

# **EXECUTIVE SUMMARY**



## Executive Summary

### I. Intent of Storm Water Drainage and Sewerage Management Systems

About 40 *per cent* of the World's population is affected by lack of water, while 80 *per cent* of wastewater, throughout the planet, is emptied into oceans or rivers, without proper waste treatment. United Nations Sustainable Development Goal 6 (2015) aims to ensure 'availability and sustainable management of water and sanitation for all', by the year 2030, as this is critical to the health of people and the planet.

Effective storm water drainage and sewerage management provides environmental, social and economic benefits to local communities. When storm water and sewerage is managed well, streams, rivers and lakes are cleaner, flood risks are reduced, costs due to flood damage decrease and the quality of community life increases.

Accelerated growth and rapid urbanisation, along with population increase, have however, led to increased pressure on infrastructure and natural resources, leading to encroachment of water bodies/ drains and depletion of natural drainage systems. Increase in concretisation and the impervious layer have resulted in increase of storm water runoff. A higher runoff leads to more flooding. Consequently, the frequency of floods has increased over the years and floods have become a regular phenomenon, resulting in the submergence of low areas; causing water stagnation at several locations, as well as traffic holdups, for several hours; restricting pedestrian movement; and leading to extensive damage to public property. The need for effective storm water management is, thus, paramount.

Rapid growth of population has also adversely affected storm water drains<sup>1</sup>. Since all drains receive raw sewage from households, causing water pollution in water bodies/ rivers, due to non-availability of adequate sewerage treatment facilities in the cities, it adversely affects the environment and creates health hazards.

### II. Why this Performance Audit?

The objective of this Performance Audit was to assess whether the management of storm water drains and sewerage system was effective and efficient and had been carried out economically and scientifically, by the Municipal Corporations.

**Period of Audit** : FYs 2017-18 to 2021-22

**Sample** : All Five Municipal Corporations

**What Audit found** :

Audit observed that the expansion of municipal infrastructure, for storm water drainage and sewerage systems, has not kept pace with the rapid urbanisation that most cities are experiencing. The infrastructure for storm water drainage

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<sup>1</sup> Storm water drains: Storm water drainage system components that receive runoff from inlets and convey the runoff to some point. They are either closed conduits, or open channels, connecting two or more inlets.

and sewerage has been poorly maintained, by the Municipal Corporations and has not been upgraded, as per requirements, resulting in waterlogging and urban flooding. Deficiencies in design; lack of planning; and encroachment of storm water drains and sewerage systems, are resulting in excess runoff. Untreated sewage is being carried to the waterbodies, causing water pollution, which, in turn, results in public health and environment hazards. Some of the major audit findings, in this regard, are mentioned in the subsequent paragraphs.

### **III. Planning for collection/ conservation of storm water and construction of storm water drains and sewerage systems**

- Due to absence of regulatory framework for management of Storm Water Drainage, Government of Odisha and Urban Local Bodies failed to comply with the National Disaster Management guidelines, which led to water logging and urban flooding.
- Significant measures to recharge ground water were not taken by Municipal Corporations despite depletion in ground water level.
- Rapid urbanisation has more impact on land use pattern of the cities, mostly on drains/ nallahs.
- Municipal Corporations did not prepare the master plan for storm water drainage management in cities, leading to water logging and urban flooding.
- Municipal Corporations did not provide adequate safety to commuters by covering the drains with slabs.
- Deficiencies in preparation of Detailed Project Report for sewerage projects, led to avoidable expenditure of ₹3,045.44 crore.
- The Daya West irrigation canal was virtually converted to a sewage waste drain and the contaminated water was being supplied for irrigation of 835 ha of agricultural land at downstream.
- Water at intake well of River Kuakhai for water supply to Bhubaneswar city was highly contaminated. The Biochemical Oxygen Demand, Total Coliform and Faecal Coliform were beyond the permissible limits.

### **IV. Financial Management**

- Under utilisation of funds for storm water drain and sewerage management by Municipal Corporations/ Odisha Water Supply and Sewerage Board due to absence of master plans.
- Exemption of GST and Service Tax for consultancy services, led to excess expenditure of ₹30.11 crore from the State exchequer.
- Municipal Corporations did not collect storm water drainage and sewerage charges from public, causing poor own revenue generation capacity to attain self-sustainability.

- Due to non-achievement of service level benchmarks and non-preparation of annual accounts, Urban Local Bodies did not get the central assistance of ₹333.58 crore under 14<sup>th</sup> Finance Commission grant.

#### **V. Contract Management and Project Execution of storm water drainage and sewerage systems**

- Award of work to non-performer and non-termination of contracts, led to time and cost overrun of nine years and ₹249.21 crore, respectively for Cuttack Drainage projects.
- Out of 558.64 Million Liter per Day sewerage waste generated in these five Municipal Corporations, only 52.97 Million Liter per Day (9.48 per cent) of the sewerage waste had been collected by the existing sewerage systems, leaving the remaining 505.67 Million Liter per Day (90.52 per cent) un-collected and had been discharged to water bodies causing water pollution.
- Non completion of sewerage projects, led to time and cost overrun of 12 years and ₹550.07 crore, respectively for Bhubaneswar sewerage districts I, II and III.
- There was excess payment of ₹5.11 crore for Rourkela West project in deviation to contract conditions and Odisha Public Works Department Code.

