



SUPREME AUDIT INSTITUTION OF INDIA
लोकहितार्थं सत्यनिष्ठा
Dedicated to Truth in Public Interest

Report of the Comptroller and Auditor General of India on Jal Jeevan Mission



Government of Kerala
Report No. 10 of 2025
(Performance Audit - Civil)

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PREFACE

This Report of the Comptroller and Auditor General of India for the period ended 31 March 2024 has been prepared for submission to the Governor of the State of Kerala under Article 151(2) of the Constitution of India, for being laid before the Legislature of the State.

This Report contains the results of the Performance Audit on 'Jal Jeevan Mission' covering the period 2019-24.

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

Audit acknowledges the cooperation received from the Departments of Water Resources and Ground Water, Government of Kerala, Kerala Water Authority, Kerala Rural Water Supply and Sanitation Agency and all the test-checked Grama Panchayats at each stage of the audit process.

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Kerala is considered as a land of abundant water resources with 44 rivers and a number of lakes and backwater lagoons. Kerala also receives significant amount of rainfall annually and is one of the top states in terms of annual rainfall in India. The rural population of Kerala is known to depend upon well water system. In Kerala, three fourth of the population has access to drinking water within their own premises. However, the statistics varied for different districts, with Idukki having only 41 *per cent* of the population with access to drinking water within the premises, while the reach was 85 in Kollam district. The quality of drinking water also varied across the districts.

When Government of India launched Jal Jeevan Mission (JJM) in 2019, Government of Kerala set for itself an ambitious target of service level at 100 litres per capita per day (lpcd) of drinking water to the rural community. With only less than 25 *per cent* coverage of rural households through tap water connection in 2019, the State aspired to provide 100 *per cent* of its rural population with Functional Household Tap Connections (FHTC) during the period 2020-25. Administrative sanction was accorded for providing FHTCs to 54.45 lakh households at a total cost of ₹44,714.79 crore.

Considering the significance of this intervention in the rural water supply landscape, we took up this audit to assess how far the objectives of the mission were achieved, in terms of planning, implementation, financial management and monitoring. Our examination yielded key insights on the effectuation of the scheme in Kerala.

The JJM was intended to be a community centric and community driven scheme with rural communities actively involved in the planning, implementation and management of water supply systems. However, we found that the Kerala Water Authority (KWA), an autonomous body under the Government of Kerala, remained the principal force propelling JJM. The KWA implemented the scheme through its divisions/subdivisions, drawing inputs from DPRs prepared autonomously, without any realistic assessment of felt needs at ground level. Though Village Water and Sanitation Committees (VWSC) and Village Action Plans (VAP) were built into the Operational guidelines of the scheme to instill a sense of ownership and intended to be a means of empowerment of rural marginalised communities, we noticed that VWSCs were constituted only in four out of 21 test-checked Grama Panchayats (GP) and VAPs were not prepared as envisaged. The State Action Plan did not flow out of District Action Plans and no comprehensive action plan was formulated for source sustainability measures and greywater treatment. The State had not formulated an Operation and Maintenance (O&M) Policy to ensure the sustainability and continuity of water supply systems. Furthermore, a suitable notification under the Panchayat Raj Act enabling formal transfer of drinking water management to the PRIs in line with the 73rd Amendment to the Constitution of India remained to be issued in the State. We noticed that, in the test-checked districts, no convergence plan with other programmes/ schemes like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Finance Commission (Tied Grant), Integrated Watershed Management Programme (IWMP), Swachh Bharath Mission (SBM) (Grameen), etc. was formulated to

facilitate utilisation of labour and financial resources for execution of projects under JJM.

Resultantly, though we saw significant headway in providing functional tap connections, we also noticed that 2,13,991 connections were disconnected within one month of providing the same, indicating disinterest of beneficiaries in the scheme. This was also seen reflected in the fact that only four test-checked GPs had collected community contribution which amounted to ₹131.40 lakh.

We also observed that in its effort to achieve 100 *per cent* coverage, the Government did not carry out realistic assessment of requirements through baseline surveys and prioritisation thereof, due to which specific interventions aimed at covering areas truly in need of water supply infrastructure, such as quality affected areas, aspirational district, Sansad Adarsh Gram Yojana (SAGY) villages, etc. did not materialise. We could not find any effective remedial action being taken by KWA/test-checked GPs to address the health hazards in water quality-affected habitations by operationalising sufficient number of Community Water Purification Plants (CWPPs). Not even a single FHTC was provided in the three ST dominated GPs, Agali, Pudur and Sholayur, selected for audit.

The scheme also faced significant delays, with only 51 *per cent* of the total 5,318 works completed in the five year period. Seventeen *per cent* of the works could not even commence. We saw that the major cause of these delays were the difficulties in obtaining permissions related to road cutting sanctions, with more than half of the total 7,458 applications relating to JJM works forwarded to various entities for obtaining road cutting sanction, still awaiting decisions. The average period of delay in obtaining sanctions from approving agencies ranged from 60 to 390 days.

In addition to these administrative delays, we also noticed that the delay in release of matching State share and the resultant short release of the GoI funds significantly added to the delays in implementation. Though the State's projected requirement of funds for JJM was more than six times the total outlay on the entire grant, the Government did not identify the sources for mobilising sufficient funds for completing JJM scheme, given that it was on a 50:50 sharing basis with GoI. Sufficient funds were not also forthcoming in the form of community contribution and local body contribution. The liquidity constraints had a bearing on the implementation of the scheme, with bills totaling ₹3,578.47 crore pending for payment to the contractors in the State, making them hesitant to take up new projects. The lack of interest amongst contractors was evident, with work packages valued at ₹3,625.72 crore remaining unawarded, further adding to the delays.

We also noticed several shortcomings in how the quality of water was monitored and the overall progress of the scheme was tracked. Regular and systematic water quality surveillance covering all water sources was not seen carried out and the results of samples which were tested positive were not shared with the community for remedial action. Third-party inspections of all engineering works executed under in-village infrastructure which were supposed to be carried out, were not seen conducted prior to release of payment. We also found that the Implementation Support Agencies (ISAs), which were supposed to assist in mobilising and engaging the communities to plan, design and

implement in-village water supply infrastructure were brought into the process only after the entire planning and mobilisation phase was already over, limiting the role and impact these agencies could have had. The Internet of Things (IoT) platform was not currently in place and mechanism for data governance and validation in respect of Integrated Management Information System (IMIS) needed to be strengthened.

Overall, while the implementation of JJM in Kerala made considerable progress in expanding functional household tap connection network across rural areas, the State could achieve only 52.46 *per cent* by March 2024, as against the targeted 100 *per cent* coverage of rural households with FHTCs. Furthermore, the implementation fell short in many critical areas of responsible and responsive participation of communities in ensuring long-term sustainability of the water supply systems. The absence of baseline surveys and prioritisation led to the low coverage of vulnerable areas, including quality-affected areas and tribal habitations. The sources for mobilising sufficient funds as against the huge amount of funds projected as required for implementation were not identified. Limited role of communities and GPs and administrative delays in issue of rail/road cutting sanctions as well as paucity of funds significantly affected the timely execution of works. Gaps in water quality monitoring and third-party oversight also affected overall execution of the scheme.

On the basis of an examination, the following recommendations are made:

Recommendations in this Report

- *Government may consider issuing notification under the KPR Act to facilitate devolution of drinking water management to PRIs in line with the 73rd Amendment to the Constitution of India, to facilitate community ownership and involvement.*
- *Government may draw out a comprehensive action plan including measures for source sustainability and greywater management under JJM.*
- *Government may ensure that a comprehensive O&M policy is formulated for projects implemented under JJM to cater to the sustainability and continuity of water supply systems.*
- *Government may ensure that Baseline surveys are undertaken in case of large, beneficiary oriented projects at the start of the project itself, to enable assessment of the percentage of households with access to safe drinking water in a village.*
- *Government may ensure that Village Water Sanitation Committees are constituted in all GPs in the State and that they function effectively as part of a decentralised and participatory institutional framework for implementation of JJM.*
- *Government may frame a clear road map for prioritising requirements under JJM and mobilising adequate financial resources to meet these requirements.*

- *Government may initiate action for the timely release of State share of funds for JJM and initiate steps to collect contributions from community and local bodies, promoting sense of ownership and increased participation in implementation of the scheme.*
- *Government may lay down a protocol for the implementing agencies of JJM on coordination with Departments and GPs for timely clearances for rail/road cutting.*
- *Government may ensure that Community Water Purification Plants are set up and made functional in water quality-affected habitations, so as to provide uninterrupted supply of potable water to meet the drinking and cooking needs of households.*
- *Government may ensure that KWA conducts water quality monitoring and surveillance programmes on a regular basis through Quality Control divisions and State/district/sub divisional laboratories and communicates test results to stakeholders in a timely manner.*
- *Government may ensure that KWA implements an appropriate measurement and monitoring system, leveraging Internet of Things (IoT) based technologies to strengthen the mechanism for data governance and validation in respect of IMIS (JJM).*

CHAPTER I

INTRODUCTION

CHAPTER I INTRODUCTION

Water is vital for life. Assured availability of drinking water in the households is critical for health outcomes and for promoting overall well-being. The Jal Jeevan Mission (JJM), launched on 15 August 2019, aimed to provide safe and adequate drinking water to every rural household in the country through individual functional household tap connections (FHTC) by 2024.

The JJM aimed to provide 55 litres of safe and reliable drinking water per person per day through piped supply, focusing on equitable access, especially for marginalised communities. The broad objectives of JJM were to prioritise the installation of FHTCs in areas affected by water quality issues, to monitor the functionality of tap connections, to empower and develop human resources in the sector to meet the demands of construction, water quality management, water treatment and Operation and Maintenance.

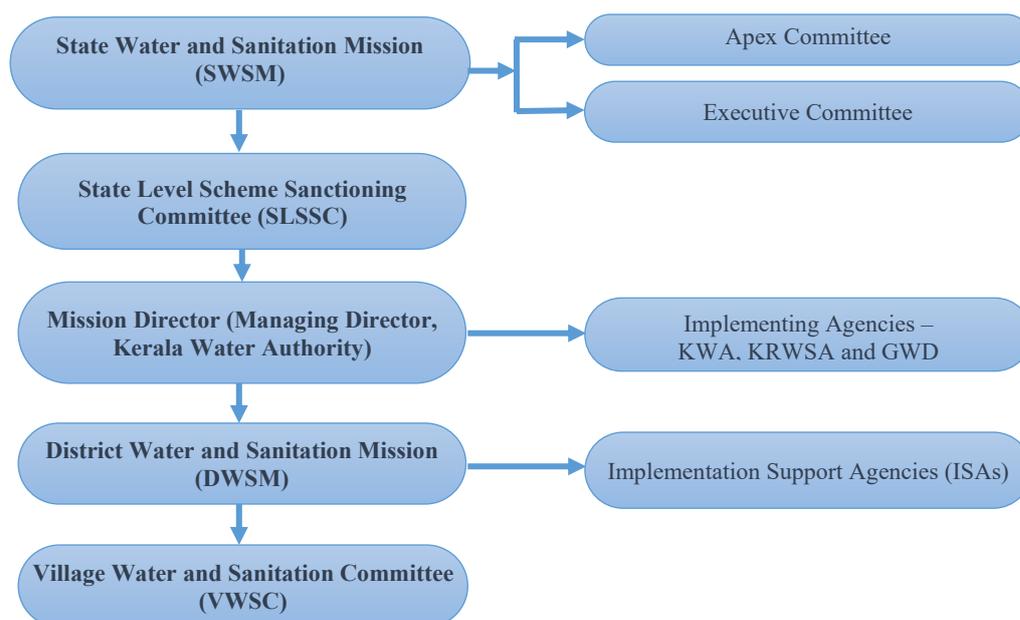
Components such as development of in-village piped water supply infrastructure and reliable drinking water sources, augmentation of existing water sources, bulk water transfer, treatment plants, distribution network, technological interventions for removal of contaminants affecting water quality, retrofitting of completed and ongoing schemes, greywater management and support activities were to be initiated under JJM.

The timeline for completion of the programme was set for five years, from 2019-20 to 2023-24, which was subsequently extended to March 2025.

1.1. Organisational structure of JJM in the State

The institutional framework for the implementation of JJM in the State is given in **Chart 1.1:**

Chart 1.1: Organisational structure of JJM in Kerala



(Source: Details furnished by Kerala Water Authority)

1.2. Audit Objectives

The Performance Audit (PA) was taken up with the objective to ascertain whether:

- i. efficient planning and institutional framework was in place and ensured effective implementation of JJM;
- ii. financial resources have been employed in an economic and efficient manner;
- iii. adequate and effective mechanisms existed for monitoring and evaluation of the programme.

1.3. Audit Criteria

The Audit observations included in the Report were benchmarked against the criteria derived from the following:

- i. Operational Guidelines for implementation of JJM
- ii. Margadarshika for Grama Panchayat and Village Water and Sanitation Committees to provide safe drinking water in rural households
- iii. Drinking Water Quality Monitoring and Surveillance Framework of Ministry of Jal Shakti, Department of Drinking Water and Sanitation, National Jal Jeevan Mission
- iv. SDG obligations and Standard Operating Procedure for Water Sanitation and Hygiene (WASH)
- v. General Financial Rules, 2017
- vi. KPWD Manual 2012 and Stores Purchase Manual 2013
- vii. Pipe policy of KWA

1.4. Scope, sampling and methodology of audit

The PA focused on the implementation of JJM programme from 2019-20 to 2023-24 and was conducted from July 2024 to February 2025. Three districts were selected using stratified random sampling through IDEA¹. Two Block Panchayats (BP) from each selected district and two to four Grama Panchayats (GP) from each selected BP were selected randomly as detailed in **Appendix 1.1**.

The methodology adopted involved review of relevant records in the Water Resources Department (WRD), Government of Kerala (GoK) and three key implementing agencies². Additionally, records from the State Referral Institute, Quality Control Divisions of KWA at Kochi and Kozhikode, District Quality Control Laboratories and District Water and Sanitation Missions (DWSM) were examined. The audit methodology included joint physical inspections of assets

¹ Interactive Data Extraction and Analysis

² Kerala Water Authority (KWA), Kerala Rural Water Supply and Sanitation Agency (KRWSA) and Ground Water Department (GWD)

created, beneficiary interactions, Focus Group Meetings³ in 21 test-checked GPs and survey of 342 beneficiaries⁴. Audit also conducted a comprehensive review of data obtained from the Integrated Management Information System (IMIS) of JJM to substantiate its findings.

The entry conference was held on 23 July 2024 with the Special Secretaries of Water Resources Department and Local Self Government Department (LSGD), GoK and Joint Managing Director, KWA wherein the scope, methodology, sampling and audit objectives were discussed. The exit conference was held with the Additional Chief Secretary⁵ (ACS), Water Resources Department and the Special Secretaries of Water Resources Department and LSGD, on 23 May 2025, wherein the audit findings were discussed in detail. Government reply was received and response of Government has been suitably incorporated in the Report.

1.5. Acknowledgement

Audit acknowledges the cooperation and assistance extended by the Departments of Water Resources and Ground Water, GoK, KWA, KRWSA and the 21 test-checked GPs in the conduct of the PA.

³ involving the GP Secretary, elected representatives, representatives from KWA, Health Inspectors, etc.

⁴ Audit conducted beneficiary survey covering 342 households across 15 test-checked GPs where FHTCs were provided.

⁵ Through Video conferencing

CHAPTER II INSTITUTIONAL MECHANISM AND PLANNING

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An Operation and Maintenance Policy has not been formulated and approved by the Government so far. As against the constitutional mandate vested upon GPs, the rural water supply schemes in the State were currently operated and maintained by the Government owned autonomous body, the Kerala Water Authority (KWA).

Out of the 21 test-checked GPs in the State, GP Water and Sanitation Committees (GPWSC) were set up in four GPs only, and these WSCs have not met till date. None of the test-checked GPs conducted need assessment and Baseline survey as envisaged in the JJM guidelines, which implied that the GPs were providing FHTCs without assessing the actual needs of the population. The test-checked GPs did not formulate Village Action Plans (VAP) as envisaged, due to which District Action Plans (DAP) and State Action Plans (SAP) which reflected the true needs at ground level were not seen prepared.

The shortfall in achievement of targets for FHTCs during the period from 2020-21 to 2023-24 ranged from 74.76 to 83.94 *per cent*, which indicated disconnect between planning and implementation. It was observed that no comprehensive action plan had been developed for source sustainability measures and greywater treatment. Of the 21 test-checked GPs, only 18 engaged Implementation Support Agencies (ISA), and in 10 of these GPs (56 *per cent*), ISAs were engaged only after the planning and mobilisation phase.

2.1. Non-issuance of notification in Gazette for mandated transfer of function

The 73rd Amendment to the Constitution of India placed the subject of drinking water under the Eleventh Schedule, assigning its management to the GPs. The Kerala Panchayat Raj Act of 1994 (KPR Act) was enacted to establish a decentralised system of governance, aligning with the principles enshrined in the 73rd Amendment to the Constitution of India. Section 234 A of the Act stipulated that the water supply and sewerage services currently under the Kerala Water Authority (KWA) were to be vested in the Panchayats by a notification in the Gazette. From that time onwards, all assets related to water supply such as plant and machinery, water works, pumping stations and other infrastructure within a Panchayat's jurisdiction, were to be transferred to that Panchayat. The Operational Guidelines of JJM specified that the State Governments were to issue a suitable notification under the Panchayat Raj Act so as to empower GPs to manage in-village water supply systems.

However, Audit observed that such a notification as specified in the KPR Act was not issued by Government till date (November 2024). In the course of GP level survey conducted by Audit, the GPs expressed their inability to take over or maintain in-village infrastructure of water supply schemes due to lack of technical knowhow and monetary constraints. It was also evident from the Focus Group Discussions convened by Audit in test-checked GPs that KWA single-handedly managed the functioning of JJM, whereas the GPs had a limited

role in the planning, implementation and monitoring of schemes within their jurisdiction.

On this being pointed out, Government replied (June 2025) that the works were being executed at GP level with the involvement of elected representatives of GPs. However, the response obtained from the representatives of test-checked GPs in the Focus Group discussions conducted by Audit indicated that the GPs were not involved in the implementation of projects under JJM, in the manner envisaged in the Guidelines of the scheme.

Formal transfer of drinking water management to PRIs through Gazette notification would have empowered PRIs to legally take over the Water Supply Schemes, thereby enabling community ownership and involvement, which were central to JJM.

2.2. Non-formulation of Operation and Maintenance Policy for the schemes implemented under JJM

According to the JJM Guidelines, the responsibility for the management and Operation and Maintenance (O&M) of water supply schemes, as well as the recovery of user charges, lay with the GPs and/or their sub-committees. The Mission Director, National Jal Jeevan Mission (NJJM) stressed upon⁶ the formulation of a comprehensive O&M policy in the State to ensure the sustainability and continuity of water supply systems.

Audit observed that O&M Policy encompassing the key components such as role of stakeholders, guidance in management of schemes, specified skill sets for personnel, etc. has not been formulated and approved by the Government so far. Contravening the constitutional mandate vested upon GPs, the rural water supply schemes in the State were currently operated and maintained by the Government owned autonomous body, KWA, which was also entrusted with the responsibility of collecting user charges for provision of water supply.

The O&M expenses involved recurring costs like expenses on electricity bills, expenditure on maintenance, payment towards staff, cost of chemicals, etc. However, the extent of recovery of water charges by KWA was not sufficient to cover the O&M costs of water supply schemes in the State. This needs to be viewed against the liability of KWA amounting ₹458.54 crore (as on 31 December 2024) towards Kerala State Electricity Board as power charges. As JJM proposed to provide FHTCs to 100 *per cent* of rural households, the O&M expenditure was bound to increase in the ensuing years, which had to be recovered in the form of user charges.

The Focus Group discussions conducted by Audit in test-checked GPs revealed issues relating to frequent breakage of pipes, poor maintenance practices and delayed redressal of complaints, which would have been addressed effectively, had a comprehensive O&M policy been in place. Though JJM Guidelines suggested local communities to be trained on an entrepreneurial mode to execute O&M of the schemes, no such initiative was witnessed in any of the test-checked GPs.

⁶ Vide letters dated May 2021, August 2021 and October 2021 to Additional Chief Secretary, Water Resources Department, GoK

Government stated (June 2025) that as part of the O&M policy of JJM, proposal for rural water supply schemes including handing over of in-village infrastructure to GPs was under consideration of the Government. It was also stated that O&M was required only when the entire scheme was completed and that further actions related to training and maintenance will be taken up once the O&M policy was approved by Government. Since the JJM Guidelines envisaged that O&M policy was to be a part of SAP, delay in framing O&M policy would also delay handing over of in-village infrastructure to GPs.

2.3. Institutional Mechanism under JJM

Being a time-bound mission-mode programme, JJM was in need of a robust institutional framework for its successful implementation. To accomplish the above, a four-tier institutional mechanism was to be set up, viz. National Jal Jeevan Mission at national level; State Water and Sanitation Mission (SWSM) at state level; District Water and Sanitation Mission (DWSM) at district level; and GP/ Sub-committee of GP, i.e., Village Water and Sanitation Committee (VWSC) at GP level.

2.3.1. Village Water and Sanitation Committees

The Village Water and Sanitation Committees were to be set up as sub-committees in each Panchayat, comprising 10-15 members, giving 50 per cent representation to women members. Out of the 21 test-checked GPs, VWSCs were set up (July 2022 and July 2023) only in three GPs⁷ in Kollam District and one GP⁸ in Palakkad District. Audit however noticed that VWSCs in these GPs had not met till date.

