Chapter IV

Compliance Audit

Chapter-IV

Compliance Audit

Environment Department

4.1 Detailed Compliance Audit of All Applicable Environmental Laws in South 24 Parganas District

4.1.1 Introduction

As per the Environment (Protection) Act, 1986, 'environment' includes water, air and land and their inter-relationship with human beings, other living creatures, plants and micro-organisms. Environmental pollutant means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be, injurious to environment. Some of the major causes of degradation in the environment are human processes and activities such as deforestation, urbanisation, industrialisation and improper waste management. As per Article 48A of the Constitution of India the State shall endeavour to protect and improve the environment.

West Bengal has 23 districts of which South 24 Parganas district having an area of 8,165.05 sq. km and population of 81.62 lakh was selected for audit of compliance of all applicable environmental laws. There were 7,740 factories in seven industrial areas[56] and 7,678 Micro and Small Scale Enterprises in the district. The district has 986 sq km of very dense forest, 745 sq. km of moderately dense forest and 1,061 sq km of open forest. The Sundarbans, the largest mangrove forests on earth, are spread over 13 of the 29 development blocks in the district and covers an area of about 4,260 sq. km. Moreover, East Kolkata Wetlands under Ramsar convention[57] also lies in the district.

Thus, diversified relationship among flora and fauna coupled with industralisation and urbanisation in South 24 Parganas district, make this district an appropriate selection for audit.

4.1.2 Audit Objectives:

The objectives of the detailed compliance audit (DCA) of "All Environment Laws Applicable in South 24 Parganas District" were to evaluate whether the Environment Department and its parastatal agencies could ensure that all stakeholders complied with the Acts, Rules, Government policies, instructions for prevention, control and abatement of environmental pollution.

4.1.3 Audit Criteria

The audit criteria include all the environmental laws, rules, norms and standards applicable to a district and include the following:

- The Water (Prevention and Control Pollution) Act, 1974
- The Air (Prevention and Control of Pollution) Act, 1981 and National Ambient Air Standards fixed from time to time

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[56] *Namely-Behala, Baruipur, Santoshpur, Falta Phase-I & II, Falta SEZ and Santoshpur Food Park.*

[57] *Convention on Wetlands is also known as the Ramsar Convention.*

- The Environment (Protection) Act, 1986 and various rules made there under as indicated below:-
  - The Municipal Solid Waste (Management and Handling) Rules, 2000 as amended
  - The Bio Medical Waste (Management & Handling) Rules, 1998
  - The Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules, 2016
  - Plastic Waste (Management and Handling) Rules, 2011
  - The Batteries (Management & Handling) Rules, 2001
  - E-Waste (Management and Handling) Rules, 2011
- Coastal Regulation Zone Notification, 2011
- National Environment Policy, 2006
- Biological Diversity Act, 2002,
- Wetlands (Conservation and Management) Rules, 2010
- Central Motor Vehicles Rules, 1989.
- Orders, instructions, guidelines, standards issued by State Government, Central Pollution Control Board (CPCB) and Hon'ble Courts *etc*.

4.1.4 Scope and Methodology of Audit

Detailed Compliance Audit of all applicable "Environmental Laws in South 24 Parganas District" was conducted between December 2019 to March 2020 and again from December 2020 to February 2021 by the offices of the Pr. Accountant General (Audit-I), West Bengal (WB) and Pr. Accountant General (Audit-II), WB. Records were examined in the offices of the Environment Department, WBPCB and its Regional Offices, West Bengal State Coastal Zone Management Authority (WBSCZMA), West Bengal Bio-Diversity Board, East Kolkata Wetland Management Authority (EKWMA), Institute of Environmental Studies and Wetland Management, State Transport Utilities, Health and Family Welfare Department (HFWD), Animal Resources Development Department (ARDD) and selected Municipalities within the district.

The audit methodology involved collection of data through document analysis, response to audit queries, questionnaires, photographic evidence and joint physical verifications of 10 industrial units[58], two Municipalities[59], 12 Health Care Facilities and four Block Livestock Development Offices (BLDOs), which were selected through random sampling without replacement.

[58] 1. *M/s BNM Organics (P) Ltd. 2. 5 Star Hotel & Serviced apartment 3. Residential Complex at Bagherghole 4. M/s BESCO Ltd. 5. M/s Pepsico India Holding Pvt. Ltd. 6. CETP at Calcutta Leather Complex 7. CESC Ltd. (Budge-Budge) 8. IOCL Indane Bottling Plant 9. Lubrina Recycling (P) Ltd. 10. Bristol Petroleum Pvt. Ltd.*

[59] *Maheshtala Municipalities and Budge-Budge Municipalities (ULBs).*

4.1.5 Institutional Mechanism

As per West Bengal Rules of Business, Department of Environment, GoWB, henceforth referred to as Department, is responsible for protection of environment & ecology, prevention and control of the pollution of air, water and land, co-ordination between Departments and agencies of the State and Union Government. The Department executes all its major activities with the assistance of six parastatal organisations viz. West Bengal Pollution Control Board, EKWMA, WBSCZMA, Institute of Environment Studies and Wetland Management, West Bengal Biodiversity Board and State Environment Impact Assessment Authority.

Audit observed following non-adherence of the Acts/Rules/orders/ directions relating to protection of environment in the South 24 Parganas district as discussed in the subsequent paragraphs.

4.1.6 Water Pollution

According to the Water (Prevention and Control of Pollution) Act, 1974 (Water Act), water pollution means contamination of water or alteration of the physical, chemical or biological properties of water. Water pollution occurs when untreated sewage, trade effluents, etc. discharged into the water render it harmful or injurious to the life and health of public, animals, plant or aquatic organisms. WBPCB is the nodal agency responsible for collection and dissemination of information relating to water pollution and the prevention, control or abatement thereof.

4.1.6.1 National Water Quality Monitoring Programme

Central Pollution Control Board (CPCB) in association with State Pollution Control Boards (SPCBs) has established National Water Quality Monitoring Programme (NWQMP) for uniform monitoring of surface as well as underground water across the country for the purpose of making a rational plan for controlling water pollution. Under the NWQMP, WBPCB monitors water quality across the State through 105 monitoring stations including one surface water monitoring station at Diamond Harbour on river Hooghly and three[60] ground water monitoring stations in the district. Audit observed following irregularities in monitoring of water quality by WBPCB:

a) Surface as well as Ground Water Quality Monitoring Stations

i) As per guidelines on Water Quality Monitoring (WQM) 2017, the surface water monitoring stations were to be classified as Baseline[61], Trend[62], Flux[63] and Hotspot[64] stations and the ground water monitoring stations were to be classified as baseline stations which were to be further re-classified as Trend and Hotspot stations. Such categorisation is essential for fixing the

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[60] *Sonarpur Residential Area, Amtola and Budge Budge (Budge-Budge was functional from 2019-20).*

[61] *Where there is no influence of human activities on water quality.*

[62] *Monitoring station designed to show how a particular point on a water course varies over time due to the influence of human activities.*

[63] *Station located for measuring the mass of particular pollutant on main river stem for measuring the extent of pollution due to human interference or geological feature at any point of time and is necessary for measuring impact of pollution control measures adopted.*

[64] *Means location/site where concentration of a particular parameter or a group of parameters except bacteriological particulars are beyond the permissible limits of drinking water quality.*

parameters to be monitored and the frequency thereof as it minimises the cost of monitoring without sacrificing the desired level of information. The parameters and frequency of monitoring of each parameter under each classification is given in the ***Appendix-14***.

