower was not deployed for management of stores and hence proper stock accounts could not be maintained. Materials were issued by the central stores without ascertaining the actual requirements, which was fraught with the risk of

misuse of material. Periodic physical verification of stores/scraps, had not been carried out, leading to material and scrap lying idle, for long periods, in the central stores.

The Company failed to procure required material in time or ensure efficient utilisation of issued material resulting in non-completion of works. Commencement of departmental execution of work was also delayed leading to non-utilisation of material procured. Due to poor material management, material worth ₹ 29.99 crore were in the custody of a private contractor whose contract had already been terminated. No action was taken for more than 16 months, to transfer un-utilised material, issued to field officials, into its stores.

As such, the material management and inventory control of the Company was not up to the mark and needed all round improvement.

Recommendations

1. *The Company may adhere to the timelines for preparation of the budget and ensure utilisation of funds.*
2. *Procurement may be done as per the W&P Manual, JPP and prescribed norms.*
3. *MIS for material management may be put in place and annual physical verification of stores may be carried out.*
4. *The Company may initiate action for early recovery of unutilised material lying with private contractors or field officials.*

The Department appreciated (May 2022) the observations of Audit on the various aspects of material management, tendering process and other issues and stated that it would help JBVNL in maintaining free, fair and transparent transactions, as per set norms and guidelines. JBVNL also assured that all efforts would be made to follow the audit recommendations.

5.1 Introduction

Regular and uninterrupted availability of power is a key ingredient for continuing economic growth and overall development. The Power Sector consists of three major segments, *viz*. generation, transmission, and distribution. Distribution is considered the most critical segment, as it contributes to the revenue stream of the Sector and is directly responsible for the satisfaction of end consumers. Distribution companies are required to maintain a robust distribution network, to ensure a regular and uninterrupted supply of power to their consumers. Maintenance of an efficient power distribution network involves significant inputs in the form of material, and, as such, economy, efficiency and effectiveness in material management and inventory control, are critical for any distribution company.

The electricity distribution network in Jharkhand is managed by the Jharkhand *Bijli Vitran Nigam* Limited (the Company), a State-owned Company, incorporated on 23 October 2013. The administrative control of the Company is vested with the Energy Department, Government of Jharkhand (GoJ).

The opening stock of the Company, in its central stores, was ₹ 1,264.68 crore, as on 1 April 2017. It received stock of ₹ 2,522.08 crore and issued stock of ₹ 3,602.61 crore, during the period covered by Audit, *i.e.* from 2017-18 to 2020-21, leaving a closing stock of ₹ 184.15 crore, as on 31 March 2021. The Company maintains its inventory under two heads of account, *viz*. Capital and Operation & Maintenance (O&M). During the financial years (FYs) 2017-18 to 2020-21, the Company had placed purchase orders of ₹ 846.55 crore, centrally, under the Capital Head, for procurement of material, of which ₹ 654.05 crore ***(Appendix 5.1)*** was for major material, such as: (i) transformers (ii) cables and conductors (iii) electric poles and (iv) meters. The remaining ₹ 192.50 crore was utilised for the procurement of other material, such as GI wires, stay sets, distribution boxes, fabrication items, disc insulators etc.

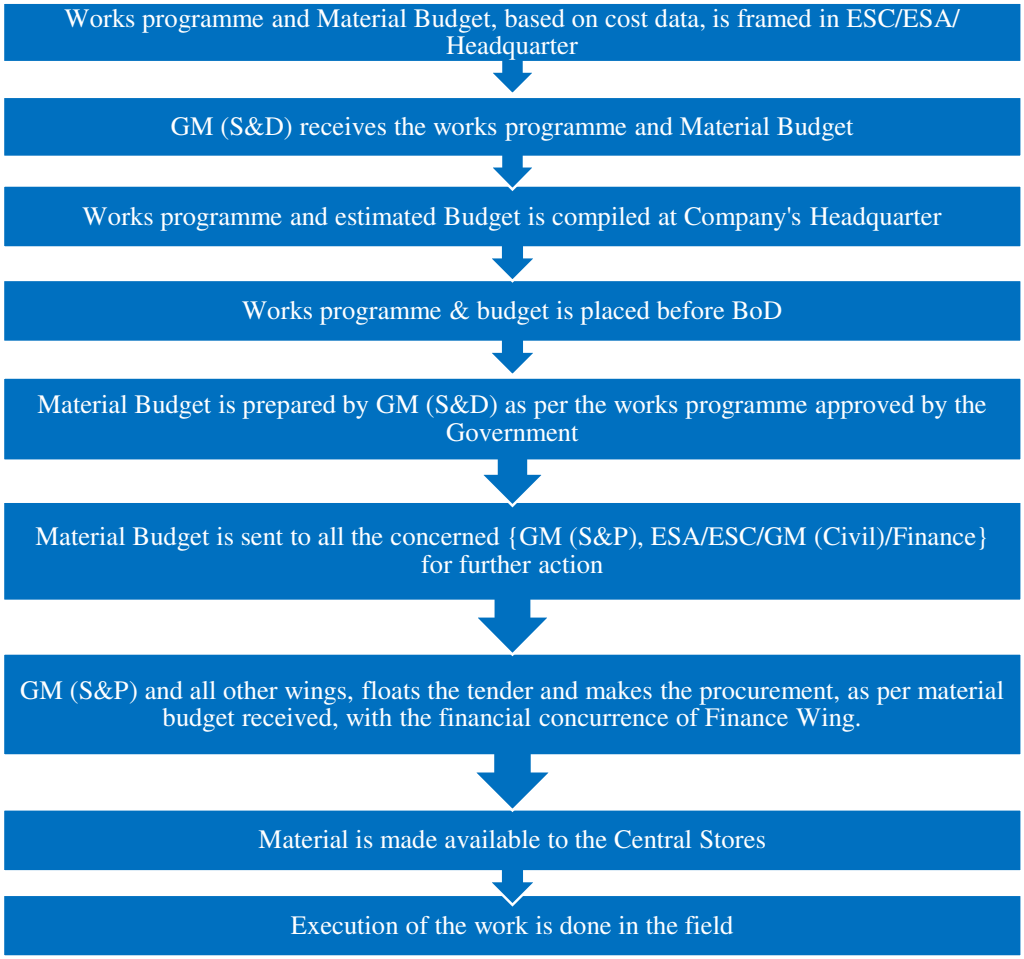
5.2 Organisational setup

The Management of the Company is vested with the Board of Directors (BoD), comprising four Directors. The Managing Director (MD), appointed by the State Government, is assisted by Executive Directors (EDs), General Managers (GMs), Deputy General Managers (DGMs) and Senior Managers (SMs), at the Company Headquarters in Ranchi, as given in ***Appendix 5.2***. At the field level, there are seven Electric Supply Areas (ESAs), headed by General Managers; 15 Electric Supply Circles (ESCs) headed by DGMs; and 44 Electric Supply Divisions (ESDs) headed by SMs. Every ESC has one Central Store and one Transformer Repair Workshop (TRW). Further, ESDs are divided into Sub-Divisions and Sections, which are headed by Managers and Junior Managers, respectively. Material is issued to the Managers and Junior Managers from the central stores, on the basis of indents placed by them.

5.3 Material management and Inventory control functions

Material management and inventory control are the responsibility of the Stores and Purchase (S&P) wing of the Company, headed by GM (S&P). The GM, Supply and Distribution (S&D), prepares the material budget, based on the assessment of materials, for various electrification schemes to be implemented by ESAs. GMs of the ESAs are also responsible for monitoring the utilisation of materials. Major materials are procured centrally by Headquarters, in case of the Company's own works and by ESCs, in case of deposit works, *i.e.* works executed for other agencies. Following the Purchase Orders (POs), Dispatch Instructions (DI) are issued to the suppliers, for delivery of the material to different central stores. The central stores maintain inventory, as per guidelines issued by GM (S&P). A chart showing the processes, related to Material Management, is given below:

Chart: 5.1



5.4 Audit Scope and methodology

A Compliance Audit on Material Management and Inventory Control in JBVNL, covering the period from the FY 2017-18 to the FY 2020-21, was conducted between December 2020 and October 2021, to assess the compliance of the Company with applicable rules and regulations, in regard to procurement, storage, utilisation and management of material. The audit focused on the procurement of major items of material[1], which comprised almost 80 *per cent* of the stock value, and the effectiveness of the inventory control system. During the audit, records and data maintained by GM (S&P), GM (S&D), GM (R-APDRP[2]) and seven[3] out of 15 ESCs, were test-checked.

The audit objectives, criteria, scope, and methodology were explained in the entry conference (09 February 2021) and the audit findings were discussed exit conference (02 June 2022) held with the Principal Secretary, Energy

[1] *Transformers, Cables & Conductors, Poles, and Meters*
[2] *R- APDRP: Restructured Accelerated Power Development and Reforms Programme*
[3] *ESCs with Central Stores and TRWs: Chaibasa, Chas, Hazaribag, Jamshedpur, Koderma, Ranchi and Sahibganj.*

Department, Government of Jharkhand. The response of the Government/Department has been suitably incorporated in the Audit Report.

5.5 Audit Objectives

Audit was conducted to assess whether:

- an adequate system was in place to plan procurement of material and it was being followed;
- procurement was done in compliance with rules and regulations, in an economic, efficient, and effective manner;
- monitoring of adherence to terms and conditions of procurement contracts and payments to suppliers, were adequate and effective; and
- Inventory Control Mechanism of the Company was scientific and effective, the system for physical verification of inventory was adequate and obsolete stock was disposed of in time.

5.6 Audit Criteria

The criteria for achieving the audit objectives were derived from the following sources:

- Jharkhand Procurement Policy, 2014
- Work and Procurement (W&P) Manual of the Company, as approved by the BoD in March 2017, Accounts and Finance Code of the Company and orders/ circulars issued thereunder
- Budget, the delegation of financial powers of the Company and Agenda and minutes of Committees involved in the procurement of material
- Instructions issued by the Ministry of Power, GoI
- Terms and conditions of NITs, agreements, and purchase orders and
- Management Information System and other related records of the Company.

Audit Findings

5.7 Irregularities in Assessment of requirement

5.7.1 Work Program and Material Budget

The Work and Procurement (W&P) Manual, effective from April 2017, envisages the start of procurement activities in the current financial year, for material required for the next financial year. The requirement of material, for the next financial year, was to be finalised in the month of August, based on the average consumption during the last three years and additional estimated needs for the next year. Further, the S&P wing, with the help of field authorities, was to complete the estimation of item-wise final requirements by the third week of August. In the last week of August, the S&P wing, together with the Finance & Accounts (F&A) wing, was to finalise the budgetary allocation, and the procurement authorities would start the procurement

process, after approval of the budget by BoD. The tenders for procurement were to be floated, in a phased manner, considering the item-wise priority, lead time required for supply and the time by which the material was required to be made available for use in the field.

To meet the requirement for upgradation and extension of the electricity distribution system as per the demand, the Company prepares an Annual Development Programme (ADP), for works to be undertaken departmentally each year. The requirement of material, for works under the ADP, is worked out based on the requirement of material obtained from the field offices and is included in the material budget for procurement during the year. The proposed expenditure under the ADP is met from the funds provided by the GoJ. Details of the annual budgets under the ADP and their approval by BoD, are given in **Table 5.1**:

Table 5.1: Details of annual budgets under ADP and their approval

Financial year	Month when budget proposals were called for from field offices	Delays in Commencing budget preparation	Month of placing budget before BoD and its approval by BoD	Amount of approved budget (₹ in crore)	Funds received (₹ in crore)	Funds utilised (₹ in crore)
2017-18	April 2017	8 months	November 2017	431.64	431.64	245.53
2018-19	February 2018	6 months	September 2018	670.00	91.72	215.81
2019-20	October 2018	2 months	Not placed	0.00	0.00	127.92
2020-21	April 2020	8 months	November 2020	290.00	290.00	71.48
Total				**1,391.64**	**813.36**	**660.74**

Source: *Information furnished by the Company*

- It can be seen, from **Table 5.1,** that the Company started budget preparation with delays ranging between two and eight months, from the month of August of the previous year, which led to delays in the approval of budgets by BoD. These delays ultimately led to shortfalls in the release and utilisation of funds.
- Audit noticed that the annual approved budget of ₹ 670 crore for the FY 2018-19, had been re-appropriated, by excluding approved works of ₹ 301.65 crore, and replacing these works with new works, for the same amount. The revised budget was placed thrice, between August 2019 and August 2020, before the BoD, but the BoD had deferred its approval, without assigning any reason till September 2022.
- It was seen that, though the Company had prepared a tentative budget for ₹ 600 crore for FY 2019-20, it had not been submitted for approval to the BoD, and, hence, the works proposed in the budget could not be taken up. Only spill-over works, from the previous years, were executed during the year.

While accepting the facts, the Department stated (May 2022) that the delays in the preparation of the Budgets, were mainly due to shortage of manpower at

the field and headquarters levels. Regarding non-submission of the ADP Budget for FY 2019-20, it was stated that the same had not been submitted because the Department had released only ₹ 91.72 crore, against the approved ADP Budget of ₹ 670 crore for FY 2018-19, and, hence, the works proposed in the budget could not be taken up. The fact, however, remains that, during the audit period, JBVNL could not effectively implement works which would have upgraded the assets created for electricity distribution in the State, in a timely manner.

Audit recommendation 1: The Company may ensure timely preparation and approval of annual budgets.

5.7.2 Status of Inventory

As per the books of accounts of the Company, the position of inventory, during FYs 2017-18 to 2020-21, was as detailed in **Table 5.2**.

Table 5.2: Inventory position of the Company for the period 2017-18 to 2020-21

(₹ in crore)

Financial year	Head	Opening stock	Stock received during the year	Stock issued during the year	Stock adjusted during the year	Closing balance of Stock	Average Stock for the year	Average inventory during the year (In months)
1	2	3	4	5	6	7	8={(3+7)/2}	9={(8/5)x12m}
2017-18	Capital	1,273.66	1,091.19	706.67	-	1,658.19	1,465.93	24.89
	O&M	(-) 8.98	60.65	23.43	-	28.25	9.64	4.93
2018-19	Capital	1,658.19	908.12	1,617.21	(-) 695.36	253.74	955.96	7.09
	O&M	28.25	14.90	34.31	-	8.84	18.54	6.49
2019-20	Capital	253.74	296.05	307.64	(-) 36.30	205.84	229.79	8.96
	O&M	8.84	31.06	12.70	-	27.21	18.03	17.04
2020-21	Capital	205.84	99.37	145.88		159.33	182.59	15.02
	O&M	27.21	20.74	23.12		24.82	26.02	13.50

Source: *Information furnished by the Company*

It can be seen from **Table 5.2,** that the Company had maintained inventory of more than 12 months requirements, for capital stocks, during FYs 2017-18 and 2020-21 and for O&M stocks during 2019-20 and 2020-21, even though it was required to procure material annually, based on the ADP. Carrying excess inventory not only results in the blocking of funds, but is also fraught with the risk of material becoming obsolete due to the passage of time.

The Department stated (May 2022) that the average of inventory during the year, as mentioned in the Table, is the cumulative figure. It further stated that, to maintain the widely spread electrical network and to cover electrification in new areas, minimum inventory of different material is regularly required.

The reply is not convincing, as the Company had maintained inventory of more than 12 months in three out of four years, even though it was to procure material in a phased manner, as per the W&P Manual, i.e. thrice (June,

September and December) in a year, considering the item-wise priority and the time period by which material was required for use in the field.

5.8 Irregularities in the procurement of material

5.8.1 Irregularities in the tendering process

(i) Preparation and finalisation of Notice Inviting Tenders (NITs)

As per the W&P Manual, tenders for procurement of material should be finalised within three months (90 days) from the date of issue of NIT.

During FYs 2017-18 to 2020-21, the Company issued 250 purchase orders (POs), for procurement of major materials, against 59 NITs. Scrutiny of tender files revealed delays in the finalisation of tenders, shorter bid period being given for submission of bids, unjustified floating of short or emergency tenders, improper technical evaluation of tenders and variations in the guarantee period clauses in different NITs, as discussed below:

- Out of 57 NITs[4], only 10 were finalised within the prescribed 90 days. In the remaining 47 NITs, there were delays of 10 to 230 days, beyond the prescribed 90 days. These 47 NITs included 24 NITs where the delay was more than 100 days. The Technical Evaluation Committee (TEC) also consumed up to 80 days, in evaluating the technical capabilities of the bidders whose financial bids were to be opened. These delays led to subsequent delays in the supply of material.
- Out of 57 NITs, 23 were short and emergency tenders[5]. However, 17 out of 23 tenders were finalised beyond the prescribed 90 days, with delays ranging between 21 and 230 days. Thus, calling for short or emergency tenders was not justified.
- The W&P Manual prescribes a minimum bid period of 28 days, for submission of bids, in case of open tenders. Audit noticed, however, that bid periods of only 14 to 26 days, had been allowed in all the 34 open tenders.
- For procurement of transformers, the W&P Manual prescribes a guarantee period of 54 months from the date of commissioning, or 60 months from the date of dispatch by the manufacturers, whichever is earlier. However, the prescribed guarantee period had been included only in four out of 22 such NITs. In 9 NITs, the required guarantee period had been limited to 24 months from the date of commissioning and 30 months from the date of dispatch by the manufacturer. In the remaining nine NITs, the required guarantee period had been limited to 36 months from the date of dispatch, and the guarantee period post-commissioning had been waived. Reducing the prescribed

[4] *Records relating to NIT No. 303/PR/JBVNL/2019-20 and 604/PR/JBVNL/2015-16 were not produced to Audit.*

[5] *'Short and Emergency tenders' are invited for urgent procurement of material, in which seven and 14 days, respectively, are allowed for submission of bids, instead of the minimum prescribed bid period of 28 days.*

guarantee period or waiving a particular guarantee clause, in violation of the provisions of the W&P Manual, was indicative of extension of undue favour to bidders.