The following further observations were made in audit:

- The VWSCs were required to prepare VAPs based on Baseline survey, resource mapping and felt needs of the village community. Irrespective of source of funding, all drinking water-related works in the village were to be taken up on the basis of the VAP. Audit observed that during 2019-24, VAPs were not prepared by the test-checked GPs or its VWSCs during the planning phase. Instead, the VAPs prepared by KWA were seen attested by Secretaries of GPs in eight GPs. However, the documents did not contain vital information such as details of VWSC, water quality, source sustainability, greywater management and convergence with various schemes and programmes, as mentioned in paragraph 2.6.
- Audit scrutiny of a sample of VAPs collected from 21 test-checked GPs revealed that only one GP⁹ had prepared VAP, that too, after the expiry of planning phase.
- None of the 21 test-checked GPs had conducted Baseline survey, which implied that all selected GPs were providing FHTCs without prioritisation and need assessment. Baseline data on household coverage

⁷ Panmana, Kundara, Munroethuruth

⁸ Pattancherry

⁹ Thurayur

prior to 01 April 2019 was not available in these GPs. The Implementation Support Agencies (ISA) depended on secondary data¹⁰ sourced from the GPs to prepare inception reports. In the absence of a realistically assessed number of needy households, the entire number of households in the GP, excluding those with tap connection provided by KWA, were considered as beneficiaries under the scheme. Lack of authentic assessment of requirement of water in a GP contributed to substantial number of disconnections of FHTCs as shown in **Table 2.1**:

Table 2.1: Details of disconnections of FHTCs in test-checked districts as on 01 April 2024

District	Number of FHTCs provided	Number of FHTCs disconnected	Arrears of billed amount to be recovered (in ₹)
Palakkad	1,96,125	44,519	1,45,86,963
Kollam	2,50,414	36,963	2,02,66,016
Kozhikode	1,15,525	4,621	41,64,510

(Source: e-Abacus and e-Service data of KWA)

It was noticed that of the 4,04,404 FHTCs¹¹ disconnected in the State during the audit period, 2,13,991 (52.92 *per cent*) disconnections occurred in the very same month of providing tap connections. This pointed to the possibility of tap connections being provided without a realistic assessment of the requirement or extent of availability of water.

- The ACS WRD opined during the Exit conference (May 2025) that the key concern in JJM implementation was 100 *per cent* coverage and distribution network which mostly covered multi villages in Kerala, which made VAP irrelevant. Government stated (June 2025) in reply that orders have been issued (August 2020) forming GPWSC instead of VWSC, suiting state specific conditions. It was also stated that Detailed Project Reports (DPR) were prepared by KWA and submitted to GPs and were approved.

The above contention was not acceptable as DPRs which were scheme-specific cannot be considered as a replacement for VAPs, which was to be a comprehensive plan encompassing the core elements of water quality, source sustainability, convergence, etc. Further, Audit also observed that though orders were issued in August 2020 to form GPWSCs, only four of the 21 test-checked GPs had formed GPWSCs.

- As regards Baseline survey, Government replied (June 2025) that COVID pandemic and subsequent shutdowns restricted large scale field verifications in the initial stage. Since the State policy was to provide 100 *per cent* coverage of rural households, there was no requirement for prioritisation. It was also mentioned that data uploaded in e-Abacus and e-Service showed extent of disconnection with respect to connections provided prior to JJM due to non-payment of water charges, unauthorised usages, buildings demolished, etc. Disconnection entry was effected in e-Abacus for HTC connections which will become functional, once the production components were completed.

¹⁰ Data contained in Panchayat records such as total number of building permits issued.

¹¹ The minimum estimated per unit cost for providing FHTCs was ₹5,913.71 as per PRICE 3.0

The above reply on prioritisation was not tenable in the light of instances of non-prioritisation of SC/ST/Aspirational districts, etc. in providing FHTCs, as detailed in paragraphs 4.9 and 4.12 of this Report.

Representatives of GPs had raised concerns regarding water quality in their jurisdiction during the Focus Group Discussions conducted by Audit. Effective Baseline survey would have helped in identifying these issues so as to initiate timely remedial action.

Further, the connections shown in e-Service related to new connections provided under JJM. The payment dues against disconnections indicated that they were functional tap connections and hence were billed. Replies from officers in test-checked KWA divisions and beneficiary survey also revealed that disconnections occurred due to availability of alternate sources of water, which could have been identified during Baseline survey.

2.3.2. District Water and Sanitation Mission

The State Government constituted (June 2020) District Water and Sanitation Missions in all 14 districts of the State. The DWSM was to be headed by the District Collector and included the Executive Engineer, KWA Division at District Headquarters as Member Secretary and one member each of seven departments/projects¹².

Audit observed that the DWSMs in the test-checked districts did not ensure that VAPs were prepared by the GPs falling in their jurisdiction, which were to be consolidated into a DAP. Although a DAP was prepared by DWSM, Kollam district, it did not contain vital information or plans for source sustainability, greywater management, convergence of schemes and water budgeting. DWSM also failed in monitoring the performance of ISAs.

Government stated (June 2025) that the GPs prepared proposals considering the Panchayat-wise habitation based requirement of tap connections. The GPs passed resolutions and submitted the proposals to DWSM for approval of projects. The DWSM submitted the approved proposals to State Level Scheme Sanctioning Committee (SLSSC) for approval of schemes. It was also stated that all individual proposals collectively constituted the DAP and that a single consolidated plan was not possible for a district.

The Government reply substantiated the fact that the crucial stages of preparation of VAPs and their consolidation into DAPs were precluded from being part of the planning process in the State. Resultantly, critical aspects to be included in VAPs, as envisaged in the Operational guidelines of JJM did not find place in the proposals submitted by KWA.

¹² Forest, Health, General Education, Irrigation, Ground Water, Public Relations, Integrated Tribal Development Project (ITDP)

2.3.3. State Water and Sanitation Mission

Audit observed the following with respect to the functioning of SWSM:

- The Apex Committee of the SWSM was mandated to meet at least twice a year and quarterly, if possible. Audit noticed that SWSM had conducted only eight meetings since August 2020, with the last meeting convened in January 2025 after a gap of 15 months.
- Audit scrutiny revealed that the minutes of the meetings did not include any actionable points on the key functions vested upon SWSM, viz., providing for financial planning and timely utilisation of funds, convergence of water supply and sanitation activities, delegation of powers to local governance bodies for managing in-village water infrastructure or inter departmental co-ordination in implementation of projects.
- The decisions taken in Apex Committee meetings, with respect to mobilisation of community contribution, arrangement of water quality testing with the aid of Field Testing Kits, etc. were not addressed/implemented, as detailed in paragraphs 3.2.1 and 5.2 of this Report, indicating inadequate follow-up on implementation of decisions taken by the committee.
- Though the Apex committee of SWSM was assigned with the appraisal and in-principle approval of SAPs¹³ after discussion with Department of Drinking Water and Sanitation (DDWS)/ National Jal Jeevan Mission (NJJM), Audit noticed that no SAP was discussed and approved by SWSM during the audit period. The SAP which was prepared by KWA and seen uploaded in IMIS did not have the mandated approval of Apex committee of SWSM. The above SAP did not also include measures for source sustainability and greywater treatment or identify a long-term comprehensive water security plan.
- Audit also observed that though the Executive Committee was to meet once in a month to facilitate fruitful deliberations, only four meetings were held in the entire five-year audit period, with no meetings convened post November 2023. The minutes of these meetings revealed that though representatives of Irrigation Department, PWD, KSEB and LSGD were members of the Committee, there was hardly any discussion held on topics of relevance to these stakeholders, viz., road restoration, convergence of schemes, etc.

Government stated (June 2025) that detailed discussions were held on SAP and its component water security plan in SWSM meetings. All projects being discussed and approved in SWSM were part of SAP. It was further stated that the different proposals as part of SAP were based on the proposals in DAP and that these proposals were approved by SWSM for implementation.

Audit scrutiny of minutes of SWSM meetings substantiated the fact that the SAP uploaded in IMIS by KWA was not discussed and approved by SWSM.

¹³ Every State was to prepare a five-year State Action Plan wherein annual target of FHTCs and corresponding financial requirements were to be projected

Audit observed that based on instructions of GoI to include source sustainability, revised SAP was approved in the meeting of SWSM and a committee formed to formulate water security plan in January 2025.

Government further stated that State had taken the policy of implementing rural drinking water schemes based on sustainable surface sources, due to which additional programme for sustainability was not considered. However, Audit noticed that, of the three test-checked districts, the surface water sources in two districts were inadequate for supplying water during the distress period. This underscored the need to formulate SAP including source sustainability measures.

2.4. Non-achievement of targets as per the Annual Action Plan

The State was to prepare an Annual Action Plan (AAP) in the month of February, detailing yearly targets commensurate with the annual allocation. The AAP was to emerge from the SAP and was to be approved by DDWS/NJIM. Funds would be released, keeping in view the achievements under AAP. The FHTC targets set in AAP by the State and year-wise percentage of shortfall in achievement were as mentioned in **Table 2.2:**

Table 2.2: Details of shortfall in achievement of FHTC targets in the State

Year	FHTCs targeted as per AAP	Date of Administrative Sanction (AS)	No. of FHTCs achieved (as per JJM Dashboard)	Shortfall (Percentage of shortfall)
2019-20*	10,10,146	-	85,476	-
2020-21	21,42,028	1 st – 21.08.2020	4,04,464	17,37,564 (81.12)
		2 nd – 24.12.2020		
2021-22	29,37,564	3 rd – 18.09.2021	6,63,874	22,73,690 (77.40)
		4 th – 23.02.2022		
2022-23	32,96,325	5 th – 13.05.2022	5,29,487	27,66,838 (83.94)
		6 th – 28.10.2022		
2023-24	14,54,000	7 th – 26.10.2023	3,66,937	10,87,063 (74.76)

* KWA did not prepare AAP for the year 2019-20. Data for this year was retrospectively sourced from the AAP for 2020-21.

(Source: AAP, AS and JJM IMIS)

Audit observed that the targets for FHTCs were not met in any of the years from 2020-21 to 2023-24. The shortfall in achievement ranged from 74.76 to 83.94 per cent.

On this being pointed out, Government stated (January 2025) that as JJM works were not taken up in 2019-20, the target of first year was added along with that of 2020-21. It was also mentioned that the backlogs of the previous years' targets were included in the AAP of subsequent years, which led to setting of higher targets during the starting period. Government acknowledged that delay in availability of suitable land and obtaining permission from other departments, roads under Defect Liability Period (DLP), etc. slowed down the progress of implementation. Further, the shortage in fund availability caused slow progress in 2023-24.

2.5. Ineffective employment of Implementation Support Agencies

As per the Operational Guidelines of JJM, it was required to engage ISAs in each GP as partners in mobilising and engaging the communities to plan, design, implement, manage, operate and maintain in-village water supply

infrastructure. The Kerala Rural Water Supply and Sanitation Agency (KRWSA) was entrusted with the responsibility of shortlisting and empanelling ISAs. The DWSM was to allot ISAs from the empanelled list to GPs. On selection of an ISA, a tripartite agreement was required to be signed among the DWSM, ISA and GP concerned.

Since ISAs played a critical role in planning, their timely availability in the villages from the commencement of preparation of VAP was essential. However, Audit found that out of 21 test-checked GPs, 18 GPs¹⁴ had engaged ISAs, and in 10 of these GPs, ISAs were engaged only after awarding the work to the contractor, when the planning and mobilisation phase was fully over. This precluded the ISAs from being involved in the core activities¹⁵ executed during this phase.

2.5.1. Unfruitful payment made to ISA

The DWSM Palakkad engaged Kudumbashree, the State Poverty Eradication Mission as ISA in 30 GPs, including the test-checked GPs of Kollengode and Pudunagaram in Palakkad. Though ₹27 lakh was paid to Kudumbashree upon execution of agreement with the GPs, Audit could not trace records of any activity having undertaken by Kudumbashree in these GPs. The DWSM Palakkad stated (January 2025) that the period of contract signed with these GPs had expired and were not renewed due to the inactivity and insufficient performance of Kudumbashree as an ISA.

As per the agreement, if the ISA failed to meet its obligation within the stipulated time of completion, liquidated damages at a rate of 0.50 *per cent* of balance services (subject to a maximum of five *per cent* of the contract value) were to be realised from the ISA. If the ISA failed to complete the services even after levying the maximum of the liquidated damages, the balance portion of the services was liable to be terminated and arranged through other means at the risk and cost of the defaulted agency. However, Audit found that DWSM neither monitored the performance of Kudumbashree as an ISA, nor did it terminate the contract or levy penalties for its inactivity.

The above instance highlighted the need for stricter adherence to selection criteria and performance monitoring mechanisms by the DWSM.

Government replied (June 2025) that payment made to Kudumbashree was given for their initial positioning and that action will be initiated to recover the balance amount from the Agency.

2.6. Convergence with other programmes/schemes

The guidelines of JJM provided for convergence with other programmes/schemes like Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Finance Commission (Tied Grant),

¹⁴ In the remaining three GPs, although Kudumbashree was assigned with the role of ISA in two GPs, no agreement was executed between DWSM, Kudumbashree and GPs. In Kadalundy GP, no ISA was engaged as only retrofitting schemes were being implemented under JJM.

¹⁵ Such as facilitating community familiarisation, constitution of sub-committees of GPs, conducting need assessment of FHTCs, undertaking Participatory Rural Appraisal (PRA) activities and capacity-building for GP sub-committees, preparation and approval of VAP, etc.

Integrated Watershed Management Programme (IWMP), Swachh Bharath Mission (SBM) (Grameen), District Mineral Development Fund (DMDF), State schemes like Member of Parliament Local Area Development Scheme (MPLADS), Member of Legislative Assembly Local Area Development Scheme (MLALADS), etc. Source sustainability measures such as aquifer recharge, rainwater harvesting, increased storage capacity of water bodies, reservoirs, de-silting, bore well recharge structures, watershed management, water conservation, etc. were to be undertaken through convergence. Convergence with Pradhan Mantri Koushal Vikas Kendra (PMKVK) was to be explored on priority and on continuous basis to meet the huge requirement of capacity building of skilled human resource such as masons, pump operators, plumbers, electricians, motor mechanics, etc. for construction and O&M.

The DWSM was entrusted with the responsibility to identify the sources of convergence to meet the requirements and to ensure availability of funds for source sustainability works and greywater management to be executed through convergence. Clearance to projects was to be given only if these components were part of DPR.

Audit noticed that, in the test-checked districts, no convergence plan with other programmes/schemes implemented by the State was formulated to facilitate utilisation of labour and financial resources for execution of projects through convergence, under JJM.

Government did not furnish specific reply to the above observations of Audit.

Recommendations

- ***Government may consider issuing notification under the KPR Act to facilitate devolution of drinking water management to PRIs in line with the 73rd Amendment to the Constitution of India, to facilitate community ownership and involvement.***
- ***Government may draw out a comprehensive action plan including measures for source sustainability and greywater management under JJM.***
- ***Government may ensure that a comprehensive O&M policy is formulated for projects implemented under JJM to cater to the sustainability and continuity of water supply systems.***
- ***Government may ensure that Baseline surveys are undertaken in case of large, beneficiary oriented projects at the start of the project itself, to enable assessment of the percentage of households with access to safe drinking water in a village.***
- ***Government may ensure that Village Water Sanitation Committees are constituted in all GPs in the State and that they function effectively as part of a decentralised and participatory institutional framework for implementation of JJM.***

CHAPTER III

FINANCIAL MANAGEMENT

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The total outlay on the Grant XX-Water Supply and Sanitation during the period 2020-24 of implementation of JJM was only ₹6,577.52 crore. We observed that though the projected requirement of funds to the tune of ₹44,714.79 crore for JJM was more than six times the total outlay on the grant, GoK, while approving the proposal for fund requirement, did not identify the sources for mobilising sufficient funds for completing the schemes under JJM.

Only four of the 21 test-checked GPs collected the community contribution, and that too, partially. The collected amount was kept in the own fund account of the GPs and was not remitted to the Single Nodal Account (SNA) for JJM. Against the estimated local body contribution of ₹999.07 crore, only ₹24.65 crore was received from GPs, resulting in short collection of ₹974.42 crore.

In violation of the guidelines, ₹24.71 crore was expended as centage charges from JJM funds for road restoration works in test-checked divisions. As of 15 August 2024, 3,709 bills totalling ₹3,578.47 crore were pending for payment, which caused many contractors to halt or slow their work. Additionally, 453 work packages valued at ₹3,625.72 crore remained unawarded due to lack of bidder participation, stemming from concerns over delayed payments. During the period 2021-22 to 2023-24, ₹24.13 crore was transferred as security deposit/ bank guarantee for JJM projects under the test-checked divisions, which was not refunded to SNA so far.

The funds for JJM were to be shared between the Government of India (GoI) and the Government of Kerala (GoK) in the ratio of 50:50¹⁶. The fund allocated to a State/UT was to be utilised up to five *per cent* and two *per cent* for support activities and Water Quality Monitoring and Surveillance (WQMS) activities respectively. The balance funds were to be utilised to provide Functional Household Tap Connections (FHTC) to rural households. Funds for Scheduled Castes (SC) and Scheduled Tribes (ST) were to be earmarked in the State at least in proportion to their population. The funding pattern for support activities and WQMS activities was in the ratio of 60:40 between GoI and GoK. For in-village schemes, the community was required to contribute in cash and/or kind and/or labour, five *per cent*¹⁷ or 10 *per cent* of in-village infrastructure capital expenditure.

3.1. Financial progress of JJM

As per paragraph 7.8 of the scheme guidelines, annual allocation of funds was to be made in two equal instalments and each instalment, in two equal tranches. The first tranche, which was to be 50 *per cent* of the first instalment, was to be issued in April, based on fund utilisation shown in the Public Financial

¹⁶ The expenditure of JJM is shared by the GoI and the State Government in the ratio of 90:10 (in case of Himalayan and North-Eastern states (NE) and Union Territories with Legislature), 50:50 (in case of other states) and 100:0 in case of Union Territories without Legislature.

¹⁷ In hilly and forested areas.

Management System (PFMS) / Integrated Management Information System (IMIS) portals. The second tranche was to be released when 75 per cent of the available funds (opening balance and the first tranche) were utilised.

The remaining share of the first instalment, adjusted for excess opening balance, was to be released after the State spent at least 75 per cent of the available funds. The second instalment, which formed 50 per cent of the total allocation, was to be phased in two tranches, with the second tranche issued after 75 per cent utilisation of available fund and submission of UCs for amount utilised.

The pattern of release of JJM funds by GoI and GoK and its utilisation for the period 2019-20 to 2023-24 was as shown in **Table 3.1**.

Table 3.1: Release and utilisation of JJM funds

(₹ in crore)

Year	Opening Balance		GoI Release	GoK release			Expenditure		Closing Balance	
	GoI	GoK		GoI share	GoK share	Total	GoI	GoK	GoI	GoK
2019-20	0	0	101.29*	25	25	50 [#]	62.26	63.70	0.80	-0.64
2020-21	0.80	-0.64	303.18*	379.47	379.47	758.94 [@]	304.29	317.62	37.92	23.15
2021-22	37.92	23.15	1353.45*	451.15	1353.45	1804.60	957.44	1059.57	433.92	317.02
2022-23	433.92	317.02	2206.54	Nil	1616.29	1616.29	1741.93	1741.68	898.53	191.63
2023-24	898.53	191.63	671.18	Nil	1207.16	1207.16	1457.18	1434.63	104.28	-49.74
Total			4635.64	855.62	4581.37	5436.99	4523.10	4617.20		

* The tranches of 2019-20 and 2020-21 and the first tranche of 2021-22 were released to GoK by GoI. GoK was required to release these funds to KWA along with matching state share. The subsequent tranches were released direct to SNA of KWA by GoI.

[#] During 2019-20, GoK was required to release ₹202.58 crore. However, GoK released ₹50 crore only and ordered to transfer ₹152.58 crore from the deposits of Local Self Governments (LSG) with KWA. KWA temporarily transferred ₹75 crore from LSG deposits and ₹1.12 crore available with KWA to JJM account. Therefore, the fund available for JJM was ₹126.12 crore (₹50 crore + ₹76.12 crore) i.e., ₹63.06 crore under GoI share and ₹63.06 crore under GoK share. Thus, the closing balance was ₹0.80 crore (₹63.06 crore - ₹62.26 crore) and ₹-0.64 crore (₹63.06 crore - ₹63.70 crore).

[@] During 2020-21, available fund was ₹682.82 crore after returning the funds received from other sources during 2019-20 ((₹758.94 crore - ₹75 crore - ₹1.12 crore) + Opening Balance).

(Source: Fund release orders by GoI and GoK and details furnished by KWA)

Audit noticed lapses in financial management of the scheme, which are detailed in the following paragraphs:

3.1.1. Non-identification of sources for funding

As per the Operational Guidelines for the implementation of JJM, 2019, the SWSM/ DWSM was required to prepare year-wise financial plans by pooling all available resources for rural drinking water supply like the Central fund, State fund, funds of other programmes, Member of Parliament Local Area Development Scheme (MPLADS), Member of Legislative Assembly Local Area Development Scheme (MLALADS), District Mineral Development Fund (DMDF), Corporate Social Responsibility (CSR) fund, donations, etc. The Annual Action Plan (AAP) of the State was to emerge from the approved State Action Plan (SAP). The AAP was to be approved by the Department of Drinking Water Supply (DDWS)/National Jal Jeevan Mission (NJJM), based on consultation with the respective State/UT and funds released, keeping in view the achievements under AAP.