Audit observed that the WBPCB failed to classify the monitoring stations even after a lapse of four years from issuance of the WQM guidelines. As a result, WBPCB was not able to take corrective action on water quality, wherever necessary, and minimise the cost of monitoring.

ii) Analysis of parameters monitored *vis-à-vis* parameters required to be monitored as per guidelines on WQM-2017 in the only surface water and two ground water monitoring stations (Sonarpur Residential Area and Amtala) in the district for the years 2017-18 to 2019-20 is shown in **Table 4.1** below:

Table 4.1: Status of parameters required to be monitored *vis-à-vis* those actually monitored in ground and surface water stations

Categories of Parameters	No. of parameters to be monitored	No. of Parameters monitored	No. of parameters not monitored (%)
Pesticides	22	09	13 (59%)
Toxic Metals	15	10	05 (33.3%)
Poly-nuclear Aromatic Hydrocarbons, Polychlorinated Biphenyls and Trihalomethane	03	Nil	03 (100%)

Non-monitoring of harmful pollutants like pesticides and toxic metals present in water may cause chronic diseases like cancer, damage of liver and kidney, immune disorders, and even progressive physical, muscular, and neurological degenerative processes to humans in the long run. It would also bring the local flora, fauna and the aquatic life under threat.

b) Incorrect classification of designated best use of surface water

The Water Act, 1974 stipulates to maintain and restore the 'wholesomeness' of our aquatic resources. According to guidelines for WQM 2007-08, if a water body or its part has multipurpose usage, then the use which demands highest quality of water is classified as 'designated best use'.

The water at the only one surface monitoring station in the district was classified as "C" (drinking water source with conventional treatment) having permissible Biological Oxygen Demand[65] (BOD) value 3 mg/l or less and Total Coliform (TC) value less than 5000 MPN/100 ml among others.

Scrutiny, however, revealed that out of 84 water sample tests carried out between 2014-15 & 2019-20 by WBPCB, the level of BOD exceeded 3mg/l (ranging between 3.1 and 12.18 mg/l) in 34 (40.48 *per cent*) occasions ***(Appendix-15)***. Further, in 75 (89.29 *per cent*) occasions ***(Appendix-15)***, the level of TC exceeded 5,000 (ranging between 6,000 and 5,00,000).

This indicates that the classification of water was erroneous and quality of water was unfit for human consumption even with conventional treatment and intensive physical and chemical treatment was required before it could be used safely.

[65] *the amount of dissolved oxygen needed by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period.*

4.1.6.2 Water pollution by industries

Section 25/26 of the Water Act says that no industry can discharge sewage or trade effluent into a stream or well or sewer or land beyond the permissible standards prescribed by CPCB. Whoever contravenes the provisions of the Act shall be punishable with imprisonment or fine under section 43/44 of the Act. The WBPCB can issue directions for closure of industry and disconnection of electricity in case of persistent defiance by any polluting industry under section 33-A of the Water Act.

Ten projects[66] (from grossly polluting industries) were selected in audit for detailed scrutiny and joint physical inspections were conducted with the officials of WBPCB. In three[67] out of 10 projects, following observations were made relating to water pollution:

a) Budge Budge Thermal Power Plant under Calcutta Electricity Supply Corporation

When coal is burnt in thermal power plants, the mercury (trace amount 0.04 – 0.7mg/kg) available in coal is released. Once released, part of the mercury either evaporates in the atmosphere, some part is trapped in pollution control instruments like electrostatic precipitator, bag *etc* and the rest goes with the fly ash. As per study[68], a typical 100 MW thermal power plant can emit over 10 kg of mercury in a single year. As per notification[69] of Ministry of Environment, Forests and Climate Change (MoEF&CC), any thermal power plant having capacity of 500 MW & more and installed before 31 December 2003, is required to monitor the level of mercury. However, during joint site visit (February 2021) with WBPCB, Audit noticed that CESC, Budge-Budge unit having installed capacity of 500 MW, set up prior to December 2003 (installed in 1995), was not monitoring the level of mercury. Permissible limit for release of mercury was 0.03mg/Nm^3 as per MoEF&CC guidelines. Mercury is a highly mobile pollutant that is toxic to humans and animals. Exposure to mercury even in small amounts is dangerous to humans, since it acts as a neurotoxin in the body. Therefore, non-monitoring of mercury poses serious health risk to the local inhabitants. Mercury may also contaminate the local water bodies and get into the food chain through contaminated fish and water usage.

b) BNM Organics

BNM Organics (P) Ltd. (BNM) was established in April 2004 and is engaged in the production of various drugs[70]. As per clause (xii) of the Environmental Clearance (EC) given by State Environment Impact Assessment Authority (SEIAA), BNM had to set up an Effluent Treatment Plant (ETP) consisting of

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66 *1) M/s BNM Organics (P) Ltd., 2) 5 Star Hotel & Serviced apartment, 3) Residential Complex at Bagherghole, 4) M/s BESCO Ltd. 5) M/s Pepsico India Holding Pvt. Ltd., 6) CETP at Calcutta Leather Complex, 7) CESC Ltd. (Budge-Budge), 8) IOCL Indane Bottling Plant, 9)Lubrina Recycling (P) Ltd. and 10) Bristol Petroleum Pvt. Ltd.*

67 *Kohinoor Paper Mill, Calcutta Electricity Supply Corporation and Water Canals of Calcutta Leather Complex.*

68 *A study National Environmental Engineering Research Institute, Nagpur-2013.*

69 *No.S.O.3305(E) dated 07 December2015*

70 *like L-Clopidogrel Hydrogen Sulphate, Carvedilol, Glimepiride etc.*

physical, chemical, biological and tertiary treatment systems to treat effluents generated from its production/ manufacturing process. However, during the joint physical inspection with the representatives of WBPCB, it was observed that there was no biological treatment system in the ETP and partially treated effluents were disposed in their open ground. Thus, in absence of biological treatment system, the microbial pathogens may remain in the effluents, which may contaminate the ground and surface water.

c) Storm Water Canals in Calcutta Leather Complex

Para no. 3.7 of the CAG's Performance Audit report on "Pollution by Industries in West Bengal" (2018) highlighted that 250 tanneries of Calcutta Leather Complex (CLC) were not given connection to Common Effluent Treatment Plant (CETP) and were discharging effluents indiscriminately on the road and in the storm water canals. Besides, it was also pointed out that the quality of water discharge from three storm water canals in CLC and at outlet point of CETP failed to meet the permissible limits fixed by CPCB. The storm water canals drained into the Kulpi River flowing nearby.

As of March 2021 all the tanneries were connected to CETP, however, even after two years, audit observed persisting irregularities during the joint inspection (February 2021) of the CLC as detailed below:

i) In reply to previous PA Report on indiscriminate discharge of effluents in storm water canals, Department stated (December 2017) that the tanneries were regularly monitored by WBPCB. However, analysis of test results (51 samples) of the quality of water of three storm water canals in CLC by WBPCB between April 2017 and June 2019 revealed that pollutants like chloride, Oil & Grease (O&G) and sulphide exceeded the permissible standards in almost all cases as shown in **Table 4.2** below. Thus, the monitoring by WBPCB remained grossly ineffective as the quality of water in the storm water canals did not meet the prescribed standards.