Thus, the Company did not adhere to the provisions of the W&P Manual in deciding tenders within the prescribed timeline, inviting short or emergency tenders, allowing sufficient bid period and including a uniform guarantee clause.

In reply, the Department stated (May 2022) that the delays in finalisation of tenders were due to shortage of manpower. It was further stated that normally 21 days are given for submission of bids, which is sufficient for healthy competition and matches with the spirit of the W&P manual. With regard to the guarantee clause, it was stated (January 2022) by GM (S&P) that this provision is being followed in the recent NITs.

The reply regarding delays in finalisation of tenders, due to shortage of manpower is not convincing, as the S&P wing had sufficient manpower[6] compared to its sanctioned strength. Delays in finalisation of short and emergency tenders also defeated the objective of emergent procurement and compromised fair competition. Further, the contention that generally a bid period of 21 days was allowed which was sufficient for healthy completion and matched with the spirit of W&P Manual, is contradictory to the provisions of the Manual, which prescribe a minimum bid period of 28 days in open tenders. Moreover, in 14 out of 34 open tenders, bid periods ranging between 14 and 20 days were also allowed.

(ii) Procurement made in violation of the provisions of the Jharkhand Procurement Policy (JPP), 2014

As per Paragraph 8.1 of the Jharkhand Procurement Policy (JPP), Pre-Stressed Concrete (PSC) Poles and Aluminium Conductor Steel Reinforced (ACSR) conductors, were to be purchased exclusively from Micro and Small Enterprises (MSEs), located[7] within Jharkhand. Further, as per Paragraph 4 (d) of the JPP (inserted in July 2019), it is mandatory to purchase items mentioned in the exclusive list, from local MSE suppliers, on the Government e-market place (GeM) portal.

Audit noticed that the Company had procured 2,16,883 PSC Poles and 14,820.35 km of ACSR conductors, at a cost of ₹ 129.54 crore, from April 2017 to March 2021. Of these, 17,500 PSC Poles and 6,107.62 km of ACSR Conductors, costing ₹ 30.49 crore, had been procured through 17 Purchase Orders (POs), from outside suppliers, whose corporate or head offices were

[6] *Eleven against sanctioned strength of nine during March 2019 to March 2021.*
[7] *As per the provisions of the JPP, the Head or Corporate office of such registered units/enterprises should be within the territorial jurisdiction of Jharkhand.*

not situated in Jharkhand. Further, the Company had procured 44,295 Poles and 2,521 km of conductors, costing ₹ 29.29 crore, after July 2019, through an open tender for procurement of material included in the exclusive list and available on the GeM portal.

In reply, the Department stated (May 2022) that a vendor of PSC Pole (M/s Precision Pre-Stress Unit) was registered as MSE by GoJ and hence it was a State MSE under the definition of JPP 2014. The Department further stated that in the larger interest of timely execution of work and considering the capacity and consent of MSE units of Jharkhand, it became necessary to consider other bidders, even though the said items are included in the exclusive list of JPP. It was further stated that the Company cannot afford to purchase any quantity of items, under the exclusive list, only from the State MSEs, without being sure of their capacity to supply the items within a set time frame.

The reply regarding procurement of PSC pole from a State MSE is factually incorrect, as the Corporate office of the said MSE was in Jaipur, Rajasthan, whereas, as per the JPP, it should have been within the territorial jurisdiction of Jharkhand. Further, the Company had neither assessed the capacity of State MSEs, nor obtained their consent regarding supply of PSC poles within time, as all the tenders were also open for outside bidders, who would have got the tenders if they were found to be the lowest bidders. The reply was silent regarding procurement not having been made through the GeM portal.

Audit recommendation 2: Provisions of W&P Manual should be adhered to in allowing sufficient bid period and deciding contracts in time. State MSEs should be given preferences in procuring listed materials as per JPP. Material should be procured through GeM portal, if available.

(iii) Irregular procurement on nomination basis

As per the Delegation of Financial Powers (DoFP) of the Company, the DGM of the ESC can accord approval for procurement of material upto ₹ 50,000 on nomination basis, only in cases of emergency. Further, as per the W&P Manual, the guidelines of the Central Vigilance Commission (CVC) shall be applicable *mutatis mutandis* over the Company. The CVC order of July 2007 stipulated that the tendering process is a basic requirement for the award of a contract by any Government Agency, as the award of a contract, on nomination basis, would amount to a breach of Article 14 of the Constitution, guaranteeing the right to equality. The CVC circular (July 2018) had reiterated that procurements on nomination basis, without adequate justification, amounted to a restrictive practice, eliminating competition, fairness, and equity.

Audit noticed that six, out of seven test-checked ESCs, had procured material by inviting quotations which had been finalised by the Tender Evaluation

Committee (TEC). However, ESC, Jamshedpur, procured material worth ₹ 10.56 crore, through 59 POs, issued (January 2018 to September 2020) to vendors on nomination basis, following telephonic communication, without inviting quotations or tenders, in violation of the Delegation of Financial Powers (DoFP) of the Company and CVC guidelines.

In reply, the Department stated (July 2022) that procurements had been made on nomination basis, in order to safeguard the interest of work. The reply is not acceptable, as similar procurements had been made by other ESCs, after inviting quotations or tenders.

5.8.2 Procurement of Transformers

(i) Procurement of Distribution Transformers not meeting specified standards

The Ministry of Power (MoP), GoI, in consultation with the Bureau of Energy Efficiency, through notification published (December 2016) in the Gazette of India, deleted three-star rating (Energy Efficiency Level-1) Distribution Transformers (DTs) from its technically viable equipment list, with instructions not to manufacture, procure, store, or use them in future. MoP also issued (February 2017) instructions, to treat transformers which did not meet the specified standard, as having expired by 30 June 2017. Further, the Power Finance Corporation Limited (PFCL) issued (March 2017) an advisory to procure standard ratings DTs, which met the loss levels of four-star (Energy Efficiency Level-2) specified in IS: 1180 (Part-1, 2014).

Audit scrutiny of POs issued by the Company, from FYs 2017-18 to 2020-21, revealed that the S&P wing of the Company had centrally procured 4,755 DTs, costing ₹ 45.30 crore, with three-star rating, in August 2017. The S&P Wing had discontinued procurement of DTs not meeting the specified standards after August 2017. However, the seven test-checked ESCs had procured 241 DTs[8] (valuing ₹ 2.76 crore) not meeting the specified standards, during July 2017 to March 2021.

Thus, the Company procured 4,996 DTs costing ₹ 48.06 crore and installed 4,739 deemed to be expired and energy inefficient DTs, in its distribution network, despite instructions and advisory of GoI and PFCL.

The Department stated (July 2022) that four ESCs (Chas, Koderma, Chaibasa and Ranchi) had procured DTs as per the specifications prescribed by the S&P wing.

The reply is factually incorrect, as the S&P wing itself did not procure DTs not meeting the specified standards after August 2017. Moreover, the reply was

[8] *Chaibasa: 17, Chas: 30, Hazaribag: 49, Jamshedpur: 4, Koderma: 18, Ranchi: 106 and Sahibganj: 17.*

silent on the procurement of energy inefficient DTs by the remaining three ESCs.

(ii) Loss of energy due to procurement of DTs with high energy losses

MoP, GoI, notified (December 2016) standards for energy loss of DTs of different capacities, at 50 and 100 *per cent* load, at four-star ratings. The prescribed norms were made applicable from January 2017 and were also incorporated in the W&P Manual.

Audit scrutiny of POs, issued from FY 2017-18 to FY 2020-21, by the S&P wing and four[9] ESCs, revealed that the Company had procured 2,849 four-star rating DTs, with energy losses at 50 *per cent* load, that were higher than the prescribed norms. Higher energy losses would lead to a loss of 8.60 crore kWh of energy[10], with purchase cost of ₹ 37.60 crore[11].

In reply, the Department stated (May 2022) that the loss calculated by Audit related to those NITs which had been floated prior to the circulation of the W&P Manual, and the calculation of loss and average life expectancy assumed by Audit, is arbitrary. The reply is not factually correct, as the NITs had been finalised and energy inefficient DTs had been procured, despite adoption of the W&P Manual. Further, the loss has been calculated considering an average life expectancy of 25 years, which has been considered by the Central Electricity Regulatory Commission (CERC) in its depreciation schedule.

5.8.3 Procurement of Meters

(i) Excess expenditure on procurement of meters

As per W&P Manual, guidelines of CVC shall be applicable *mutatis mutandis* over the Company. CVC guidelines[12] stipulate that the Minimum Annual Average turnover (MAAT) of a bidder, during the last 3 years, ending 31st March of the previous financial year, should be at least 30 *per cent* of the tendered cost, as a pre-qualification criteria.

Audit noticed that an NIT had been floated (April 2016) at an estimated cost of ₹ 50.26 crore, for procurement of two lakh single-phase energy meters, with accessories, with pre-qualifying MAAT criteria of 30 *per cent* of the tendered cost. Subsequently, POs amounting to ₹ 41.95 crore were issued (September 2016) for the supply of meters, at the rate of ₹ 732 per meter and accessories at the rate of ₹ 1,367 per meter.

Further scrutiny revealed that the Company had floated (August 2017) an NIT, with an estimated tendered cost of ₹ 104.95 crore, for procurement of similar

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[9] *ESCs at Chaibasa, Chas, Koderma and Ranchi.*
[10] *Considering an expected life of 25 years, of 2 DT run at 50 per cent load, as per CERC norms.*
[11] *Calculated at the average rate of power purchase for the financial year 2018-19, at the rate of ₹ 4.37/kwh.*
[12] *Issued vide Circular dated 17.12.2002.*

meters, but without accessories, under the *Jharkhand Sampurna Bijli Achchhadan Yojana* (JSBAY). However, the pre-qualifying MAAT criteria was fixed at ₹ 400 crore (381 *per cent* of the tendered cost), to limit participation to well established, reputed and financially sound firms, for supply of quality products. Five bidders[13] participated in the bid and, ultimately, the lowest rate of ₹ 905 per meter was accepted (May 2018), through negotiation. The remaining four bidders also agreed (April and May 2018) to supply meters at the negotiated rate. Though the issue of much higher MAAT criteria was raised by the firm, which had supplied meters at the rate of ₹ 732 each in the previous bid, the Company did not revise the MAAT criteria and POs were issued (May 2018 and March 2019) to all the five firms, for supply of 9,28,071 meters, at the negotiated rate.

As per the Schedule of Rates (SoR) of JBVNL for the FY 2017-18, the rate of single-phase meters worked out to ₹ 745 per meter, considering the rate of ₹ 732 per meter, decided in the NIT of April 2016 and an escalation factor of 1.77 *per cent.* The Company had also procured 82,836 meters with accessories, at the rate of ₹ 732 per meter in November 2017, *i.e.* after floating the NIT with excessive MAAT criteria. Further, nothing was found on records to show that the meters procured at the April 2016 NIT rate had been found defective. Thus, the Company incurred excess expenditure of ₹ 14.85 crore[14], on procurement of 9,28,071 meters at the higher rate.

In reply, the Department stated (May 2022) that the MAAT of ₹ 400 crore had been approved by the Special Purchase Committee, to procure meters from reputed manufacturers only, as it is a critical item. It further stated that the meter price of ₹ 905 each, also included cost of additional free items (meter box, free meters, MRI Software), whereas the meter price of ₹ 732 each was for the meter only, and, hence, comparison was not justified.

The reply regarding higher MAAT is not convincing, as there were no complaints in regard to the meters procured at the lower rate through the NIT of April 2016, which had been floated with lower MAAT criteria. The Company had also procured 82,836 meters, at the rate of ₹ 732 each, in November 2017 (after floating NIT with higher MAAT in August 2017), without going for fresh tenders with higher MAAT, through repeat orders from the vendors who had supplied meters against the NIT of April 2016. Further, the cost of additional free items, as stated by the Department, was approximately ₹ 43 per meter, as per the rate justification submitted by the L1 bidder. Even if this is considered, the Company had incurred extra expenditure of ₹ 10.86 crore.

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[13] *(1) M/s HPL Electric and Power Private Limited, New Delhi (2) M/s Genus Power Infrastructure Limited (3) M/s Larson & Toubro Limited (4) M/s Landis+Gyr Limited, Kolkata and (5) M/s Secure Meters Limited.*

[14] *₹ 905- ₹ 745 = ₹ 160 x 9,28,071= ₹ 14,84,91,360.*

(ii) Irregularities in procurement of consumer meter accessories

For JSBAY, meters were procured centrally at Headquarters, whereas accessories like service pipes, PVC insulated aluminium conductors, service cables, meter boards, MCBs, support wires, piercing connectors, *etc*. were procured by the ESCs. Audit noticed irregularities in the procurement of accessories, in the seven test-checked ESCs, as discussed below:

- The Company had instructed (February 2018) all ESCs to procure accessories and install meters under JSBAY, at a maximum cost of ₹ 2,250 per meter. It was observed that all the seven test-checked ESCs had issued work orders, for supply of accessories and installation of meters, on nomination basis, including the cost of accessories, amounting to ₹ 50.52 crore.
- As per the work orders, payments for accessories were to be made on the basis of actual consumption, based on duly verified consumption reports by the concerned Electric Supply Divisions (ESDs). Audit noticed that three[15], out of the seven test-checked ESCs, had paid (between October 2019 and March 2021) ₹ 14.28 crore, on the basis of work orders, without getting consumption reports from ESDs. Thus, the possibility of excess payment having been made cannot be ruled out.

The Department (July 2022) was silent in regard to procurement on nomination basis, whereas, regarding payments having been made without obtaining consumption reports, it was stated that two of these ESCs (*i.e.* other than Jamshedpur) had made payments for accessories after verification of bills by the concerned JEE, AEE and EEE. The reply is not convincing, as the payments had been made after verification of only the numbers of meters installed, and not on the basis of consumption of different items, such as meter board, connection wire, connection pipe, MCBs etc.

(iii) Procurement of system meters and related equipment

The Company awarded (August 2017) work for supply of 112 system meters[16] and associated material for installation in feeders, to draw 600 Megawatts of power, from 56 take off points of the Damodar Valley Corporation (DVC), at a cost of ₹ 10.69 crore. As per the terms of the work order, 70 *per cent* of the cost was to be paid on receipt of the meters, with material, at the store, and the remaining 30 *per cent* was to be paid after commissioning of all the meters.

Audit noticed that the Company had not conducted proper survey of the site, prior to issuing work orders, and meters and material worth ₹ 2.93 crore could not be installed in the substations at DVC, due to space constraints. These meters and material had been lying in store (as of May 2021), since their

[15] *ESCs at Hazaribag, Jamshedpur and Koderma.*
[16] *With Metering Unit, Metering panels with Data Connector Unit (DCU) and modem etc., with five-year maintenance.*

supply in February 2018, and the purpose for which they were procured was defeated.

The Department did not reply to the audit observation. However, the GM (Commercial & Revenue) of the Company had accepted space constraints as the reason for non-installation of meters and stated (June 2022) that all meters had been installed (June 2021) in other places. The fact, however, remains that the Company could not install its own meters till date (July 2022), at the take-off points of DVC, for which they had been procured.

(iv) Procurement and installation of DT meters

A Letter of Award was issued (July 2017 and February 2018) to two agencies, for supply of DT meters with accessories, including annual maintenance for five years. The purpose of installation of these meters was to fetch energy readings remotely, through modem, for energy accounting and identification of DTs with high load and high energy losses.

Audit noticed that, out of the 18,979 DT meters procured, 11,485 were installed in the seven test-checked ESCs. However, energy data was not being fetched from all the installed meters. It was seen that energy data, for the period from December 2019 to March 2021, could not be fetched, on an average, from 3,543 DT meters (31 *per cent*), installed at a cost of ₹ 4.69 crore, out of 11,485 DT meters, in the seven test-checked ESCs. This was mainly due to missing meters, burnt meters, meter bypass, disconnected DTs, defects in the meters *etc*. Thus, the purpose of procurement of the DT meters, *i.e.* energy accounting and identification of overloaded DTs and DTs with high energy loss, was defeated.

In reply, the Department (July 2022) stated that the concerned agency had been asked for rectification of the non-communicating meters in ESC, Chaibasa, but was silent on action taken, if any, in the other six test-checked ESCs.

5.8.4 Avoidable expenditure on procurement

GoI nominated (August 2014) the Damodar Valley Corporation (DVC) to take up rural electrification work under the Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY), in Chatra district of ESC, Hazaribag. As DVC expressed its inability to take up the work, due to shortage of manpower and involvement in its core business of generation of power and construction of power plants, the Company took up the work departmentally and prepared (August 2017) a DPR for electrification of 549 villages of Chatra district.

Audit noticed that the DPR had initially been approved (August 2017) by the Technical Evaluation Committee for ₹ 32.87 crore but was later on revised to

₹ 75.62 crore (February 2018), ₹ 132.73 crore (October 2018) and ₹ 93.46 crore[17] (August 2020), due to variations in the quantity of material required, as the scope of work was frequently revised, as shown in **Table 5.3**.

Table 5.3: Details of increase in the requirement of major materials

Sl. No.	Name of material	Quantity Assessed			
		August 2017	February 2018	October 2018	August 2020
1	PSC Pole 200 KG (in Nos.)	10,208	36,190	61,000	69,526
2	ACSR Rabbit Conductor (in Km)	915	1,727	2,800	2,497
3	LT AB Cable 3c X 50 sq. mm (in Km)	455	605	1,700	1,480
4	LT AB Cable 1cX16 sq. mm (in Km)	0	0	300	251

The scope of work had increased, as no survey had been conducted before preparation of the first DPR and all areas/ *tolas*/ *panchayat bhawans*/ schools, *etc.* had not been included in the surveys for preparation of the revised DPRs. Audit noticed that material was procured in a piecemeal manner, in terms of the requirements, as revised from time to time. With the passage of time, the cost of material increased, and the Company incurred avoidable expenditure of ₹ 2.02 crore, on procurement of material, as detailed in **Table 5.4**.