The JJM was introduced by GoI during 2019-20 and during the period from 2020-21 to 2023-24, GoK accorded administrative sanction for providing piped

drinking water to 54.45 lakh rural households at a total cost of ₹44,714.79 crore, as detailed in **Table 3.2**.

Table 3.2: Details of FHTCs sanctioned and estimated cost

Date of Sanction	Targeted FHTCs (Number in lakh)	Estimated cost (₹ in crore)
21.08.2020	16.48	4,343.89
24.12.2020	5.17	2,313.11
18.09.2021	14.00	11,551.23
23.02.2022	11.51	13,090.88
13.05.2022	5.74	7,652.87
28.10.2022	0.45	1,251.63
26.10.2023	1.10	4,511.18
Total	54.45	44,714.79

(Source: Government Orders issued by Water Resources Department, GoK)

The GoK submitted AAP to DDWS from the financial year 2020-21 onwards, detailing the financial as well as physical targets for each year. Comparison of funds proposed in the AAP as required by the State for JJM, with the funds allocated and released by the State through budget was as shown in **Table 3.3**:

Table 3.3: Comparison of funds proposed in AAP with funds released through State Budget

	(₹ in crore)			
	2020-21	2021-22	2022-23	2023-24
Budget outlay on 'Water Supply and Sanitation'	1,439.68	1,524.95	2,303.15	1,309.74
Budget Allocation for State share of JJM	400.00	400.00	500.00	500.00
Funds required as State share of JJM as per AAP	2,912.92	7,463.56	13,978.97	2,223.00
Funds released as State share of JJM	379.47	1,353.45	1,616.29	1,207.16
Funds expended out of State share	317.62	1,059.57	1,741.68	1,434.63
Percentage of State share allocated against the requirement	13.73	5.36	3.58	22.49
Percentage of State share released against the requirement	13.03	18.13	11.56	54.30

(Source: Budget documents of GoK and Annual Action Plan of JJM)

The fund allocated by the State for JJM ranged between 3.58 per cent and 22.49 per cent of the requirement as per AAP for the period 2020-21 to 2023-24. While granting administrative sanctions in August 2020 and December 2020, GoK had estimated to meet 10 per cent of the project cost from community contribution and 15 per cent of State share from local body contribution. Estimated sources of finance were not mentioned in subsequent sanctions issued in 2021, 2022 and 2023.

Audit noticed that the total outlay on the Grant XX - Water Supply and Sanitation during the period 2020-24 of implementation of JJM was only ₹6,577.52 crore. Despite the fact that the projected requirement of funds to the tune of ₹44,714.79 crore for JJM was more than six times the total outlay on the grant, GoK, while approving the proposal for fund requirement, did not envision the sources for mobilising these funds for implementing the schemes under JJM.

Though GoK decided (August 2020) to source funds from MLALADS for meeting the expenditure under JJM, in the case of GPs which could not raise

sufficient local body contribution and community contribution, SWSM did not take any steps in this direction. The possibility of mobilising funds from other programmes such as CSR fund, donations, etc. was also not explored.

Audit noticed that KWA had submitted (September 2023) a proposal for availing financial assistance from World Bank and for obtaining Kerala Infrastructure Investment Fund Board (KIIFB) assistance (September 2024). Government stated (June 2025) in reply that the above proposal did not materialise due to limitation in borrowing power of the State. It was also stated that proposal for institutional funding by National Bank for Agriculture and Rural Development (NABARD) and Housing and Urban Development Corporation Limited (HUDCO) for State share was currently under consideration of the Government.

Regarding non-identification of resources for funding, the Additional Chief Secretary, WRD stated (May 2025) in the Exit Conference that the projected requirement was for entire scheme period and funds would be made available as and when required, by invoking the provisions of reappropriation and additional authorisation.

The reply of ACS was not borne by facts on the ground, as evidenced by the huge liability of GoK in paying the long pending bills of contractors as mentioned in Paragraph 3.3 of this Report, which established paucity of funds. Further, proposals being mooted with the contention that funds would be made available as and when required, was not in alignment with the principles of efficient financial management.

3.1.2. Delay in release of matching State share and consequent non-release of GoI instalments

The first tranche of the second instalment was to be released as and when the State submitted provisional Utilisation Certificates (UC) for the current year for the amount equivalent to 75 per cent of available balance, final UCs for GoI and GoK share for the previous year, etc. As soon as the utilisation of available fund (GoI and State shares) exceeded 75 per cent, the second tranche of the second instalment was to be released. The releases by GoI to GoK were to be made to the State treasuries from where the funds could be released to SNA, within 15 days.

Audit observed the following with respect to funds released by GoI and GoK during the period 2019-20 to 2023-24, which were marked by delay as shown in **Appendix 3.1:**

- During 2019-20, GoI released ₹101.29 crore to GoK on 28 August 2019 and GoK was required to release ₹202.58 crore including matching state share before 12 September 2019. However, GoK released (December 2019) only ₹50 crore to KWA and the fund equivalent to the GoI share was released only in the subsequent financial year on 08 June 2020, with a delay of 270 days. The delay in release of the balance fund was 291 days from the date of GoI release. Thus, against the GoI allocation of ₹248.76 crore in 2019-20, GoK could obtain ₹101.29 crore only, resulting in a short release of GoI funds by ₹147.47 crore.

- GoI released part of first instalment of the first tranche for 2020-21 to GoK on 30 May 2020. However, GoK released the amount with matching State share on 06 November 2020 only, causing a delay of 145 days. Since each release of GoI was based on the release of matching State share of the previous GoI release and expenditure met therefrom, the initial delay in release of matching share delayed subsequent releases from GoI and resulted in foregoing of GoI share of ₹101.06 crore during the year.
- During 2021-22, GoK issued orders on 31 May 2021 to release the GoI share and the matching State share of first tranche of first instalment, amounting to ₹902.30 crore. However, the amount was credited to the JJM bank account in part payments on 10 June 2021, 18 June 2021 and 12 July 2021 only. Thus, GoK took 42 days to credit the entire funds from the date of issuance of order. This affected the release of further funds by GoI and GoI funds fell short by ₹451.14 crore compared to allocation.
- The delay in release of GoK share of first and second tranches of first instalment during 2023-24 extended to 44 and 26 days respectively. Audit further noticed that the matching share of second tranche of first instalment released on 11 December 2023 (₹327.76 crore) was credited to SNA in parts, on 31 January 2024 and 22 March 2024 only, with a delay of three months and 11 days. Thus, GoK actually released the matching State share of the second tranche of the first instalment of GoI share by the fag end of the financial year only. This also acted as one of the reasons for non-release of second instalment of GoI share to GoK, and GoI share fell short by ₹671.18 crore compared to the allocation.

GoI had instructed (March 2023) the State to make sufficient provision in budget for the matching State share, so that, delays in central releases on account of non/delayed transfer of matching State share to the SNA could be avoided. From **Table 3.3**, it is evident that insufficient provision of funds in budget caused delays in release of funds by GoK.

Audit observed that the availability of funds during the initial years of implementation could have been ensured, had GoK exercised due diligence in the timely transfer of funds to the SNA. This was all the more evident from the fact that GoI fund was available without much delay from 2020-21 onwards, when GoI started releasing funds directly to SNA.

Audit observed that, against GoI allocation of ₹6,006.49 crore, the released amount was ₹4,635.64 crore only, resulting in non-receipt of GoI share to the extent of ₹1,370.85 crore.

GoK replied (June 2025) that the major delays occurred in financial year 2019-20 as there were challenges during the initial phase of JJM due to COVID-19, delay in land acquisition, non-availability of clearance from various departments, etc. However, the reply was silent about the delay in release of State share during 2021-24.

3.2. Community contribution and local body contribution

3.2.1. Improper accounting of community contribution

To provide FHTCs to all rural households, in-village water supply infrastructure was to be created through Single Village Scheme (SVS)/ Multi Village Scheme (MVS)/ solar power-based stand-alone schemes for scattered areas. For in-village piped water supply infrastructure and related source development to be implemented by GP/VWSC, the communities were to contribute 10 *per cent* of the capital cost¹⁸. The community contribution made in cash towards in-village infrastructure creation was to be deposited in the respective Bank account of GP/VWSC jointly operated by the chairperson of GP/VWSC and respective Panchayat Secretary.

Audit noticed that some individuals remitted the contribution directly to SNA during 2020-21 and 2021-22. The details of such remittances, *viz.*, the work for which contribution was paid, GP in which the depositor resides, etc., were not traceable. The community contribution thus received amounted to ₹3.69 lakh. In the survey conducted by Audit in the 21 test-checked GPs, Secretaries of 19 GPs¹⁹ stated that they had not opened a dedicated bank account for depositing the community contribution collected.

Audit scrutiny of records in 21 GPs revealed that only four GPs²⁰ collected the community contribution. The collected amount (₹131.40 lakh) was kept in the own fund account of the GPs and was not remitted to the SNA for JJM as community contribution.

GoK replied (June 2025) that, from the inception of the scheme, Government has been releasing funds on behalf of the GPs and beneficiaries in order to meet the deadlines. It was also stated that GPs were collecting the beneficiary contributions and remitting to SNA of JJM and further action would be taken through LSGD to transfer the amount remaining with the GPs to the SNA.

Contrary to the above, 17 out of 21 test-checked GPs had stated to Audit that they have not collected community contribution. Further, the contribution collected by the remaining four GPs were not seen remitted to SNA. The contention that Government has been releasing funds on behalf of the beneficiaries was not also tenable, as it can be seen from **Appendix 3.1** of this Report that GoK released funds equal to or less than GoI share during 2019-20 to 2023-24 and no additional fund for community contribution was released by GoK.

3.2.2. Non-collection of Local Body contribution

For the schemes sanctioned in August 2020 and December 2020, GoK had formulated fund sharing pattern with local body contribution amounting ₹999.07 crore, being 15 *per cent* of the estimated cost of ₹6,660.46 crore²¹. The

¹⁸ In villages other than hilly and forested areas, NE and Himalayan States and villages having more than 50 *per cent* SC/ST population.

¹⁹ Kadalundy GP opened a new account and Vadavannur GP did not participate in the survey.

²⁰ Panayam, Pattancherry, Olavanna and Kadalundy

²¹ AS amounts of ₹4,343.89 crore + ₹2,316.57 crore (₹2,313.11 crore + ₹0.61 crore for providing FHTCs to Anganwadis + ₹2.85 crore for providing CWPPs in water quality affected habitations)

contributions from GPs remitted to the SNA of JJM during the period from 2020-21 to 2023-24 amounted to ₹24.65 crore only, as shown in **Table 3.4**.

Table 3.4: Details of contribution from local bodies

Year	Local body contribution (₹ in crore)
2020-21	13.01
2021-22	6.64
2022-23	2.64
2023-24	2.36
Total	24.65

(Source: Data furnished by KWA)

Further, the detailed statement of contribution did not contain details such as name of GP, amount of contribution received, work for which earmarked, etc. in all cases.

Accepting the audit observation, GoK stated (June 2025) that the Mission Director had requested (February 2025) the Principal Director of Panchayats to take urgent steps to remit the contribution amounting to ₹1,522.75 crore for the completed projects.

3.2.3. Blocking up of community contribution and local body contribution

Even as sufficient funds were not forthcoming in the form of community contribution/ and local body contribution, Audit observed that the amount received as contribution was not seen utilised for execution of projects under the scheme. As of 31 March 2024, though ₹24.69 crore was at the disposal of the implementing agency as contributions from GPs and communities, this was not utilised to pay off the amount which was due to contractors.

GoK replied (June 2025) that since the local body contributions were paid directly from the accounts of GPs to the SNA, transaction details were not relayed from the State's Integrated Financial Management System (IFMS) to PFMS. Consequently, the amounts deposited by the GPs were not recorded as part of State's share in the PFMS and hence these funds remained inaccessible in the SNA.

In the absence of clear cut directions from Government, a sum of ₹24.69 crore contributed by GPs/communities remained unavailable for meeting expenses in connection with the implementation of schemes under JJM.

KWA has not taken up the constraints in utilisation of such funds with GoK and sought for directions for utilisation.

3.3. Pendency in payment to contractors

The guidelines of JJM specified that on completion of work, the bill for claiming payment was to be submitted by the contractor and the payment was to be made within 30 to 45 days after third party inspection. As of 15 August 2024, 3,709 bills totaling ₹3,578.47 crore were pending for payment and 453 work packages valued at ₹3,625.72 crore remained unawarded, due to lack of bidder participation, stemming from concerns over delayed payments in the State. Delay in payment caused many contractors to halt or slow their work. The

details of pendency in payment to contractors in the test-checked divisions of KWA were as mentioned in **Table 3.5**.

Table 3.5: Details of bills due for payment to contractors in the test-checked divisions of KWA

Sl No.	Name of Division	No. of bills	Amount due (₹ in crore)
1	Project Division, Kollam	128	88.67
2	Public Health Division, Kollam	65	15.42
3	Public Health Division, Kottarakkara	114	30.84
4	Project Division, Palakkad	125	233.13
5	Public Health Division, Palakkad	33	7.49
6	Project Division, Chittoor	75	77.19
7	Project Division, Kozhikode	228	507.41
8	Public Health Division, Kozhikode	34	65.33
9	Public Health Division, Vadakara	65	80.61
	Total	867	1,106.09

(Source: KWA website)

As delay in payment to contractors would directly impact upon the pace in progress of work, sufficient financial resources were to be harnessed to find a solution to the problem.

GoK replied (June 2025) that despite the State fulfilling all stipulated conditions and meeting its obligations under the JJM for the financial years 2023-24 and 2024-25, GoI has not released the second tranche of funds for both 2023-24 and 2024-25, which resulted in paucity of funds to pay the pending bills.

The contention of GoK that the State had fulfilled all stipulated conditions under JJM for 2023-24 was not tenable, as the delay in receipt of GoI funds was due to the delay in actual release of matching State share as detailed in **Appendix 3.1**.

3.4. Double booking of GST in road restoration charges

The JJM works in Palakkad district also involved laying of pipes under PMGSY²². Audit examined a few works, in which road restoration charges were deposited by KWA in favour of PMGSY (**Appendix 3.2**).

The road restoration estimates were calculated by PMGSY authorities on the basis of unit rates mentioned in the circulars²³ issued by PWD, which included cost index and GST at 18 *per cent*. However, PMGSY authorities, while arriving at the final road restoration figures, included GST at 18 *per cent* additionally in the estimate, resulting in double payment of GST charges by KWA from JJM funds.

Lapse on the part of KWA officials in scrutinising the restoration estimate furnished by PMGSY authorities resulted in the mistake going undetected, which led to avoidable payment of ₹87.19 lakh as GST.

GoK replied (June 2025) that the matter would be taken up with the authorities of the PMGSY and any discrepancies identified in the GST component would

²² Pradhan Mantri Gram Sadak Yojana

²³ Rates published vide circulars CE(R&B)/GL-RL/2/2018 dated 30.03.2019 and CE (PWD)/2675/2021-C4(W) RD dated 10.02.2023

be duly accounted for by reducing the corresponding amount from future payments, subject to mutual agreement between both the parties.

3.5. Irregular spending of GoI funds on schemes designed for more than 55 lpcd

As per the JJM guidelines, the service level of potable drinking water supply should be at least 55 lpcd²⁴. However, States were empowered to enhance the same to higher level depending on availability of drinking water sources, for which additional financial resources that may be required, were to be met by the State Government/local community/donors. On verification of IMIS data, it was noticed that the expenditure incurred for execution of the schemes in test-checked GPs was shared equally between GoI and GoK, despite these schemes providing water in excess of 55 lpcd (**Appendix 3.3**). Thus, the additional cost incurred for supply exceeding 55 lpcd was charged to GoI also, which was in violation of the guidelines.

GoK replied (June 2025) that JJM projects were prepared with a service level of 100 lpcd, considering state-specific conditions, water consumption patterns and projected future growth. In accordance with GoI directions issued in January 2024, the State had reconciled the costs and determined a total amount of ₹3,656.19 crore as additional cost for providing higher service level than prescribed, which would be adjusted in State share.

The reply indicated that the additional cost was yet to be adjusted from the State share. Moreover, verification of IMIS data relating to the above works revealed that additional cost incurred for 100 lpcd service level was not seen reckoned for four works²⁵.

3.6. Inadmissible payment of centage charges

As per JJM guidelines, no centage²⁶ was to be charged from grant-in-aid to be provided from the JJM funds. In case such necessity arose, the same would be the responsibility of the State Government.

The implementing agencies of JJM obtained road cutting permission for the execution of works by remitting the road restoration charges²⁷ demanded by Public Works Department (PWD). It was noticed in the test-checked divisions of KWA that centage charges were not excluded from road restoration charges while making payment to PWD. The expenditure was booked under central and state shares equally, thereby utilising GoI funds to the tune of ₹24.71 crore for centage charges (**Appendix 3.4**).

GoK replied (June 2025) that the issue was deliberated upon during a high level meeting chaired by the Hon'ble Chief Minister of the State (March 2025) and that the matter was currently under consideration of Department of Finance, GoK.

²⁴ litres per capita per day

²⁵ Sl. Nos 1, 6, 12 and 13 of **Appendix 3.3**

²⁶ Charges levied by Government for work executed on behalf of another Government, local body or private party.

²⁷ The rates fixed included cost index, centage charges and GST. The rate of centage charges included in the road restoration charges was 12.50 per cent w.e.f. May 2018 and 13.78 per cent w.e.f. February 2023.

3.7. Expenditure on Security deposit/bank guarantee booked as final expenditure from JJM funds

A security deposit of 10 per cent of the restoration amount required for the road cutting area was to be remitted to PWD by KWA. This was to be released 28 days after the Defect Liability Period (DLP) of the restoration work or DLP of the existing road (if any), whichever was later. The KWA was to submit the security deposit in the form of Treasury Savings Deposit/Bank Guarantee for obtaining sanction.

Audit noticed that, during the period 2021-22 to 2023-24, ₹24.13 crore was transferred from JJM funds as security deposit/ bank guarantee for JJM projects under the test-checked KWA divisions as detailed in **Table 3.6**:

Table 3.6: Details of security deposit/ bank guarantee for JJM projects under the test-checked Divisions

(₹ in lakh)		
Year	Name of Division	Expenditure on security deposit / bank guarantee
2021-22	Project Division, Kozhikode	366.21
	Total	366.21
2022-23	Project Division, Chittur	411.04
	Project Division, Kozhikode	1,416.69
	Project Division, Kollam	1.41
	Project Division, Palakkad	32.25
	Total	1,861.39
2023-24	Public Health Division, Vadakara	67.18
	Project Division, Kozhikode	39.52
	Project Division, Palakkad	78.65
	Total	185.35
Grand Total		2,412.95

(Source: Details of expenditure furnished by KWA)

Since the security deposit/ bank guarantee was a refundable sum to be deposited for a specific period of time, charging the same as final expenditure under JJM was not justifiable. As the JJM funds were shared between GoI and GoK, amount expended for security deposit/ bank guarantee from JJM funds would have a bearing on GoI also. No amount drawn as security deposit/bank guarantee was refunded to SNA so far.

GoK replied (June 2025) that the KWA Divisions were directed to report any such instances of fund utilisation for taking appropriate corrective action and to ensure that they were not repeated in the future.

3.8. Mismatches noticed in the accounts of JJM

Consequent to the release of ₹101.29 crore by GoI in August 2019, GoK released (December 2019) ₹50 crore to KWA for the implementation of JJM. KWA deposited the amount in the then existing SB account²⁸. An amount of ₹75 crore from Local Self Government (LSG) deposits was credited to the account on 18 February 2020. Funds under the scheme of Niti Aayog, National Water Quality Sub Mission (NWQSM), balance fund returned by District Collector, Thrissur, etc. were also credited to the account.

²⁸ ₹1.27 crore was available in the account. This account was operationalised as the SNA of JJM.

Audit verified the accounts of JJM for the period 2019-24 and the following were observed:

- The scheme-wise expenditure statement of KWA for the period 2019-20 contained expenditure on work bills amounting to ₹123.17 crore. However, the Cheque Memo Register (CMR) for the period mentioned about work bills worth ₹18.54 crore only.

GoK replied (June 2025) that during 2019-20, pending National Rural Drinking Water Programme (NRDWP) bills²⁹ were paid using bill discounting system. Though payments were made, the expenditure was booked as and when the funds were received from GoI and the bills met their turn as per seniority. Further, as the expenditure was temporarily met using funds available with KWA, the same was not reflected in the scheme-specific account at that time.

The reply was not tenable, as all funds received for JJM including the amount temporarily utilised by KWA were transferred to the scheme-specific account of JJM, the expenditure should have been reflected in the JJM account. Moreover, non-submission of vouchers to Audit in support of the expenditure during the period obviated the possibility of confirmation of genuineness of expenditure.

- As per the consolidated expenditure statement furnished by KWA, total expenditure for 2020-21 was ₹621.91 crore, whereas the Division-wise statement showed an expenditure of ₹621 crore only, resulting in a shortage of ₹91 lakh.

GoK confirmed (June 2025) in reply that the expenditure for 2020-21 amounted to ₹621.91 crore. No clarification was offered for the shortage of ₹91 lakh as pointed out by Audit.

GoK also assured that corrective measures will be implemented to improve the accuracy and consistency of reporting in the future.