Table 4.2: Status of quality of water of the three storm water canals inside the CLC during April 2017 to June 2019

Pollutants (Permissible limit)	Ammonical Nitrogen (50 mg/l)	BOD (30 mg/l)	Chloride (1000 mg/l)	O&G (10 mg/l)	Sulphide (1mg/l)	Total Dissolved Solids (TDS) (2100 mg/l)	Total Chromium (2 mg/l)	Total Suspended Solid (100 mg/l)
Compliant with standards (in number of tests)	1	1	0	0	0	1	9	2
Non – Compliant(NC) with standards (in number of tests)	50	50	51	51	51	50	42	49
Range of results beyond permissible limits	91-510	118-3375	1249-4248	51-7558	7-178	3864-8496	3-184	50-1710

ii) In reply to previous PA Report on standards of discharge from CETP, the Department stated (December 2017) that regular monitoring of CETP was conducted and regulatory actions were taken by WBPCB. Audit, however, observed that between April 2017 and March 2020, the waste water in the

outlet of CETP was tested 31 times by WBPCB and in majority occasions the discharge failed to meet the prescribed standards as shown in the **Table 4.3** below:

Table 4.3: Status of quality of water outlet of CETP (April 2017 to March 2020)

Parameters (permissible limits)	Ammonical Nitrogen (50)	BOD (30)	Chloride (1000)	COD (Chemical Oxygen Demand) (250)	Sulphide (1)	TDS (2100)
Compliant	6	23	0	28	25	1
Non-Compliant	25	8	31	3	6	30
Range of NC	71-259	38-200	1749-9497	277-770	9-66	3396-9946

The results clearly indicate that the effluent treatment at the CETP was not effective and the treated water failed to meet permissible limits of pollutants in most tests conducted during the period.

Therefore, CLC continued to add to the pollution of the Kulpi River through both untreated effluents of tanneries and the ineffectively treated CETP discharge of the CLC.

Between March and December 2019, WBPCB issued three (March, September and December 2019) show cause notices to CLC as the effluents exceeded permissible limits. However, the indiscriminate discharge of untreated wastewater at various locations of CLC in the storm water drains and through CETP continued unabated. WBPCB, however, did not resort to strict action like imposition of fines, closure of industries, etc. as provided in the Water Act.

4.1.7 Air Pollution

Air Pollution occurs when the air is contaminated by unwanted substances which have a harmful effect on both the living and the non-living things. Substances that are generally identified as air pollutants include Suspended Particulate Matter (SPM), Respirable Suspended Particulate Matter (RSPM/PM_{10}), Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), Carbon Dioxide (CO_2), ozone depleting substances such as Chloro-fluro carbons (CFC) *etc*. The most common causes of air pollution are emissions from vehicles, industries *etc*.

4.1.7.1 Regulation of Air Pollution

Government of India enacted the Air (Prevention and Control of Pollution) Act 1981 (Air Act) which provides for prevention, control and abatement of air pollution. Besides, CPCB notified (2009) National Ambient Air Quality Standard (NAAQS) with identified 12 pollutants[71] in order to indicate necessary air quality levels and appropriate margins required to ensure the protection of vegetation, health and property as well as to provide a uniform yardstick for the assessment of air quality at the national level. The basis of development of standards is to provide a rationale for protecting public health from adverse effects of air pollutants, to eliminate or reduce exposure to hazardous air pollutants and to guide national/local authorities for pollution control decisions.

[71] *Sulphur Dioxide, Nitrogen Dioxide,* PM_{10}, $PM_{2.5}$, *Ozone, Lead, Carbon Monoxide, Ammonia, Benzene, Benzo(a)pyrene, Arsenic and Nickel.*

Under section 17(3) of the Air Act, one of the functions of the WBPCB is to collect and disseminate information relating to air pollution. The air quality of the entire State is monitored by WBPCB through 79 Semi-Automatic Ambient Air Quality Monitoring Stations (SAAQMS) and 14 Continuous Ambient Air Quality Monitoring Stations (CAAQMS). There are two SAAQMS (Amtala and Baruipur) but no CAAQMS in South 24 Parganas district.

4.1.7.2 Inadequate number of monitoring stations in the district

Guidelines for Ambient Air Quality Monitoring, 2003 provide that the required minimum number of stations and its distribution needed for monitoring trends of common pollutants like SPM in urban areas were based on population of the area. The formula for deciding the number of stations in a city is shown in the **Table 4.4** below:

Table 4.4: Population vis-à-vis number of Air quality monitoring stations required for SPM.

Population	Minimum no. of monitoring stations
Less than 1 lakh	4
1 lakh to 10 lakh	4 + 0.6 per 1 lakh population
10 lakh to 50 lakh	7.5 + 0.25 per 1 lakh population
More than 50 Lakh	12+ 0.16 per 1 lakh population

Accordingly, the number of stations required in the district of South 24 Parganas with an urban population of 20.88 lakh (Census 2011) should be at least 12 and optimally 24. Against that, there were only two monitoring stations in the district as of March 2020. No proposal for increase in monitoring stations was sent to CPCB by the WBPCB for the district. In South 24 Parganas, there are seven[72] industrial areas having 6876 registered industrial unit. Further, the district is contiguous to Kolkata and large part of the district is included in the greater Kolkata areas. However, except in Baruipur, WBPCB had not set up station in the remaining six industrial areas for monitoring the air quality.

4.1.7.3 Inadequate monitoring of air pollutants

The air quality of South 24 Parganas district was monitored (2014-15 to 2019-20) through two SAAQMS. Scrutiny of records revealed that these two SAAQMS were monitoring only three[73] out of the required 12 pollutants. Audit observed that in absence of information on the remaining nine[74] pollutants, there was no assessment nor any mitigation measures possible in respect of those nine air pollutants in the district.

4.1.7.4 Presence of PM_{10} beyond permissible limits

PM_{10}[75] is an important air pollutant. It is small enough to enter lungs and cause health problems like asthma, bronchitis and pneumonia. NAAQSs 2009 set the concentration of PM_{10} as 60 µg/m^3(annual average) in ambient air. Analysis

[72] *Behala, Baruipur, Santoshpur-I, Falta-I, Falta-II, Falta SEZ and Santoshpur-II*

[73] PM_{10}, *Sulphur Dioxide and Nitrogen Dioxide*

[74] *$PM_{2.5}$, Ozone, lead, Carbon Monoxide, Ammonia, Benzene, Benzo(a)pyrene, Arsenic and Nickel*

[75] PM_{10} *describes inhalable particles in air with diameters 10 micrometers and smaller.*

of generated data (2014-15 to 2019-20) from the two SAAQMS (Amtala and Baruipur) in the district revealed that the level of PM_{10} remained consistently beyond the prescribed permissible limits in all the years as shown in the **Table 4.5** below:

Table 4.5: Concentration of PM_{10} in SAAQMS at Amtala and Baruipur

(Units in µ/m³)

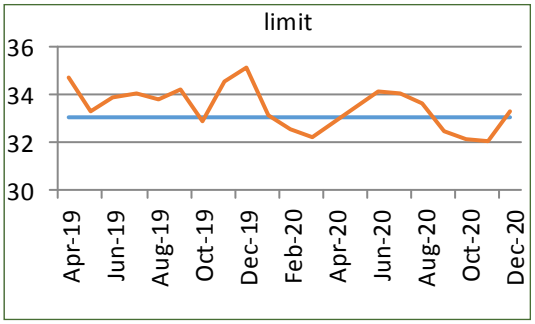
Year	Permissible limit of PM_{10}	Concentration of PM_{10} at Amtala (Annual Avg.)	Concentration of PM_{10} at Baruipur (Annual Avg.)	Maximum concentration of PM_{10} during the year (Amtala/ Baruipur)
2015-16	60	100.31	101.69	224/249
2016-17		105.33	115.33	189/ 232
2017-18		101.71	103.89	204/ 214
2018-19		83.45	97.40	184/ 205
2019-20		78.15	98.30	120/ 214

Thus, WBPCB was required to plan a comprehensive programme to bring the concentration of PM_{10} within the permissible limit as per Air Act 1981. However, no action has been initiated by WBPCB other than disseminating the air quality data.