Table 5.4: Details of excess expenditure

Sl. No	Name of material	Procurement done				Quantity procured at higher rates	Difference in rates (in ₹)	Excess expenditure (₹ in lakh)
		Requirement in February 2018	Rate at which procured (in ₹)	Requirement in October 2018	Rate at which procured (in ₹)			
1	PSC Pole 200 Kg (in Nos.)	36,190	2,427.84	61,000	2,516.94	24,810	89.10	22.10
2	ACSR Rabbit Conductor (in Km)	1,727	34,529.04	2,800	40,426.8	1,217	5,897.76	71.78
3	LT AB Cable 3c X 50 sq. mm (in Km)	605	1,41,214	1,700	1,49,860	1,192	8,646.00	103.06
4	LT AB Cable 1cX16 sq. mm (in Km)	0	28,366	300	29,974	300	1,608.00	4.82
Total								**201.76**

Source: *Data compiled from the records of the Company*

Thus, due to piecemeal procurement of material, based on deficient surveys, the Company had to bear avoidable expenditure of ₹ 2.02 crore.

In reply, the Department stated (July 2022) that initially, the DPR had been prepared on estimation, and later on, due to identification and inclusion of new areas/*tolas*, the geographical condition of villages and right of way, the scope of work changed. The reply confirmed that no proper survey had been done, prior to preparation of the DPR, and, hence, the scope of the work had to be revised frequently, which ultimately led to avoidable expenditure.

[17] *The cost of DPR reduced due to reduction in the number of villages identified for electrification, from 549 villages, to 539 villages.*

5.8.5 Test of Material

Tests and inspection in procurement of ACSR conductors

As per the W&P Manual, in case of procurement of ACSR[18] conductors and cables, a test report, from a laboratory accredited by the National Accreditation Board for Testing and Calibration Laboratory (NABL), is required to be furnished by the bidder, along with the bid, failing which the offer is to be rejected. Further, during Pre-dispatch Inspection at the premises of the manufacturer, 13 tests for ACSR conductors and seven tests for cables, are required to be conducted, to ensure length, weight, strength, ductility, strain *etc*. In case of poles, strength test is required to be conducted, during the Pre-dispatch Inspection. Additionally, the manufacturer needs to adopt a Quality Assurance Plan (QAP) for raw material and other items, showing its sources and test reports.

Audit observed that while the Company had followed these norms, as envisaged in the W&P Manual, in centralised procurement by the S&P Wing, the test-checked ESCs had not adhered to the norms of quality assurance, in the procurement of 2,196 km of ACSR conductors, 36.50 km of cables and 2,639 poles, costing ₹ 15.02 crore, from FY 2017-18 to FY 2020-21. The test-checked ESCs had also not asked for test-reports of NABL accredited laboratories from the suppliers, at the time of offer or supply. They had carried out pre-delivery inspections in an ad-hoc manner, with acceptance of material having been given mainly on the basis of visual examination. They also did not conduct the required tests for ensuring the length, weight, strength, ductility, *etc*. of material, nor did they ensure the adoption of a QAP, before conveying their acceptance in Pre-delivery Inspections.

Thus, the quality of locally procured ACSR conductors, cables, and poles, was not ensured prior to their erection, which could, potentially, lead to a lower life span of the distribution network, higher T&D losses and frequent breakdowns, in addition to an increase in the risk of accidents.

In the case of ESC, Ranchi, the Department accepted the facts and assured (July 2022) that recommendations regarding tests and inspection would be followed for future procurements. In the case of two other ESCs (Chaibasa and Koderma), it was stated that material had been procured following the norms given in the previous Purchase Orders. The reply is not convincing, as the two ESCs did not follow the norms for procurement of conductors.

5.8.6 Payments to suppliers

Short deduction of liquidated damages

As per the W&P Manual, all contracts are required to provide for a clause on Liquidated Damages (LD), equal to half *per cent,* per fortnight of delay,

[18] *ACSR: Aluminium Conductor Steel Reinforced*

subject to a maximum of 10 *per cent* of the value of the contract, for delays in completion of the contract by the contractor. In case of supplies with an agreed delivery schedule, the LD is to be calculated on the unexecuted portion of the supply.

Audit scrutiny of files revealed that there was provision of maximum LD of five *per cent,* in three POs[19], issued from Headquarters, as against the prescribed 10 *per cent*. There had been delays in supply, beyond 20 weeks, in all these three POs and LD was deducted at five *per cent*. This resulted in short deduction of LD, by ₹ 36.68 lakh[20], from the concerned suppliers.

In reply, the Department stated (May 2022) that S&P is deducting LD in all POs, as per the clause prescribed in the NITs, as the W&P Manual was received late by S&P.

The reply is not factually correct, as the said NITs had been floated (May and August 2017) after approval (March 2017) of the W&P Manual by the BoD.

5.9 Deficiencies in Inventory Control

5.9.1 Management Information System for Material Management

The key objective of an MIS for Material Management (MM) is to ensure synchronisation between the requirements, procurement, availability, and utilisation of stores. It also aims to ensure monitoring, planning, digitisation of data and real-time status of inventory at Headquarters and field offices.

The work order for developing an MIS for capital expenditure of the Company, *viz. SARAL SAMIKSHA,* was issued (May 2017) to M/s Cyber SWIFT Infotech Private Limited, for an amount of ₹ 59.40 lakh, which included an amount of ₹ 18 lakh, for development of an MM module. The Agency was required to customise and implement a web and mobile-based application software, provide SAAS (software as a service) on cloud, train end users and create master data. The master data, so created, was to be integrated into the Enterprise Resource Planning (ERP) software, which was under implementation by another agency. The initial contract period was for 24 months i.e., till May 2019.

Audit noticed that the Agency had developed the application software and entered the relevant data at the Transformer Repair Workshops (TRWs), central stores and projects being executed by the Company by May 2019. Further, MD, JBVNL approved the extension of the contract period till December 2019, as the created master data could not be integrated with the alternate ERP, which was not yet operational. Subsequently, the General Manager (IT) approved (November 2019) closure of the project, as the ERP

[19] *PO No. 169 Dated 28.03.2018, PO No. 22 Dated 25.05.2018 and PO No. 19 Dated 25.05.2018.*
[20] *PO No. 169 dated 28.03.2018: ₹ 8.86 lakh; PO No. 22 dated 22.05.2018: ₹ 24.57 lakh; and PO No. 19 dated 25.05.2018: ₹ 3.25 lakh*

MM module was expected to go-live by December 2019. The Agency withdrew (November 2019) its services after being paid an amount of ₹ 41.05 lakh. As the contract was for software as a service, the MIS for material management again became non-functional, because the source code of the developed software had not been handed over to the Company, by the Agency. Further, the alternate ERP system had not been implemented, as of July 2022, and, hence, the master data created under the project could also not be put to use. During audit, it was seen that the S&P wing was compiling the stock position on the basis of information gathered telephonically from central stores, at the time of procurement and could not provide PO-wise delivery details to Audit, despite repeated requisitions.

Thus, the Company failed to ensure real-time material management, despite having incurred expenditure of ₹ 41.05 lakh, for developing an MIS for material management.

In reply, the Department stated (May 2022) that the Company would implement the ERP, after which a real-time MIS would be available.

The fact, however, remains that the ERP had not been implemented (as of July 2022) and the Company had failed to utilise the data base created under *Saral Samiksha* since December 2019.

5.9.2 Manpower position in Stores

Manpower management is crucial for effective management of stores and for facilitating better internal control. As per the W&P Manual, there will be a Store Superintendent for each central store, who will be assisted by a senior and a junior storekeeper.

There were 15 functional central stores in ESCs (as of March 2021). However, there was only one Assistant Store Controller, 13 senior storekeepers and four assistant storekeepers, in these 15 central stores. Senior Managers were posted in only two of the seven test-checked central stores and the remaining central stores were being headed by officials on additional charge.

Audit further noticed that the Company had adopted (August 2018) a new organisational structure. However, the sanctioned strength of the officials to be posted in the central stores had not been defined. Though the Company had constituted (November 2020) a committee to review the posts created under the new organisational structure, the report was awaited (as of October 2021).

Thus, the Company did not ensure adequate manpower for stores, which was one of the main reasons behind non-maintenance of proper accounts of stores**.**

While accepting the facts, the Department stated (July 2022) that the recruitment process would be started after the finalisation of a new organisational structure.

5.9.3 Physical Verification of Stores/TRWs

The Work and Procurement (W&P) Manual provides for physical verification of goods and material to be conducted at the end of the financial year (as on 31st March) and discrepancies, if any, to be recorded in the stock register, for appropriate action by the competent authority.

Audit noticed that:

- In all the seven test-checked ESCs, physical verification of central stores and TRWs had been done just once (FY 2018-19), during the period from FY 2017-18 to FY 2020-21.
- Audit noticed that items of material such as GI wires, AB switches, Tri-vector meters, *etc*., costing ₹ 97.72 lakh, procured under Rural Electrification schemes, had not been covered under physical verification in ESC, Chas, as they were not included in the stock ledger of the central store.
- Items of scrap had been included in the stock ledgers of central stores but had not been included in the physical verification reports in any of the seven test-checked ESCs.

The Department (July 2022) accepted the facts in regard to two ESCs (Ranchi and Koderma) and stated that, in the light of the audit observation, physical verification of scrap was being carried out, and timely physical verification would be ensured in future. However, no reply was furnished regarding the remaining five ESCs.

5.9.4 Accounting of Inventory

(i) Non-capitalisation of storage charges

As per the Accounts and Finance Code, all incidental expenses connected with the stores, *viz.* store keeping expenses, rents, wages to store coolies, work charged establishment for handling of material and the store godowns *etc*., are to be debited by levy of actual incidental expenses, or percentage charges on the value of stores, issued to the works. The accounting policy also envisages that capital work in progress should be carried out at cost, comprising of direct costs, incidental expenses, and interest.

Audit noticed that three *per cent* of the material cost was being taken as storage charges, in the estimate of works. However, at the time of accounting, storage charges of ₹ 33.35 crore, had not been included in the value of material worth ₹ 1,111.55 crore[21], issued and accounted for as capital works in progress, during the period from FYs 2017-18 to 2020-21. Thus, a part of storage expenses was not charged to capital works in progress, and, hence,

[21] *₹ 273.30 crore in ESC, Hazaribag; ₹ 130.13 crore in ESC, Jamshedpur; ₹ 92.72 crore in ESC, Chas; ₹ 37.94 crore in ESC, Koderma; ₹ 418.37 crore in ESC, Chaibasa; ₹ 51.63 crore in ESC, Sahibganj; and ₹ 107.46 crore in ESC, Ranchi.*

capitalisation of Assets was understated, and storage expenses were overstated, in the Financial Statements of the Company.

The Department stated (July 2022) that accounts would be rectified at ESC, Ranchi, whereas, in two ESCs (Koderma and Hazaribag), storage charges had not been included in the cost of capitalisation, as it was done on the actual cost of utilised material. The reply is not convincing, as all incidental charges, including storage charges, should be included in the cost of capitalisation.

(ii) Incorrect accounting of Inventory

As per the provisions of the Accounts and Finance Code, all requisitions for the issue of material should bear the details of the work order and account head, in addition to a brief description of the nature of the work (capital or operation & maintenance).

Audit scrutiny of Store Issue Vouchers[22] (SIVs) in the seven test-checked ESCs revealed that, though material had been issued for operation and maintenance (O&M) in six ESCs (except Ranchi), the value of the issued material was charged to capital works in progress. During the period during FYs 2017-18 to 2020-21, material worth at least ₹ 44.45 crore[23] was issued to O&M works, but was charged to capital works. The incorrect classification of the value of the material in the accounts, was due to the absence of details of the work orders, account heads or brief nature of works, in requisitions or SIVs, in addition to shortage of personnel in the central stores.

Thus, the revenue expenditure of the Company was understated, due to incorrect classification of the value of material to capital works.

The concerned DGMs accepted the facts and stated (between February 2021 and September 2021) that necessary rectification would be done in the accounts.

(iii) Non-Accounting of Inventories

As per the W&P Manual, the accounts of all stores, for the month, are to be closed on the 20th and the last batch of the Stores Received Vouchers[24] (SRVs), the requisition and devolution[25] is to be sent to the Accounts section on the 23rd. On closing the accounts, the abstract of stock receipts, issues and balances, in the Form prescribed by the Financial & Accounts Code of the Company, is to be prepared and forwarded to the Accounts Officer within five days.

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[22] *SIVs are requisition forms on which material is issued from Central Stores.*

[23] *₹ 11.08 crore in ESC, Hazaribag; ₹ 0.89 crore in ESC, Jamshedpur; ₹ 28.05 crore in ESC, Chas; ₹ 3.34 crore in ESC, Koderma; ₹ 0.81 crore in ESC, Chaibasa and ₹ 0.28 crore in ESC, Sahibganj. Details pertaining to FY 2020-21 could not be furnished by the ESCs.*

[24] *SRVs are forms which contain details of the material received by the Central Stores.*

[25] *Dismantled material received in stores.*

Audit noticed that Transformer Repair Workshops (TRWs) in two selected ESCs (Chas and Koderma), consumed material worth ₹ 2.46 crore, during FYs 2017-18 to 2019-20, for repair of transformers, against material worth ₹ 2.94 crore, received directly from vendors. However, the TRWs did not submit the detailed position of stock, in the prescribed Forms, to the Accounts Officers, till March 2020. As a result, the closing stock and expenditure of ESCs were understated in the accounts, by ₹ 48 lakh and by ₹ 2.46 crore, respectively.

The concerned DGMs accepted the fact and stated (March 2021 and July 2021) that necessary rectification would be carried out in the accounts.

5.9.5 Management of Inventory

(i) Receipt and Storage of Inventory

The W&P Manual and the Accounts and Finance (A&F) Code provide norms for the effective and efficient management of inventory.

Audit noticed deficiencies in inventory management, in all the seven test-checked central stores, as discussed below:

- As per the A&F code, all material received in store is to be examined and counted, weighed, or measured. Audit noticed that weighing machines and cranes were not available in six of the central stores (except in the case of Ranchi). In the absence of weighing machines and cranes, these central stores were accepting material, supported by weight receipts of suppliers, without any system of cross-verification.

- As per the A&F code, the Store Officer is to arrange to take necessary precautions to guard against pilferage, theft, fire, deterioration *etc.* of stores. In all the seven test-checked ESCs, material was found lying stacked in the open, due to constraints of space, as shown in **Picture 5.1.** This was fraught with the risk of pilferage and deterioration in quality.

Picture 5.1: Pictures of material kept haphazardly in CSs

Conductors and cables, lying in the open, at the central store, Hazaribag

Conductors and other equipment, lying in the open, at the central store, Jamshedpur

Conductors, cables, transformers, and other fabrication items, lying in the open, at the central store, Chas

Transformers, lying in the open, at the central store, Koderma

Conductors and fabrication items, lying in the open, at the central store, Chaibasa

Conductors, transformers and steel tubular poles, lying in the open, at the central store, Sahibganj

Cables, lying in the open, at the central store, Ranchi

- Fire extinguishers were not available in any of the seven test-checked central stores. An incident of fire had occurred (November 2018) in the central store, Chas, leading to an estimated loss of ₹ 3.75 lakh, and theft had taken place (July 2019) in the central store, Jamshedpur, leading to an estimated loss of ₹ 2.82 lakh. The absence of a boundary wall, in the central store, Koderma, as shown in **Picture 5.2,** left it vulnerable to the risk of theft of material**.**

Picture-5.2: Pictures of the boundary wall and fence in CS, Koderma

Central Store, Koderma, without boundary wall and makeshift gate

Boundary wall, at the Central Store, Koderma, without barbed wire fencing

- As per the A&F Code, complete stock of the same material should be stored at a single location within the store, and storage at more than one location should be avoided. Audit noticed that poles had been kept in a haphazard manner, at different locations, outside the central store premises in four ESCs (Hazaribag, Jamshedpur, Chas and Koderma), as shown in **Picture 5.3**.

Picture 5.3: Poles kept at different locations outside the store

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Poles lying near the guest house at Hazaribag</td><td>Poles lying near the Karandih Divisional Office at Jamshedpur</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Poles lying by the side of a road at Chas</td><td>Poles lying by the side of a road at Koderma</td></tr>
</table>

The Department stated (July 2022) that, due to lack of proper shade in four ESCs (Ranchi, Chaibasa, Koderma and Hazaribag), and non-availability of godown (ESC, Koderma), material had been kept either in open areas or in the old circuit house area of the District Administration. In ESC, Koderma, a tender for the construction of a boundary wall was in process.

(ii) Acceptance of dismantled material

Work relating to utility shifting, due to construction or widening of roadways, waterways, buildings *etc*., is undertaken under the 'deposit' head. Such work includes dismantling of erected material, which is the property of the Company. The dismantled material, as per the scope of work in the estimates, is to be returned to the central store.

Audit scrutiny of records of all the seven test-checked ESCs, revealed that:

- Dismantled material, *viz.* conductors, transformers, poles, *etc.,* had been received by the central stores, without a copy of the estimates showing the scope of dismantling. Due to this, Audit could not cross-verify the quantity of receivable and received dismantled material in the stores. Audit further noticed

that NHAI had executed a work[26] of utility shifting on its own, under the supervision of ESC, Koderma. However, NHAI had not returned the dismantled material, *viz.* rail poles, conductors, *etc.,* valued at ₹ 1.62 crore, to the central store (as of July 2021), even though the work had been completed in March 2020.