Recommendations

- ***Government may frame a clear road map for prioritising requirements under JJM and mobilising adequate financial resources to meet these requirements.***
- ***Government may initiate action for the timely release of State share of funds for JJM and initiate steps to collect contributions from community and local bodies, promoting sense of ownership and increased participation in implementation of the scheme.***

²⁹ Schemes were carried over to JJM from erstwhile NRDWP.

CHAPTER IV

IMPLEMENTATION OF SCHEMES

CHAPTER IV IMPLEMENTATION OF SCHEMES

Out of 5,318 JJM works entrusted to the Implementing Agencies for implementation, only 2,726 (51 *per cent*) works were completed (November 2024). Nine hundred and twenty four works (17 *per cent*) had not even commenced, though the initially envisaged period of completion of project expired on 31 March 2024. Of the 7,458 applications relating to JJM works forwarded to various entities for obtaining road cutting sanction, only 3,387 applications were approved by the entities, indicating that 4,071 works (54.59 *per cent*) were kept on hold, awaiting approval for road cutting.

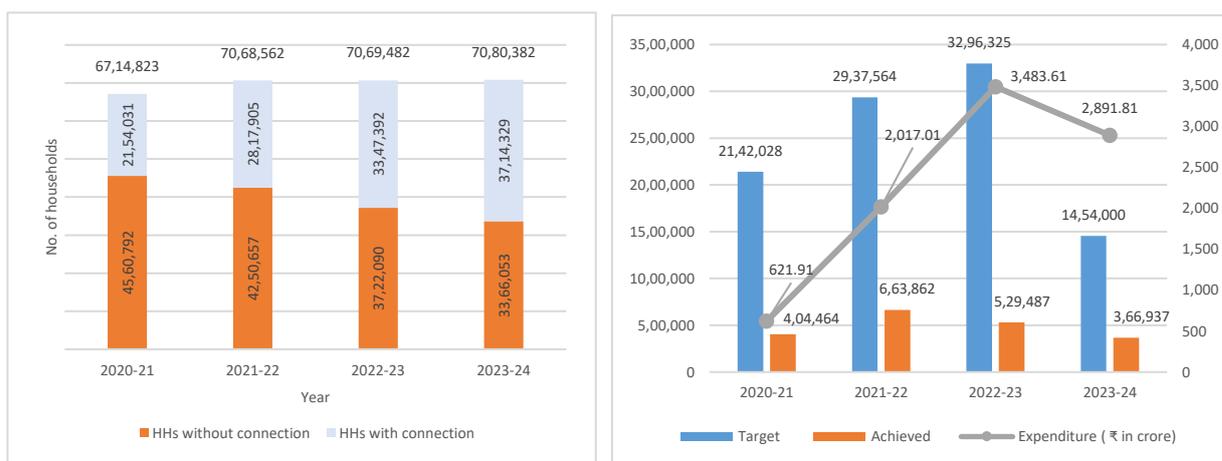
In the field offices at Kozhikode and Palakkad districts, the error in calculation of trench width adopted for different types of pipes led to excess payment amounting to ₹2.84 crore. Audit noticed that two tenders at Public Health Circle Kozhikode were not issued keeping the firm period extended after the opening of price bid. This resulted in cost escalation amounting to ₹4.05 crore, due to rate revision. Polymer pipes valuing ₹6.44 crore were left stacked at various locations for a period ranging from one to nearly two years, awaiting sanctions for laying. On scrutiny at the field offices of KWA in Kozhikode and Palakkad, pipes were seen procured by firms/contractors from firms/suppliers not included in the empanelled list, which was violative of the provisions in the pipe policy of KWA.

A critical objective of JJM i.e., to prioritise provision of FHTCs in quality affected areas, aspirational districts, SAGY villages, etc. was not fulfilled. It was also seen that not even a single FHTC was provided under JJM in three test-checked GPs, which were among the ST dominated GPs in Kerala. Audit noticed that Community Water Purification Plants were not made functional in the fluoride affected habitats in Agali GP of Palakkad district till date, even after a lapse of five years.

The implementation phase of JJM (six to 12 months) was to commence from the award of work and start of activity on the ground and extend till commissioning of the scheme. The post implementation phase was to start from the date of commissioning of the scheme and extend for three to four months.

Though JJM was rolled out nation-wide in 2019 by GoI, its implementation in Kerala started only in August 2020. The year-wise break up of implementation status in the State is shown in **Chart 4.1**:

Chart 4.1: Year-wise break up of status of implementation of the scheme in the State



(Source: Annual Action Plans & JJM dashboard)

Government stated (June 2025) that 21 lakh FHTCs were provided under the programme in four years which was more than the total tap connections provided in the last 50 years. Thirty *per cent* increase was achieved in coverage of rural households with FHTCs since the start of the Mission. Government also stated that unlike other states, Kerala is the only State following 100 *per cent* metering and billing of connections to ensure sustainability of schemes for years.

While Audit acknowledges the above progress achieved, deficiencies were also observed in implementation in the test-checked GPs in three sampled districts, as detailed below:

4.1. Slow pace in implementation of schemes

The JJM was to assist, empower and facilitate the States/ UTs in creation of water supply infrastructure so that every rural household had Functional Household Tap Connection (FHTC) by 2024³⁰. The Kerala Water Authority (KWA), Kerala Rural Water Supply and Sanitation Agency (KRWSA) and Ground Water Department (GWD), Government of Kerala were the three Implementing Agencies (IA) of JJM works in Kerala. The details of schemes undertaken by IAs during the audit period were as given in **Table 4.1**.

Table 4.1: Details of schemes undertaken by the Implementing Agencies during the period 2019-24

Name of Implementing Agency	Total number of schemes undertaken	Number of schemes dropped	Number of schemes completed	Number of schemes not completed	Percentage of schemes not completed
Kerala Water Authority	535	Nil	157	378	71
Kerala Rural Water and Sanitation Agency	69	4	33	32	46
Ground Water Department	16	1	12	3	19
Total	620	5	202	413	67

(Source: SWSM data as on 06 December 2024)

³⁰ subsequently extended till 31 March 2025

The major share of implementation of JJM with 86 *per cent* of schemes, was vested with KWA. Audit observed that 71 *per cent* of schemes undertaken by KWA remained incomplete. The percentage of non-completion of 69 schemes undertaken by KRWSA and 16 schemes undertaken by Ground Water Department stood at 46 and 19 respectively.

In respect of Multi-village schemes, the in-village piped water supply infrastructure consisted of pumping arrangement, Over Head Tanks, underground sumps, pipeline for water supply, water treatment plant, distribution network and bulk meter, etc. Accordingly, the IAs divided the schemes into several packages of works. As per the statement furnished by SWSM, 620 schemes sanctioned by the GoK comprised of 5,318 packages/works. State-wide physical status of these 5,318 works was as shown in **Table 4.2**.

Table 4.2: Details of physical status of packages

Total number of packages	Works completed	Ongoing works	Works not started	Works in tendering stage
5,318	2,726	1,668	377	547

(Source: Data furnished by KWA as on 05 December 2024)

Out of 5,318 works entrusted to IAs for implementation, only 2,726 (51 *per cent*) works were completed (November 2024). Nine hundred and twenty four³¹ works (17 *per cent*) were not commenced at the time of expiry of project period on 31 March 2024. Thirty one *per cent* of works (1,668 works) entrusted to IAs were ongoing.

Of the 13 major ongoing works in test-checked GPs, the physical progress exceeded 90 *per cent* in the case of one work only. In nine works, physical progress achieved was below 70 *per cent*.

The status of implementation of JJM in the three test-checked districts was as given in **Table 4.3**.

Table 4.3: Status of implementation of JJM in the three test-checked districts

Year	Details	Palakkad	Kozhikode	Kollam
2020-21	Target	4,10,496	1,38,625	3,03,310
	FHTCs given	75,539	17,803	30,631
	Percentage of target achieved	18.40	12.84	10.10
2021-22	Target	3,45,886	3,58,924	3,17,168
	FHTCs given	53,609	37,873	1,12,275
	Percentage of target achieved	15.50	10.55	35.40
2022-23	Target	3,84,516	3,20,368	3,25,647
	FHTCs given	47,021	40,183	93,342
	Percentage of target achieved	12.23	12.54	28.66
2023-24	Target	1,52,596	1,10,132	1,13,111
	FHTCs given	44,477	16,747	44,863
	Percentage of target achieved	29.15	15.21	39.66

(Source: AAP and JJM IMIS data)

³¹ Inclusive of works not started and works in tendering stage.

As against the targeted 100 *per cent* coverage of rural households with FHTCs, the State could achieve coverage of only 52.46 *per cent* by March 2024. In the three test-checked districts, the percentage of coverage was in the range of 38.70 to 70.34.

During the beneficiary survey conducted by Audit, 122 out of 342 (35.67 *per cent*) beneficiaries stated that the water connections either failed to provide water, or the supply was limited to two to four hours per day, whereas some of the locations received water only once or twice a week. Since these connections did not ensure regular supply of water in adequate quantity and prescribed quality, they cannot qualify as fully functional tap connections under JJM.

GoK attributed (June 2025) the slow pace of implementation to longer gestation periods of larger schemes, land acquisition challenges, lack of inter-agency coordination and delayed flow of funds. It was also stated that as the timeline for JJM has now been officially extended up to 2028, all the implementing agencies in the State were revising work schedules and resource planning to ensure timely and effective completion of remaining works by the revised deadline.

That the Government could not foresee the possible hindrances to hassle free implementation pointed to deficiencies in planning process. This underscores the need for formulation of VAPs and DAPs which would have facilitated identification of sources of convergence to meet the financial and institutional requirement, location of water source, implementation schedule, etc.

4.2. Time management in scheme execution

4.2.1. Delay in obtaining sanction for rail/road cutting

Scrutiny of project monitoring details uploaded in KWA website (as displayed on 30 January 2025) revealed that:

- Of the 7,458 applications relating to JJM works forwarded to various entities for obtaining road cutting sanction, only 3,387 applications were approved by the entities, indicating that 4,071 applications (54.59 *per cent*) were kept on hold, awaiting approval for road cutting. The details of such works are as shown in **Table 4.4** and **Chart 4.2**.

Table 4.4: Details of applications relating to JJM works pending for want of road cutting sanction

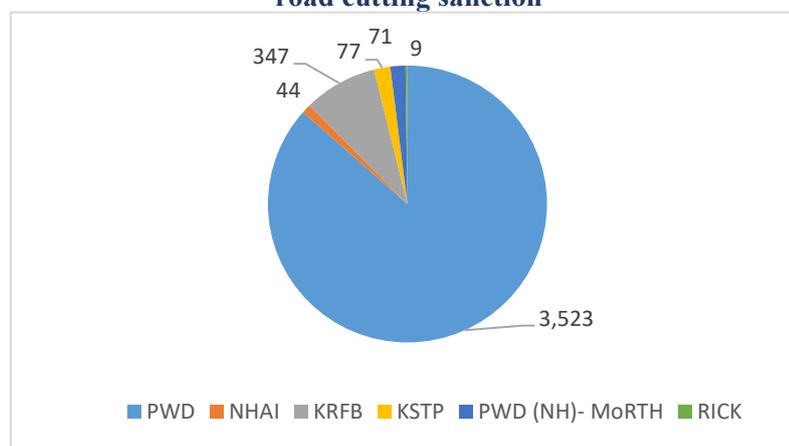
Name of the approving authority	Number of applications forwarded for road cutting sanction	Number of applications for which road cutting sanction received	Percentage of applications pending for want of sanction	Average period of delay in according sanction (in days)
Public Works Department (PWD)	6,583	3,060	53.52	154
National Highway Authority of India (NHAI)	123	79	35.77	60
Kerala Road Fund Board (KRFB)	516	169	67.25	224

Name of the approving authority	Number of applications forwarded for road cutting sanction	Number of applications for which road cutting sanction received	Percentage of applications pending for want of sanction	Average period of delay in according sanction (in days)
Kerala State Transport Project (KSTP)	113	36	68.14	180
PWD (NH) - Ministry of Road Transport and Highways (MoRTH)	110	39	64.55	390
Road Infrastructure Company Kerala Ltd. (RICK)	13	4	69.23	NA*
Total	7,458	3,387	54.59	

(Source: Data furnished by KWA)

*Not available

Chart 4.2: Agency-wise details of applications related to JJM works awaiting road cutting sanction



Audit observed that the sanctioning authority with highest number of applications, PWD, had an average delay of 154 days in granting permissions. Inordinate delay on the part of the sanctioning authorities resulted in pendency extending even upto 789 days in individual cases.

Out of 90 applications submitted State-wide (as on 19 March 2025), for approval from Railways for laying pipeline through railway land, permission was granted in the case of 63 applications. However, in 39 locations, the work could not be started even though permission was granted, and seven works were ongoing.

- In Kollam district, out of six works, only one work was completed and the remaining five works for which permission had been obtained from Railway, were not yet commenced. Of these, permission was awaited from NJJM in the case of four works and the remaining work can be executed only on completion of related pipe laying work.
- In Palakkad district, out of 20 applications submitted for approval of railway authorities, two were rejected due to the issue of parallel laying of pipes. In the case of six approved applications, railway crossing works

had not started due to land issues, delay in approval of excess/extra items by Technical sanctioning authority, etc.

- In Kozhikode district, though way leave permission was granted by railway to seven applications submitted, work had not started (March 2025) in any case, due to non-issuance of caution certificate by railway.

As on 19 March 2025, in 80 cases, the required land was not available from various sources, which stood in the way of commencement of works. Of these, 29 cases related to land under Forest Department, 38 cases to private land owned by GPs and 13 cases to Government owned land.

GoK stated that (June 2025) there was delay in obtaining road cutting permissions particularly from PWD, due to which the work front could not be made available for laying pipes. The reasons for delay were attributed to shortage of funds required to remit road restoration charges, periodical bans, non-expiry of Defect Liability Periods, delays in conducting joint verification, etc. It was also stated that a formal request for the amount to be remitted to NHAI was made to the Ministry of Jal Shakti in January 2024 and that funds were yet to be received. In the case of Railway clearances, it was replied that eight cases were pending. However, no records in support of the above statements were furnished by Government.

4.2.2. Extended time gap between Administrative Sanction and Technical Sanction

The schemes sanctioned under JJM were to be implemented without cost and time overrun. In case of any escalation beyond the approved cost, it was to be borne by the State and no additional expenditure out of Central share was to be made. The Guidelines also fixed the maximum time for completion of new SVS³² and MVS³³ as 18 and 36 months respectively, from the date of awarding the work. Further, for schemes requiring up to three years to complete, the contract was to be awarded for implementation before March 2021 and for schemes requiring up to two years to complete, the contract was to be awarded before March 2022.

Audit noticed significant delay in issuance of Technical Sanction (TS) by implementing agencies in the case of major works³⁴ for which Administrative Sanction (AS) has been issued. The extent of delay in issuing TS in the case of works for which AS has been obtained is depicted in **Table 4.5**:

Table 4.5: Abstract of major works in test-checked districts

Name of the District	Total no. of JJM works awarded during 2019-24	Works awarded after March 2022	No. of works in which TS was issued after 12 months from the date of AS	No. of works awarded after six months from the date of TS
Kollam	156	89	43	25
Palakkad	129	73	23	9
Kozhikode	138	57	33	11

(Source: IMIS data - Progress Report of JJM Works as on 11 February 2025)

³² Single Village Scheme

³³ Multi Village Scheme

³⁴ valued above ₹ one crore

In the case of works for which contract was to be awarded before March 2022, 89 works in Kollam, 73 works in Palakkad and 57 works in Kozhikode could be awarded only after March 2022, of which 43 works in Kollam, 23 works in Palakkad and 33 works in Kozhikode were plagued by inordinate delay ranging from 12 to 45 months in according TS.

GoK replied (June 2025) that TS was issued within a reasonable timeframe following surveys and approval of estimates. However, it was acknowledged that in several instances, the handover of land from the GPs/Revenue Department took longer than expected, causing delay in issuing TS.

Impediments in handing over of land could have been resolved through effective co-ordination between GPs/Departments, which would have minimised delays in issuance of TS.

4.3. Execution of schemes

The intake well, Raw Water Pumping Main (RWPM), Water Treatment Plant (WTP), Clear Water Transmission Main (CWTM), Overhead Service Reservoir (OHSR) and Ground Level Service Reservoir (GLSR) were critical components of a Water Supply Scheme (WSS). In case of failure/delay in awarding any of these critical components, the WSS could not become functional, thereby rendering the expenditure on laying distribution lines and FHTCs unfruitful.

4.3.1. Critical components of the scheme not being awarded

As on 15 March 2024³⁵, there were 72 JJM schemes (13.46 per cent) in the State with at least one of the critical components not awarded. The details of these schemes were as presented in **Table 4.6**:

Table 4.6: Details of schemes where critical components were not awarded

Critical Component not awarded (Number)	FHTC Planned (Number)	AS Amount (₹ in lakh)	Awarded PAC for rest of the components (₹ in lakh)	Total financial Progress (₹ in lakh)	Distribution planned (km)	Distribution laid (km)
CWTM (13)	2,18,390	1,61,037	81,594	27,203	3,708	1,107
Distribution Network (1)	39,521	29,519	8,982	6,899	444	0
OHSR and GLSR (15)	2,25,972	2,08,500	1,13,677	32,666	3,979	1,423
RWTM (4)	79,978	91,915	81,293	8,121	1,740	26
WTP (39)	5,07,526	6,31,176	3,33,280	68,981	13,029	3,557

(Source: KWA data)

Of the total amount for which administrative sanction was accorded for completion of 72 schemes, works costing only 52.80 per cent of the total sanctioned amount were awarded. The financial progress in respect of these works was only 20.69 per cent of the sanctioned amount. KWA estimated that it would require another ₹5,033 crore to meet the expenditure on remaining works when awarded, so as to commission the 72 schemes. Thus, owing to non-awarding of critical components, these schemes could not be made functional.

³⁵ the last date for awarding of JJM tenders as decided by GoI

GoK cited (June 2025) delays in land acquisition for components and timely funding for JJM schemes as the reason for the lukewarm response to tenders by contractors, which often necessitated multiple rounds of tender calls. The reply confirms the audit observation regarding non-awarding of critical components.

4.3.2. Deviation from accepted procedures while adopting QCBS method

The KWA followed the practice of L1 system till 2020-21, under which eligible bidder making the lowest quote in the e-tender was awarded contract. The MD, KWA decided (March 2021) to shift from conventional technologies and adopt cutting edge technology to execute water supply infrastructure projects involving complexity and high impact, at a fast pace. For this, KWA introduced Quality and Cost-Based Selection (QCBS) as an alternative strategy for bidding all works with outlay above ₹ five crore. Under this method, the tender was to be awarded to the bidder with the highest score (R1) based on the QCBS ranking, irrespective of whether the R1 bidder quoted the lowest price or not. The Notice Inviting Tender (NIT) was to be suitably modified to incorporate the QCBS guidelines and the pre-qualified³⁶ bidders were to be ranked, with 60 *per cent* marks given to technical parameters and 40 *per cent* marks to the financial parameters. In the test-checked districts, 31 works were awarded under QCBS for ₹679.25 crore.

Government sought (February 2022) justification from MD KWA for adopting QCBS method, as its evaluation of the R1 bidder was considered as highly complicated, lacked transparency and could be subjected to favouritism. Since QCBS involved major shift in the existing tendering methodology, consent of the Government was vital for its inception. However, KWA did not obtain sanction from GoK for introducing QCBS.

Government had earlier issued orders (September 2016) instructing that work should be awarded at a rate which was least among L1 rate, local market rate (LMR) and Delhi Schedule of rates (DSR)+10 *per cent* tolerance. In the absence of specific instructions from KWA on the finalisation of price bid, the field offices while awarding the work to R1, limited the award money in accordance with the above instructions of Government. A mention of the adoption of least rate as per the above Government order was not seen recorded either in the proceedings of MD, KWA, or in the NIT used for QCBS tenders.

On account of this omission, bidders of 16 works approached the Honourable High Court (HC) for obtaining the work order at quoted price which was above the LMR/DSR. The HC held (March 2023) the view that the Government order could not be applied to these instances as the terms and conditions of the tender were not to be deviated midway. As a result, KWA was forced to review the work orders of the above works and revise the accepted Probable Amount of Contract (PAC) at the rates quoted by R1 contractor. The variation in amount as calculated in line with QCBS method with that of the Government order amounted to ₹51.30 crore, which would be payable by KWA.

³⁶ Based on financial standing, past experience and organisational capacity

Thus, the omission on the part of KWA to incorporate the key aspects of the Government order in the NIT resulted in KWA becoming liable to make good the loss sustained by the contractors.

Government stated in reply (June 2025) that QCBS method of selecting bidders was frozen by the MD, KWA in March 2022.

4.3.3. Delay in implementation due to realignment

With the objective of achieving 100 *per cent* FHTCs under JJM in Sholayur GP in Palakkad district, the Panchayat Committee decided (July 2021) to implement Water Supply Scheme (WSS) to Agali, Pudur and Sholayur GPs. The work was awarded to a contractor for an amount of ₹29.61 crore and an agreement was executed (May 2023), with the implementing agency, KWA, with date of completion within 12 months from the date of agreement.

Scrutiny of files revealed that the contractor requested (February 2024) KWA to re-align the Clear Water Gravity Main (CWGM) Kottamedu tank to Kottathara through Mannarkkad-Anakatty road under PWD, instead of the route through forest land, included in the original scope of work. In May 2024, the contractor informed that the realignment of CWGM would necessitate change in location of pipeline bridge across Siruvani river, thereby leading to modification of design and necessary sanction for road cutting from PWD. Further, the location of booster pump house had to be shifted and pump set redesigned due to change in alignment. Hence, the contractor sought extension of time till 31 December 2024. KWA acceded to the request of the contractor and issued directions (September 2024) to re-align the CWGM through the PWD road.