4.1.7.5 Air pollution in Budge Budge Thermal Power plant under Calcutta Electricity Supply Corporation (CESC)

a) Total power generating capacity of Budge Budge Thermal Power Plant (BBTPP) was 750 MW[76] (3 units X 250 MW). During joint physical inspection of BBTPP in February 2021, Audit observed the following non-compliance with the conditions of Environment Clearance (EC). As per conditions of EC granted by WBPCB in December 2005, percentage of ash in coal should be less than 33 *per cent*. Scrutiny of available test reports of ash content of coal used for the period from April 2019 to March 2020 and from June 2020 to December 2020 revealed that the average ash content of coal exceeded 33 *per cent* in majority of months as depicted in the line Chart 4.1. Further, as per EC, the content of sulphur in the coal in thermal power stations should not be more than 0.38 *per cent*. Test reports for the period from June 2020 to December 2020 revealed that there were instances of coal containing sulphur more than 0.38 *per cent (ranges between 0.39 and 0.41 per cent)* used in all three units of the thermal power station as shown in the **Table 4.6** below:

Chart 4.1 Showing average as content of Coal



[76] *The third unit of 250 MW was installed in 2005.*

Table 4.6: Instances of violations of coal containing more than the prescribed percentage of sulphur

Month &Year	Month-wise instances of violations/ number of tests conducted during the month		
	Unit-1	Unit-2	Unit-3
June 2020	09/30	09/30	07/30
July 2020	13/31	11/31	09/31
August 2020	17/31	13/31	14/31
September 2020	18/30	24/30	21/30
October 2020	25/31	24/31	28/31
November 2020	21/30	20/30	19/30
December 2020	18/31	09/31	11/31

b) As per special conditions of the EC, a dust extraction and dust suppression system should be installed for suppression of fugitive dust from the coal handling area. However, audit observed during joint verification (February 2021) with WBPCB officials that huge heaps of coal were stored in the coal stackyard without installation of any dust extraction system which may cause respiratory problems to the local inhabitants.

Figure 4.1: Coal handling area at the stackyard

c) According to the Environment (Protection) Amendment Rules, 2015, permissible limit for SO_2, NO_X and PM_{10} was 600 mg/Nm^3, 300 mg/Nm^3 and 50 mg/Nm^3 respectively. Between June 2017 and January 2020, WBPCB had tested the emission of each of the three chimneys of BBTPP 30 times. Analysis of the test results revealed that PM_{10} was within the prescribed limit. However, SO_2 and NO_X exceeded the permissible limits in 26 to 29 occasions as shown in **Table 4.7** given below:

Table 4.7: Number of times SO_2 and NO_X in BBTPP exceeded the permissible limits between June 2017 and January 2020

Pollutants	Boiler 1		Boiler 2		Boiler 3	
	SO_2	NO_X	SO_2	NO_X	SO_2	NO_X
Permissible limits (mg/Nm3)	600	300	600	300	600	300
No. of violations (out of 30 tests)	26	29	27	29	28	26

Audit observed that inspite of serious lapses in compliance to the EC and Consent to Operate (CTO) by the industries, WBPCB did not initiate any action like issuing show cause notice, imposing penalty *etc*. against the BBTPP as per the provisions of the Act.

4.1.7.6 Vehicular emission

According to the CPCB, the transport sector contributes to 70 *per cent* of total pollution in metros. As per report of the West Bengal State Action Plan on Climate Change 2017-20, CO_2 emission from the transport sector in West Bengal is estimated to be about 12,000 units of Greenhouse Gases (GHG)/ year.

There are four depots of two STUs located in the district, *viz.,* three depots of Calcutta State Transport Corporation (CSTC) at Kasba, Garia and Thakurpukur with average bus strength of 356, 440 and 407, respectively and South Bengal Transport Corporation (SBSTC) Falta depot with average bus strength of 53 during the period under Audit. All the four depots were covered for detailed checking in this audit including physical verification.

a) Improper maintenance of buses led to adverse effects on emission performance

Emission performance of a vehicle is entirely dependent on proper maintenance of vehicles after a specified kilometer (KM) run. The entire maintenance work in CSTC was carried out in-house or through private contractors. However, none of the depots in the district maintained proper records showing schedule of vehicle specific preventive maintenance programme carried out during the period covered in audit.

Maintenance jobs of buses in CSTC and SBSTC is termed as 'docking'. The STUs prescribed 'A' docking on daily basis and 'B' docking after run of certain gross km for BS-III and IV buses.

Detailed checking of records at three depots[77] of CSTC in South 24 Parganas district during 2014 to 2019 revealed that there was a shortfall of 437 (25 *per cent*) scheduled dockings based on gross km operated. Further, records of Falta depot of SBSTC for the same period revealed that there was shortfall of 47 (64 *per cent*) scheduled dockings with respect to gross km operated.

Further, scrutiny of records on maintenance of buses in the four[78] depots revealed that management did not ensure change of engine oil, diesel filter, gear oil and Differential Bar (DB) oil as per the standard norms, as shown in **Table 4.8** below:

Table 4.8: Percentage deficit in changing engine oil, diesel, filter, gear oil and DB oil

Name of the Depot	% of deficit in changing engine oil	% of deficit in changing diesel filter	% of deficit in changing gear oil	% of deficit in changing DB oil
Kasba Depot, CSTC	38.11	27.47	Nil	Nil
Garia Depot, CSTC	63.47	70.83	Nil	Nil
Thakurpukur Depot, CSTC	31.49	54.78	Nil	Nil
Falta Depot, SBSTC	75.35	56.86	85.21	96.30

Audit observed that the non-compliance was mainly due to unavailability of technical manpower, monitoring at management level and non-availability of buses (due to busy schedule) at the time of docking. Thus, improper maintenance of buses which affect their emission performance by STUs added to vehicular emissions and air pollution.

[77] *Kasba Depot (KD), Garia Depot(GD) and Thakurpukur Depot (TPD) of CSTC.*

[78] *Kasba, Garia, Thakurpukur and Falta Depot.*

b) Emission of NO_x gases in the environment due to non-working of SCR System

The Selective Catalytic Reduction (SCR) system is provided to treat engine exhaust of buses to meet BS-IV emission norms by reducing oxides of nitrogen through dosing of the reducing agent *AdBlue*[79] with fuel. *AdBlue* generates ammonia from heating that reacts with the harmful nitrogen oxides and converts them into harmless nitrogen and water.

According to original equipment manufacturer, minimum four litres of *AdBlue* additive is required for every 100 litres of HSD. During April 2014 to March 2019, CSTC (in KD, GD and TPD) operated 401 BS-IV buses daily on an average and consumed 2.63 lakh litres of *AdBlue*, which could purify only 65.77 lakh litres of HSD, out of total consumption of 168.39 lakh litres of HSD during the same period. Thus, the remaining 102.63 lakh litres of HSD was burnt without *Ad*Blue and noxious nitrogen oxides emitted in the environment. Further, it was seen that the SCR system of 36 vehicles out of 152 buses in two selected depots[80] were not functioning properly due to defect in dosing units in such buses. There were no buses using this technology in SBSTC.

Thus, sub-optimal use of *Ad* Blue and non-functioning of SCR system in buses resulted in emission of NO_x gases in the environment, which are harmful for humans and cause lung diseases.

c) Pollution under Control (PUC) Certificate

According to Rule 116 (7) of the Central Motor Vehicles Rules, 1988, after expiry of one year from the date of registration, every vehicle shall obtain Pollution Under Control" (PUC) certificate every six month and obtain re-registration certificate after 15 years. Operation of vehicles without PUC certificate is liable to a penalty of ₹ 1,000 for first offence and ₹ 2,000 for subsequent offences as specified in section 190 (2) of the Motor Vehicles Act.