- In two[27] works, the contractors did not return a major part of the dismantled material, *viz.* 428 rail poles, 91.27 km of ACSR Dog/Rabbit conductors, 28 DTs of different capacities and 7.85 km of ACSR Weasel conductors, worth ₹ 2.43 crore, to the central store, Jamshedpur. Further, in the case of construction of a Power Sub-Station (PSS) at Saram, in ESC, Chas, 58 unutilised rail poles, worth ₹ 17.49 lakh, had not been returned to the central store and were stated to have been lying at the site, since October 2017.

- Audit noticed that dismantled conductors, weighing 3,29,587.17 kg, had been recorded in the scrap ledgers, but had been re-issued, from all the seven test-checked central stores, for maintenance and strengthening of electrical lines. There was no mechanism in the central stores to ensure the quality and strength of the dismantled material which had been re-issued. Hence, the possibility of creation of assets, with sub-standard conductors, could not be ruled out.

The Department accepted the facts (July 2022) in the case of ESC, Koderma, and stated that repeated correspondence had been made with the Project Director, NHAI, for the return of the dismantled material. Regarding ESC, Chaibasa, it was stated that, in case of breakdown/snapping, small pieces of removed conductors, of good condition, had been issued to the field, due to the non-availability of new conductors. The reply is not convincing, as removed conductors, along with other old material, had been issued, both in maintenance and original works, without ensuring their quality, even after identifying them as scrap.

(iii) Issue of material without ascertaining requirement

As per the A&F Code, all requisitions, for the issue of material, should bear the details of the work order[28]. As per the W&P Manual, material is to be carried out of the store area, based on the estimate and the work order.

Audit scrutiny of store issue vouchers (SIVs), in the seven test-checked central stores, revealed that material had been issued to works of capital nature, without obtaining details of estimates and work orders, as detailed in **Table 5.5**.

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[26] *Shifting of existing utilities at NH 31 due to widening of Road in ESC, Koderma.*
[27] *Dismantling works for Mahulia-Baharagora-Chirchira section of NH-33 and Shifting of 11 KV, DSS & LT line of Bandwan-Katin-Badabhum road under Patamda section, in ESC, Jamshedpur.*
[28] *Work orders are issued after the technical sanction (formal approval for executing a work) of an estimate has been accorded.*

Table 5.5: Details of material issued without estimates and work orders

Sl. No.	Name of ESC	Number of SIVs not supported by estimates and work orders	Value of material issued (₹ in crore)	Financial Year(s) for which records were not furnished to Audit
1.	Hazaribag	175	2.39	--
2.	Jamshedpur	249	2.11	2017-18 and 2018-19
3.	Chas	215	2.63	2017-18 and 2018-19
4.	Koderma	86	0.80	--
5.	Sahibganj	748	13.99	2017-18
6.	Chaibasa	23	0.25	--
7.	Ranchi	499	5.11	2017-18 and 2018-19
Total		**1,995**	**27.28**	**--**

Source: *Information furnished by the Company*

It can be seen from **Table 5.5** that material worth ₹ 27.28 crore had been issued by the central stores, against 1,995 SIVs, without ascertaining the requirements. Issue of material, without ascertaining requirements, was fraught with the risk of excess issue and misuse of material.

The Department accepted the fact and stated (July 2022) that: (i) in three ESCs (Chas, Chaibasa and Koderma), material had been issued for urgent works (ii) however the concerned officials have been instructed to submit the required documents. The reply was silent in regard to the remaining four ESCs.

(iv) Irregular diversion of material

As per the W&P Manual, the issue of material, interchangeably from different heads, due to shortage or non-availability of material under one head, should be avoided completely.

In three out of the seven test-checked ESCs, Audit noticed that material procured for works, under specific heads, had been issued to works under different heads, during the FYs 2017-18 to 2020-21, as detailed in **Table 5.6**.

Table: 5.6: Transfer of material from one head to another

Name of ESC	Head for which material were procured	Item	Unit	Issued to Deposit head/ DDUGJY	Purchase rates per unit (in ₹)	Value of material issued (in ₹)
Jamshedpur	ADP	Rail Pole	Nos.	8	33,228.80	2,65,830.40
	RAPDRP	25 KVA DTR	Nos.	1	49,051.00	49,051.00
	JSBAY	Single Phase Meter	Nos.	7,700	905.00	69,68,500.00
Chas	RAPDRP	LT AB cable	km	1	5,31,408.68	5,31,408.68
Ranchi	RE	LT AB cable	km	4.69	1,41,214.46	6,62,295.82
		ACSR Rabbit Conductor	km	152.5	34,529.04	52,65,678.60
Total						**1,37,42,764.50**

Source: *Records of the Company*

It can be seen from **Table 5.6** that material worth ₹ 1.37 crore, procured for works under various schemes, had been issued (March 2018 to March 2020), to deposit works (₹ 67.74 lakh) and to a Turnkey contractor (₹ 69.68 lakh), for

works under DDUGJY. Adjustment/recoupment of the transferred material was awaited (as of September 2021).

In the case of ESC, Chas, the Department accepted the facts and stated (July 2022) that the material items would be adjusted on procurement in the concerned heads. No reply was furnished in regard to the remaining two ESCs.

5.9.6 Repairs of transformers

There are 15 Transformer Repairing Workshops (TRWs), one in each ESC, for carrying out repairs of defective and burnt transformers.

(i) Recovery of oil from transformers

As per the W&P Manual, transformers received for repair at TRWs, are to be opened in the presence of a Committee[29], which is required to observe the scrap (coil) and oil level of the transformer. If the transformer oil is found below 90 *per cent*, the concerned Junior Manager is to either submit proper reasons to the Committee, or submit a copy of the First Information Report (FIR), in cases of theft of oil or coil. The re-serviceable coil and oil are to be entered in the inventory register, with their details like the serial numbers of the transformers, places of installation, their capacity, dates and causes of defects/ burning, status of core and coil, level of oil, *etc*.

Scrutiny of records of the seven test-checked TRWs revealed that:

- The Committees had not been constituted, for examination of defective or burnt transformers, at any of the TRWs. In five[30] TRWs, 8,818 transformers had been received for repair, from April 2017 to March 2021. Audit found shortage of 13.62 lakh litres of transformer oil, valued at ₹ 3.41 crore ***(Appendix 5.3),*** which was not supported either by justification reports, or by copies of FIRs. In two[31] TRWs, there were no details of the oil recovered from 2,958 defective transformers, due to which, Audit could not ascertain shortage, if any, in the quantity of oil recovered from these transformers.

- Detailed information, containing the serial numbers of the defective transformers, places where installed, their capacity, dates and causes of burning or defect, status of the core and coil, level of oil, *etc*., were not found entered in the inventory register, in any of the TRWs.

The Department accepted the facts and stated (July 2022) that: (i) clarifications have been sought from officials of ESC, Ranchi (ii) a Committee will be formed and (iii) an inventory register will be maintained in ESC, Ranchi. Regarding the two other ESCs (Chaibasa and Hazaribag), it was stated that the leakages in DTs had been due to accidental damage, heavy sparking,

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[29] *The Committee consists of Junior Electrical Engineer (TRW), Assistant Electrical Engineer (TRW), Junior Electrical Engineer (Supply) and repairing agency representative.*
[30] *TRWs at Hazaribag, Jamshedpur, Koderma, Ranchi and Sahibganj.*
[31] *TRWs at Chaibasa and Chas.*

thunder, internal fault *etc*., which had caused shortage of oil, and committees had not been formed due to vacancies in the posts of officers. The reply in regard to the said two ESCs, is not convincing, as shortages of oil, for whatsoever reasons, were to be certified by committees, which were not in place.

(ii) Excess issue of coils

Defective transformers are repaired in TRWs, by agencies appointed by the Company. The winding wires, required for repair, are issued to the appointed Agency, to replace the discarded coils of the defective transformers. As per the W&P Manual, the weight of HV/LV coils, provided in the repaired transformers, is to be the actual weight of the coils taken out from the damaged transformer.

Audit noticed that:

- Six out of the seven test-checked TRWs had issued 2,90,185.38 kg of winding wires, from FY 2017-18 to FY 2020-21, to the Agencies, for replacing 1,49,214.67 kg of discarded coils, recovered from the defective transformers. As such, 1,40,970.71 kg of winding wires, worth ₹ 3.21 crore (calculated at a purchase rate of ₹ 227.50 per kg), were issued in excess of requirements. The recovery of excess wires issued was awaited (as of September 2021). Audit could not ascertain discrepancies, if any, in the issue of winding wires in TRW, Koderma, as the required information was not furnished.

- As per the W&P Manual, the repaired transformers are to be labelled with the date of the last repair, and the Agency is to provide one year's warranty, from the date of issue of the repaired transformer. Audit noticed that fresh job numbers had been given in case of all repairs. Hence, Audit could not ascertain the number of transformers re-repaired at the cost of the Company, within the warranty period.

On this being pointed out in audit, the Department recovered (August 2021) 4,541.59 kg of coils from the Agency in ESC, Chaibasa. However, the Department had not intimated the action initiated, if any, in the remaining five ESCs (as of July 2022).

5.9.7 Non-availability of facilities in TRWs

As per the W&P Manual, all the repaired transformers are to be subjected to all the routine tests[32], as per IS: 2026/1977 (Part-I), IS 2026/1981 (Part-III) and the latest amendment thereof. Further, TRWs need to adopt fire-fighting measures.

[32] *No-load loss at rated voltage, load loss at 75^0 C (watt), Impedance test at 75^0 C, insulation resistance test, high voltage test, double voltage double frequency test, BDV value of Transformer oil test etc.*

Audit observed that:

- The test for energy loss was not being done by any of the seven test-checked TRWs, due to the non-availability of related testing equipment. Other routine tests[33] were also not being done in six TRWs (except for Ranchi). It was seen that 11,906 repaired DTs had been issued by the seven test-checked TRWs, from FY 2017-18 to FY 2020-21, for installation in the distribution network, without ensuring the required quality tests. This carried the risk of leading to excess energy loss and frequent breakdowns, in addition to compromising the safety of the connected electrical equipment, the personnel handling the equipment and the public.

- There was lack of space and proper facilities in TRWs, for storing scrap material and discarded transformer oil (which is highly inflammable). However, except for fire extinguishers at TRW, Ranchi, the TRWs did not have an adequate fire-fighting system. It was noticed that the fire brigade had been called to control a fire incident (September 2020) at TRW, Chas, in which scrap and equipment, worth ₹ 2.95 lakh, were destroyed. The Committee set up for examination found (October 2020) that there was no fire-fighting system in the TRW and recommended setting up proper fire-fighting arrangements.

The Department accepted (July 2022) the non-availability of equipment as a reason for not conducting the required tests in three ESCs (Ranchi, Chaibasa and Koderma). However, it stated that a testing machine had been installed (July 2021) at ESC, Koderma. No reply was furnished in regard to the remaining four ESCs.

5.9.8 Disposal of scrap

The Board of Directors (BoD) of the Company accorded (October 2015) Administrative Approval (AA), for the disposal of unused/ unserviceable/ obsolete ferrous & non-ferrous metal, lying at different central stores and TRWs, through M/s Metal Scrap Trade Corporation Limited (MSTC), a PSU of GoI. An agreement was also executed between the Company and MSTC, in February 2016.

Audit noticed that:

- The Company had not initiated action for auction of the scrap, for almost three years from the date of agreement. The Standing Committee for fixation of scrap rates was constituted twice (March 2018 and January 2019), and BoD again accorded (June 2019) AA, for disposal of scraps, through e-Auction.

[33] *Insulation resistance test, high voltage test, double voltage double frequency test, BDV value of Transformer oil test etc.*

- The Standing Committee had fixed (June 2019) the reserve price for scrap items of only the TRWs, but the reserve price of scrap of central stores had not been fixed (as of September 2021). Accordingly, BoD approved (June 2019) the reserve price for scrap of TRWs only.

- MSTC invited bids twice (September 2019 and November 2019) for e-auction, but they did not materialise, as the reserve prices were on the higher side, compared to reserve price of similar scrap sold by other PSUs[34], from January 2019 to December 2019. Though MSTC suggested (December 2019) a review of the reserve prices, in order to make the e-auction successful, action in this regard was awaited (till September 2021).

Thus, due to inaction on the part of the Company, scrap, with an estimated value of ₹ 13.24 crore, as worked out by the ESCs, was lying idle in the central stores and TRWs of four[35] test-checked ESCs. The remaining three test checked ESCs had not worked out the value of scrap (as of September 2021).

In reply, the S&P wing accepted the audit observation and assured (January 2022) that all efforts would be made for the auction of the scrap.

Audit Recommendation No. 3: MIS for material management should be put in place and annual physical verification of stores should be ensured.

5.10 Inefficient utilisation of material

5.10.1 Idle inventory with PSSs

The construction of nine Power Sub-stations (PSSs[36]), with associated lines, was approved under the ADP, by DGMs of four ESCs, between FYs 2013-14 and 2016-17. The Departmental execution of these PSSs commenced in the same financial years, but could not be completed (as of September 2021), due to pending statutory clearances from Forest Department and Railways, in conjunction with non-procurement of material, as discussed below:

- Construction of three PSSs[37] each, at ESCs, Chas and Jamshedpur, was sanctioned between FYs 2013-14 and 2016-17. However, the work had not been completed (as of September 2021), due to delay in obtaining railway clearance by the Company, non-charging of completed 33 KV Line and non-availability of material including transformers, cables, rail poles, vacuum circuit breakers *etc*., in the stores. Further, material worth ₹ 4.80 crore, issued

[34] *Power Grid Corporation of India Limited, Kerala State Electricity Board, UP Power Transmission Corporation Limited, South Bihar Power Distribution Company Limited etc.*
[35] *Central Stores and TRW at Chaibasa, Hazaribag, Koderma and Ranchi.*
[36] *ESC, Chas: PSSs at Taranari, Phudnidih and Pathuria; ESC, Hazaribag: at Tantijharia; ESC, Chaibasa: at Landupada and ESC, Jamshedpur: at Balibandh, Nischintpur, Uperpawra and Baliguma.*
[37] *ESC, Chas: PSSs at Taranari, Phudnidih and Pathuria and ESC, Jamshedpur: at Balibandh, Nischintpur and Baliguma*

between June 2016 and October 2020, for these six PSSs, had not been put to use (as of September 2021).

- Power Transformers, worth ₹ 23.76 lakh, delivered (April 2019) to the Central Store, Hazaribag, for construction of PSS at Tantijharia, were lying (September 2021) in store, due to the failure of the Company to obtain forest clearance for the erection of necessary 33KV line. Further, material worth ₹ 9.58 lakh, issued (November 2018 and February 2019) to works, by the central store, Hazaribag, was lying idle at the PSS premises.

- Two 5 MVA Power Transformers were purchased at a cost of ₹ 47.53 lakh, for the construction of PSSs at Landupada, in ESC, Chaibasa, and delivered at site during February 2017. However, these transformers were not being used, due to non-completion of 150 meters of underground cabling of 33 KV lines, across the railway lines, as the Company had failed to obtain clearance from the Railways. Further, material worth ₹ 62.63 lakh, issued to the work, had also not been put to use. Further scrutiny revealed that this was partly due to delayed deposit (November 2019) of ₹ 42,319, demanded (November 2017) by the Railways.

- Aluminium Conductor Steel Reinforced (ACSR) Dog and Wolf Conductors, were procured (March 2018 and September 2019), for erection of 11/33 KV lines of PSSs. Audit noticed that 929.09 km of ACSR Dog conductors, and 423.53 km of ACSR Wolf conductors, worth ₹ 11.33 crore, were lying in the central stores of these four ESCs (as of March 2021).

- Details of material issued to the PSS at Upperpawra in ESC, Jamshedpur, were not furnished to Audit, though called for.

- Audit also noticed that the test-checked central stores did not maintain work-wise accounts of issued material. Further, material at site accounts were also not being maintained by the concerned Managers and Junior Managers. Non-maintenance of work-wise accounts by the central stores, or 'material at site' accounts by the Managers and Junior Managers, carried the risk of diversion of material to other works, excess issue of material for the same work, absence of monitoring of unutilised material for long periods *etc*., as there were inordinate delays in completion of the works.

Thus, the Company failed to procure required material in time and ensure efficient utilisation of issued material, which led to non-completion of works relating to construction of PSSs, that had commenced during FYs 2013-14 to 2016-17, and material worth ₹ 17.56 crore lying idle.

The Department accepted (July 2022) the delays in construction of PSSs, in three ESCs (Chas, Chaibasa and Hazaribag) and stated that four, out of five PSSs, in these ESCs, had been completed (as of May 2022). No reply was furnished regarding the remaining four PSSs of ESC, Jamshedpur.

5.10.2 Non-utilisation of material relating to R-APDRP work

Ministry of Power, GoI, approved (September 2008) the Restructured Accelerated Power Development Reforms Programme (R-APDRP), during the 11th Plan period. Under the Scheme, 25 *per cent* of the sanctioned cost was to be given by GoI as Loan. For implementing the Scheme in 30 towns of Jharkhand, GoI approved (September 2013) DPRs of ₹ 1,181.45 crore, for completion within a maximum period of five years.

In 22 out of 30 towns, the work could not be awarded, despite repetitive tendering. The Company ultimately decided (December 2015 and April 2017) to execute the works departmentally, in these 22 towns.

Audit noticed that the assessment of the required quantity of material, based on actual survey, varied from the quantity assessed in the approved DPRs. For departmental execution, the Company procured material, centrally based on the requirements assessed in the DPR or Survey. However, since the target date of completion was August 2018, the Company put a freeze (December 2017) on the scope of work. This led to non-utilisation of the procured material, as detailed in **Table 5.7**.