In violation of provisions³⁷ in the Kerala PWD Manual, the implementing agency identified the need for re-alignment only when pointed out by the contractor after 10 months from the date of agreement, in February 2024. The incorrect preliminary investigation by the implementing agency resulted in delay in execution of the entire project. Consequently, the work which was to be completed within 12 months from the date of agreement remained incomplete till date (March 2025). The physical progress of the work was only 77 *per cent* even after expending ₹9.49 crore.

GoK stated (June 2025) that since the original alignment was in a difficult terrain, maintenance of pipeline would be difficult in future. The process of obtaining pipe laying sanction from Forest Department was also not easy. The proposal for revised estimate is under the scrutiny of TS authority for ratification. It was also stated that the change in alignment was proposed by KWA.

The reply is not acceptable as the availability of 100 *per cent* hindrance free land was not ensured before the bidding of work, which resulted in the overhaul of the work. Further, the contention of Government that the change in alignment was proposed by KWA was not acceptable as the Assistant Engineer, KWA,

³⁷ Every work was to be properly investigated and all relevant data collected and correlated before finalising the design and estimate for the work.

while initiating the proposal had referred to the request of the contractor, in his letter to the Executive Engineer, Project Division, Palakkad.

4.4. Irregularities noticed in contract management

4.4.1. Excess excavation charges in laying of pipes

As per the provisions in PWD Manual, detailed estimate of a work was to be prepared after investigation of the site by the authority concerned, on the basis of detailed designs and specifications for the work. The detailed estimate of a work was to reflect the cost of work as faithfully as possible, as could be foreseen at that time.

The Chief Engineer (Projects and Operations) directed (October 2021) field offices to use polyethylene (PE) pipes instead of PVC pipes for JJM works. As per Indian Standard (IS) Code of practice for plastic pipe works for potable water supplies, the High density polyethylene (HDPE) pipeline was to be laid alongside the trench in the road portion and after joining, the pipeline was to be lowered into the trench carefully without causing undue bending. The IS specified trench width of 300 mm for laying PE pipes of sizes 20-110 mm. While shifting over to PE pipes, the field offices at Kozhikode and Palakkad districts erroneously allowed the same trench width as permitted for PVC pipes (500 mm), instead of 300 mm, in the detailed estimate. The mistake went undetected for months during the initial period of introducing PE pipes, thus permitting the contractors to claim excavation charges amounting ₹2.84 crore.

Government replied (June 2025) that a uniform trench width of 300 mm is being currently adopted for all relevant estimates. However, the fact remains that excavations were carried out in excess of actual requirement, which was against provisions.

4.4.2. Deviations from accepted procedures resulting in change in scope of work

The General Financial Rules, 2017 stipulated that the terms of a contract must be precise, definite and without any ambiguities. The terms of a contract including the scope and specifications once entered into, were not to be materially varied. Whenever material variation in any of the terms or conditions in a contract became unavoidable, the financial and other effects involved were to be examined and recorded and specific approval of the competent authority obtained, before varying the conditions. Further, KWA had directed its officers (July 2001 and September 2008) not to tender any work unless the entire land required for completion and commissioning of the scheme was in complete physical possession of the Authority. The following instances noticed in audit were violative of the above conditions:

- *WSS to Ulliyeri, Moodadi and adjoining panchayats in Kozhikode district - Phase II Package III:*

HDPE pipes for laying distribution lines included in original proposal were replaced with PVC pipes, resulting in additional expenditure of ₹60.33 lakh to KWA, due to variation in rates for supplying and laying of PVC pipes with the estimated rates applicable to HDPE pipes.

- *WSS to Ulliyeri, Moodadi and adjoining panchayats in Kozhikode district-package V-Zone 1, providing FHTC by laying new distribution line at Meppayur GP:*

Non-availability of land necessitated change in design from OHSR to GLSR and identification of alternate site. However, the alternate site identified was also in dispute over approach road, due to which the work remained incomplete even after 20 months (February 2025).

- *WSS to Thenkara, Thachampara, Kanjirapuzha and Karakurussi GPs:*

The land made available for construction of OHSR was unsuitable due to insufficient bearing capacity as per the soil test results conducted. Alternate site made available by the GP also proved unfit for construction. Work remained in standstill (March 2025).

- *Phase II-WSS to Ulliyeri, Moodadi and adjoining Panchayats in Kozhikode district-Package IV-Zone II-providing FHTC by laying new distribution lines at Atholi GP:*

As the land initially proposed by the GP was found unsuitable due to soil conditions, an alternate site was proposed by the GP. The new site situated in a steep hilly terrain required considerable earth work, due to which the proposal of OHSR was changed to GLSR. The revised design of GLSR and RCC retaining wall to reinforce the site was submitted to an Engineering College and the work has not yet commenced (March 2025).

With reference to the first instance, the Government stated (June 2025) that during the installation of PE pipes, several complaints were raised by the GPs and public regarding delays in execution. One of the main concerns was the difficulty in sourcing the required special fittings, as these were not readily available in the open market. Considering the technical feasibility, the TS issuing authority sanctioned the change of PE pipe to PVC pipes without any financial burden. The Government further stated that Audit might have worked out the loss considering the tender excess for extra items. As PVC items were sanctioned as extra items and no tender excess was allowed for these items, no additional financial commitment was incurred.

The reply of Government was not acceptable, as subsequent to MD, KWA instructing field offices (August 2021) to opt for HDPE pipes instead of PVC pipes for JJM works, majority of JJM works in the State were tendered and executed with HDPE as part of scope of the work. Further, the loss was worked out in Audit considering the rates and length for PE and PVC pipes provided in the revised estimates sanctioned by the TS authority and no tender excess has been considered.

4.4.3. Extra liability to KWA due to irregular rate revision

As per Government Order issued in September 2016, all agencies undertaking public works were to ensure that the tender of the lowest bidder was accepted and the acceptable rate was to be limited to the least among the three items, viz., (i) quoted rate among the lowest bidder, (ii) local market rates of PWD, and

(iii) current DSR³⁸ plus latest cost index + 10 *per cent* tolerance limit. Further, the basic LMR adopted was to be the one prevailing at rates as on the date of opening the tender.

Audit observed that 17 tenders³⁹ in respect of WSS under JJM received at the office of the Chief Engineer (Northern region) (CE) for finalisation pertaining to four circle offices⁴⁰ during the period 07 June 2021 to 12 August 2021 were pending approval. Since the firm period of these tenders was due to expire in September 2021, the CE directed (September 2021) the circle offices to ensure that the firm period got extended till 31 October 2021.

Audit noted that though the two tenders at PH Circle, Kozhikode were opened on 11 June 2021, the work order was not issued keeping the firm period extended till 31 October 2021. Consequently, the work orders were issued on 19 November 2021 for both the works at ₹72.06 crore and ₹93.54 crore respectively, considering DSR and LMR at the time of opening the tender. The contractor requested (29 November 2021) for the work to be awarded considering DSR and LMR at the time of finalising the tender. The KWA, heeding to the contractor's request in violation of the prevailing Government orders, revised the work orders (30 November 2021) at ₹74.45 crore and ₹95.20 crore respectively and hence the resultant cost price escalation (**Appendix 4.1**).

On revision, LMR exceeded DSR and KWA finalised both the tenders at DSR rates which was the least among the three.

Government stated (June 2025) that for both the works, the awarded amount was below the quoted amount and the awarded amount was based on DSR PAC (2018) with 10 *per cent* excess only, which was the admissible amount.

The reply of the Government cannot be accepted since both the works were tendered with rates arrived from DSR 2016. As per the Government orders cited by Audit, the tenders can be finalised only with the prevailing DSR and LMR at the time of opening the tender. Moreover, Audit observed that though the work orders issued on 19 November 2021 were in tune with the prevailing Government orders, KWA, on behest of the contractor and in clear violation of the prevailing Government orders, revised the work order which resulted in committed extra liability of ₹4.05 crore.

4.4.4. Polymer pipes stacked at various locations for want of sanction for laying

The NIT for works taken up under JJM stipulated that all materials were to be supplied by the contractor in a phased manner as per the supply schedule prepared by the agreement executing authority. Quantity and time of each supply was to be specifically mentioned in this schedule in tune with the time of completion. Each supply of material was to be done by the contractor only after getting written instruction from the Executive Engineer (EE) concerned. The EE should direct the contractor to place supply order in each phase after evaluating actual progress of laying of pipes supplied in the previous phase.

³⁸ Delhi Schedule of Rates

³⁹ Two JJM works are from Kozhikode district and one from Palakkad district.

⁴⁰ PH Circle, Kozhikode, PH Circle, Palakkad, PH Circle, Malappuram and PH Circle, Kannur

In violation of the above provisions, the agreement sanctioning authorities⁴¹ had not prepared a road map regarding the phased schedule of supplies. Consequently, the contractors procured and stacked large quantity of polymer pipes for a long duration in respect of the works shown in **Appendix 4.2**.



Figure 4.1: Pipes stacked near Nadapuram Hospital, Photo furnished by KWA

Polymer pipes valuing ₹6.44 crore were stacked at various locations for a period ranging from one to nearly two years, awaiting sanctions for laying. The contractors were permitted to supply pipes without evaluating actual progress of laying of pipes supplied in the previous phase. The polymer pipes left exposed to prolonged ultraviolet radiation would turn brittle and prone to cracking due to photo-oxidation⁴², thereby affecting the strength and durability of pipes.

GoK replied (June 2025) that the pipes were stacked as the works were pending for want of road cutting permission and that the pipes were now properly covered and protected.

The reply was not acceptable as this was in clear violation of the provisions in the NIT where supply of pipes was to be effected only in a phased manner. Further, the Government reply (June 2025) was silent on the reasons for pipes being allowed to be supplied in such huge quantities and left idling for periods ranging from one year to two years, when there was no possibility of laying the pipes due to want of sanctions.

4.5. Quality Management in procurement

4.5.1. Irregular procurement of pipes from non-empanelled manufacturers

As per the Pipe policy of KWA, pipe material and other allied accessories contribute to over 60 *per cent* of the total cost of water supply and sewerage schemes and were critical to the success of the scheme. The GoK directed (October 2021) MD, KWA to pre-qualify and publish a list of qualified suppliers/manufacturers and include it in the NIT for works of procurement of pipes and allied items. Accordingly, MD, KWA circulated a list of empanelled manufacturers/suppliers from March 2022 onwards, instructing that materials from the prequalified manufacturers alone would be accepted by KWA.

Audit observed that pipes were being procured by firms/contractors from firms/suppliers not included in the empanelled list and utilised in JJM works at Kozhikode and Palakkad, the details of which are presented in **Appendix 4.3**.

This was violative of the provisions in the pipe policy of KWA.

Government reply was silent on the specific cases mentioned in the Appendix.

⁴¹ Office of the Superintending Engineer, PH Circle offices, KWA

⁴² A chemical process which reduces the polymer's molecular weight due to which the material becomes more brittle, with a reduction in its tensile, impact and elongation strength.

4.6. Avoidable expenditure

4.6.1. Charges paid by Har Ghar Jal Panchayats for tanker lorries/stand posts

The JJM envisaged achievement of overall state drinking water security by providing potable water to every household in the habitat, in such a way as to avoid arranging water supply through tankers/trains, handpump installation, etc. in any village. In the Har Ghar Jal panchayats, as 100 *per cent* of households were ensured as being provided with adequate quantity of potable water through FHTCs, the GPs were not expected to depend on alternate sources of water supply.

Audit observed that charges for standposts/supply of potable water in tanker lorries were being paid to KWA by two test-checked GPs even after being declared as Har Ghar Jal Panchayats. The details are given in **Table 4.7**:

Table 4.7: Details of expenditure for standpost/tanker lorry by Har Ghar Jal Panchayats in test-checked districts

Name of the GP	Name of the BP	Date of declaration as Har Ghar Jal GP	No. of standposts existing after declaration	Amount incurred for standposts (in ₹)	Amount incurred for tanker lorry operation (in ₹)
Munroethuruth	Chittumala	20 October 2022	318	3,85,814 per annum	Nil
Neendakara	Chavara	20 October 2022	46	55,810 per annum	2,46,883

(Source: Data furnished by GPs)

The fact that GPs declared as self-sufficient in terms of potable water supply continued to depend on standposts and tanker lorries in distress periods weakened the authenticity of selection of these GPs as Har Ghar Jal GPs. As the JJM envisaged ‘ease of living’ for rural community, especially women, non-availability of uninterrupted supply of water negates the targeted outcome of the JJM and adversely affects the ease of living of the rural community.

GoK replied (June 2025) that retention of standposts was the discretion of the Local Self Government Institutions and in case of the Har Ghar Jal GPs, KWA has ensured proper water supply through the established distribution network.

The reply is not acceptable as a GP, after being declared as Har Ghar Jal GP, continuing to depend on alternate sources of water, testifies its ineligibility to fit into the status of Har Ghar Jal GP. Further, the JJM objective of achieving overall State drinking water security by providing potable water to every household in the habitat was not achieved in the case of the aforementioned two Har Ghar Jal GPs.

4.6.2. Excess road restoration charges paid by KWA

Citing inability to pool additional funds for road restoration as part of JJM schemes, KWA decided (December 2023) to review the significantly higher road restoration charges claimed by PWD. In order to check the veracity of the claim of KWA that PWD was charging exorbitantly, Audit cross-verified actual

restoration charges remitted by KWA with the amount generated in PRICE 3.0⁴³ for five works⁴⁴ in the test-checked districts of Kollam and Kozhikode (**Appendix 4.4**) and noticed that ₹3.22 crore was paid in excess to PWD by KWA.

Thus, PWD had charged approximately 58.43 to 119.13 *per cent* in excess of actual requirement. Inaction on the part of KWA to timely pursue the matter of exorbitant restoration charges at the level of Government resulted in avoidable excess payment from JJM funds.

The Government replied (June 2025) that the estimates provided by PWD were accepted to avoid delays in obtaining necessary permissions and that engaging in disputes or prolonged negotiations over the rates could have significantly delayed the execution of works, thereby affecting the timely commissioning of water supply schemes.

Audit observed that the action of Government in accepting excessive rates of PWD had resulted in avoidable additional charge on GoI funds pertaining to JJM.

4.6.3. Compensation paid by KWA on account of damaged roads

The PWD granted permission (January 2023) to KWA for digging and laying pipes along the left and right sides of the Vadakkencherry-Pollachi road in Palakkad district and restoring the road back to its original state. KWA deposited ₹1.71 crore as security for digging the roads which were under DLP. PWD stated that permission was granted on the condition that one side of the road had to be completed and backfilled before digging the other side. Instead, the KWA contractor dug both sides of the road simultaneously and did not restore the road to its original form, resulting in further damage to the uncut portion of the road. This necessitated additional expenditure by PWD to temporarily set right the damaged road.

As per the directions from PWD Vigilance Wing to penalise KWA for the subpar work, PWD had deducted (August 2024) an amount of ₹42.50 lakh from the security deposit of ₹1.71 crore as damage compensation by KWA for the poor workmanship. Audit noticed that KWA has not claimed the amount from the contractor, in accordance with the terms of NIT⁴⁵ of the work.

The Government stated (June 2025) that at the time permission for road cutting was granted, the DLP of the road had already ended. The damage to the road was not caused by the work carried out by KWA and that KWA was responsible only for the restored portions, which were in good condition. It was further stated that the forfeiture of the security deposit was temporarily withheld by the District Collector Palakkad and that a joint inspection was conducted by the

⁴³ PRICE 3.0 is the latest version of the Project Information and Cost Estimation (PRICE) software developed by the Kerala Public Works Department (PWD) for the preparation and online approval of estimates.

⁴⁴ For which work files were made available to Audit

⁴⁵ If the width of trench exceeded the minimum requirement due to faulty workmanship/protection/shoring etc. the additional payment for the extra damaged road width payable to PWD/NH, local bodies, etc. was to be recovered from the contractor's bill.

District Collector along with KWA and PWD officials and report submitted to the Secretary, PWD.

The contention of the Government that the DLP of the road had expired cannot be accepted in Audit, since demand by PWD for remitting security deposit arises only in roads covered under DLP and any subsequent damages to the road will be deducted from the security deposit submitted by KWA. Audit also observed that the damages to the road were assessed by the Vigilance wing of PWD and hence the Government's contention in justifying the contractor cannot be accepted.

4.7. Source Inadequacies

4.7.1. Non-completion of augmentation of Water Treatment Plant leading to inadequate supply of potable water

The Bilateral Assisted Water Supply Scheme (BAWSS) to Kundara and adjoining Panchayats, aimed to provide 2,416 number of FHTCs to Kundara and 4,414 FHTCs to Perayam by 2023, so as to ensure 100 *per cent* FHTCs to these Panchayats. The proposal included extension of pipeline, augmentation of Water Treatment Plant (WTP) at Elampal and replacement of existing Asbestos Cement (AC) distribution network. The implementing agency, KWA proposed to first provide 500 FHTCs to Kundara and 1,514 FHTCs to Perayam. The remaining connections were agreed to be provided post renovation of the WTP. The works were tendered and awarded to the contractor in July 2021. Despite expending an amount of ₹8.87 crore on these works, the above works have not been completed till date (October 2024).

The following further observations were also made:

- Though the remaining 4,816 connections⁴⁶ were to be laid after augmentation of WTP, it was seen that the only work taken up as part of augmentation was the dismantling of one out of the four filter beds, which has not been restored till date (October 2024). The contractor provided 5,286 connections⁴⁷ in both GPs without undertaking any of the works relating to the renovation of the WTP.
- On a scrutiny of outflow details, it was noticed that the average production of treated water in the WTP Elampal was nine mld⁴⁸ against the installed capacity of 16 mld, which indicated 44 *per cent* shortage in its installed capacity. Readings in valve operation schedule in the GPs confirmed that water was being supplied only once in a week. This was due to the non-functioning of vital components of the WTP, *viz.*, clarifier, flash mixer, flocculator, rapid sand filter, air compressor, etc.
- As per the test report of EE, Water Quality Division, Thiruvananthapuram (June 2024), the colour and turbidity of water was above the permissible limits and Coliform bacteria and E-coliform bacteria were present in the sample.

⁴⁶ 1,916 in Kundara and 2,900 in Perayam

⁴⁷ 2,526 in Kundara and 2,760 in Perayam

⁴⁸ Million litres per day

Source inadequacies as mentioned in the above paragraphs would hinder uninterrupted supply of quality water for consumption and hence needed to be addressed on priority.

The Government stated (June 2025) that the laxity on the part of the contractor had delayed the improvement works of WTP and assured that it will be resolved soon by taking appropriate action.

4.7.2. Non-commissioning of tube wells leading to non-supply of water

The scope of work Phase I - CWSS to Chavara - Panmana Jananidhi scheme under JJM 2021-22 included construction of six tube wells by KWA as part of source improvement. KWA provided (March 2024) 2057 out of the proposed 2864 connections and requested Panmana GP for list of beneficiaries who had not been supplied with FHTCs. The GP did not provide the said list to KWA. KWA informed (July 2024) the Secretary of the GP that it was not in a position to take up the O&M work of the scheme and requested the GP to commission the scheme by taking over the tube wells. Audit scrutiny revealed that the GP had to remit arrears of bulk meter charges amounting to ₹884.11 lakh for the period from January 2014 to February 2025, to KWA. On account of persistent reluctance of the GP to pay the pending charges, KWA was not willing to take up the O&M of the scheme. Thus, the scheme continued to be non-operational, resulting in an infructuous expenditure of ₹278.90 lakh.

During the beneficiary survey, 17 out of 22 beneficiaries reported that there was no water supply through the JJM tap connections provided.

Government replied (June 2025) that water supply in the GPs was carried out by SLEC/GP and that the tube wells were constructed on the basis of resolution of GP, in order to cater to the water scarce areas. It was also stated that KWA had no role in the O&M of water supply in Panmana GP. No response has been received from Local Self Government Department till date (June 2025).

4.8. Quality Issues in water supply

4.8.1. Non-functional Reverse Osmosis Plants in Fluoride affected habitats

The Operational guidelines of JJM stipulated that, in water quality-affected habitations, especially with Arsenic and Fluoride contaminants, potable water had to be ensured on priority. As an interim measure towards achieving this, Community Water Purification Plants (CWPP) were to be set up to provide 8-10 lpcd potable water to meet the drinking and cooking needs of every household residing in such villages/ habitations by March 2021.

An amount of ₹284.77 lakh was earmarked for the installation of CWPP for fluoride affected habitations in Palakkad district as shown in **Table 4.8:**

Table 4.8: Details of fund allocated for CWPP in test-checked GPs

Grama Panchayat	Amount earmarked for CWPP (₹ in lakh)
Agali	52.77
Trikkaderi	89.00
Mundoor	128.00

Grama Panchayat	Amount earmarked for CWPP (₹ in lakh)
Kizhakkancherry	15.00
Total	284.77

(Source: Administrative Sanctions issued by GoK)

It is pertinent to note that the survey conducted (2023-24) as part of the National Programme for Prevention and Control of Fluorosis in three schools in a test-checked GP, Agali, confirmed fluorosis in 37 of 369 samples (10 per cent) tested. Out of 3600 samples tested all over Palakkad district, dental fluorosis was confirmed in 1280 samples (35 per cent), which called for immediate rectification measures. Apropos of the above, the District Medical Officer had sought (January 2023) details of fluoride affected regions in Palakkad from KWA and the GPs⁴⁹ and urged (March 2024) the local bodies to find solution to the problem in a scientific manner. However, Audit could not find any effective remedial action being taken by KWA/GPs, to address the health hazard.