Test check of records relating to pollution test in three depots of CSTC (KD, GD and TPD) and Falta Depot of SBSTC for the period 2014-19 is shown in **Table 4.9** below:

Table 4.9: Status of Pollution Test of Buses of CSTC

Depot	Buses held[81]	Smoke Test to be conducted twice a year[82]	Smoke Emission Test actually done	Percentage of Smoke Test done on average
CSTC Kasba	71	710	124	17.46
CSTC Garia	88	880	197	22.39
CSTC, Thakurpukur	82	820	255	31.10
SBSTC Falta	11	110	0	0
Total	**252**	**2,520**	**576**	**17.74**

(Source: Data provided by management)

[79] *It is the trade name of non-toxic colorless and odourless 32.5 per cent aqueous urea solution.*

[80] *KD-16 and TPD-20*

[81] *Average number of buses held during five years.*

[82] *Smoke Test required during 2014-19.*

GoWB authorised (August 1999) all the STUs to inspect and annually grant/ renew certificates of fitness[83] (CF) for their buses. In November 2016, KD, GD and TPD of CSTC were provided with Smoke Testing Machines. During joint physical verification (December 2020), it was observed that the smoke testing machine of the TPD was not in order and the depot authority was in process of starting auto emission testing centre at the depot premises, which was yet to be installed.

d) Consent to Establish and Consent to Operate

Section 21 of the Air (Prevention and Control of Pollution) Act, 1981, specified that no person shall except with the previous consent of SPCB, establish or operate any industrial plant. Further, sections 24, 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974 provide that no person shall knowingly cause or permit flow of any poisonous, toxic or polluting matter into any stream, well, sewer or land without treating it. Audit observed that all the four of depots in the District continued to operate without obtaining "Consent to Operate" from WBPCB.

Further, according to Rules 3(c) and 5(5) of the Hazardous Waste (Management and Handling) Rules, 1989, the depots require authorisation from WBPCB for storage and disposal of hazardous waste. The bus depots generate hazardous waste like used/waste lubricants, engine oil *etc*. However, it was observed that in case of three depots[84] of CSTC, WBPCB authorisation was available upto December 2013 and in case of SBSTC depot at Falta, no authorisation was available.

Further, it was seen that the GD and TPD had submitted annual return (Form-IV) about magnitude of hazardous waste generated and its disposal to the WBPCB at regular intervals but KD had not submitted any returns to WBPCB during 2015-16 and 2018-19.

The STUs operated bus depots without valid CTO or hazardous waste authorisation which was in disregard to the provisions of the Air Act, 1981. Further, due to lack of regular maintenance of buses, non-functioning of smoke testing machines and SCR system and sub-optimal use of *Ad*blue, the STUs failed to take effective measures in reducing emission of harmful gases in the environment from its buses.

4.1.8 Noise pollution

Noise is an unwanted sound that causes annoyance. Noise of sufficient intensity and duration can induce temporary or permanent hearing loss. Beginning with the technological expansion of the industrial growth, environmental noise in India has been gradually and steadily increasing. Proper monitoring and control of noise at its source would require to create general awareness regarding the hazardous effects of noise pollution.

For controlling the menace of noise in the country, MoEF&CC had enacted the Noise Pollution (Regulation and Control) Rules, 2000 (Noise Rules, 2000) under The Environment (Protection) Act, 1986. Central Pollution Control Board (CPCB) established (2011) a network of noise quality monitoring stations under

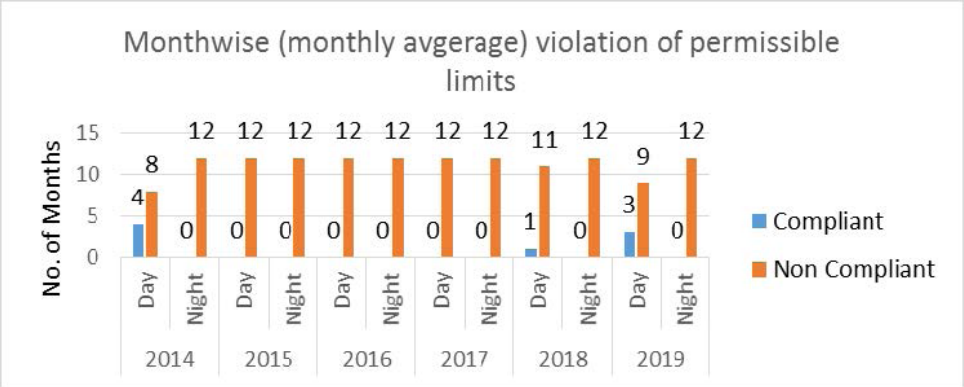
[83] *Based on compliance of 18 aspects of operational fitness including nine associated with environmental pollution.*

[84] *Kasba, Garia and Thakurpukur.*

National Ambient Noise Monitoring Network (NANMN) covering 10 locations in West Bengal including Patuli residential area in South 24 Parganas district. According to the Noise Rules, 2000, the noise levels in the Patuli residential area should be less than 55 dB (A) during day and 45 dB(A) during night.

Audit compiled the monthly data of noise pollution available in CPCB Envis website for the years 2014 to 2019. Analysis of the information showed that out of 72 months, the noise levels of the area during daytime exceeded permissible limits in 64 months while the night sound levels exceeded the permissible limits in all 72 months as given in the **Chart 4.2**.

Chart 4.2: Showing noise level exceeded permissible limits during day and night time



For controlling the menace of noise, WBPCB conducts noise pollution monitoring during major festivals. Audit, however, observed that the initiatives of WBPCB were restricted to the festival periods only. Though the noise in Patuli regularly exceeded the permissible limits, WBPCB, however, had not identified the sources of noise in the area and had not taken any steps to control the noise pollution. Thus in absence of proper monitoring and control of the noise at its source, the hazardous effects of noise pollution continued to cause ill effects on human and its natural environment in the Patuili area of South 24 Parganas.

Audit compiled the daily noise pollution level for the years 2014-17 from Status of Ambient Noise Level in India report published by CPCB. The results of analysis of the information is produced in the **Table 4.10** below:

Table 4.10: Status of Ambient Noise Level at Patuli from 2014-17

Analysis of daily noise level in Patuli area								
	Day	Night	Day	Night	Day	Night	Day	Night
Years	2014		2015		2016		2017	
Standard (in dB(A) Leq)	55	45	55	45	55	45	55	45
No of Observations	309	283	364	364	365	365	365	364
No of Exceedance	142	276	248	362	365	365	349	363
Percentage of Exceedance	46	98	68	99	100	100	96	100

At Patuli station, noise exceedance observed during day time ranged between 46 and 100 *per cent* while during night time it was between 98 and 100 *per cent*. The maximum recorded noise level during day ranged between 79 dB (A) and 89 dB (A) while during night the noise level ranged between 77 dB(A) and 88 dB(A).

4.1.9 Bio-Medical Waste Management

Bio-medical waste (BMW) means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or research activities or in the production or testing of biological or in health camps. In order to save the environment from adverse effects, Ministry of Environment, Forests and Climate Change (MoEF&CC), framed a 'Bio-Medical Waste Management (BMWM) Rules, 2016 which were amended in February 2019. Records of Health and Family Welfare Department (HFWD), WBPCB and one Regional Offices in South 24 Parganas were scrutinised in audit. Besides, coverage was extended to ARDD and Correctional Service Department (CSD), as these Departments also operated Health Care Facilities (HCFs) and contributed to generation of BMW in the district. Under the HFWD, 12 out of 100 HCFs under the two Health Districts (Diamond Harbour and South 24 Parganas) of South 24 Parganas district were covered. Five out of 55 Animal Health Care Facilities (AHCFs) under the ARDD and the sole HCF, i.e., Presidency Correctional Home Hospital under the CSD were covered in Audit. This apart, the sole Common Bio-medical Waste Treatment Facility (CBWTF) assigned for the district of South 24 Parganas was covered in audit. Joint inspections were also conducted in all the selected HCFs and the CBWTF.