Table 5.7: Details of non-utilisation of material in R-APDRP

Sl. No.	Name of material	Quantity as per DPR	Quantity as per survey	Quantity as per freezing	Quantity actually procured	Excess	Rate of material (₹ in lakh)	Excess expenditure (₹ in lakh)
1	ACSR Rabbit Conductor (in km)	2,020	1,382	1,529	1,864	335	0.28	93.8
2	ACSR Panther Conductor (in km)	445	121	85	126	41	4.26	174.66
3	XLPE HT Cable 33 kV 3x400 sq. m (in km)	0	18	2	18	16	16.65	266.40
4	XLPE HT Cable 11 kV 3x400 sq. m (in km)	0	52	19	52	33	12.71	419.43
5	25 KV DTR (in Nos.)	194	221	151	201	50	0.49	24.50
6	63KV DTR (in Nos.)	398	263	174	263	89	0.81	72.09
7	100 KV DTR (in Nos.)	726	763	645	763	118	1.03	121.54
	Total							**1,172.42**

As a result, material worth ₹ 11.72 crore, procured between June 2016 to August 2017, could not be utilised for more than four years, as of September 2021.

5.10.3 Misutilisation of material

Rural electrification scheme

- Under DDUGJY, Letters of Award (LoA) were issued (March and May 2017), to M/s IL&FS Engineering and Construction Company Limited, for rural electrification works, in three districts, *i.e.* East Singhbhum, West Singhbhum and Sahibganj. The awarded cost of the work was ₹ 624.36 crore and the work was to be completed within 24 months. The contractor could not complete the work, due to non-mobilisation of the required material and manpower, as per milestones. After the completion of works, valued at ₹ 101.96 crore, including the supply of material, the contract was terminated

in January 2019. The residual works were split up into eight packages and works were awarded (March 2019) to five contractors, for completion within nine months.

Audit noticed that the Company had commenced (September 2019) the process of reconciliation and taking over of the material, with the terminated contractor, after eight months of termination of the contract (January 2019). As per the reconciliation report (September and October 2019), material worth ₹ 58.45 crore[38] was to be taken over, by the new contractors, from the terminated contractor. However, material worth ₹ 28.46 crore[39] (49 *per cent*) only, had been lifted by the new contractors (as of March 2021). The remaining material, worth ₹ 29.99 crore, were still with the terminated contractor, even after a lapse of more than two years from the date of termination.

Further, in three ESCs, where material was transferred to the new contractors, Audit examined the utilisation of the transferred material. It was seen that in ESC, Sahibganj, material worth ₹ 2.72 crore, out of the lifted material of ₹ 7.10 crore, was found (March 2021) to be in excess. The contractor is yet to transfer the excess material to the store of the Company.

Thus, due to poor material management, material worth ₹ 32.71 crore, remained in the custody of private contractors, without any purpose, for periods ranging from 5 to 25 months.

The Department stated (July 2022) that, initially the terminated contractor (M/s IL&FS) was not willing to hand over the material to the new contractors in ESC Chaibasa, as the matter was *sub judice*. Further, due to the completion period being only nine months, the new contractors could only utilise material worth ₹ 14.60 crore, which was handed over to them by the terminated contractor. The reply is not acceptable, as the Company itself delayed the reconciliation of unused material with the terminated contractor, which led to short transfer of material to the new contractors, within their contract period. The reply was silent regarding the status of the remaining material, worth ₹ 15.91 crore, relating to ESC, Chaibasa, that was in the possession of the defaulting contractor. The Department also did not furnish the status of material worth ₹ 14.08 crore, pertaining to the other two ESCs.

Urban electrification scheme

- Six LoAs were issued (between July 2017 and September 2017) under the Integrated Power Development Scheme (IPDS) including three LOAs for supply of materials, to the same contractor, *i.e.* M/s IL&FS Engineering and Construction Company Limited, for completion of work within 24 months.

[38] *Jamshedpur: ₹ 16.32 crore, Chaibasa: ₹ 30.51 crore and Sahibganj ₹ 11.62 crore.*
[39] *Jamshedpur: ₹ 6.76 crore, Chaibasa: ₹ 14.60 crore and Sahibganj: ₹ 7.10 crore.*

Due to poor progress of the work, these contracts were also terminated (January 2019), after financial progress of 21 *per cent.* The residual works were awarded to five contractors (between March 2019 and July 2019), for completion between December 2019 and March 2020.

Audit noticed that unutilised material, worth ₹ 60.24 crore[40], was lying with the contractor, after termination of the contract, and was transferred only by February 2020, *i.e.* after more than 12 months from the date of termination.

Further scrutiny of the records of three[41] test-checked ESCs, where transfer of material worth ₹ 36.38 crore had taken place, revealed that transferred material, worth ₹ 7.37 crore[42], had not been utilised as of September 2021. This included non-utilisation due to delay in transfer of the material (₹ 1.37 crore) to the new contractors, change in the scope of work (₹ 2.16 crore), supply of material without the required accessories (₹ 1.14 crore). ESC, Sahibganj, did not furnish information regarding unused material worth ₹ 2.80 crore.

Thus, there was delay of 12 months in the transfer of material worth ₹ 60.24 crore. In addition, material worth ₹ 7.37 crore was still in the custody of private contractors (as of September 2021), in three test-checked ESCs.

The concerned DGMs accepted the facts and stated (between March 2021 and September 2021) that necessary instructions would be obtained from Headquarters, for early utilisation of the material.

- Electrification works were executed departmentally, in six[43] out of seven test-checked ESCs, under the RAPDRP-B scheme. For the works, material was procured centrally, by S&P wing, based on the requirements assessed by the concerned ESCs. The central stores received the material and issued it to the Managers of Electric Supply Sub-divisions (ESSD)s, for execution of works.

Audit noticed differences in the quantities of major items of material issued to the works, and the items of material utilised in the works, which were declared closed in June 2020. It was seen that conductors, poles, cables, meters and transformers, worth ₹ 30.81 crore, had been issued to works, from the central stores, but, as per the closure reports, material worth ₹ 18.74 crore only had been utilised in the works. The accounts of the remaining material worth ₹ 12.07 crore ***(Appendix 5.4)*** were neither found to have been maintained by the concerned Managers, nor was the material returned to the central stores.

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[40] *ESC Chaibasa: ₹ 11.66 crore, Dhanbad: ₹ 15.74 crore, Dumka: ₹ 8.12 crore, Jamshedpur: ₹ 13.07 crore and Sahibganj: ₹ 11.65 crore.*
[41] *ESCs at Chaibasa, Jamshedpur and Sahibganj.*
[42] *ESC Chaibasa: ₹ 1.12 crore, Jamshedpur: ₹ 3.45 crore and Sahibganj: ₹ 2.80 crore.*
[43] *ESCs at Chaibasa, Chas, Hazaribag, Jamshedpur, Koderma and Sahibganj.*

ESCs also failed to recover the un-utilised material, prior to preparing closure reports of the works, or till date (December 2021).

Thus, due to non-recovery of excess materials issued by ESCs, as compared to the closure reports, misutilisation or misappropriation of materials, worth ₹ 12.07 crore, could not be ruled out.

While accepting the audit observations, the Department stated (July 2022) that material statements were yet to be received from concerned officials in ESC, Sahibganj. In ESC, Chas, material had been received partially, and the balance material was under the custody of the concerned officials. With respect to ESC, Koderma, it was stated that reconciliation of material had been done before making the final payment. The reply regarding ESC, Koderma, is not acceptable, as the audit observation was based on cross-examination of the scheme closure reports, material statements and stock ledgers, that were prepared/closed after processing of the final bills. No reply was furnished in regard to the remaining three ESCs.

Audit Recommendation No. 4: The Company may ensure early recovery of unutilised material lying with private contractors or field officials.

Chapter 6

Audit Paragraphs:

CHAPTER 6
ROAD CONSTRUCTION DEPARTMENT

6.1 Non-recovery of dues and penalty

The Executive Engineer did not adhere to the conditions of contracts in effecting adjustments and recoveries while making interim payments to the contractor. Security deposit of ₹ 3.95 crore was prematurely refunded and recovery/ adjustment of ₹ 11.17 crore could not be made even after a lapse of more than five years of completion of work.

According to Section 175 of Jharkhand Public Works Department (JPWD) Code, engineers and their subordinates are responsible to ensure that the terms of contracts are strictly enforced, and that no act is done tending to nullify or vitiate a contract.

Widening and strengthening of four roads[1] were technically sanctioned (between March 2013 and July 2014) and administratively approved (between September 2013 and December 2014) for ₹ 116.11 crore and ₹ 127.24 crore respectively by the Road Construction Department (RCD). All the works were awarded (between September 2013 and April 2015) to the same contractor through four different contracts. Agreements were executed (between November 2013 and April 2015) by the Executive Engineer (EE), Road Division, Ranchi at an agreed cost of ₹ 105.51 crore with the stipulated dates of completion between January 2015 and May 2016. The works were completed between February 2016 and June 2016 at a cost of ₹ 88.37 crore as detailed in ***Appendix 6.1.1***. The final bills were measured between May 2016 and March 2017 while the last paid bills were measured between February and April 2016. The excess works certified previously were mainly related to earthwork, sub-base, bituminous and concrete works.

Scrutiny of records (between January 2018 and March 2021) of the EE, Road Division, Ranchi and further information collected (July 2021 and January 2022) revealed that the division could not recover ₹ 11.17 crore which included overpayment (₹ 88.60 lakh), price adjustment (₹ 3.40 crore), royalty (₹ 1.15 crore) and liquidated damages (₹ 5.74 crore) even after a lapse of more than five years after completion of works. Further, security deposit of ₹ 3.95 crore was prematurely refunded to the contractor as discussed below:

(A) Overpayment due to allowing excess measurements

As per clause 42 of the contract (Standard Bidding Document), the contractor shall submit to the engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously. The engineer

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[1] *Birsa Chowk to Tupudana Chowk Road (BT Road), Birsa Rajpath (New Market Chowk to HEC Gate Chowk) Road (BR Road), Justice LPN Shahdeo Chowk to Booty More Road (LB Road) and Namkum to Doranda Road (ND Road).*

shall check the contractor's monthly statement within 14 days and certify the amount to be paid to the contractor.

As per final bills, the work values of three out of four roads were less by ₹ 88.60 lakh from the last paid bills. Though the overpayments were shown adjusted (June 2017) in the final bills through passing Transfer Entry Orders (TEOs), the adjustments were not reflected in the divisional accounts as of December 2021.

(B) Non-recovery of royalty from interim bills

As per clause 43 of the contract (Standard Bidding Document), payment should be adjusted for deduction of advance payments, retention, and other recoveries in terms of contract and taxes at sources, as applicable under the law.

As per the final bills of three out of four roads, royalty of ₹ 115.45 lakh was recoverable from the contractor including an amount of ₹ 61.66 lakh lying in the divisional suspense. The division passed TEOs for only ₹ 53.80 lakh debiting the security deposits lying in suspense. No action was taken to adjust the amount of royalty lying in suspense. Moreover, the adjustments were also not reflected in the divisional accounts as of December 2021.

(C) Price adjustment not done

As per clause 47 of the contract, the contract price shall be adjusted for increase or decrease in rates and price of materials and cost difference of bitumen. The price adjustment shall be determined during each month.

As per the final bills of two out of four roads, the cost difference of bitumen amounting to ₹ 1.32 crore was recoverable from the contractor for which TEOs were passed but the adjustment was not reflected in the divisional accounts as of December 2021.

Further, on being pointed out (between January 2018 and March 2019) by audit regarding less adjustment of the price of bitumen and other materials in two other roads, the Division raised (July 2019) the demand by ₹ 2.08 crore. As of December 2021, the amount of ₹ 3.40 crore was yet to be adjusted.

(D) Non-imposition of liquidated damages

As per clause 49 of the SBD, the contractor shall pay liquidated damages (LD) to the employer at the rate per day stated in the contract data for each day that the completion date is later than the intended completion date. The total amount of LD shall not exceed 10 *per cent* of the contract value and the employer may deduct LD from payments due to the contractor.

Audit observed that the original intended dates of completion of three[2] out of four roads were between January and June 2015. Final measurements of these works were recorded between June 2016 and March 2017. However, the

[2] *BT Road: February 2015, BR Road: June 2015 and ND Road: January 2015.*

division deducted LD of only ₹ 2.56 crore[3] through particular RA bills being 10 *per cent* of the bill value against the admissible LD of ₹ 8.30 crore being 10 *per cent* of the contract value.

(E) Irregular refund of security deposits

As per clause 48 of the contract, the employer shall retain (SD) from each payment due to the contractor as per the contract. Half the amount retained is repaid to the contractor on completion of the whole work and the other half is repaid when the defect liability period has passed.

Audit noticed that the division retained SD of ₹ 7.57 crore[4] from interim payments of four roads but refunded (December 2015) ₹ 3.95 crore[5] in respect of two roads before completion of the work and settlement of final bills. Thus the contradictory completion certificates being issued (October and December 2015) to facilitate premature refund of SD could also not be ruled out.

Premature refund of SD also prevented the division from adjusting recoveries from SD at the time of settlement of the final bill as in one road (BT Road), incorrect TEO was passed (June 2017) for ₹ 33.56 lakh[6] debiting SD though the whole SD of ₹ 3.03 crore had already been refunded in December 2015.

(F) EoT granted on basis of two completion certificates

Further, as per paragraphs 291 and 292 of the Jharkhand Public Works Department (JPWD) Code, if a contract is approved by the Departmental Tender Committee (DTC), the Engineer-in-Chief (EIC) is empowered to grant Extension of Time (EoT) up to 50 *per cent* of the time period defined in the contract and if EoT required is more than 50 *per cent*, the matter shall be referred to a Committee headed by the Departmental Secretary whose other members would be EIC, Internal Financial Advisor and the concerned Chief Engineer (CE). Further, if the contract is approved by the CE, the CE is empowered to grant EoT up to 25 *per cent* and EIC up to 50 *per cent* of the time period. Extension beyond 50 *per cent* of the time period defined in the contract shall be referred to the Committee.

Again clauses 55 and 56 of the SBD stipulate that the contractor shall request the engineer to issue a certificate of completion of the work and the engineer will do so upon deciding that the work is completed. The employer shall take over the site and the works within seven days of the engineer issuing a certificate of completion.

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[3] *BT Road: ₹ 86.22 lakh against ₹ 3.79 crore, BR Road: ₹ 23.89 lakh against ₹ 2.04 crore and ND Road: ₹ 1.46 crore against ₹ 2.47 crore.*

[4] *BT Road: ₹ 3.03 crore, BR Road: ₹ 1.56 crore, LB Road: ₹ 1.13 crore and ND Road: ₹ 1.85 crore.*

[5] *BT Road: ₹ 3.03 crore and ND Road: ₹ 92.44 lakh.*

[6] *For recovery of royalty of ₹ 16.53 lakh excluding royalty of ₹ 37.28 lakh lying in suspense and overpayment of ₹ 17.03 lakh.*

Audit noticed that EoT was granted on the basis of two contradictory completion certificates issued twice by EE after more than five years of the date of reported completion of work beyond the provisions of the contracts. Further, EoT was granted by authorities beyond the powers delegated to them under JPWD Code as discussed below:

- **BT Road**
  The original intended period of completion of BT Road was 15 months i.e., by 26 February 2015. A completion certificate was issued (October 2015) by the EE showing the completion date as 14 September 2015 for which EoT was granted (July 2016) by the EIC. The contractor again requested (September 2020) for EoT up to 26 February 2016 which was recommended by field engineers and was lying with the EIC as of December 2021. In support of the new completion date (26 February 2016), another completion certificate was issued by the EE on 24 August 2021 i.e., after more than four years of submission of the final bill.

- **BR Road**
  The original intended period of completion of BR Road was 10 months i.e., by 29 June 2015. A completion certificate was issued by the EE on 23 October 2015 showing the completion date as 30 September 2015 for which EoT was granted (April 2021) by the CE on request (September 2020) of the contractor that was made after five years of completion of the work. Moreover, this EoT should have been granted by DTC as per JPWD Code as the contract was finalised (August 2014) by DTC. However, the work was completed on 18 June 2016 as intimated (July 2019) by the EE to the contractor.

- **ND Road**
  The original intended period of completion of ND Road was 12 months i.e., by 14 January 2015. A completion certificate was issued by the EE on 7 December 2015 showing the completion date as 30 November 2015. Further, the contractor requested (September 2020) for EoT up to 30 November 2015 i.e., after five years of completion of the work which was lying with the Superintending Engineer since February 2021. However, the work was completed on 22 February 2016 as intimated (July 2019) by the EE to the contractor.

Thus, undue financial benefit to the contractor through entertaining requests for EoT after four years of the final bill, issue of contradictory completion certificates and grant of EoT beyond delegation of power cannot be ruled out. This resulted in non-recovery of LD amounting to ₹ 5.74 crore even after a lapse of more than five years.

As such, the division could not recover/adjust ₹ 11.17 crore which included overpayment (₹ 88.60 lakh), price adjustment (₹ 3.40 crore), royalty (₹ 1.15 crore), and liquidated damages (₹ 5.74 crore) even after a lapse of more than

five years. Against this, the division had retained SD of only ₹ 3.62 crore. Further, the division had not transferred ₹ 3.18 crore[7] which was lying in suspense for more than five years.

On these being pointed out, the Executive Engineer did not furnish specific replies and stated (January 2022) that decisions on grant of EoT were under process and action would be taken in respect of retained amounts after getting instructions from the Department.

The fact, however, remains that the Department could not recover its dues even after a lapse of more than five years because the field engineers did not adhere to the terms of the contract.

The matter was reported to the Government/Department (April 2022); reply is awaited (June 2022).