Government stated in reply (June 2025) that, five⁵⁰ Reverse Osmosis (RO) plants⁵¹ costing ₹47.01 lakh were installed (June 2021) in the test-checked GP, Agali. However, Joint Physical Verification conducted (June 2025) by Audit subsequently in Agali GP, alongwith the officials of KWA Mannarkkad Section, Palakkad, revealed that all the five RO plants installed were left non-functional in an abandoned state, as shown in **Figure 4.2**.



Figure 4.2: Non-functional RO plant at Agali GP.
Photo taken by Audit party on 20 June 2025

The expenditure incurred on the RO plants had thus become unproductive, depriving the local population of access to safe drinking water.

4.8.2. Non-provision of Community Water Purification Plant in Water Quality Affected areas

The Central Ground Water Board (CGWB) report recorded the prevalence of six parameters⁵² in ground water and recommended for installation of CWPP as an immediate relief measure to provide 8-10 lpcd potable water for drinking and cooking purpose. The JJM-WQMIS data with respect to the water quality

⁴⁹ which included the test-checked GPs of Sholayur and Kollengode.

⁵⁰ Three plants in Kallumala colony, one in Kavundikkal colony and one in Thavalam colony.

⁵¹ GoI directed to install CWPP including Reverse Osmosis plants in affected areas.

⁵² Arsenic, Chloride, Fluoride, Iron, Nitrate and Salinity

affected habitats since 01 April 2019 identified Nenmeni habitation of Munroethuruth GP in Kollam district as an affected habitation.

Audit observed that the latest tests conducted (April 2025) by KWA in the samples taken from Nenmeni ward in the GP showed chemical contamination of high iron content. However, no CWPP has been provided to the habitat yet, even as an immediate relief measure. It is significant to note that Munroethuruth GP was declared as 'Har Ghar Jal' Panchayat on 20 October 2022 vide resolution passed by the GP, despite being notified for water quality issues and lack of remedial action.

In the Focus Group meeting conducted (November 2024) by Audit, the GP stated that no action has been taken by KWA to address the issue and that the residents used bottled water for consumption. The Assistant Engineer, KWA justified the non-provision of CWPP on account of a multi village scheme⁵³ with WTP being undertaken as a permanent solution for water quality issues. However, Audit noted that out of 16 packages of the above WSS, only four packages were completed and the works relating to nine packages had not even commenced. As supply of treated water from this MVS to the quality affected areas was a remote possibility in the near future, immediate relief measure like CWPP was the need of the hour.

Government stated (June 2025) that recent sample test results confirmed that the water supplied met the desired quality parameters. However, no records in support of the claim were provided to Audit. Further, the samples tested by QCDL Kollam from Nenmeni ward on 28 March 2025 on request of Audit, as depicted in Paragraph 5.3, showed high iron content of 1.28 mg/l, which is above the acceptable limit.

4.9. Functional Household Tap Connections not provided in priority areas

JJM guidelines advocated provision of FHTCs by March 2021 in water quality-affected areas, Japanese Encephalitis and Advanced Encephalitis Syndrome (JE-AES) affected areas, Desert Development Programme (DDP) areas, Drought Prone Area Programme (DPAP) areas, Aspirational districts and Sansad Adarsh Gram Yojana (SAGY) villages. However, it was seen that 100 per cent FHTCs were not provided in any of the prioritised areas in test-checked districts and the only aspirational district in the State till date (March 2025) as presented in **Table 4.9**:

Table 4.9: Details of FHTCs in priority areas

Details of priority	District	No. of Panchayats/habitats	Total number of HHs	Number of FHTCs provided	Percentage of completion
Aspirational District	Wayanad	23 (Panchayat)	1,91,308	72,158	37.72
Quality affected areas	Palakkad	2 (habitat)	768	689	89.71
	Kozhikode	15 (habitat)	6,452	786	12.18
SAGY	Palakkad	3 (Panchayat)	19,406	8,073	41.60
	Kollam	3 (Panchayat)	31,736	20,606	64.93

(Source: JJM IMIS data as on 21 March 2025)

⁵³ WSS to Perinad, Panayam, Thrikkaruva and Munroethuruth

Thus, a critical system of JJM i.e. to prioritise provision of FHTCs in quality affected areas/ aspirational district/ SAGY villages etc. remained unfulfilled.

GoK replied (June 2025) that since most of the schemes were MVS, it was not possible to separate priority areas as most of the priority areas will be distributed among different GPs. It was further stated that once the WTPs were operational, the remaining FHTCs will be provided.

The reply is not justifiable as it reflects the low priority accorded to providing FHTCs in areas to be prioritised. The only aspirational district Wayanad had one of the lowest performances (38 *per cent*) in implementation of JJM in the State. Further, the SAGY GPs among the test-checked GPs in Palakkad, viz., Agali, Pudur and Sholayur had a single scheme, WSS to Agali and adjacent GPs, and the physical achievement of the scheme as on 01 November 2024 was just 18.33 *per cent*. Not even a single FHTC was provided to the above three GPs under the scheme till date.

4.10. Failure to adopt single village schemes in Q&Q Blocks

Ground water is a major source of drinking water in the State and rural households in Kerala rely on dug wells for drinking water purpose.

The Central Ground Water Board (CGWB) identified a list of Quantity and Quality blocks (Q&Q Blocks) which had ground water in adequate quantity of prescribed quality. In villages where ground water/ surface water/ spring water was available in terms of both quantity and quality, the States were advised to undertake Single Village Schemes (SVS) based on these sources. Multi Village Schemes (MVS) were suggested to be taken up in those blocks, which did not fall under the category of Q&Q blocks. Of the 152 blocks falling in the 14 districts in the State, three were categorised as ‘critical’, 27 blocks were ‘semi-critical’ and remaining 122 blocks fell under ‘safe’ category.

Of the 21 GPs test-checked, it was observed that not even a single SVS was implemented in 15 GPs situated in four⁵⁴ safe Q&Q blocks. KWA undertook MVS in these GPs, which remained non-functional due to delay in completion of components. In the two safe Q&Q blocks Chittumala and Chavara in Kollam district which included eight test-checked GPs⁵⁵, the MVS being implemented drew water from Kallada river and Sasthamcotta lake respectively. Both these sources were facing the threat of depletion due to over exploitation.

GoK replied (June 2025) that Q&Q block may be a small geographical area where a comprehensive scheme already existed or was part of a newly designed MVS. In such cases, it was economical and sustainable to give line extension from the MVS to that area. However, Audit observed that new schemes were implemented in test-checked GPs (Panayam, Munroethuruth) with source as Kallada river, though it was included in the Q&Q blocks where SVS could have been taken up.

Further, it was stated that ground water sources were susceptible to biological contamination and O&M cost of the SVS was high. However, Audit could not find reports of any feasibility studies conducted in this regard. Evidence for

⁵⁴ Chavara, Chittumala, Attappadi, Melady

⁵⁵ Chavara, Neendakara, Panmana, Thevalakkara, Kundara, Munroethuruth, Panayam and Perayam

considering SVS while taking up new schemes was not included in the minutes of DWSM, SWSM and Source finding committee. Audit compared the cost per household for FHTCs of SVS and MVS and noticed that the cost of providing FHTCs in SVS was lower than that in MVS.

4.11. Tap connections not provided at specified locations

Paragraph 3.5 (ii) of JJM guidelines mentioned that FHTCs may be planned to be provided in every household with three delivery points (taps), viz., kitchen, washing and bathing area and toilet, to keep water clean and prevent misuse. The details of tap connections provided in the houses verified by audit in test-checked BPs were as shown in **Table 4.10**:

Table 4.10: Details of tap connections provided in test-checked Block Panchayats

Name of the District	Name of the Block Panchayat	No. of houses verified physically by audit	No. of houses in which tap connections not provided in the specified locations	Percentage of tap connections provided in specified locations
Kollam	Chittumala	85	85	0
Kollam	Chavara	90	89	1
Palakkad	Kollengode	97	97	0
Kozhikode	Kozhikode	50	50	0
Kozhikode	Melady	20	20	0
	Total	342	341	-

(Source: Beneficiary Survey conducted by Audit)

According to the beneficiary survey, the tap connections were provided outside the houses of beneficiaries and not at locations specified. Tap connections not being provided at specified locations was a deviation from the Guidelines of the scheme.

GoK replied (June 2025) that extension of service lines inside the property of individuals would lead to increase in cost per connection and cost of JJM. The reply was not acceptable. When the estimates provided for additional lengths, it was not clear as to why KWA did not provide FHTCs in specified locations under the scheme, which would have facilitated ease of living for rural community, especially women.

4.12. Lack of potable water supply to SC/ST dominated areas of test-checked Grama Panchayats

The JJM aimed at providing every rural household in the country with potable tap water supply by 2024, including those in tribal areas and areas that are not reachable by motorable road in forest and hilly regions. While allocating the fund, 10 per cent weightage was to be assigned to population residing in SC/ST dominated areas, to prioritise coverage in these areas. Of the 0.42 lakh rural households residing in SC/ST areas in the State, only 32 per cent households had access to tap water supply. Against this backdrop, Audit assessed the extent of shortage of potable water supply in the SC/ST dominated areas in the test-checked districts, the results of which are detailed in **Table 4.11**:

Table 4.11: Status of potable water supply in SC/ST dominated habitations

District	Test-checked BP (GPs)	Status of supply of potable water
Palakkad	Attappadi (Agali, Pudur, Sholayur)	<ul style="list-style-type: none"> • Mini water supply schemes implemented to tide over the water crisis in the three GPs were not successful and hence a comprehensive WSS to Attappadi was conceived (May 2022) by KWA. The pace of implementation of the scheme decelerated considerably since August 2023 due to paucity of funds and delay in execution of works. Not a single FHTC was provided under JJM in the three test-checked GPs. • In Mulli ward in Pudur, inhabitants were excluded from JJM due to inability of KWA to provide water to the place located at very high altitude. • Korathipara habitation in Agali GP was not provided with distribution line and was excluded from JJM.
Kozhikode	Melady (Keezhariyur GP)	<ul style="list-style-type: none"> • Oorukunnu SC colony in the GP was excluded from the final plan without the notice of the GP. It was opined that this exclusion created gaps in expected service delivery.

(Source: Minutes of Focus Group Meetings conducted by Audit)

GoK replied (June 2025) that JJM works were in progress in Agali, Pudur and Sholayur GPs. The reply is not tenable, as no progress in implementation has been recorded since August 2023. No remarks were seen offered in the case of Keezhariyur GP.

Recommendations

- **Government may lay down a protocol for the implementing agencies of JJM on coordination with Departments and GPs for timely clearances for rail/road cutting.**
- **Government may ensure that Community Water Purification Plants are set up and made functional in water quality-affected habitations, so as to provide uninterrupted supply of potable water to meet the drinking and cooking needs of households.**

CHAPTER V
WATER QUALITY MONITORING AND
SURVEILLANCE

CHAPTER V

WATER QUALITY MONITORING AND SURVEILLANCE

The State Referral Institute (SRI), Nettoor, was equipped to conduct tests for 40 parameters in lieu of 73 number of water quality parameters to be tested at State level. Posts such as Chief Chemist, Microbiologist/Bacteriologist, Laboratory Assistant and Data Entry Operator were not sanctioned to SRI. A project initiated for strengthening the SRI infrastructure facilities was pending completion (June 2025) even after expending ₹5.65 crore.

Audit noticed that sub divisional laboratories did not conduct water quality testing covering all water sources under their jurisdiction. The results of samples which were tested positive were not shared with the community/GP for awareness and for remedial action. Water surveillance at GP/Village level by using FTKs was confined to the year 2021-22 only.

Audit observed that all the labs operating in the State had a turnaround time greater than seven days. The average turnaround time of district labs in test-checked districts of Kozhikode, Kollam and Palakkad was 45, 40 and 33 days respectively.

Drinking water quality monitoring and water quality surveillance are distinct, yet closely related activities. Water quality monitoring involved laboratory and field testing of water samples collected from water sources and FHTCs, whereas water quality surveillance was undertaken by local community using Field Test Kits⁵⁶ (FTKs) and H₂S vials.⁵⁷ JJM emphasised on the provision of potable water as prescribed by the Bureau of Indian Standards (BIS). The IS 10500:2012⁵⁸ was formulated with the objective of assessing the quality of water resources and to check the effectiveness of water treatment and supply by the authorities concerned.

5.1. Institutional framework of laboratories in the State

Under JJM, laboratories were to be set up at three levels - a nodal unit at the top-level, district laboratories at intermediate level and sub district labs at grassroots level. There was one State level Lab at Nettoor, Kochi and 14 district labs and 71 sub district labs in the State, of which 54 sub district labs were established and upgraded during the period of implementation of JJM, utilising an amount of ₹19.66 crore.

5.1.1. State level Laboratory

The State Referral Institute (SRI) established (February 2009) at Ernakulam, designated as the State lab and nodal unit for WQMS in Kerala operated under

⁵⁶ A portable multi-parameter kit used for examination of physio-chemical contamination as initial screening for water contamination to provide indicative test results that help in identifying potential water quality issues.

⁵⁷ Hydrogen Sulphide (H₂S) vials are used for ascertaining the presence/ absence of bacteria in water.

⁵⁸ IS 10500:2012 prescribed 13 basic water quality parameters such as pH, turbidity, total alkalinity, total hardness, etc.

the administrative control of KWA. The SRI was to oversee three Quality Control Divisions (QCD) with 14 District labs and 71 Sub Divisional Labs.

- The Water Quality Monitoring and Surveillance Framework (WQMSF) mandated establishment of an Independent Drinking Water Quality Commissionerate with the authority to oversee water quality testing. The roles and responsibility related to water supply and water quality monitoring were to be segregated along with personnel. The personnel working in SRI and District Laboratories were appointees of the Managing Director, KWA. The Director, SRI was a Superintending Engineer (SE) of KWA and the Executive Engineers (EE) from KWA headed its QCDs. The posts of the Director and the Heads of QCDs in SRI were interchangeable with those of SEs and EEs in the Public Health (PH) Circles and Divisions of KWA.

Government stated (June 2025) that QCDs were working more or less independently, even though there was intra-swapping of staff and infrastructure. The Quality Control wing was started as a separate vertical to ensure that the system operated separately and independent of the other verticals.

The above reply was not in consonance with the JJM Guidelines which envisaged de-coupling of water supply delivery function from water quality testing service to ensure transparency and accountability. The existing system carried the risk of conflict of interest as evidenced in non-communication of test results to stake holders and low priority given to water quality surveillance using FTKs.

- Government had not sanctioned the post of Chief Chemist⁵⁹ at the State level laboratory till date, so as to independently co-ordinate the activities of the laboratories in the State and to represent SRI in SWSM. The posts of Microbiologist/Bacteriologist, Laboratory Assistant and Data Entry Operator were also not sanctioned to SRI.

Government replied (June 2025) that creation of posts was a matter of policy decision of the Government and that the functioning of SRI was properly managed by utilising the available manpower and by hiring required manpower as per rules. It was also stated that the duties of Chief Chemist were performed by the Senior-most Chemist.

However, no records were produced to substantiate assigning of duties of Chief Chemist to the Senior-most Chemist. Further, SWSM had not nominated the Chief Chemist as the member of Executive Committee. It was also significant to note that Laboratory Gap Assessment and Improvement Plan 2025 of SRI had identified the need for appointing of permanent staff, which was required for maintaining National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation.

- The Institute faced deficiencies in physical infrastructure and manpower, which prevented it from conducting the full range of

⁵⁹ An individual with at least 15 years of experience in water quality analysis and a postgraduate degree in Sciences was to be appointed as the Chief Chemist at SRI, who was to oversee all drinking water quality testing laboratories in the State and report directly to the Secretary, WRD.

prescribed analyses. Of the mandated 73 number of water quality parameters to be tested at State level, SRI was equipped to conduct tests for 40 parameters only. The SRI was currently functioning in the building of Quality Control Division of KWA at Kochi. The available space in the two floors was being utilised for various utilities like laboratories, storage, office space, rest room, etc. of both the offices and a sub district laboratory.

- Audit noted the fact that though administrative sanction was accorded (August 2020) for construction of new building for SRI at Nettoor, Ernakulam and ₹5.65 crore was already spent for the purpose, only 72 per cent of the work was completed as shown in **Figure 5.1**. The project has been stalled from August 2024, with tendering for electrical works pending.



*Figure 5.1: New SRI Building under construction at Nettoor.
Photo taken by Audit party on 04 October 2024*

Government assured (June 2025) that action was being taken to equip SRI laboratory to test the remaining parameters. In the case of infrastructure, it was stated that the issues associated with the new SRI building were being sorted out and that the construction would be completed quickly.

5.1.2. District Level Laboratories

There were 14 district laboratories in the State, which had NABL accreditation for 17 parameters. Only three out of 14 district laboratories got NABL accreditation for microbiology.

As per WQMSF, a district laboratory was to test 250 water sources/samples per month (3,000 water sources in a year⁶⁰). All sources spread geographically were to be randomly covered, including the samples tested positive, referred by the sub divisional/block laboratory/mobile laboratory for atleast 13 basic water quality parameters. The district laboratory was to refer the samples which tested positive to the State laboratory immediately and communicate test results to District Panchayat (DP), GPs and/ or its sub-committees for corrective action.

Audit however observed that the district laboratories did not communicate the test results to DP or GP for remedial action. This led to the GPs being left unaware of the status of water quality in their jurisdictional area.

⁶⁰ As per the target of roster available on Department/National Mission IMIS

Government replied (June 2025) that the test results were uploaded in the Water Quality Monitoring and Information System (WQMIS) site and GP, DP and general public had access to view these details.

Audit noticed that in WQMIS (Format WQ1 to 6), vital information such as date of sampling, date of issue of test report, location of sampling and remedial action taken was not available. There were delays in uploading the test results in WQMIS and in test-checked districts, the turnaround time ranged between 33 and 45 days.

As test results were not shared with the GPs, there was no mechanism to generate awareness among communities to not consume water for cooking and drinking from contaminated sources.

5.1.3. Sub Divisional Laboratories

There were 71 sub divisional laboratories in the State, out of which 70 laboratories obtained NABL recognition for testing chemical parameters. Only two out of 71 laboratories got recognition for testing bacteriological parameters.

Sub divisional/block level laboratories were required to test 100 *per cent* of water sources under their jurisdiction; once for chemical parameters and twice⁶¹ for bacteriological parameters in a year. The samples tested positive were to be referred to the district laboratory and the test results were to be shared with the community.

However, sub divisional laboratories in test-checked districts did not conduct water quality monitoring, covering all water sources under their jurisdiction. The test results were not shared with the community/GP for awareness and remedial action.

Government reply stated (June 2025) that only the sources of piped water supply were currently being tested and since the remedial actions were done by the implementing agency, the details were not officially communicated to GP.

The reply was not acceptable as the GPs had a legitimate right to know the test results of water samples in their jurisdictional areas.

The KWA stated in Exit conference (May 2025) that its quality control labs were monitoring the sources of KWA schemes in their jurisdictional areas alone. The aforementioned contentions of Government/KWA are to be viewed in the light of KWA's own statement in the Exit conference that there were 63 lakh wells in use in Kerala. Exclusion of these sources from the sphere of testing tantamounts to exposing them to the threat of biological and chemical contamination of water consumed. Further, the objective of JJM being supply of potable water to 100 *per cent* of households, exclusion of such significant number of sources from testing was against the provisions of WQMS Framework.

⁶¹ Pre and post monsoon

5.2. Effectiveness of Water Quality Testing at Grama Panchayat/ Village Level

As per WQMS Framework, all drinking water sources were to be tested for water quality using FTKs at least once a month and the results of these tests systematically uploaded to the WQMIS portal.

Audit noticed that SRI procured 7,605 FTKs and 7,60,500 Bacteriological Vials (BV) during the financial year 2021-22. Ever since the commencement of JJM programme, procurement of instruments was undertaken only during 2021-22. Furthermore, the date of expiry of instruments costing ₹6.88 lakh had elapsed, as testing process was not carried out on time as shown in **Table 5.1**.

Table 5.1: Details of FTKs and BVs procured by SRI during 2021-22

Test Instrument	Details of Procurement		Details of expired instruments	
	Number	Value (₹ in lakh)	Number	Value (₹ in lakh)
Field Test Kits	7,605	72.78	401	3.83
Bacteriological Vials	7,60,500	54.26	42,800	3.05
Total		127.04		6.88

(Source: Reply furnished by SRI)

Further, during the course of audit, it was observed that five FTKs which could have been used for testing 500 samples, received by Munroethuruth GP for testing the water samples, were left unused with its sealed contents including bottles of reagents left unopened. The FTKs were found dumped inside the GP office and their dates of usage had already expired, as shown in **Figures 5.2 and 5.3**:



Figure 5.2: Unused bottles in the FTKs kept inside Munroethuruth GP office



Figure 5.3: Expired reagents supplied with FTKs kept at Munroethuruth GP office

Audit also undertook (March 2025) testing of water samples in Nenmeni ward of Munroethuruth GP in laboratories and found that the water samples collected from Nenmeni were chemically contaminated. Had the GP utilised the FTKs and regularly tested the quality of water supplied, remedial measures to mitigate the health hazards of chemical contamination of drinking water could have been initiated.

Government replied (June 2025) that Kudumbashree was engaged in testing using FTKs which was stopped due to dispute over payment. Government further stated that KWA was having a network of 84 labs and therefore the stoppage of testing using FTKs did not affect the quality monitoring of drinking water in the State.