4.1.9.1 Non-inventorisation of HCFs and data on BMW generation

In terms of the BMWM Rules 2016, WBPCB is responsible for inventorisation of occupiers[85] and data on bio-medical waste generation, treatment and disposal. Audit observed that WBPCB awarded (August 2019) the work of inventorisation of HCFs to an agency with due date of submission being April 2020. Final report of inventorisation of HCFs not yet been (March 2020) submitted by the agency. Thus, even after four years of enactment of the Rules, inventorisation of HCFs could not be done. As per inventory of WBPCB, there were 26 HCFs, against 100 Government HCFs in the South 24 Parganas district (as per list provided by Health and Family Welfare Department), indicating that the inventory of the WBPCB was incomplete, resulting in BMW generation in the District remaining unassessed. As per Annual Report of WBPCB 2018, 973.64 MT of bio-medical waste was generated in the district.

4.1.9.2 Handling and Management of BMWs without valid authorisation

Under BMWM Rules, 2016, every HCF handling BMW shall apply to WBPCB for grant of authorization for generation, collection, storage, transportation, treatment processing and disposal of bio-medical wastes. WBPCB grants authorisation with validity of five years for bedded and for one time in case of non-bedded HCFs. Audit observed that out of 100 HCFs under H&FW Department, GoWB, in the two Health District of South 24 Parganas District only 10 HCFs had valid BMW authorisation.

WBPCB stated (February 2020) that it had developed an online system for receiving applications for BMW authorisation from the HCFs. However, the

[85] *Occupier means a person having administrative control over the institution like hospital, nursing home, clinic etc for both humans and animals.*

Superintendent, Bijoygarh State Government Hospital (SGH) and Presidency Correctional Home in their replies (February 2020) stated that they could not submit online applications for obtaining BMW authorisation from WBPCB in the absence of land records (records of rights). No response was offered by other test checked Government HCFs. Thus, majority of the HCFs in the district were functioning without any authorisation and remain outside the monitoring ambit of the WBPCB.

4.1.9.3 Non-submission of Annual Reports

BMWM Rules, 2016 specify that every HCF shall submit Annual Report to WBPCB in Form-IV on or before 30 June every year about generation and disposal of BMW. The WBPCB was to compile, review and analyse the information received and send the same to the CPCB on or before 31 July every year.

Audit observed that 75 to 94 *per cent* of HCFs in the category of "upto 50 and non-bedded", did not submit Annual Reports. Non-submission of Annual Reports by HCFs implies that WBPCB has no information on the BMW generated or treated. This implied that there was practically no means of monitoring the generation and treatment of BMW by HCFs in the district by WBPCB. The data transmission process to the CPCB was also impacted.

4.1.9.4 Lack of Training programme

As per BMWM Rules, 2016 WBPCB was to organise training programmes on segregation, collection, storage, transportation, treatment and disposal of bio-medical wastes for staff of HCFs.

Scrutiny of records revealed that no Calendar of Training programme was framed by WBPCB to ensure coverage of staff of all HCFs. Since promulgation of BMWM Rules, WBPCB organised only three training programme in 2018-19 for staff of HCFs under HFWD. HFWD also provided training to 16 staff of HCFs only during March 2019. No training on BMW to staff under CSD and ARDD was provided during the period under audit.

4.1.9.5 Non-execution of agreement by the ARDD and CSD with the CBWTF

BMWM Rules, 2016 provides that HCFs shall hand over segregated wastes as prescribed to CBWTF for treatment, processing and final disposal.

Records of HFWD indicated that the only one CBWTF (Greentech Environ Management Pvt Ltd.) was selected (January 2016) for treatment and disposal of BMWs generated in all HCFs of South 24 Parganas District. Accordingly, all HCFs of the District were bound by contract with the same CBWTF. However, neither CSD nor ARDD entered into any agreement with CBWTF for treatment and final disposal of BMWs. In reply, Deputy Director, ARD, South 24 Parganas stated (March 2020) that approval from the Directorate for the agreement was not yet obtained. The Superintendent, Presidency Correctional Home replied (February 2020) that steps were being taken to dispose the BMW through the authorised agency. Thus, veterinary and other BMW relating to ARDD and CSD remained untreated.

4.1.9.6 Compliance to provisions of BMW Management Rule

HCFs are primarily responsible for segregation, collection, in-house transportation, pre-treatment and storage of BMW before such waste is collected by the CBWTF. Irregularities observed during audit in this process are discussed in the subsequent paragraphs.

i) Improper Segregation of BMW

BMWM Rules specify that BMW generated from HCFs is required to be segregated at the point of generation as per stipulated colour coding into four categories (Yellow[86], Red[87], White[88] and Blue[89]). It also specifies that untreated BMW should not be mixed with other general wastes. Scrutiny of records of test checked HCFs disclosed the following violations of provisions of BMWM Rules:

- BMW wastes were being disposed along with general waste in coloured plastic bags in all the test checked HCFs of HFWD, resulting in mixing of BMW with other waste.
- BMW was not segregated in specified coloured plastic bags. Black coloured bags meant for disposal of municipal waste were also used for BMW in seven[90] test checked HCFs. This allowed disposal of BMW along with municipal waste, contaminating municipal solid waste, which have potential to cause serious adverse effects on human health and the environment. In Diamond Harbour District Hospital and Bijoygarh State General Hospital BMW was being disposed in containers instead of specified coloured plastic bags or puncture proof containers.
- Provisions of BMWM Rules for segregation and collection of BMW generated in the sole HCF under CSD was yet to be implemented.

ii) Use of chlorinated plastic bags/containers

BMWM Rules mandates use of non-chlorinated specific coloured plastic bags for collection of wastes generated in HCFs. These Rules also specify that use of chlorinated plastic bags, gloves and blood bags are to be phased out within two years from the date of notification (March 2016) of these Rules. Burning of chlorinated bags in the incinerator releases gas which are carcinogenic in nature.

Audit observed that in seven test checked HCFs chlorinated plastic bags were used (supplied from district office to HCFs in November 2018) for collecting BMWs even after two years of the Notification. Similarly, chlorinated plastic bags for collection of BMWs were used in all the test checked HCFs under ARDD.

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86 *Yellow: Human and animal anatomical waste, soiled waste, expired or discarded medicines, chemical waste, Microbiology, Biotechnology and other clinical laboratory waste.*

87 *Red: Contaminated waste (recyclable).*

88 *Waste sharps including Metal.*

89 *Glassware and Metallic body implants.*

90 *Diamond Harbour DH & MCH, Vidyasagar SGH, Samali RH, Sagar RH, Nalmuri RH, Belpukur PHC and Kalikapur PHC.*

iii) Central Waste Collection Room or Common Collection Point for storing BMWs

BMWM Rules specify that occupier was to make provision for Common Collection Point (CCP) within the premises for storage of BMW segregated in specific coloured plastic bags or containers. This was to ensure that there was no incidence of secondary handling, pilferage of recyclables or inadvertent scattering or spillage by animals. As per CPCB guidelines, the location of CCP was to be away from the public/visitors access.

Audit observed that in two PHCs (Kalikapur and Sirakole) under HFDW, there was no designated CCP in their premises[91] for storage of BMW. Further, in respect of Nalmuri Rural Hospital and Belpukur PHC, location of CCPs was near the visitors' access. The area around the CCP of Diamond Harbour DH was scattered with BMW.

Lack of storage of BMWs in HCFs, increases the risks of secondary handling, pilferage as well as pose health hazards to the neighbourhood and the public visiting the health facilities.

iv) Inadequate pre-treatment of Laboratory wastes

BMWM Rules mandate pre-treatment of laboratory waste, microbiological waste, blood samples and blood bags through on-site disinfection with one to two *per cent* hypochlorite solution before final disposal to the CBWTF.