6.2 Unfruitful expenditure on construction of idle bridge

Commencement of bridge work without acquisition of land for approach roads resulted in the constructed bridge lying idle for more than six years rendering expenditure of ₹ 1.24 crore unfruitful.

According to Rule 132 of the Jharkhand Public Works Department (JPWD) Code 2012, except in case of emergent work such as repair of breaches *etc*., no work should be started on land which has not been duly made over by a responsible Civil Officer.

Construction of a high-level RCC bridge over Bhorongdih Nala on Bundu-Rahe Road along with approach roads was administratively approved (December 2012) and technically sanctioned (January 2013) by the Road Construction Department (RCD), for ₹ 2.02 crore. The estimate included a lump-sum provision of ₹ 14 lakh for acquisition of land required for the approach roads.

Audit scrutiny (March 2020, January 2021 and April 2021) of records of the Executive Engineer (EE), Road Construction Division (Division), Ranchi (*Gramin*) revealed that the work of construction of bridge and approach roads were awarded (March 2013) to a contractor for ₹ 1.73 crore to be completed by December 2013 without completing the process of land acquisition for the approach roads. The contractor completed (March 2015) the bridge work and was paid ₹ 1.24 crore (March 2015) but could not initiate the work of approach roads as the land was not acquired. The contractor also requested (July 2014 and June 2017) the EE to close the agreement as further execution of work was not feasible at quoted rates due to time overrun.

Audit further observed that the EE submitted (May 2014) proposal of land acquisition to the District Land Acquisition Officer (DLAO), Ranchi with a delay of more than one year from the date of commencement (March 2013) of

[7] *Retained LD: ₹ 2.56 crore and royalty: ₹ 61.65 lakh.*

bridge work. However, DLAO asked (May 2016) EE to submit the proposal in the prescribed format. EE submitted (May 2016) the proposal in the prescribed format against which DLAO, Ranchi initiated the process of land acquisition and published (September 2017) the initial notification for land acquisition. DLAO demanded (November 2017) ₹ 31.01 lakh from EE as the land acquisition cost. As there was a provision of only ₹ 14 lakh for land acquisition in the original estimate, the EE prepared and submitted (December 2017) a revised estimate (RE) for ₹ 2.37 crore including a provision of ₹ 31.01 lakh for land acquisition and balance work of approach roads (from ₹ 74.05 lakh to ₹ 99.96 lakh) at the current schedule of rates (SoR) to the Superintending Engineer (SE), Road Circle, Ranchi. However, RE was submitted to the Chief Engineer (CE), Central Design Organisation (CDO), RCD in March 2018 but was not approved on the plea that the agreement was in force. The proposal for closure of the work was submitted (August 2018) to the Engineer-in-Chief (EIC), RCD by CE (Communication), RCD but the decision was awaited (July 2021).

Though the DLAO requested (July 2018 and November 2018) the EE to deposit the land acquisition cost, the same could not be done as the revised sanction was awaited. The acquisition process lapsed as it was not completed within one year after the issue of the notification in September 2017. The EE re-submitted (August 2019) the proposal for land acquisition against which DLAO, Ranchi again published (August 2020) initial notification and demanded (December 2020) ₹ 28.24 lakh as land acquisition cost.

The CE, CDO accorded (March 2021) revised technical sanction for ₹ 2.16 crore including the land acquisition cost of ₹ 28.24 lakh after it was pointed out in audit (January 2021). Though the EE deposited (July 2021) ₹ 28.24 lakh with the DLAO, Ranchi for land acquisition, the required land was not acquired (July 2021).

Thus, due to the commencement of bridge work by the EE without acquisition of land required for approach roads beyond the provisions of JPWD code *ibid* and delay of more than three years in approval of revised estimate by the CE, CDO, the bridge constructed at the cost of ₹ 1.24 crore could not be put to use for more than six years since its completion in March 2015. Photographs of the idle bridge are shown below:

Photograph of the idle bridge (January 2021)

On being pointed out (January 2021 and April 2021), no specific reply was furnished by EE regarding delay in submission of initial land acquisition proposal to DLAO, delay of three years in approval of the revised estimate and failure to close the work. Further, the reply (July 2021) of the EE was silent as to why the work order to commence the work was given without acquiring the land for the approach roads. The fact also remains that the required land has not been acquired and the work of the approach roads not taken up as of March 2022.

The matter was reported to the Government (April 2022); reply is awaited (May 2022).

6.3 Unfruitful expenditure

The Chief Engineer (CE), Central Design Organisation (CDO), Road Construction Department (RCD) did not sanction the provision for land acquisition initially though it was included in the original estimate. Later on, the departmental engineers delayed submission and approval of revised estimate which led to non-completion of a High-level bridge over Baxa river for more than eight years rendering the expenditure of ₹ 97.04 lakh unfruitful.

As per orders (August 2012) of Road Construction Department (RCD), Government of Jharkhand, if land acquisition is required for construction of a bridge work, tender should be invited only after obtaining clearance of required land from the concerned District Land Acquisition Officer (DLAO).

Construction of a High Level (HL) bridge over Baxa river with approach roads at Chauparan-Chatra road were technically sanctioned (October 2012) and administratively approved (October 2012) for ₹ 1.88 crore by RCD. An agreement for ₹ 1.81 crore was executed (February 2013) by the Executive Engineer (EE), Road Division (RD), Chatra for completion of work by June 2014. The contractor executed the works[8] partially and was paid (up to September 2016) ₹ 97.04 lakh.

Scrutiny (December 2017 and September 2021) of records of the Road Division, Chatra revealed that there was a provision of ₹ 9.24 lakh for land acquisition in the Detailed Project Report (DPR) of the bridge which was required for constructing the approach roads. However, while granting TS, the Chief Engineer (CE), Central Design Organisation (CDO), RCD, Ranchi did not approve the provision of land acquisition without recording any reason.

While the bridge work was in progress, a requirement of 0.54 acres of land was assessed by the Division for construction of the approach roads. The EE submitted (July 2013) the proposal for land acquisition to the District Land

[8] *Earth work, filling of annular space, PCC and RCC, providing and laying of filter media, back filling in abutment, supplying, fitting and fixing of elastomeric bearing and placing of HYSD bar etc.*

Acquisition Officer (DLAO), Chatra against which the DLAO demanded[9] (January 2015) ₹ 46 lakh from the EE. The contractor also intimated (between May 2015 and November 2017) the EE regarding hindrances by the *raiyats* in execution of foundation work of the abutment (Itkhori side) as no compensation was paid to them.

Though the arrangement of funds for land acquisition required revision of estimates and demand for the same was placed (January 2015) by the DLAO, EE submitted (June 2018) the revised estimate (RE) to CE (CDO) for ₹ 2.35 crore[10] after a delay of three and half years, for reasons not available on record. The CE (CDO) asked (November 2018) EE to submit the RE through proper channel but TS of the RE was pending as concurrence of CE (Communication) was awaited (March 2021).

Meanwhile, the main partner of the construction agency died (February 2020) and the other partners expressed (March 2020) their inability to complete the work. The CE (Communication) instructed (January 2021) EE to take the final measurement and prepare a revised estimate for the remaining work. The EE took the final measurement (May 2021) for work valued at ₹ 1.18 crore and submitted (September 2021) another revised estimate for ₹ 3.28 crore[11] to the Superintending Engineer (SE) with a request to grant permission for the closure of the agreement and issue NIT for the remaining work. The RE is yet to be approved (April 2022).

Thus, due to the non-sanction of the provision for land acquisition initially by CE (CDO) though included in the original estimate and abnormal delay of more than five years in submission and sanction of RE by departmental engineers, the bridge remained incomplete (as shown in photographs below) even after a lapse of more than eight years of commencement (February 2013) of work rendering the expenditure of ₹ 97.04 lakh unfruitful.

Photographs (taken on 18 September 2021) of incomplete bridge on Chouparan-Chatra Road over Baxa river

On being pointed out by Audit, CE (CDO) stated (March 2021) that there was exigency for technical sanction of the scheme and it was granted excluding the

[9] *Revised in May 2018 and demanded ₹ 45 lakh only.*

[10] *Including land acquisition (₹ 45 lakh) and electrical utility shifting (₹ 2.07 lakh) and again revised to ₹ 2.59 crore (October 2018) after including the increase in cost of substructure (₹ 24 lakh)*

[11] *Work done by the contractor ₹ 1.18 crore, cost of remaining work ₹ 1.63 crore, Land acquisition ₹ 45 lakh and Electrical utility shifting ₹ 2.07 lakh.*

cost of land acquisition. He further stated that RE submitted in June 2018 was not sanctioned as concurrence of CE (Communication) was not received.

Reply of CE (CDO) is not acceptable as the land acquisition was necessary for construction of approach roads and grant of technical sanction excluding provision for land acquisition was not in order. Further, the delay in approval of RE indicated that field level officers i.e., EE, SE, and CE (Communication) did not initiate timely action for obtaining the appropriate sanctions needed for acquisition of land and completion of the bridge.

The matter was reported to the Government (April 2022); reply is awaited (May 2022)

Ranchi (**ANUP FRANCIS DUNGDUNG**)
The 06 May 2023 **Accountant General (Audit) Jharkhand**

Countersigned

New Delhi **(GIRISH CHANDRA MURMU)**
The 09 May 2023 **Comptroller and Auditor General of India**

Appendices

APPENDICES

Appendix 1.1

(Referred to in paragraph 1.2; page 2)

List of Departments and Autonomous Bodies/ Authorities/ Companies under the audit jurisdiction of the Accountant General Jharkhand

Departments

Sl. No.	Name of Departments
1	Agriculture, Animal Husbandry and Co-operative
2	Building Construction
3	Cabinet Election
4	Cabinet Secretariat and Vigilance
5	Commercial Taxes
6	Drinking Water and Sanitation
7	Energy
8	Excise and Prohibition
9	Finance
10	Food, Public Distribution and Consumer Affairs
11	Forest, Environment and Climate Change
12	Health, Medical Education and Family Welfare
13	Higher and Technical Education
14	Home, Jail and Disaster Management
15	Industries
16	Information and Public Relation
17	Information Technology and e-Governance
18	Labour Employment Training and Skill Development
19	Law
20	Mines and Geology
21	Panchayati Raj
22	Personnel, Administrative Reforms and Rajbhasha
23	Planning and Development
24	Revenue, Registration and Land Reforms
25	Road Construction
26	Rural Development
27	Rural Works
28	Scheduled Tribe, Scheduled Caste, Minority and Backward Class Welfare
29	School Education and Literacy Development
30	Tourism, Art Culture, Sports and Youth Affairs
31	Transport
32	Urban Development and Housing
33	Water Resources
34	Women, Child Development and Social Security

Autonomous Bodies

Sl. No.	Department	Name of the AB	District
1	Health	District Rural Health Society	Bokaro
2	Health	District Rural Health Society	Chatra
3	Health	District Rural Health Society	Deoghar
4	Health	District Rural Health Society	Dhanbad
5	Health	District Rural Health Society	Dumka
6	Health	District Rural Health Society	East Singhbhum
7	Health	District Rural Health Society	Garhwa
8	Health	District Rural Health Society	Giridih
9	Health	District Rural Health Society	Godda
10	Health	District Rural Health Society	Gumla
11	Health	District Rural Health Society	Hazaribagh
12	Health	District Rural Health Society	Jamtara
13	Health	District Rural Health Society	Khunti
14	Health	District Rural Health Society	Koderma
15	Health	District Rural Health Society	Latehar
16	Health	District Rural Health Society	Lohardaga
17	Health	District Rural Health Society	Pakur
18	Health	District Rural Health Society	Palamu
19	Health	District Rural Health Society	Ranchi
20	Health	District Rural Health Society	Ramgarh
21	Health	Jharkhand State Health Mission Society	Namkum, Ranchi
22	Health	District Rural Health Society	Saraikela- Kharsawan
23	Health	District Rural Health Society	Simdega
24	Health	District Rural Health Society	West Singhbhum
25	Health	District Rural Health Society	Sahibganj
26	Education	Jharkhand Shiksha Pariyojana Parishad	Ranchi
27	Health	Jharkhand AIDS Control Society	Ranchi
28	Education	Netarhat Residential School	Netarhat
29	Rural Development	District Rural Development Authority	Deoghar
30	Rural Development	District Rural Development Authority	Latehar
31	Rural Development	District Rural Development Authority	Hazaribagh
32	Rural Development	District Rural Development Authority	Giridih
33	Rural Development	District Rural Development Authority	Garhwa
34	Rural Development	District Rural Development Authority	Ranchi
35	Rural Development	District Rural Development Authority	Jamshedpur
36	Rural Development	District Rural Development Authority	Ramgarh
37	Rural Development	District Rural Development Authority	Chaibasa
38	Rural Development	District Rural Development Authority	Simdega
39	Rural Development	District Rural Development Authority	Koderma
40	Rural Development	District Rural Development Authority	Dumka
41	Rural Development	District Rural Development Authority	Godda
42	Rural Development	District Rural Development Authority	Pakur
43	Rural Development	District Rural Development Authority	Saraikela
44	Rural Development	District Rural Development Authority	Lohardaga
45	Rural Development	District Rural Development Authority	Bokaro
46	Rural Development	District Rural Development Authority	Chatra
47	Rural Development	District Rural Development Authority	Dhanbad
48	Rural Development	District Rural Development Authority	Gumla
49	Rural Development	District Rural Development Authority	Palamu
50	Rural Development	District Rural Development Authority	Sahibganj
51	Rural Development	District Rural Development Authority	Jamtara
52	Rural Development	District Rural Development Authority	Khunti
53	Education(H&T)	Birla Institute of Technology, Mesra, Ranchi	Ranchi
54	Aviation	Civil Aviation Authority, Ranchi	Ranchi

Sl. No.	Department	Name of the AB	District
55	Information Technology	Jharkhand Institute of Application for Promotion (JAP-IT)	Ranchi
56	Information Technology	Jharkhand Space Application Centre, Dhurwa, Ranchi	Ranchi
57	Social Welfare	Jharkhand Pollution Control Board, Ranchi	Ranchi
58	IT & e-Governance	State Information Commission	Ranchi
59	Industry	Industrial Area Development Authority, Ranchi	Ranchi
60	Industry	Industrial Area Development Authority, Bokaro	Bokaro
61	Industry	Industrial Area Development Authority, Adityapur	Jamshedpur
62	Forest	Lac Treatment Plant, Latehar	Latehar
63	Agriculture	National Horticulture Mission, Jharkhand	Ranchi
64	Education (H&T)	Science & Technology Council, Govt. Of Jharkhand	Ranchi
65	Forest	Lac Cultivation Crop in forest, Doranda	Ranchi
66	Animal Husbandry	Bacon Factory, Kanke, Ranchi	Ranchi
67	Law	High Court Legal Services Committee, Ranchi	Ranchi
68	Information and Public Relation	Government Press, Ranchi	Ranchi
69	Education	Birsa Agriculture University	Ranchi
70	Forest	Jharkhand Bio-Diversity Board/ Council, Doranda, Ranchi	Ranchi
71	Industry	Chief Executive Officer, Jharkhand State Khadi and Village Industries Board, Ranchi	Ranchi
72	Health	Director, R.K. Mission, TB sanatorium, Tipudana	Ranchi
73	Education	Director, R.K. Mission Ashram, Morabadi, Ranchi	Ranchi
74	Education	Jharkhand Mahila Samakhya Society, Kadru Ranchi	Ranchi
75	Forest	Executive Director, Wasteland Development Board	Ranchi
76	Forest	Forest Development Authority	Ranchi

State Public Sector Enterprises

Sl. No.	Name of the SPSEs	Name of the Department	Month and year of incorporation
1	2	3	4
Power Sector			
1	Jharbihar Colliery Limited	Energy	June 2009
2	Jharkhand Bijli Vitran Nigam Ltd.	Energy	October 2013
3	Jharkhand Urja Sancharan Nigam Ltd	Energy	October 2013
4	Jharkhand Urja Utpadan Nigam Limited	Energy	October 2013
5	Jharkhand Urja Vikas Nigam Limited	Energy	September 2013
6	Karanpura Energy Ltd.	Energy	September 2008
7	Patratu Energy Limited	Energy	August 2012
8	Tenughat Vidyut Nigam Limited	Energy	November 1987
Non-Power Sector			
9	Jharkhand State Agriculture Development Corporation Limited	Agriculture	January 2016
10	Jharkhand State Beverage Corporation Ltd. (JSBCL)	Excise	November 2010
11	Jharkhand State Food and Civil Supplies Corporation Ltd.	Food, Public Distribution & Consumer Affairs	June 2010
12	Jharkhand State Forest Development Corporation Ltd.(JSFDC)	Forest, Environment & Climate Change	March 2002
13	Jharkhand Medical & Health Infrastructure Development & Procurement Corporation Limited	Health, Medical Education & Family Welfare	May 2013
14	Jharkhand Police Housing Corporation Ltd. (JPHCL)	Home, Jail & Disaster Management	March 2002
15	Adityapur Electronic Manufacturing Cluster Limited	Industries	November 2016
16	Atal Bihari Vajpayee Innovation Lab.	Industries	December 2018
17	Jharkhand Plastic Park Limited	Industries	September 2016
18	Jharkhand Railway Infrastructure Development Corporation Ltd.	Industries	July 2018
19	Jharkhand Silk Textile &Handicraft Development Corporation Ltd.	Industries	August 2006
20	Jharkhand State Industrial Infrastructure Development Corporation Limited	Industries	December 2004
21	Jharkhand Communication Network Ltd.	Information Technology & e-Governance	January 2017
22	Jharkhand Film Development Corp. Ltd.	Information Technology & e-Governance	September 2016
23	Jharkhand State Mineral Development Corporation Ltd. (JSMDC)	Mines & Geology	May 2002
24	Jharkhand State Minority Finance Development Corporation	Scheduled Tribe, Schedule Caste, Minority and Backward Class Welfare	March 2012
25	Jharkhand Tourism Development Corporation Limited	Tourism, Arts, Culture, Sports & Youth Affairs	March 2002
26	Ranchi Smart City Corporation Ltd.	Transport	September 2016
27	Greater Ranchi Development Agency	Urban Development & Housing	January 2003
28	Jharkhand State Building Construction Corporation Limited	Urban Development & Housing	December 2015
29	Jharkhand Urban Infrastructure Development Company Ltd.	Urban Development & Housing	November 2013
30	Jharkhand Urban Transport Corporation Limited	Urban Development & Housing	September 2016
31	Jharkhand Hill Area Lift Irrigation Corporation Limited	Water Resources	March 2002