#### **VI. Monitoring mechanism**

- Non-conduct of regular meetings as required by State Level Steering Committee and Odisha Water Supply and Sewerage Board, for sewerage and storm water drainage management, resulted in lack of effective monitoring mechanism.
- There was lack of monitoring of sewerage projects to control pollution of water bodies and non-levy of environmental compensation of ₹1,239.00 crore by State Pollution Control Board.
- Water pollution/ water contamination pose threat to public health and ecosystems. Across the State, 42.24 lakh people were affected by acute diarrhoea, 4.63 lakh by typhoid, 0.12 lakh by hepatitis and 0.12 lakh by renal diseases during the FYs 2017-22, which were primarily caused due to water contamination.
- Consumption of leafy vegetables grown with polluted water irrigation is risky and harmful to human lives as it contains heavy amount of toxic elements of metals.

#### **VII. Recommendations**

1. *Government may formulate a comprehensive policy to recognise urban runoff as a potential resource of water and prepare a plan of action for its conservation, in consonance with the National Disaster Management (NDM) guidelines.*
2. *Corporations may evict all encroachments and prevent further reductions in the water bodies. Further, prescribed length and width of natural drains may be maintained, to ensure inter-connectivity of*

*the water bodies, for proper conservation of the ecosystem, as well as ground water.*

- 3. Government may explore the possibility of interlinking the Storm Water Drainages (SWDs), to the water bodies in the city, to prevent drying up of water bodies and to enhance the ground water recharge.*
- 4. Government may maintain data for different categories of land use, so that Municipal Corporations (MCs) are able to prepare development plans, considering the changes effected due to urbanisation.*
- 5. Corporations may consider all relevant parameters, such as rainfall patterns, increase in the impervious layers, decrease in vegetation etc., while designing and executing roads and drains, to increase ground water recharge and prevent flooding.*
- 6. Corporations may prepare Drainage Master Plans, for development of drainage infrastructure. They may also carry out periodical inspections and maintenance of all the drains, to avoid urban flooding.*
- 7. Government may ensure the preparation of Detailed Project Reports (DPRs) for Storm Water Drain projects, including necessary details, such as the extent and availability of land and alignment of drains etc.*
- 8. Odisha Water Supply and Sewerage Board (OWSSB)/ Water Corporation of Odisha (WATCO) may prepare an action plan, on priority, to connect the existing sewerage lines, with the Sewerage Treatment Plants (STPs), to avoid water pollution in water bodies.*
- 9. Corporations may escalate their efforts to conduct surveys to identify and evict encroachments on SWDs and maintain the stipulated buffer zones, to protect drains and water bodies.*
- 10. Government may take appropriate action on the erring officials who have failed to take action on unauthorised encroachment.*
- 11. Government/ Corporations may devise a suitable mechanism for collection of SWD and sewerage cess, to increase their revenues and strive for self-sustenance.*
- 12. Government may plan appropriate strategies, for timely submission of Utilisation Certificates (UCs), to the funding agencies and the Finance Department.*
- 13. The bye-laws for solid waste management may be enforced strictly to protect water bodies.*
- 14. Government may put in place an institutional mechanism, for ensuring coordination of all line departments, in implementation of Under Ground Sewerage System.*
- 15. OWSSB/WATCO may ensure availability of work site and all mandatory clearance from line departments, before awarding tenders for Underground Sewerage Systems.*
- 16. MCs may plan to commission the remaining sewerage pipelines and STP to ensure adequate sewerage flow and treatment.*
- 17. MCs may plan to provide household connections to sewerage lines, preventing direct discharge of household sewage into water bodies.*

18. *MCs may plan to restore the non-functional Sewage Treatment Plant to ensure adequate sewerage flow and treatment.*
19. *Rourkela Municipal Corporation (RMC)/ Berhampur Municipal Corporation (BeMC) may plan to provide adequate capacity of STPs for treatment of sewerage water for Rourkela and Berhampur city.*
20. *OWSSB/WATCO may focus on ensuring the quality of sewage treatment, by independent audit of water quality and by performing recommended laboratory tests through accredited laboratories.*
21. *OWSSB/WATCO may take steps to protect the environment by increasing reuse of treated water and converting sludge into manure.*
22. *Government may activate monitoring committees and strengthen the control mechanisms, as envisaged in the SWD Manual, Sewerage Manual and NDM Guidelines, and accountability of the officers responsible, may be fixed.*
23. *Government/OWSSB/WATCO/MCs may take adequate and effective steps to protect the environment and ecosystems, by taking prompt action for completion of sewerage networks and by taking measures to prevent wastewater from falling into the drains/ rivers.*