Audit observed that on-site disinfection before handing over of waste to CBWTF was not done by four out of 12 test checked HCFs under HFWD and none of the test checked HCFs under ARDD and CSD. Besides, five HCFs under HFWD did not maintain records of pre-treatment or disinfection procedure of laboratory wastes and microbiological wastes. Thus, chances of spreading diseases during transportation of wastes cannot be ruled out.

v) Non-neutralisation of liquid chemical wastes before mixing with other effluents

BMWM Rules prescribe segregation of liquid chemical waste from HCFs at source and ensuring their pre-treatment or neutralisation prior to mixing with other generated effluents.

Audit observed that no pre-treatment was done in four of the test checked HCFs and such waste was disposed directly in the drains. Further, compliance to this provision was not found in the test checked HCFs under ARDD and CSD. Such discharge of waste, without treatment, had the potential of polluting surface and ground water and spreading contamination to human beings through fish and other aquatic plants/ animals.

vi) Non-quantification of BMW generated in HCFs

As per BMWM Rules, a weighing machine should be kept at CCP of an HCF having 30 or more beds. HCFs having less than 30 beds should obtain printed receipts regarding quantity of BMW handed over to CBWTF. Besides, every HCF needs to maintain record of category-wise quantity of BMW generated

[91] *Kalikapur PHC stored BMW plastic bags in buckets and Sirakole PHC stored in open place attached to Bathroom.*

and its treatment/disposal through CBWTF on daily basis. Scrutiny of records revealed the following:

- Weighing arrangements were available only in Vidyasagar SGH out of eight test checked HCFs having 30 or more beds under HFWD.
- Printed receipts issued by CBWTF to HCFs (under HFWD) mentioned the number of 'coloured packets' collected and 'weight generated from each HCF'. A joint inspection of vehicles collecting BMW disclosed that there was no weighing facility in vehicles of CBWTF lifting BMW. The weight was seen to be inserted on the basis of assumption and this fact was also admitted by the respective HCF authorities in their replies.

This indicated that there was no system to assess the quantity of BMW generated at source.

vii) Non-labelling of packaged BMWs

As per Schedule IV of BMWM Rules and CPCB guidelines, specific coloured containers/bags were to be sealed and be labelled with symbol for bio hazard.

Audit observed that none of the 12 test checked HCFs under HFWD complied with this provision of sealing and labelling coloured containers/bags containing BMW with bio-hazard symbols, before handing over to CBWTF for treatment and final disposal.

viii) Non-adopting of barcode system for bags and containers transporting BMW

BMWM Rules stipulate HCFs to establish a barcode system for each bag and container of BMW to be dispatched from the premises for treatment and disposal. Compliance with this stipulation was to be in place within one year from the notification (March 2016) of BMWM Rules, for tracking of lifted BMW from source of generation to intended destination. None of the 12 test checked HCFs under HFWD complied with this provision, even after three years of the stipulated time-frame getting over.

ix) Non-compliance with provision for in-house transportation of BMW

CPCB guidelines stipulate that in-house transportation of BMW from site of waste generation/interim storage to CCP within the premises of the hospital must be done in closed trolleys/containers, preferably fitted with wheels for easy mobility to avoid any adverse effects to human health and environment. Such trolleys or carts may be designated for purpose of BMW collection only.

Audit observed that in four test checked HCFs under HFWD, either there were no closed trolleys for transportation of BMW from ward to common storage point or closed trolleys were lying non-operational. Transportation of BMW was done in open trolleys, thereby leaving scope for BMWs to adversely affect human health and environment.

4.1.9.7 Irregular disposal of BMW from HCFs without involvement of CBWTF

Rule 7 (3) prohibits occupiers from establishment of on-site treatment and disposal facility of BMW if CBWTF is available within a distance of 75 km. Under BMWM Rules, disposal by deep burial is permitted only in rural or remote areas where there is no access to CBWTF.

a) Disposal of BMW instead of handing over to CBWTF

BMWM Rules stipulates that HCFs hand over segregated BMW to CBWTF for treatment and final disposal. These Rules also included that the category of expired medicines of BMW was to be collected in yellow coloured packets for disposal through CBWTF. Further, no untreated BMW was to be mixed with other wastes.

It was observed that in three test checked HCFs, BMW (including expired medicines) were dumped in the backyard and expired medicines were burnt with other general wastes in a pit near the hospital premises of Nalmuri Rural Hospital without handing over to CBWTF.

b) Disposal of BMW through Deep Burial Method

BMWM Rules stipulate that disposal by deep burial is permitted only in rural or remote areas where there is no access to CBWTF. This will be carried out with prior approval from the WBPCB and as per the standards specified in Schedule II of BMWM Rules. As stipulated in BMW Rules, pits for disposal of BMW for deep burial method were to be prepared by digging earth with the use of baked earthen ring instead of concrete. Covers of galvanized iron or wire meshes may be used. On each occasion when waste are added to the pit, a layer of soil of 10 cm would be added to cover the wastes. Audit, however, observed following irregularities in disposal of BMW:

- Despite availability of CBWTF, the Deputy Director, ARDD South 24 Parganas decided (October 2018) to dispose BMWs through burial pit without authorisation from WBPCB. BMW (including needles with syringes) were disposed in pits, in all five test checked AHCFs.
- In four of the test checked AHCFs, pits were constructed with baked earthen rings, but 'covers of galvanised iron or wire meshes', as was stipulated in the BMWM Rules, were not used.
- In three HCFs (Budge Budge-I, Sonarpur and Diamond Harbour-I), pits were located near habitation, in violation of BMWM Rules.
- Pits used by three test checked HCFs under ARDD were found to be filled with water along with discarded BMW. This indicated that no arrangement was made to construct a relatively impermeable pit in violation of BMWM Rules, 2016.
- None of the five test checked HCFs under ARDD, added a layer of soil of 10 cm to cover the wastes, in deviation of stipulation of BMWM Rules.

4.1.9.8 Occupational safety in handling BMW

BMWM Rules stipulate that HCFs are to ensure occupational safety of all their health workers and other staff involved in handling of BMW by providing appropriate and adequate personal protective equipment (PPE).

Audit observed that only in six out of 12 test checked HCFs under HFWD, PPE kits were issued to workers handling BMW. In two of the five test checked AHCFs, under the ARDD, only masks and gloves were given to the staff. In the sole HCF under CSD, no PPE kits were given.

In reply, Deputy Director, ARDD of the district admitting the fact stated (March 2020) that no PPE kits were issued to the officials handling BMW. The Superintendent of the HCF, under CSD, stated (February 2020) that steps would be taken to supply the same.

Without protection of immunisation of PPE, health and safety of personnel handling BMW in the district is being put at risk every single day and needs to be urgently addressed.

4.1.9.9 Inadequate immunisation and health check-up of staff in HCFs

BMWM Rules stipulate that HCFs were to conduct health check-up at the time of induction and at least once in a year for all health care workers involved in handling BMW. The Rules also stipulate immunisation against diseases including Hepatitis B and Tetanus that are likely to be transmitted from handling of BMW.

Audit observed that no health check-up was done in five test checked HCFs and no immunisation was done in two HCFs (Sirakole and Belpukur PHC) under HFWD. Health check-up and immunsation of staff were also not undertaken in any of the test checked AHCFs under ARDD and HCF under CSD. Thus, health workers handling BMWs remained under threat of infection.

Deputy Director ARD under ARDD, stated (March 2020) that no policy was framed for periodical health check-up and immunisation of the staff handling BMW in HCFs. The reply is not tenable as HFWD itself adopted BMWM Rule, 2016 in their different orders/notifications.