Appendix 2.1

(*Referred to in Paragraph 2.4.7; page 47*)

Details of demand and collection of water user charges in the test-checked ULBs, during the FYs 2016-17 and 2020-21

Sl. No.	ULB	Financial year	Total Demand	Total Collection	O&M Costs	Percentage of collection to the O&M Costs
			(₹ in lakh)			
1.	Basukinath NP	2016-17	28.12	7.72	13.87	55.7
		2017-18	28.19	6.59	13.87	47.5
		2018-19	29.59	7.6	41.17	18.5
		2019-20	30.48	5.1	48.16	10.6
		2020-21	34.24	2.36	17.42	13.5
		Total	**150.62**	**29.37**	**134.49**	**21.8**
2.	Deoghar M. Corpn.	2016-17	74.34	17.59	Not available	
		2017-18	114.96	20.11	Not available	
		2018-19	162.41	41.78	Not available	
		2019-20	199.37	38.21	416.78	9.2
		2020-21	251.98	67.42	416.78	16.2
		Total	**803.06**	**185.11**	**833.56**	**22.2**
3.	Dhanbad M. Corpn.	2016-17	1,930.79	449.96	617.43	72.9
		2017-18	2,182.25	423.27	1,189.91	35.6
		2018-19	2,453.33	500.24	1,509.23	33.1
		2019-20	2,438.28	495	1,300	38.1
		2020-21	5,154.41	369.17	1,700	21.7
		Total	**14,159.1**	**2,237.64**	**6,316.57**	**35.4**
4.	Godda MC	2016-17	136.38	14.24	37.38	38.1
		2017-18	139.28	6.76	37.38	18.1
		2018-19	149.46	3.91	37.38	10.5
		2019-20	163.41	2.92	37.38	7.8
		2020-21	179.07	2.15	37.38	5.8
		Total	**767.6**	**29.98**	**186.9**	**16.0**
5.	Hussainabad NP	2016-17	16.19	1.27	0.73	174.0
		2017-18	22.41	3.26	1.15	283.5
		2018-19	26.7	1.02	1.18	86.4
		2019-20	33.26	3.08	2.11	146.0
		2020-21	37.75	1.49	4.39	33.9
		Total	**136.31**	**10.12**	**9.56**	**105.9**
6.	Khunti NP	2016-17	49.61	4.92	Not available	
		2017-18	58.81	10.79	8.42	128.1
		2018-19	63.25	10.84	2.76	392.8
		2019-20	68.28	11.2	1.91	586.4
		2020-21	73.56	9.69	Not available	
		Total	**313.51**	**47.44**	**13.09**	**362.4**
7.	Medininagar M. Corpn.	2016-17	287.06	25.71	0.35	7345.7
		2017-18	315.68	27.94	3.55	787.0
		2018-19	343.09	30.36	11	276.0
		2019-20	373.17	25.13	Not available	
		2020-21	412.58	25.78	Not available	
		Total	**1,731.58**	**134.92**	**14.9**	**905.5**
8.	Phusro MC	2016-17	61.36	7.75	6.01	129.0
		2017-18	62.07	7.35	19.86	37.0
		2018-19	63.4	4.19	18.34	22.8
		2019-20	68.17	5.86	6.96	84.2
		2020-21	71.5	3.95	3.78	104.5
		Total	**326.5**	**29.1**	**54.95**	**53.0**
9.	Ranchi M. Corpn.	2016-17	6,177.78	389.02	Not available	
		2017-18	6,721.19	414.67	Not available	
		2018-19	7,091.56	436.18	Not available	
		2019-20	7,222.38	436.4	140.9	309.7
		2020-21	7,098.41	190.04	Not available	
		Total	**34,311.3**	**1,866.31**	**140.9**	**1324.6**

Sl. No.	ULB	Financial year	Total Demand	Total Collection	O&M Costs	Percentage of collection to the O&M Costs
			(₹ in lakh)			
10.	Simdega MC	2016-17	67.64	26	31.86	81.6
		2017-18	78.26	5.34	31.86	16.8
		2018-19	86.17	5.23	31.86	16.4
		2019-20	91.63	9.34	31.86	29.3
		2020-21	81.4	4.78	31.86	15.0
Total			**405.1**	**50.69**	**159.3**	**31.8**
Grand total			**53,104.66**	**4,620.68**	**7,864.22**	

Source: *Data provided by test checked ULBs*

Appendix 3.1

(Referred to in Para 3.1; page 55)

Components to be executed under the sewerage and drainage project

Sl. No.	Component	Total cost (₹ in crore)	Remarks
1	Supplying and laying pipes of sewer, road restoration, construction of manholes, construction of house service connections, *etc* (11.74 km of main trunk line and 268 km of network line)	177.86	Item rate contract
2	Designing, supply, construction, erection, commissioning Sewage Treatment Plant (STP) of 37 MLD capacity based on modern technology	42.00	Turnkey basis
3	Five years operation & maintenance of STP	4.21	Turnkey basis
4	Designing, supply, construction, erection, commissioning Sewage Pumping Station (SPS) of 10.2 MLD capacity	5.80	Turnkey basis
5	Five years operation & maintenance of SPS	0.28	Turnkey basis
6	Construction of storm water drains (207 km)	120.38	Item rate contract
7	Construction of storm pipes	1.65	Item rate contract
8.	Construction of culverts	7.07	Item rate contract
	Total	**359.25**	

Appendix 3.2

(Referred to in Paragraphs 3.2.3.2 & 3.2.3.3; page 68 & 70)

Calculations for less recovery from contractor after termination of contract

					(Amount in ₹)
Value of agreement with the contractor					3,59,25,00,465
Total value of work done by the contractor (till termination of contract)					84,00,09,835
Value of unexecuted work					2,75,24,90,630
Total Security deposits of the contractor available with the RMC					21,92,89,729
(i) Initial performance security (BGs)		3,02,00,000 14,94,25,023			
(ii) Security deposits actually deducted from bills		3,96,64,706			
Mobilisation advance paid to contractor		53,88,75,070			53,88,75,070
Mobilisation advance (Principal amount) recovered from bills		17,98,00,000			17,98,00,000
Balance amount (principal) of mobilisation for recovery at the time of termination of contract		35,90,75,070			35,90,75,070
Amount to be deducted for defective work		61,41,398			61,41,398
Calculations for less recovery done by RMC					
On the basis of provisions of JMAM, 2012			On the basis of provisions of agreement		
Additional cost for completion of work to be recovered from the contractor (20 *per cent* of unexecuted work)	55,04,98,126	55,04,98,126 (A)	Initial performance security to be forfeited (2 *per cent* of agreement value)		7,18,50,000 (G)
Security deposits to be forfeited (i) Initial performance security (5 *per cent*) (ii) Deduction of Security Deposits to be made from bills (5 *per cent* of value of work done)	17,96,25,023 4,20,00,491	22,16,25,514 (B)	Security deposits deducted from bills to be forfeited (3 *per cent* of value of work done)		2,52,00,295 (H)
Balance amount (principal) of mobilisation advance, for recovery at the time of termination of contract		35,90,75,070 (C)	Balance amount (principal) of mobilisation for recovery at the time of termination of contract		35,90,75,070 (I)
Amount to be deducted for defective work		61,41,398 (D)	Amount to be deducted for defective work		61,41,398 (J)
Total recoverable amount upon termination (A+B+C+D)		113,73,40,108 (E)	Total recoverable amount upon termination (G+H+I+J)		46,22,66,763 (K)
Actual amounts recovered by RMC (i) By forfeiture of BGs (ii) By security deposits from bills	35,96,25,023 3,96,64,706	39,92,89,729 (F)	Actual amounts recovered by RMC (i) By forfeiture of BGs (35,96,25,023) (ii) By security deposits from bills (3,96,64,706)		39,92,89,729 (L)
Amount of less recovery on the basis of provisions of JMAM, 2012	(E – F)	73,80,50,379	Amount of less recovery on the basis of provisions of agreement (K -L)		6,29,77,034

Appendix 3.3

(Referred to in Para 3.2.3.4(i); page 73)

Component-wise amount for design and drawing on the basis of price breakup as recommended by M/s WAPCOS Ltd. for new contractor

Sl. No.	Compo-nents	Sub-component	Component percentage out of total cost	Activity percentage	Activity Amount (in ₹)	Amount payable to contractor for design and drawing
	STP Total cost on turnkey basis				42,00,00,000	---
A	Civil works (70 *per cent*)				29,40,00,000	---
1	Main pumping station		12%	---	3,52,80,000	---
		Approval of hydraulic design and drawing	---	5%	17,64,000	---
		Approval of structural design and drawing	---	5%	17,64,000	---
2	Primary treatment unit		13%	---	3,82,00,000	---
		Approval of hydraulic design and drawing	---	5%	19,11,000	---
		Approval of structural design and drawing	---	5%	19,11,000	---
3.	SBR basin		35%		10,29,00,000	---
		Approval of hydraulic design and drawing		5%	51,45,000	51,45,000
		Approval of structural design and drawing		5%	51,45,000	51,45,000
4	CCT		4%		1,17,60,000	---
		Approval of hydraulic design and drawing		5%	5,88,000	---
		Approval of structural design and drawing		5%	5,88,000	---
5	Chlorine room with toner room		4%		1,17,60,000	---
		Approval of hydraulic design and drawing		5%	5,88,000	---
		Approval of structural design and drawing		5%	5,88,000	---
6	Sludge pump house		4%		1,17,60,000	---
		Approval of hydraulic design and drawing		5%	5,88,000	---
		Approval of structural design and drawing		5%	5,88,000	---
7	Sludge sump		3%		88,20,000	---
		Approval of hydraulic design and drawing		5%	4,41,000	---
		Approval of structural design and drawing		5%	4,41,000	---
8	Centrifuge house		4%		1,17,60,000	---
		Approval of hydraulic design and drawing		5%	5,88,000	---
		Approval of structural design and drawing		5%	5,88,000	---
9	Blower room/ MCC/PLC/ Admn block		15%		4,41,00,000	---
		Approval of hydraulic design and drawing		5%	22,00,500	---
		Approval of structural design and drawing		5%	22,00,500	---
10	HT substation area		2%		58,80,000	---
11	DG area		1%		29,40,000	---
12	Security cabin		1%		29,40,000	---
13	Internal road, compound wall and site development		2%		58,80,000	---
		Approval of structural design and drawing		5%	2,94,000	---
B	Mechanical works (15 *per cent*)				6,30,00,000	---
C	Electrical and instrumental works (10 *per cent*)				4,20,00,000	---
D	Testing and commissioning (5 *per cent*)				2,10,00,000	---
					Total	**1,02,90,000**

Appendix 4.1

(Referred to in Para 4.5, Pages 95 & 106)

Details of vetting (approval) by three institutions

Name of Institution/ Year of vetting	Details of report
IIT, Mumbai (October 2015)	Component: 1. Hydraulic design & drawing of Underground Sewerage System • Design life: 30 years (2018 base year, 2033 Intermediate year, 2048 Ultimate year) • Peak sewage generation: 15.03 MLD for base year 18.35 for intermediate year 22.15 MLD[1] for ultimate year • Sewer line: 18,985 m (17254 m of 300 mm pipe and 1731 m of 450 mm pipe), number of Manholes: 651 Conclusion: The sewerage system has been planned and designed to cater to the sewage generated along the river, for a width of 250 m on either side of the river.
	2. Component: Hydraulic design & drawing of river cross section • River section- design for return cycle of 25 years Discharge (urban stretch): • Between chainage 0 m and 2180 m: Actual- 30.07 to 32.94 m^3/sec, designed- 34.95 to 45.16 m^3/sec, width of channel-3.0m, Area of cross section-15.45 m^2 • Between chainage 2180 m and 2769 m : Actual- range 32.94 to 34.53 m^3/sec, designed-41.33 to 44.15 m^3/sec, width of channel-3.0m, Area of cross section-15.45 m^2 • Between chainage 2769 m and 4068 m : Actual- range 34.53 to 41.21 m^3/sec, designed-41.86 to 44.15 m^3/sec, width of channel-3.0m to 4m, Area of cross section-15.45 m^2 to 21.38 m^2 • Between chainage 4068 m and 6440 m : Actual- range 41.21 to 54.34 m^3/sec, designed-41.86 to 55.69 m^3/sec, width of channel-4.0m to 6.0m, Area of cross section-21.38 m^2 to 30.50 m^2 • Between chainage 6440 m and 7818 m : Actual- range 54.34 to 59.22 m^3/sec, designed-55.69 to 60.39 m^3/sec, width of channel-6.0m to 7.0m, Area of cross section-28.88 m^2 to 30.50 m^2 • Between chainage 7818 m and 10400 m : Actual- range 59.22 to 64.11 m^3/sec, designed-60.39 to 79.96 m^3/sec, width of channel- 7.0m, Area of cross section-28.88 m^2 to 33.25 m^2 Conclusion: The present section is safe for runoff coefficient[2] 0.29 and for a rainfall of 25 years return period.
	3. Component: Elevated pathways Conclusion: Elevated pathway is designed as per the prevailing design code

[1] *Sewage flowing through six inlets: 7.46 MLD; sewage produced by the riverside houses (250 m on either side of river): 12.97 MLD; and sewage produced by the 33 toilet blocks: 1.72 MLD*

[2] *As per Paragraph 3.9.1 of the CPHEEO Manual, the characteristics of the drainage area, such as imperviousness; topography, including depressions: water pockets, shape of the drainage basin; and duration of the precipitation, determine the fraction of the total precipitation which will reach the sewer. This fraction is known as the coefficient of runoff.*

Name of Institution/ Year of vetting	Details of report
BIT, Mesra (January 2016)	1. Component: Drawing and design of 8 STPs Raised observations on design of STP (PST, phytorid bed, collection tank *etc*.) in its initial vetting report but final vetting report was not submitted.
NIT, Jamshedpur (Between December 2016 and November 2017)	1. Component: Design of revised cross section of river Design of revised section between chainage 1,900 m and 2,040 m: not produced to Audit Design of revised section between chainage 2,040 m and 2,180 m: River section-design for return cycle of 50 years • Discharge (chainage 2,050 m): Actual- 65 m^3/sec, designed- 182.36 m^3/sec, width of channel-13.50 m, Area of cross section-46.81 m^2 • Discharge (chainage 2,100 m): Actual-65 m^3/sec, designed- 77.96 m^3/sec, width of channel-4.5 m, Area of cross section-23.18 m^2 • Discharge (chainage 2,130 m): Actual-65 m^3/sec, designed-83.54 m^3/sec, width of channel-5.0 m, Area of cross section-24.50 m^2 • Discharge (chainage 2,180 m): Actual-65 m^3/sec, designed-194.24 m^3/sec, width of channel-14.5 m, Area of cross section-49.43 m^2 Component: Design of revised section for strengthening bank of Harmu river (between chainage 2,769 m-chainage 10,400 m) River section- design for return cycle of 50 years Discharge (urban stretch) • Between chainage 2,769 m and 4,068 m: Actual 64.99 m^3/sec, designed -65.07 m^3/sec, width of channel- 3 m, Area of cross section-20.01 m^2 • Between chainage 4,068 m and 6,440m: Actual 102 m^3/sec, designed -102.01 m^3/sec, width of channel- 4m, Area of cross section-27.11 m^2 • Between chainage 6,440 m and 7,818 m: Actual-118 m^3/sec, designed -118.02 m^3/sec, width of channel- 6m, Area of cross section-40.00 m^2 • Between chainage 7,818 m and 10,400m: Actual-137 m^3/sec, designed -137.10 m^3/sec, width of channel-7.0 m, Area of cross section-49.19 m^2
	1. Component: Design of inlets • Out of 14 inlets (in the revised estimates), the final reports of only Inlets 1, 2, 3 and 4 and 1A, was available Discharge of inlets: inlet 1- 34.34 m^3/sec, inlet 1A-5.2 m^3/sec, inlet 2- 15.87 m^3/sec, inlet 3-5.66 m^3/sec and inlet 4- 5.5 m^3/sec Velocity of discharge in inlets: inlet 1- 3.6 m/sec, inlet 1A-5.2 m/sec, inlet 2- 2.116 m/sec, inlet 3-0.761 m/sec and inlet 4- 0.739 m/sec Recommendation: Dimension of the sewer line: NP3 pipe between inlet 1 and 1A and STP: 750 mm

Appendix 4.2

(Referred to in case study-4.2 and table 4.4 (para 4.5.2 and para 4.5.3.1), Page numbers 98 & 100)

Capacity calculation of STP, for inlets 1 and 1A and peak sewage generated through 14 major inlets (Note-1)

Sl. No.	Particulars	Sewage generated through 14 major inlets	Sewage generated through inlets 1 and 1 A
1.	Catchment area (in square km)	14.31	4.3
2.	Total urban area of Ranchi (in square km)	175.12	175.12
3.	Catchment area/Total urban area of Ranchi *(Sl. No. 1/Sl.No.2)*	0.081715	0.024555
4.	Projected Population of Ranchi (Intermediate year 2033) (Note-2)	14,95,998	14,95,998
5.	Population coverage[3] (inlets) *(Sl. No.3 x Sl No.4)* (Note-3)	1,22,246	36,734
6.	Per person use of water (in litre) (Note-4)	135	135
7.	Wastewater generated (in litre) *(Sl. No. 6 x 80 per cent)* (Note-5)	108	108
8.	Average Sewage discharge (in litre) *(Sl. No.5 x Sl. No.7)*	1,32,02,575	39,67,230
9.	Average Sewage discharge (in MLD) *(Sl. No.8/10,00,000)*	13.20	3.96
10.	Peak Sewage discharge (in MLD) *(Sl. No.8 x 2)*	26.40	7.92
11.	STP capacity recommended (in MLD)	-	4
Note 1: IIT Mumbai, adopted catchment area and population based (increase of population in proportion to increase of catchment area) methodology, for assessing the population, water consumption and sewage generation. Audit followed the same methodology for calculation of sewage generation.			
Note 2: Population projection is done by using the 'Arithmetic Increase' and 'Incremental Increase' Methods. In this case, averaging of these methods was used to arrive at the projected population. The growth of population from 1951 to 2011 (last census) is available and this growth pattern was used to arrive at the incremental and arithmetic growths of population from 2011 to 2048. These figures were then averaged, to arrive at the final projection data. This methodology was used by IIT, Mumbai. This forecast data has been used to prepare the DPR by the consultant.			
Note 3: The projected population coverage (inlets) was calculated as the proportionate population (total catchment area, covering the inlets/ total area of Ranchi). This is on the same lines as calculated by IIT, Mumbai.			
Note 4: Government of Jharkhand notified (August 2011) 135 litre per person water requirement as the service level benchmark for different services, like water supply and sewerage and sanitation, for all ULBs. This figure was taken by IIT, Mumbai, for assessing the water requirement. Audit followed the same methodology.			
Note 5: Government of Jharkhand notified (August 2011) 80 *per cent* of 135 litres per person water requirement for sewage generation, as the service level benchmark for different services, like water supply and sewerage and sanitation, for all ULBs. This figure was taken by IIT, Mumbai, for assessing the sewage generation. Audit followed the same methodology.			