The contention of Government was not tenable as KWA, with its established network of 84 labs had not ensured regular testing of water in the Nenmeni ward, which was exposed to contamination of sources. KWA laboratories undertook water quality testing in Nenmeni ward only once in a year.

5.3. Discrepancies among values in the results of Water Quality Tests

The WQMS Framework insisted upon the conduct of water quality surveillance by the local community every month. The activities of water quality monitoring and surveillance also included cross verification of water quality data and integration with other laboratories of State/ Central Government agencies.

Audit team, assisted by KWA, collected water samples from two different sources each from the test-checked districts and tested them at the Quality Control District Lab (QCDL) of KWA, and further at other labs on the same day and at QCDL after two months. The comparison of values among the test results conducted by QCDL and other laboratories is depicted in **Appendix 5.1**:

- While comparing the test results conducted by QCDL, Kollam with that of CEPCI⁶², Audit observed that the values in test results of the water samples taken from the same location showed variations, when re-checked within a period of two months. Iron content in the sample checked increased by 0.57 mg/l and turbidity by 4.0 NTU⁶³. Though the test results of CEPCI conducted on the very same day showed lower values of iron content and turbidity with that of QCDL, total coliform presence was positive for CEPCI, whereas it was negative in the test results of QCDL.
- In Palakkad district, the test results showed variations in the parameter value of Fluoride by QCDL, Palakkad (0.20 mg/l) and EMAL⁶⁴ (1.0 mg/l), indicating a difference of 0.80 mg/l. In the second sample collected, the test results of QCDL showed presence of coliform whereas it was absent in the results of EMAL.
- In Kozhikode district, the test results by CWRDM⁶⁵ showed presence of coliform in one of the samples, whereas it was absent in the report of QCDL, Kozhikode.

The above discrepancies point towards the urgent need to review the surveillance and quality testing mechanism and analyse the causes of variation in test results conducted in samples drawn from the same source on the same day.

Government replied (June 2025) that as KWA laboratories ensure accuracy and maintain ISO/IEC 17025:2017 accreditation, the chance for error in test results from QCD lab of KWA is very remote.

The reply is not tenable, as Audit noticed that results of water sample tests conducted at QCDL, Kollam within an interval of two months showed variation

⁶² Cashew Export Promotion Council of India Laboratory and Research Institute, Kollam

⁶³ Nephelometric Turbidity Unit

⁶⁴ Environmental Monitoring and Analytical Laboratory, Palakkad

⁶⁵ Centre for Water Resources Development and Management, Kozhikode.

in iron content from 0.71 mg/l to 1.28 mg/l, as against the acceptable limit of 1.0 mg/l, which has been included in Paragraph 4.8.2 of this Report.

It was evident that cross verification of water quality data and integration with other laboratories of State/Central Government agencies as well as inter/intra laboratory comparison with the results of other laboratories have not been done, as prescribed in Guidelines of JJM/ISO.

5.4. Non-adherence to prescribed Turnaround Time

A turnaround time⁶⁶ of 24 hours was advised for testing chemical parameters and not beyond 48 hours for testing the biological parameters. Audit, on reviewing IMIS data, observed that all the labs operating in the State had a turnaround time greater than seven days.

The average turnaround time of district labs in test-checked districts of Kozhikode, Kollam and Palakkad was 45, 40 and 33 days respectively.

Government stated (June 2025) in reply that testing of all samples was completed within three to five days and that any delay in publishing the results would be examined. It was also stated that, the actual testing of water samples in the three test-checked districts was carried out within the prescribed turnaround time. However, no records to substantiate the claim was furnished to Audit by Government.

5.5. Other deficiencies noticed in implementation of Water Quality Monitoring and Surveillance Programme (WQMSP)

5.5.1. Sanitary survey

JJM guidelines prescribed formulation of a Water Safety Plan which included both water quality testing and sanitary inspection to determine appropriate control measures. A sanitary survey was to be carried out once in a year for all drinking water sources in the State. Annual sanitary survey, if conducted, was to be reported and remedial actions taken.

Audit noticed that sanitary survey as envisaged in the guidelines has not been conducted in the test-checked GPs and water security plan has not been prepared for the State.

Government replied (June 2025) that though annual sanitary survey has been conducted, the entire data was not being uploaded into the WQMIS portal due to lack of manpower. It was also stated that action was being taken to enter details of sanitary survey in WQMIS Portal.

However, no records pertaining to sanitary survey or any remedial action taken was provided to Audit to substantiate the claim of the Government.

⁶⁶ Turnaround time for laboratory services is done by taking the time of sample collection at the water quality laboratories as the starting point and the printing of reports/ receipt of electronic report as the end point.

5.5.2. Mobile Laboratory

Establishment of mobile laboratories to undertake regular water quality surveillance of sources of drinking water in far off/tribal/forested areas was to be prioritised. Mobile laboratory was deemed essential for conducting testing of water samples in remote locations and disaster-prone areas. However, Audit noticed that Mobile laboratories have not been made operational in the State.

Government replied (June 2025) that as KWA had a network of 84 labs undertaking quality monitoring and surveillance activities, establishment of mobile laboratories was not a necessity at present as it required additional expenditure. The reply was not acceptable in light of the observations relating to inferior quality of water provided to rural households, as revealed in tests mentioned in Paragraph 5.2 of this Report. Further, Government had made it clear during Exit conference that testing was restricted to sources of water supply of KWA alone. Kerala, being a State characterised by uneven terrains and frequent natural calamities, mobile laboratories would have supplemented and strengthened the coverage area of quality testing and surveillance.

Recommendation

- ***Government may ensure that KWA conducts water quality monitoring and surveillance programmes on a regular basis through Quality Control divisions and State/district/sub divisional laboratories and communicates test results to stakeholders in a timely manner.***

CHAPTER VI

MONITORING AND EVALUATION

CHAPTER VI MONITORING AND EVALUATION

KWA reported that Supervisory Control and Data Acquisition (SCADA) system was installed only in six water treatment plants of capacity 75 mld and above, out of 241 water treatment plants in the State. Audit also noticed that in 99 cases, the geo-tagged data captured in respect of FHTCs were related to positions outside the State.

On scrutiny of e-Abacus data pertaining to the water connections provided under JJM, it was seen that 66,134 number of connections were not billed for period ranging from three months to more than three years of connection. In the three test-checked districts, it was noticed that agreements for execution of works were entered into between KWA and executing agency only and the GP was not made party to the agreement.

In contrast to scheme guidelines which stipulated that third party inspection and certification of the quantity and quality of work done was to be conducted prior to release of any payment, Audit noticed that third party inspections were conducted after construction and processing of payments of running account bills.

Audit noticed that the KWA had launched Aqualoom, a digital portal in 2021. This portal was accessible via website/social media and individuals could upload their complaints in a simple format and track their progress. Users of the portal were to choose their district and constituency, select a problem category and provide their phone number and Customer ID to file a complaint. The portal could also be used to obtain results of water quality testing from an accredited water testing laboratory for a nominal fee.

6.1. Monitoring of functionality of tap connections

Effective monitoring mechanisms were to be in place to assess the functionality of tap connections, water quality and reliability of water supply under JJM. For both Single Village Schemes (SVS) and Multi-Village Schemes (MVS), various systems including sensors, bulk water meters and SCADA systems were required for real-time data capturing and analysis. These physical devices referred to as Internet of Things (IoT), can connect to internet and share collected information, thereby helping to monitor service level parameters regularly and over a long period. An Integrated Management Information System (IMIS) would monitor the physical and financial progress, water quality and performance with reports generated for regular reviews. Audit noticed the following:

- In the test-checked districts, KWA or VWSC did not decide upon the type of measurement and monitoring system suited for implementation of the scheme. Consequently, information on source sustainability, quality monitoring, equitable supply, leakage detection and adequate pressure at tail end was not available.

- In Palakkad and Kollam, sensors were not provided to measure the quantity of water drawn and water level in the bore well in the case of ground water-based schemes in respect of SVS. In the absence of the above data, sustainability and availability of water in SVS could not be ascertained.
- As per IMIS data, SCADA system was installed only in six major WTPs of capacity 75 mld and above out of 241 water treatment plants for rural water supply.
- The Internet of Things (IoT) platform was not currently in place.

Government stated (June 2025) in reply that the implementation of SCADA, IoT and real time systems required huge investments. However, it was also assured that the learnings from the installed system would be used for a broader implementation plan for the future.

6.2. Integrated Management Information System/ e-Abacus/ e-Service

Scrutiny of IMIS/ e-Abacus and e-Service data pertaining to monitoring of JJM for the period from April 2019 to March 2025 revealed the following irregularities:

- There were variations in figures of component-wise expenditure shown in IMIS and the figures in Utilisation Certificates (UC) certified by Statutory Auditor and furnished by WRD to GoI. GoK replied (June 2025) that there was no difference between the figures in the UC and Dashboard. However, the figures furnished by Government did not substantiate the reply.
- Though 2,020 FHTCs were shown as provided to three selected GPs⁶⁷ in IMIS, ground verification revealed that these HTC were not made functional. Government in reply stated (June 2025) that these connections would be upgraded to full-fledged FHTCs as soon as the WTP at Peruvannamuzhi was commissioned.
- There were 5,107 instances of geo-tagging done outside the designated district. In 99 cases, the geo-tagged data captured in respect of FHTCs were related to positions outside the State, including eight cases seen erroneously marked in Lakshadweep Sea.

Government replied (June 2025) that due to network limitations in certain areas, coordinates were sometimes recorded through computer systems, resulting in location data being captured based on the system's IP address rather than the actual site. It was also informed that corrective measures were initiated and were in progress.

- On analysis of data on e-Service and e-Abacus, it was noticed that 66,134 number of JJM connections were not billed⁶⁸ for period ranging from three months to more than three years of connection as shown in **Table 6.1:**

⁶⁷ Meppayur, Keezhariyur and Thikkodi

⁶⁸ KWA follows Bi-monthly billing system.

Table 6.1: Details of non-billed FHTCs

Not billed for (as on 25 November 2024)	Not billed to	Total connections
3 months	1 year	30,829
1 year	2 years	22,378
2 years	3 years	10,170
More than 3 years	-	2,757

(Source: e-Abacus data)

Non-billing of an FHTC for long period would result in huge arrears having implication of recovery and possibility of litigations. Delayed billing points out to ineffective billing system and monitoring mechanisms in KWA.

Government in reply stated (June 2025) that the issue will be closely monitored to identify any outstanding bills and action will be taken promptly to resolve them.

6.2.1. Non-execution of tripartite agreement for execution of works

The District Water and Sanitation Mission (DWSM), in consultation with GP and/or its sub-committee, was to award the work to the selected agency and enter into a tripartite contract with the GP / its sub-committee and executing agency. In case ISA is involved, it will also form part of the agreement. However, in the three test-checked districts, it was noticed that the agreements were executed between the KWA and the executing agency only and the GP was not made party to the agreement.

Government replied (June 2025) that the works were awarded as per KPWD Manual and prevailing Government orders and that even though tripartite agreement was not executed, the works were being carried out with the concurrence of GPs. Agreements were stated to have been executed directly, to expedite implementation and meet project deadlines.

However, GP level surveys and Focus Group Discussions across 21 selected GPs revealed that the GPs were not informed about the commencement of work, and trial runs were not conducted in the presence of their representatives. Had the GPs been signatories to the agreements, it would have facilitated their active participation, leading to accountability in project execution.

By not being party to the agreement, the GP was deprived of its legitimate right to proactively involve in a community driven programme.

6.3. Irregularities in conducting inspections

6.3.1. Non-conduct of combined inspection at work site

On receipt of request for release of running payment from the executing agency, a combined inspection of site was to be undertaken by i) GP and/ or its sub-committee, ii) Public Health Engineering Department (PHED)/ Rural Water Supply (RWS) Department, and iii) third-party inspection agency (TPIA) empanelled by SWSM.

However, Secretaries of test-checked GPs stated that combined inspections involving the three parties were not undertaken at the worksites in the GPs and discussion points were not seen recorded in the work registers.

Government in reply stated (June 2025) that even if GP representatives were not present during joint inspection, the JJM works were proceeded with the prior approval of Panchayat authorities, who were are also vigilant about each phase of work and its evaluation.

The reply was at variance with the Focus group discussions conducted by Audit in the 21 test-checked GPs, wherein it was stated that no prior intimation was received in the GPs from KWA on execution of works and that trial run was not conducted in the presence of the GP representatives. Further, the GP representatives had complained about the poor quality of works and materials used and frequent breakage of pipes.

6.3.2. Irregular payments made to contractor without conducting Third Party Inspection

The JJM Guidelines stipulated that third-party inspection and certification of the quality and quantity of work done, was to be conducted prior to release of any payment to the contractor. As per the Terms of References for Third Party Inspection Agencies (TPIA), the TPIAs were to carry out inspection of quantity and quality of all engineering works executed under in-village infrastructure, as per the bill for payment claimed. Audit observed that, in the test-checked GPs in Kozhikode and Palakkad, third-party inspections were conducted post-construction, after processing payments for the running account bills, which was violative of instructions in Guidelines. Audit noticed that the project 'Jal Jeevan Mission - Kadalundi Grama Panchayat' in Kozhikode district was completed in May 2021 with an approved cost of ₹4.79 crore. According to the inspection report for Kadalundi GP, site inspections related to the first to ninth running account bills occurred on 13 August 2021 and 14 August 2021. For the tenth part and final bill, inspection was conducted on 02 November 2021.

Though the Managing Director, KWA had directed (December 2020) to withhold 30 *per cent* of the bill amount and release only 70 *per cent* in case of works which had not undergone third party inspection, Audit observed that, in three out of 21 test-checked GPs, though 30 *per cent* of bill amount was initially withheld due to the absence of the third-party inspection certificate, the amount was subsequently released to the contractor, on submission of the report by the TPIA.

Government stated (June 2025) in reply that 30 *per cent* of bill amount was withheld till certification after the third party inspection. It was also re-iterated that submission of certificate was a pre-requisite for processing both the final bill payment and the corresponding inspection charges to the TPIA. The 100 *per cent* payment to the contractor was based on the inspection certificate/report submitted along with the bills by TPIA.

The instruction of KWA issued in December 2020 contravened the JJM guidelines which stipulated that no payment was to be released unless third party certification was received. The release of bill amount on submission of TPIA report at later dates, as seen in audit, was irregular as third party inspection and certification of the quality and quantity of work was to be done and report

submitted, prior to release of any payment. As the reports were submitted by TPIA at a later date after payment has been made, Audit was not in a position to ascertain whether the TPIA had actually conducted the inspection or not.

6.3.3. Lapses in monitoring by Third Party Inspection Agencies

Audit noticed the following instances of poor monitoring by TPIA in test-checked districts:

- KWA empanelled (November 2022) the manufacturers/firms of Class B multi-jet water meters which were approved to be used in schemes of water supply system. During beneficiary survey conducted at selected GPs in Kollam and Palakkad districts, Audit observed that contractors had installed unapproved meters of inferior quality at the tail end of FHTCs, which were found leaking, as captured in **Figure 6.1**.



Figure 6.1: Leaking water meter of unapproved manufacturer at Pattanchery GP, Palakkad. Photo taken by Audit party on 08 January 2025

- As per the inspection reports of Bureau Veritas India Pvt Ltd., the TPIA in Kollam district, non-brass Male Thread Adapters (MTA) and Female Thread Adapters (FTA) were used, along with non-ISI taps at Munroethuruth GP and Pooyappally GP. At Thrikkovilvattom, fewer FTAs and MTAs than those prescribed in KWA drawing were seen used. Eventhough the findings were recorded as major and severe, the agency issued certificates for satisfactory quantity and quality.

This clearly established that the inspections conducted by TPIAs were ineffective.

Government replied (June 2025) with respect to FHTC referenced in Palakkad district that part of the work was completed under KIIFB. The reply was not tenable, as the FHTC commented upon by Audit was provided under JJM and the fact was confirmed by KWA.

Government reply was silent on the performance of TPIAs.

Recommendation

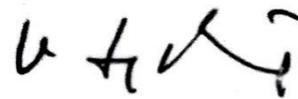
- **Government may ensure that KWA implements an appropriate measurement and monitoring system, leveraging Internet of Things (IoT) based technologies to strengthen the mechanism for data governance and validation in respect of IMIS (JJM).**



(PREETHI ABRAHAM)
Accountant General (Audit I),
Kerala

Thiruvananthapuram,
The 15 January 2026

Countersigned



(K. SANJAY MURTHY)
Comptroller and Auditor General of India

New Delhi,
The 19 January 2026

APPENDICES

Appendix 1.1

Details of sample selection

(Reference: Paragraph 1.4, Page 2)

District	Block Panchayat	Grama Panchayat
Kollam	Chavara	Chavara, Neendakara, Panmana and Thevalakkara
	Chittumala	Kundara, Munroethuruth, Panayam and Perayam
Palakkad	Attappady	Agali, Pudur and Sholayur
	Kollengode	Kollengode, Pattanchery, Pudunagaram and Vadavannur
Kozhikode	Kozhikode	Kadalundi and Olavanna
	Melady	Keezhariyur, Meppayur, Thikkodi and Thurayur

Appendix 3.1
Details of release of funds by GoI and GoK

(Reference: Paragraphs 3.1.2, 3.2.1 and 3.3, Pages 18, 20 and 22)

(₹ in crore)

Year	GoI allocation	Date of order of release of GoI share	Description	Amount released by GoI	Total	Date of Go of GoK release	Amount released by GoK	Total	Short release by GoI against allocation	Delay in issue of GO for release (in days)
1	2	3	4	5	6	7	8	9	10= (2) – (6)	11
2019-20	248.76	28.08.2019	First instalment	101.29	101.29	04.12.2019	50.00	50.00	147.47	83
						08.06.2020	51.29	270		
						29.06.2020	101.29	291		
2020-21	404.24	30.05.2020	Part of first tranche of first instalment	72.16	303.18	06.11.2020	144.32	758.94	101.06	145
		22.01.2021	Balance of first tranche of first instalment	28.90		03.02.2021	57.80			Within permissible time
		18.02.2021	Second tranche of first instalment	101.06		23.02.2021	202.12			-do-
		15.03.2021	First tranche of second instalment	101.06		16.03.2021	202.12			-do-
2021-22	1804.59	13.05.2021	First tranche of first instalment	451.15	1353.45	31.05.2021	902.30	1804.60	451.14	3
		18.11.2021	Second tranche of first instalment	451.15		04.12.2021	451.15			1
		13.01.2022	First tranche of second instalment	451.15		09.02.2022	451.15			12
2022-23	2206.54	25.07.2022	First tranche of first instalment	551.64	2206.54	16.08.2022	538.76*	1616.29	0	7
		01.12.2022	Second tranche of first instalment	551.64		16.12.2022	538.76*			Within permissible time
		14.02.2023	First tranche of second instalment	551.63		15.03.2023	538.76*			14
		31.03.2023	Second tranche of second instalment	551.63		25.05.2023	551.64			40
2023-24	1342.36	28.07.2023	First tranche of first instalment	335.59	671.18	25.09.2023	327.76*	1207.15	671.18	44
		31.10.2023	Second tranche of first instalment	335.59		11.12.2023	327.76*			26
Total	6006.49				4635.64				1370.85	

*The disparity between the GoI and GoK shares was due to the reckoning of fund sharing pattern for Support activities and WQMS activities, which was in the ratio 60:40

Appendix 3.2

Details of road restoration charges deposited to PMGSY

(Reference: Paragraph 3.4, Page 22)

(₹ in lakh)

Package No	Road	Restoration charges	GST	Total	Amount paid by KWA
KR10-74	Chemmankad-Namballam	29.93	5.39	35.32	33.20
KR10-85	Karakkuth-Manjambra	119.72	21.55	141.27	141.26
KR10-88	Poriyani Kayyara Arimani Dhoni	39.15	7.05	46.20	45.07
KR10-67	Kottayi Pulinelli Kariyamkode	27.88	5.02	32.90	32.90
KR10-61	Moochamkund Mandipathy	50.13	9.02	59.15	59.16
KR10-22	Pappanchalla Chemmanamthode	41.96	7.55	49.51	49.51
KR10-46	Pilamaram Narasimukku	42.47	7.65	50.12	50.12
KR10-49	Goolikkadavu Pattimalam	30.50	5.49	35.99	35.99
KR10-60	Thavalam Parappanthara	66.05	11.89	77.94	77.94
KR10-87	Kallapadi Kunduvampadam Vadassery	36.56	6.58	43.14	43.14
	Total	484.35	87.19	571.54	568.29

Appendix 3.3

Share of expenditure on schemes in test-checked GPs

(Reference: Paragraph 3.5, Page 23)