[3] *Population residing in the catchment area of the inlets and contributing in sewage generation*

Appendix 4.3

(Referred to in Para 4.6.5, Page number 116)

Differences between the rates of the execution and operation phases and payments made to the contractor

DPR rate (Execution phase)					DPR rate (Operation phase)				Total excess
Brief	Item No	Number of samples tested/ report submitted	Rate (₹)	Value (₹)	Item No.	Number of samples tested/ report submitted	Rate (₹)	Value (₹)	Value (₹)
		1	2	3	4	5	6	7	(3-7)
Air quality	220	80	7,500	6,00,000	225	80	1,500	1,20,000	4,80,000
Stack Emission	221	500	2,500	12,50,000	226	500	500	2,50,000	10,00,000
Noise Level	222	100	1,000	1,00,000	227	100	200	20,000	80,000
Water and waste water quality	223	40	2,500	1,00,000	228	40	500	20,000	80,000
Preparation of Environment Statement	224	3	8,000	24,000	229	3	2,000	6,000	18,000
Total (Execution phase)				20,74,000	Total (Operation phase)			4,16,000	16,58,000
Add 9.97 *per cent* (contractor profit)				2,06,777.80	Add 9.97 *per cent* (contractor profit)			41,475.20	1,65,302.60
Total (payment made to contractor for execution phase)				2280777.80	Total (payment for operation phase not made)			4,57,475.20	18,23,302.60

Appendix 4.4

(Referred to in Para number 4.6.6, Page number 118)

Details of plantation works on the bank of Harmu river MB No, RA No and date of measurement

Types of species	Qty to be planted	Rate (₹)	MB NO 7/ RA 5	MB No 8/RA 6	MB NO 10/ RA 11	MB NO10 /RA 12	MB NO11 /RA 14	MB NO /RA 18	MB NO /RA 19	Total upto 19th RA	Value (₹)	Executed during 29th RA	Total (29 and Final bill)	Value (₹)
			08.03.2016	**26.03.2016**	**21.09.2016**	**25.10.2016**	**03.03.2017**	**06.09.2017**	**07.10.2017**				**30.10.18**	
Coconut trees	360	900	90	270	0	0	0	0	0	360	3,24,000	0	360	3,24,000
Mimusops Elengi(Moulshree)	604	800	0	0	0	81	25	150	98	354	2,83,200	245	599	4,79,200
Cassia Fistula (Amaltas)	550	600	0	0	0	0	0	150	100	250	1,50,000	295	545	3,27,000
Delonix Regia (Red/Yellow Gulmohar)	600	600	0	0	250	76	30	200	0	556	3,33,600	41	597	3,58,200
Bigonia megapotamica (Rio Grand trumpet flower)	300	600	0	0	25	14	20	130	50	239	1,43,400	59	298	1,78,800
Cedrela toona (toon)	450	600	0	0	0	11	20	140	60	231	1,38,600	214	445	2,67,000
Alstonia Scholaris (Chatwan)	700	650	0	0	0	17	25	50	65	157	1,02,050	540	697	4,53,050
Areca Palm	100	800	0	0	15	20	35	0	0	70	56,000	26	96	76,800
Fishtail Palm	100	800	0	0	20	23	35	0	0	78	62,400	20	98	78,400
Largerstromia Speciosa (Jarul)(Shrubs)	400	750	0	0	14	64	41	0	0	119	89,250	279	398	2,98,500
Dombia Wallichhii (Shrubs)	200	500	0	0	0	0	0	0	0	0	0	196	196	98,000
Chinese box (Murraya exotica)(Shrubs)	150	600	0	0	0	0	0	0	0	0	0	147	147	88,200
Euphorbia pulcherrima (shrubs)	150	800	0	0	0	0	0	0	0	0	0	148	148	1,18,400
Sub Total	**4,664**									**2414**	**16,82,500**	**2,210**	**4,624**	**31,45,850**
Upper level plantation (Digging holes)	4,664	90.9								2,414	2,19,433		4,624	4,20,322
Bamboo tree guards	4,664	1,087								2,414	26,24,018		4,624	50,26,288
										Total	45,25,951			85,92,460
									Add 9.97 *per cent*		4,51,237			8,56,668.26
										Total	**49,77,188**			**94,49,128.26**

Appendix 4.5

(Referred to in Para number 4.6.6, Page number 119)

Details of comparative deforestation (between the years 2009 and 2022), on the bank of the Harmu river

Before start of work (Photographs of the years 2009 and 2015)	After start of work (years 2016, 2017 and 2018)	After start of work (year 2021)
		
Between Ganga nagar and Karamtoli		
		
Near Kadru		

Near Overbridge, Main road, Ranchi

Near Amrawati bridge, Chutia

Meeting point, with Subernarekha river, Namkum

Appendix 5.1

(Referred to in paragraph 5.1; page 129)

Details of procurement of major material during FYs 2017-18 to 2020-21

(₹ in crore)

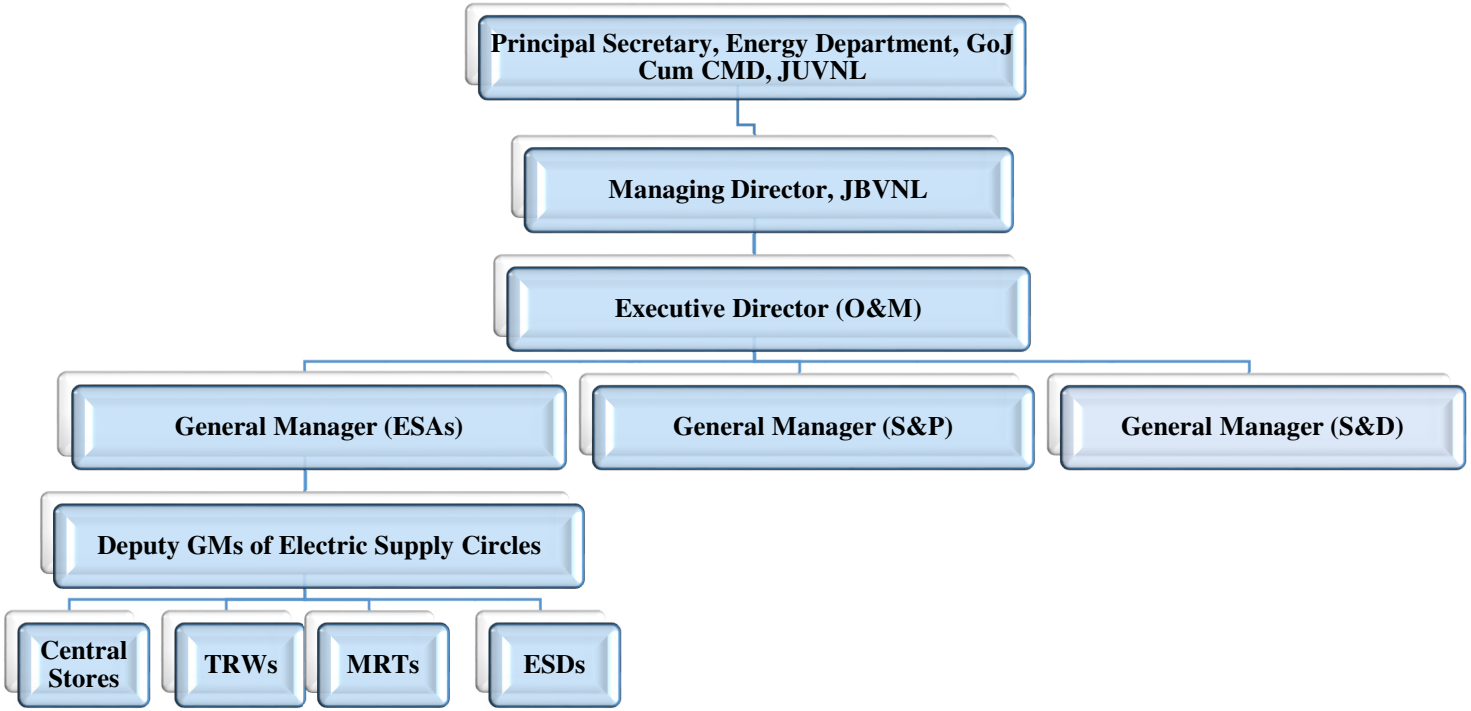
Name of Material	2017-18		2018-19		2019-20		2020-21	
	Quantity Procured	Total amount	Quantity Procured	Total amount	Quantity Procured	Total amount	Quantity Procured	Total amount
Transformers (in Nos.)	8,958	103.46	7,579	75.87	1,233	27.87	1,933	25.72
Cables and Conductors (in KMs)	12,465	99.61	4,542	31.31	2,768	22.41	15	2.66
Meters (in Nos.)	67,280	79.00	8,26,351	74.78	6,881	8.60	0	0
Poles (in Nos.)	99,663	47.30	93,224	30.18	13,338	16.45	39,970	8.83
Sub total		**329.37**		**212.14**		**75.33**		**37.21**
Grand total		**654.05**						

Source: *Information furnished by the Company*

Appendix 5.2

(Referred to in paragraph 5.2; page 129)

Organisational Chart (JBVNL)



Appendix 5.3

(Referred to in paragraph 5.9.6 (i); page 153)

Statement showing the details of short recovery of transformer oil

Financial Year	Numbers of transformers repaired	Capacity (in litre)	90 *per cent* of capacity (in litre)	Oil Received (in litre)	Short Retrieval (in litre)	Average rate of discarded oil (in ₹)	Value of transformer oil short received (in ₹)
ESC, KODERMA							
2017-18	125	28,786	25,907.40	8,869	17,038.40	25	4,25,960
2018-19	167	39,162	35,245.80	9,749	25,496.80	25	6,37,420
2019-20	222	52,352	47,116.80	13,031	34,085.80	25	8,52,145
2020-21	167	37,654	33,888.60	11,749	22,139.60	25	5,53,490
Sub-Total	681				98,760.60		24,69,015
ESC, SAHIBGANJ							
2017-18	188	43,390	39,051.00	11,371	27,680.00	25	6,92,000
2018-19	116	27,264	24,537.60	7,535	17,002.60	25	4,25,065
2019-20	120	28,858	25,972.20	7,230	18,742.20	25	4,68,555
2020-21	130	30,816	27,734.40	10,377	17,357.40	25	4,33,935
Sub-Total	554				80,782.20		20,19,555
ESC, RANCHI							
2017-18	607	1,43,476	1,29,128.40	35,105	94,023.40	25	23,50,585
2018-19	740	1,72,846	1,55,561.40	28,955	1,26,606.40	25	31,65,160
2019-20	686	1,62,622	1,46,359.80	35,295	1,11,064.80	25	27,76,620
2020-21	777	1,82,376	1,64,138.40	43,215	1,20,923.40	25	30,23,085
Sub-Total	2,810				4,52,618.00		1,13,15,450
ESC, HAZARIBAG							
2017-18	520	1,24,324	1,11,891.60	21,640	90,251.60	25	22,56,290
2018-19	557	1,33,850	12,04,650.00	5,050	1,15,415.00	25	28,85,375
2019-20	514	1,23,994	1,11,594.60	35,953	75,641.60	25	18,91,040
2020-21	423	98,942	8,90,47.80	35,574	53,473.80	25	13,36,845
Sub-Total	2,014				3,34,782.00		83,69,550
ESC, JAMSHEDPUR							
2017-18	807	1,91,872	1,72,684.80	67,971	1,04,713.80	25	26,17,845
2018-19	724	1,70,617	1,53,555.30	41,885	1,11,670.30	25	27,91,758
2019-20	594	1,36,377	1,22,739.30	35,810	86,929.30	25	21,73,233
2020-21	634	1,41,754	1,27,578.60	35,420	92,158.60	25	23,03,965
	2,759				3,95,472.00		98,86,800
Sub-Total	8,818				13,62,414.80		
GRAND TOTAL							**3,40,60,370**

Source: *Compiled from Records of TRWs*

Appendix 5.4

(Referred to in paragraph 5.10.3; page 160)

Statement showing excess quantities issued from six ESCs under the RAPDRP-B scheme

(Amount in ₹)

Name of material	Quantity issued from central stores	Quantity executed as per closure report	Excess issued from central stores	Rate of material per km/No.	Total value of excess material issued
ACSR Rabbit Conductor (Km)	592.259	476.154	116.105	28,083.94	32,60,685.85
ACSR Dog Conductor (Km)	593.363	389.83	203.533	74,340	1,51,30,643.22
Wolf Conductor (km)	55.36	17.44	37.92	1,07,950.87	40,93,496.99
ACSR Panther Conductor (Km)	9.088	5.1	3.988	4,26,235.91	16,99,828.81
AB XLPE Cable 3c*185 sq. mm (Km)	27.259	13.45	13.809	7,18,675.48	99,24,189.70
AB Cable 3C*50 sq. mm (Km)	59.162	46.67	12.492	1,41,214.46	17,64,051.03
AB Cable 3C*35 sq. mm (Km)	26.707	22.14	4.567	69,779.48	3,18,682.89
LT AB Cable 3C*95 (Km)	283.376	232.83	50.546	2,50,209.19	1,26,47,073.72
LT AB Cable 1C*35 (Km)	36.121	0	36.121	80,688.35	29,14,543.89
PSC Pole 8/9 metre (Nos.)	11,058	2,831	8,227	2,427.84	1,99,73,839.68
Steel Tubular Pole	637	14	623	18,424.67	1,14,78,569.41
Single Phase Meter	26,554	12,937	13,617	2,099.005	2,85,82,151.09
Three Phase Meter	1,477	1025	452	7,987.7	36,10,440.40
25 KVA DTR	11	10	1	49,057.18	49,057.18
63 KVA DTR	16	15	1	80,603.23	80,603.23
100 KVA DTR	195	150	45	1,03,522.52	46,58,513.40
200 KVA DTR	33	30	3	1,74,751	5,24,253.00
Total					**12,07,10,623.49**

Appendix 6.1.1

(Referred to in paragraph 6.1; page 163)

A: Details of administrative approval, technical sanction and tender decision

(₹ in lakh)

Name of the road	Administrative approval		Technical sanction		Tender decision	
	Date	Amount	Date	Amount	Date	Amount
Birsa Chowk to Tupudana Chowk	19.10.2013	5,416.58	23.03.2013	4,302.67	26.09.2013	3,786.10
Birsa Rajpath (New Market Chowk to HEC Gate Chowk)	14.08.2014	2,026.11	06.05.2014	2,026.11	26.08.2014	2,038.10
Justice LPN Shahdeo Chowk to Booty More	26.12.2014	2,243.83	15.07.2014	2,243.83	09.04.2015	2,253.97
Namkum to Doranda	05.09.2013	3,037.89	28.06.2013	3,037.89	29.11.2013	2,473.42
Total		**12,724.41**		**11,610.50**		**10,551.59**

B: Details of agreements and final bills

(₹ in lakh)

Name of the road (Agreement number)	Details of agreements				Final bill	
	Date	Amount	Intended date of completion	Actual date of completion	Number	Amount
Birsa Chowk to Tupudana Chowk (82/13-14)	26/11/2013	3,786.10	25/02/2015	26/02/2016	18th and final	3,662.19
Birsa Rajpath (New Market Chowk to HEC Gate Chowk) (25/14-15)	30/08/2014	2,038.10	29/06/2015	18/06/2016	9th and final	1,661.61
Justice LPN Shahdeo Chowk to Booty More (5/15-16)	20/04/2015	2,253.97	26/05/2016	07/04/2016	6th and final	1,226.14
Namkum to Doranda (97/13-14)	15/01/2014	2,473.42	14/01/2015	22/02/2016	15th and final	2,286.83
Total		**10,551.59**				**8,836.77**

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