Sl. No.	Name of Scheme	Scheme ID	Service level (lpcd)	GoI Expenditure (₹ in lakh)	GoK Expenditure (₹ in lakh)
1	JJM Jananidhi Chavara GP Chavara Panmana Tsunami Rehabilitation scheme	30079245	100	13.03	13.03
2	JJM Perinad Panayam & Thrikkaruva GPs WSS to Thrikkaruva, Panayam, Perinad and Munroethuruth	30113935	100	479.19	479.19
3	JJM - WSS to Agali Panchayat - CWPM, CWGM, construction of 11LL GLSR at Plamaram, 6LL GLSR at Munimala, 6LL GLSR cum BPT, Supplying, laying distribution system and providing FHTCs - 7000 nos	30127472	100	1,124.27	1,124.27
4	JJM - WSS to Pudur Panchayat - CWPM, CWGM, 5LL GLSR at Ranganathapuram, 2LL GLSR at Kulappadika, 1LL GLSR at Mele Abbannur, 1.5LL Sump cum pump house at Padavayal, 1.5LL Sump cum pump house at Bommiyampathi, Supplying, laying distribution system and providing 2000 nos, Bridge crossing, river crossing	30128091	100	146.15	146.15
5	JJM- WSS to Sholayur Panchayat - CWGM, construction of GLSR 3LL and booster pump house, Supplying, laying distribution system and providing FHTCs -1000 nos	30128069	100	292.63	292.63
6	JJM Kollengode GP WSS to Kollengode Panchayat	30063346	100	5.95	5.95
7	JJM Peruvemba GP Augmentation of WSS to Peruvemba Panchayat (6 th SLSCC approval)	30249335	100	0.63	0.63
8	JJM-2021-22 Koduvayur & Pudunagaram GPs - Augmentation of CWSS to Koduvayur and Pudunagaram Grama Panchayats in Nenmara constituency in Palakkad District	30126023	100	3.40	3.40
9	Jal Jeevan Mission providing FHTCs for Vadavannur Grama Panchayat	30125948	100	453.11	453.11
10	JJM Kadalundi GP WSS to Kadalundi Grama Panchayat Phase II	30061464	100	84.60	84.60
11	JJM Olavanna GP WSS to Olavanna Panchayat	30210711	100	247.82	247.82
12	JJM Olavanna GP Providing FHTCs in Olavanna Panchayat Phase 2	30040957	100	463.05	463.05
13	JJM Olavanna GP Retrofitting JICA Assisted KWSP Kozhikode City and adjoining villages	8157520	70	14.24	14.24
14	JJM WSS to Uliyeri, Kayanna, Atholi, Chengottukavu, Chemanchery, Arikkulam, Moodadi, Nochad, Keezhariyur, Meppayur, Changaroth, Koothali, Panangad, Koorachund and Thikkodi GPs Phase 2	30058978	100	19,578.39	19,577.21

Appendix 3.4

Details of payment of Centage Charges

(Reference: Paragraph 3.6, Page 23)

Year	Name of Division	Expenditure on road restoration (₹ in lakh)	Centage charges paid out of GoI funds (₹ in lakh)
2020-21	Public Health Division, Kollam	6.51	0.72
	Public Health Division, Palakkad	5.50	0.61
	Project Division, Kozhikode	320.13	35.57
	Total	332.14	36.90
2021-22	Public Health Division, Kottarakkara	799.51	88.83
	Public Health Division, Kollam	86.71	9.63
	Public Health Division, Kozhikode	185.65	20.63
	Public Health Division, Palakkad	47.13	5.24
	Public Health Division, Vadakara	1,295.21	143.91
	Project Division, Chittur	4,844.95	538.33
	Project Division, Kollam	3,934.73	437.19
	Project Division, Kozhikode	1,589.20	176.58
	Project Division, Palakkad	3,159.53	351.06
Total	15,942.62	1,771.40	
2022-23	Public Health Division, Kollam	74.27	8.25
	Public Health Division, Kozhikode	2,212.55	245.84
	Project Division, Kozhikode	0.56	0.06
	Total	2,287.38	254.15
2023-24	Public Health Division, Kottarakkara	173.90	21.06
	Public Health Division, Kollam	420.13	50.88
	Public Health Division, Kozhikode	225.07	27.26
	Public Health Division, Palakkad	0.98	0.12
	Public Health Division, Vadakara	468.44	56.73
	Project Division, Chittur	108.66	13.16
	Project Division, Kollam	777.15	94.12
	Project Division, Kozhikode	804.77	97.47
Project Division, Palakkad	395.99	47.96	
Total	3,375.09	408.76	
Grand Total		21,937.23	2,471.21

Appendix 4.1

Details of extra liability to KWA due to irregular rate revision

(Reference: Paragraph 4.4.3, Page 38)

Work	TPAC	Bid opening	1.LMR 2.DSR + 10 per cent 3.L1	Accepted PAC, if bid was finalized immediately after tender opening	1.LMR 2.DSR + 10 per cent 3.L1 after revision of rates	Final Accepted PAC with DSR 2018	Excess
Providing 26,689 FHTCs and distribution lines - Chelannur, Kuruvattur, Kakkodi, Thalakkulathur, Peruvayal, Olavanna, Kunnamangalam GPs	₹54.55 crore (DSR 2016)	11.06.2021	1. ₹72.06 crore 2. ₹74.45 crore 3. ₹81.83 crore	₹72.06 crore	1. ₹78.16 crore 2. ₹74.45 crore 3. ₹81.83 crore	₹74.45 crore	₹2.39 crore
Providing 37,273 FHTCs in Balussery, Kayakkodi, Kuttiyadi, Nadapuram, Nanminda, Naripatta, Thuneri, Valayam, Vanimel GPs	₹65.92 crore (DSR 2016)	11.06.2021	1. ₹93.54 crore 2. ₹95.20 crore 3. ₹98.89 crore	₹93.54 crore	1. ₹104.43 crore 2. ₹95.20 crore 3. ₹98.89 crore	₹95.20 crore	₹1.66 crore
Total							₹4.05 crore

Appendix 4.2

Details of polymer pipes stacked for a prolonged period*

(Reference: Paragraph 4.4.4, Page 39)

Sl. No.	Name of work	Pipe details	Length of pipe	Rate / metre (in ₹)	Cost (₹ in lakh)	Period of idling of pipe	Agency	Reason for delay
1.	Jal Jeevan Mission (JJM)- Balance works in Nadapuram, Thuneri, Vanimel and Valayam Grama Panchayat - Balance work in Jal Jeevan Mission Nadapuram GP Zone 10 - Pipeline Work	140 mm 8kg/cm ² PVC	1,300 m	817.05	10.62	1 year	PWD	Demand note not issued
2.	CWSS to Eramala and Adjoining Seven Panchayats in Kozhikode District - Construction and commissioning of 14 Lakh Litre (8 LL + 6 LL) capacity GLSR at Muliyanunnu, Laying distribution system and providing FHTCs in Edachery Grama Panchayat	90 mm 8kg/cm ² PVC	43,690 m	327.8	143.22	1 year 5 months	PWD	Permission not obtained
		110 mm 8kg/cm ² PVC	4,317 m	482.91	20.85			
		140 mm 8kg/cm ² PVC	7,883 m	817.05	64.41			
		160 mm 8kg/cm ² PVC	511 m	1039.81	5.31			
3.	Balance works in Nadapuram, Thuneri, Vanimel and Valayam Grama Panchayat - Balance work in Vanimel Grama Panchayat Zone 10 PWD right side	110 mm 8kg/cm ² PVC	1,600 m	482.91	7.73	1 year	PWD	Permission denied from KSEB due to underground (UG) cable already laid on the road
4.	Jal Jeevan Mission (JJM) -CWSS to Eramala and Adjoining Seven Panchayats in Kozhikode District - Purameri Grama Panchayat - Rehabilitation of existing 6 Lakh Litres OHSR at Vilathapuram, Laying Distribution System and Providing FHTCs – Arur: Zone:2	90 mm 8kg/cm ² PVC	1,000 m	327.8	3.28	1 year 6 months	PWD	Permission not obtained
5.	Ulliyeri, Moodadi and adjoining Panchayat in Kozhikode District Package V - Zone I - Providing Functional Household Tap Connection by laying new Distribution lines at Meppayur Grama Panchayat	90 mm 8kg/cm ² PVC	8.60 km	327.8	28.19	1 year	PWD	Revised Demand note not issued
6.	Jal Jeevan Mission (JJM) - JJM-Phase 2 CWSS to Muppainad, Meppadi and Vythiri Panchayats in Wayanad District Phase II	90 mm 10kg/cm ² PE	24.94 km	240.01	59.86	1.5 year	KRFB	Permission not received
		125 mm 10kg/cm ² PE		456.95	113.96			
		160 mm 10kg/cm ² PE		746.59	186.20			
Total					643.63			

* Rates reckoned based on Technical Circular dated 30.04.2021

Appendix 4.3

Details of non-empanelled firms/suppliers supplying materials in test-checked districts*

(Reference: Paragraph 4.5.1, Page 39)

Name of work	Name of pipe supplier and date of testing	Class of pipe	Quantity (metre)	Market value of pipes (₹ in lakh)	Remarks
JJM 2020-21, FHTC at Olavanna, Chelannur, Kuruvattur etc.	Sathavahana 17.12.2022	DI K9 250 mm (₹2420.34/m)	2,000	48.41	Sathavahana not empanelled
JJM 2021-22, Phase2-Providing FHTC in Chelannur GP	Mangalam Pipes 29.08.2022	HDPE 20 mm PE 80 PN 16 (₹21.24/m)	30,000	6.37	Mangalam pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 90 mm (10Kg) (₹306.84/m)	44,076	135.24	Apollo pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 90 mm (8Kg) (₹254/m)	36,866	93.64	Appollo pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 140 mm (10Kg) (₹744.55/m)	5,657	42.12	Apollo pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 140 mm (8Kg) (₹617/m)	2,615	16.13	Apollo pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 160 mm (10Kg) (₹980/m)	8,778	86.02	Apollo pipes empanelled only on 21.11.2023.
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Koothali	Apollo pipes 28.12.2022	PVC 160 mm (8Kg) (₹805/m)	1,768	14.23	Apollo pipes empanelled only on 21.11.2023.
JJM WSS to Chathamangalam FHTC in Puthuppadi	Apollo pipes 01.08.2023	GI medium 100 mm (₹1155/m)	2,370	27.37	Apollo pipes not empanelled to supply GI
JJM WSS to Chathamangalam FHTC in Puthuppadi	Apollo pipes 01.08.2023	GI medium 80 mm (₹785.03/m)	1,330	10.44	Apollo pipes not empanelled to supply GI
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 90 mm PE 100 PN10 (₹227.8/m)	1,28,452	292.61	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 90 mm PE 100 PN12.5 (₹271.32/m)	9,841	26.70	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 90 mm PE 100 PN16 (₹323.79/m)	12,851	41.61	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 110 mm PE 100 PN10 (₹331.95/m)	4,812	15.97	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 125 mm PE 100 PN10 (₹440.46/m)	4,948	21.79	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 125 mm PE 100 PN12.5 (₹535.87/m)	1,371	7.35	Sri Renukamba pipes not empanelled

Name of work	Name of pipe supplier and date of testing	Class of pipe	Quantity (metre)	Market value of pipes (₹ in lakh)	Remarks
JJM 2021-22. WSS to Ulliyeeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 125 mm PE 100 PN 16 (₹636.51/m)	1,070	6.81	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 140 mm PE 100 PN 10 (₹552.86/m)	508	2.81	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 160 mm PE 100 PN 10 (₹724.08/m)	772	5.59	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 160 mm PE 100 PN 16 (₹1044.29/m)	94	0.98	Sri Renukamba pipes not empanelled
JJM 2021-22. WSS to Ulliyeeri. Providing FHTC at Panangad	Sri Renukamba pipes 04.02.2023	HDPE 180 mm PE 100 PN 10 (₹916.21/m)	4,012	36.76	Sri Renukamba pipes not empanelled
JJM 2021-22, Supply, laying and commissioning in Panangad GP	Sri Renukamba pipes 24.05.2023	HDPE 180 mm PE 100 PN10 (₹916.21/m)	36,452	333.98	Sri Renukamba pipes not empanelled
JJM 21-22, CWSS to Peringottukurissi and Kuthannur Panchayats	Flowflex Industries 01.10.2022	HDPE 20 mm PE80 PN 16 (₹21.24/m)	23,000	4.89	Flowflex Industries not empanelled
JJM 2021-22, CWSS to Peringottukurissi and Kuthannur Panchayats	Flowflex Industries 01.10.2022	HDPE 63 mm PE100 PN10 (₹110.45/m)	3,600	3.98	Flowflex Industries not empanelled
JJM 2021-22, CWSS to Peringottukurissi and Kuthannur Panchayats	Flowflex Industries 01.10.2022	HDPE 75 mm PE100 PN10 (₹157.42/m)	6,000	9.45	Flowflex Industries not empanelled
JJM 2021-22, CWSS to Peringottukurissi and Kuthannur Panchayats	Flowflex Industries 01.10.2022	HDPE 90 mm PE100 PN10 (₹227.80/m)	4,500	10.25	Flowflex Industries not empanelled
Total				1,301.51	

* Rates reckoned based on KWA market rates w.e.f. 06 November 2021

Appendix 4.4

Details of road restoration charges paid in excess to PWD

(Reference: Paragraph 4.6.2, Page 41)

ROW Application Number and Name of Road	District	Amount remitted by KWA as per demand note of PWD based on circulars dated 30.03.2019 and 10.02.2023 (₹ in lakh)	Amount to be remitted if demand note of PWD was generated in PRICE 3.0 (₹ in lakh)	Amount remitted by KWA as excess road restoration charges to PWD (₹ in lakh)	Percentage of excess amount charged by PWD
ROW/1031483/37135 Perumboyl Kandothupara Road (km 0/000 to 4/000)	Kozhikode	220.19	136.08	84.11	61.81
ROW/1053249/60252 Chathamangalam - Chettikadavu Road (km 3/300 to 3/900)	Kozhikode	57.22	36.12	21.10	58.42
ROW/1042274/2022 Puthoormukku - Enathu Bridge (km 80/285 to 83/100)	Kollam	90.25	41.19	49.07	119.13
ROW/1027526 Padanayarkulangara – Karoorkadavu Road (km 1/770 – 2/750)	Kollam	60.19	34.40	25.79	74.97
ROW/1081919/90973 Naduvannur – Arikkulam - Iringath Road (km 6/430 to 10/730)	Kozhikode	367.76	225.58	142.17	63.02
Total		795.61	473.37	322.24	

(Source: KWA data)

Appendix 5.1
Comparison of Values in Test results of water samples collected by KWA
QCD and tested at KWA and other Laboratories

(Reference: Paragraph 5.3, Page 54)

District	Source of sample	Name of Laboratory in which sample was tested (Date)	Parameter / Units (Acceptable limits)				
			Fluoride	Iron	Total coliform (Shall not be detected/100ml)	Turbidity	Colour
			mg/l (1.0)	mg/l (1.0)		NTU (6.50 to 8.50)	CU ⁶⁹ (5)
Kollam	Nenmeni Tubewell	QCDL Kollam (18.01.2025)	Less than 0.05	0.71	Absent	3.50	5
		QCDL Kollam (28.03.2025)	0.07	1.28	Absent	7.50	30
		CEPCI Kollam (28.03.2025)	0.20	0.20	Absent	2.20	Less than 1
	Nenmeni Tap water	QCDL Kollam (28.03.2025)	Less than 0.05	1.45	Absent	9.30	20
		CEPCI Kollam (28.03.2025)	0.1	0.10	Present	2.40	Less than 1
Palakkad	Tubewell, ST colony	QCDL Palakkad (24.04.2025)	0.2	0.01	Absent	0.25	5
		EMAL Lab, Palakkad (24.04.2025)	1	0.10	Absent	BDL ⁷⁰	BDL
	Open well	QCDL Palakkad (24.04.2025)	0.84	0.01	84	0.58	5
		EMAL Lab, Palakkad (24.04.2025)	0.80	0.10	Absent	BDL	BDL
Kozhikode	Anganwadi-14	QCDL Kozhikode (29.04.2025)	Not done	0.25	Absent	1.25	1
		CWRDM Lab, Kozhikode (29.04.2025)	Not done	BDL	Absent	0.40	Less than 1
	JIM Beneficiary	QCDL Kozhikode (29.04.2025)	Not done	0.19	Absent	0.86	Less than 1
		CWRDM Lab, Kozhikode (29.04.2025)	Not done	0.28	Present	3.20	2

⁶⁹ Colour Unit

⁷⁰ Below Detection Limit

GLOSSARY OF ABBREVIATIONS

Glossary of abbreviations used in the Report

Abbreviation	Full Form
AAP	Annual Action Plan
AC	Asbestos Cement
ACS	Additional Chief Secretary
AS	Administrative Sanction
BAWSS	Bilateral Assisted Water Supply Scheme
BDL	Below Detection Limit
BIS	Bureau of Indian Standards
BPT	Break Pressure Tank
BV	Bacteriological Vials
CE	Chief Engineer
CEPCI	Cashew Export Promotion Council of India Laboratory and Research Institute
CGWB	Central Ground Water Board
CMR	Cheque Memo Register
COVID	Coronavirus disease
CSR	Corporate Social Responsibility
CU	Colour Unit
CWGM	Clear Water Gravity Main
CWPP	Community Water Purification Plant
CWRDM	Centre for Water Resources Development and Management
CWTM	Clear Water Transmission Main
DAP	District Action Plan
DDP	Desert Development Programme
DDWS	Department of Drinking Water Supply
DLP	Defect Liability Period
DMDF	District Mineral Development Fund
DPAP	Drought Prone Area Programme
DPR	Detailed Project Report
DSR	Delhi Schedule of Rates
DWSM	District Water and Sanitation Mission
EE	Executive Engineer
EMAL	Environmental Monitoring and Analytical Laboratory
FHTC	Functional Household Tap Connections
FTA	Female Thread Adapters
FTK	Field Testing Kit
GLSR	Ground Level Service Reservoir
GoI	Government of India
GoK	Government of Kerala
GP	Grama Panchayat
GPWSC	Grama Panchayat Water and Sanitation Committee
GST	Goods and Services Tax
GWD	Ground Water Department
H₂S	Hydrogen Sulphide
HC	High Court

Abbreviation	Full Form
HDPE	High density polyethylene
HTC	Household Tap Connection
HUDCO	Housing and Urban Development Corporation Limited
IDEA	Interactive Data Extraction and Analysis
IEC	International Electrotechnical Commission
IFMS	Integrated Financial Management System
IMIS	Integrated Management Information System
IoT	Internet of Things
IS	Indian Standard
ISA	Implementation Support Agency
ISI	Indian Standards Institution
ISO	International Organisation for Standardisation
ITDP	Integrated Tribal Development Project
IWMP	Integrated Watershed Management Programme
JE-AES	Japanese Encephalitis and Advanced Encephalitis Syndrome
JICA	Japan International Cooperation Agency
JJM	Jal Jeevan Mission
KIIFB	Kerala Infrastructure Investment Fund Board
KPR Act	Kerala Panchayat Raj Act, 1994
KPWD	Kerala Public Works Department
KRFB	Kerala Road Fund Board
KRWSA	Kerala Rural Water Supply and Sanitation Agency
KSEB	Kerala State Electricity Board
KSTP	Kerala State Transport Project
KWA	Kerala Water Authority
KWSP	Kerala Water Supply Project
LL	Lakh Litres
LMR	Local Market Rates
LPCD	Litres per Capita per Day
LSG	Local Self Government
LSGD	Local Self Government Department
LSGI	Local Self Government Institution
MD	Managing Director
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MLALADS	Member of Legislative Assembly Local Area Development Scheme
MoRTH	Ministry of Road Transport and Highways
MPLADS	Member of Parliament Local Area Development Scheme
MTA	Male Thread Adapters
MVS	Multi Village Scheme
NABARD	National Bank for Agriculture and Rural Development
NABL	National Accreditation Board for Testing and Calibration Laboratories
NE	North Eastern States
NH	National Highway

Abbreviation	Full Form
NHAI	National Highway Authority of India
NIT	Notice Inviting Tender
NJJM	National Jal Jeevan Mission
NRDWP	National Rural Drinking Water Programme
NTU	Nephelometric Turbidity Unit
NWQSM	National Water Quality Sub Mission
O&M	Operation and Maintenance
OHSR	Overhead Service Reservoir
PA	Performance Audit
PAC	Probable Amount of Contract
PE	Polyethylene
PFMS	Public Financial Management System
PH	Public Health
PHED	Public Health Engineering Department
PMGSY	Pradhan Mantri Gram Sadak Yojana
PMKVK	Pradhan Mantri Koushal Vikas Kendra
PRICE	Project Information and Cost Estimation
PVC	Polyvinyl chloride
PWD	Public Works Department
Q&Q	Quantity and Quality
QCBS	Quality and Cost-Based Selection
QCD	Quality Control Division
QCDL	Quality Control District Lab
RO	Reverse Osmosis
ROW	Right of Way
RWPM	Raw Water Pumping Main
RWS	Rural Water Supply
SAGY	Sansad Adarsh Gram Yojana
SAP	State Action Plan
SBM	Swachh Bharath Mission
SC	Scheduled Caste
SCADA	Supervisory Control and Data Acquisition
SDG	Sustainable Development Goals
SE	Superintending Engineer
SLEC	State Level Executive Committee
SLSSC	State Level Scheme Sanctioning Committee
SNA	Single Nodal Account
SRI	State Referral Institute
ST	Scheduled Tribe
SVS	Single Village Scheme
SWSM	State Water and Sanitation Mission
TPAC	Tendered Probable Amount of Contract
TPIA	Third Party Inspection Agency
TS	Technical Sanction
UC	Utilisation Certificate
UT	Union Territory
VAP	Village Action Plan

Abbreviation	Full Form
VWSC	Village Water and Sanitation Committee
WASH	Water Sanitation and Hygiene
WQMIS	Water Quality Management Information System
WQMS	Water Quality Monitoring and Surveillance
WQMSF	Water Quality Monitoring and Surveillance Framework
WQMSP	Water Quality Monitoring and Surveillance Programme
WRD	Water Resources Department
WSS	Water Supply Scheme
WTP	Water Treatment Plant

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