4.1.9.10 Common Bio-Medical Waste Treatment and Disposal Facility

Revised Guidelines for Common Bio-medical Waste Treatment and Disposal Facilities (CBWTDF) issued (December 2016) by CPCB stipulate that municipal body or any private entrepreneur would set up a CBWTF based on the need for ensuring environmentally sound management of BMW. The CBWTF would be set up keeping in view the techno-economic feasibility and viable operation of the facility with minimal impact on human health and environment. WBPCB implements the guidelines issued by the CPCB for CBWTF in the State. Accordingly, WBPCB submits annual reports on BMW management indicating individual functioning of CBWTF of the State to CPCB.

During the period covered under audit, M/s Greentech Environ Management Private Ltd (GEMPL) at Mograhat, South 24 Parganas was assigned by the WBPCB to function as CBWTF (initially selected for one year from January 2016 and thereafter renewed from time to time by HFWD during the period under audit) for treatment and final disposal of BMWs generated in all HCFs of South 24 Parganas.

Scrutiny of records of CBWTF disclosed the following:

i) Infrastructural Deficiencies in CBWTF

CPCB guidelines (December 2016) specifies infrastructure to be set up in a CBWTF. The entire set up is conceptualised, based on the requirement that in the entire process of functioning of the CBWTF from collection of BMW to its disposal, no adverse effect to human health and environment occurs.

Audit, during the joint physical inspection of CBWTF with WBPCB official on February 2019, observed that the CBWTF did not comply with the requirements of infrastructure set up *viz*. smooth and fine floor and wall surfaces for minimising sticking/ harbouring of micro-organisms, separate rooms for each treatment equipment (such as incinerator, autoclave, microwave etc.), clear demarcation of main waste storage room with arrangements of stacking BMWs (as per colour codification), provision of vehicle parking areas, *etc*.

Figure 4.2: Packets/containers with BMW are piled in open area

Audit observed that untreated BMW was heaped in the open **(Figure 4.2)** instead of waste storage rooms and untreated expired medicines piled in huge quantities in one room. Such non-compliance in terms of infrastructure set up was compromised the vital aspects of prevention of adverse effects to human health and environment.

ii) Operation of Effluent Treatment Plant in CBWTF

As per CPCB guidelines, a CBWTF shall have a suitable Effluent Treatment Plant (ETP) to ensure liquid effluent generated during the process of washing containers, vehicles, floors *etc*. is treated and reused after treatment. The ETP should have pH meter to measure pH level of treated effluent which is re-circulated in Air Pollution Control Device[92] (APCD) attached with the incinerator. A 'magnetic flow meter' is also to be installed at all water supply extraction points of the CBWTF and in the outlet to check quantity of waste water treated. Scrutiny, however, revealed that neither pH meter nor magnetic flow meter was installed in the ETP.

As such, there was no mechanism to assess the quality and quantity of waste water treated by CBWTF.

iii) Disposal of contaminated liquid outside the premises of CBWTF

WBPCB issued (November 2017) "Consent to Operate" to the CBWTF on condition that "fugitive emissions from the activity are controlled so as to maintain clean and safe environment around the factory premises".

In course of joint physical inspection (January 2020) it was observed that liquid effluent was discharged **(Figure 4.3)** outside the premises of CBWTF in the open agricultural field in violation of the condition of the 'Consent to Operate'. The discharge of untreated liquid waste in the open contaminates the ground water and environment and is also detrimental to human health.

Figure 4.3: Leakage of liquid waste outside the boundary wall of the CBWTF

[92] *A type of scrubber.*

iv) Non-maintenance of records of Health Check-up and shortfall in immunisation of staff of the CBWTF

BMWM Rules stipulate that CBWTF was to undertake appropriate medical examination at the time of induction and at least once in a year and immunise all its workers involved in handling of BMW for protection against diseases, including Hepatitis B, Tetanus, *etc*.

Scrutiny in this regard disclosed the following:

- nothing was on record to indicate that the annual health check-up of workers was conducted. CBWTF stated that they arranged for check-ups, but did not maintain records in support.
- regarding immunisation of staff, it was seen that during 2017-18 and 2018-19, Hepatitis B vaccine was not administered to any of its workers. Tetanus vaccine was administered to 87 *per cent* (2017-18) and 48 *per cent* (2018-19) of its staff.

Such shortfall, especially in the immunisation process, exposed handlers of BMW to infection.

v) Non-maintenance of records of training to workers and assistance to HCFs

BMWM Rules stipulate that the CBWTF was to provide training for all its workers involved in handling of BMW at the time of induction and at least once a year thereafter. It was also to assist HCFs in conduct of training for handling of BMW.

There was nothing on record to indicate that the CBWTF organised training programmes for its staff and assisted HCFs in conducting training programmes. CBWTF stated that though they arranged for training and assisted HCFs, records in support were not maintained.

vi) Irregular Collection/Lifting of BMW from HCFs by CBWTF

BMWM Rules stipulate that the CBWTF should take all necessary steps to ensure that the collected BMW is transported, handled, stored, treated and disposed of without any adverse effect to human health and environment. The Rules also stipulate that un-treated BMWs shall not be stored by HCFs beyond a period of 48 hours. Records of 12 test checked HCFs under HFWD revealed the following:

- Collection of BMW was irregular in Matherdighi RH, Nalmuri RH and Belpukur PHC, where collection were done after two-five days, resulting in foul smell from Common Collection Points of these HCFs.
- BMW was collected twice a week in Sagar RH and Kalikapur PHC.
- Collection was very irregular in Sirakole PHC. Gap between collections ranged between one to nine days and on occasions, it was more than nine days.
- Partial lifting of BMWs from the test checked HCFs also came to notice.

Therefore, the functioning of the CBWTF was found deficient with respect to extant norms and there appeared to be no monitoring of its functioning to address these deficiencies.

4.1.9.11 Monitoring the compliance to BMWM Rule 2016

a) District Level Monitoring Committee

BMWM Rules stipulate that every State Government shall constitute District Level Monitoring Committee (DLMC) under the chairmanship of District Magistrate to monitor the compliance of the provisions of the Rules in the HCFs generating BMW and in CBWTFs. The Rules also stipulate that DLMC so constituted shall submit its report once in six months to the State Advisory Committee headed by Secretary of HFWD with a copy to the WBPCB for taking further necessary action.

Examination of records revealed that HFWD constituted (December 2017) the DLMC under the Chairmanship of the District Magistrate in compliance with provision of BMWM Rules, for each of the two health districts (HDs) (including South 24 Parganas and Diamond Harbour) of the selected district. However, there was no representation of any district level official either from ARDD or CSD.

There was nothing on record to indicate that the DLMC for the HD of Diamond Harbour held any meeting, since formation. HD of South 24 Parganas held only one meeting in July 2018 during the period under audit.

b) BMW Committee at HCF level

Figure 4.4: Accumulation of BMWs in CCP of Sagar

BMWM Rules stipulate that HCFs (having more than 30 beds) were to form a Committee and in case of HCFs having less than 30 beds to designate a qualified person to review and monitor the activities related to BMW management within the establishment. The Rules also specify that the Committee shall meet once in every six months and proceedings of meetings of the Committee shall be submitted to WBPCB along with the Annual Report of HCFs.

Records of test checked HCFs under HFWD, CSD and ARDD showed that

- No committee was formed in Sagar RH having more than 30 beds and no designated official was placed to monitor the compliance of BMWM Rules in four HCFs under HFWD having less than 30 beds.
- No committee was formed in any of the selected HCFs under ARDD nor in the sole HCF under CSD to monitor the compliance of the provisions under these Rules.

In absence of any meeting of DLMC and non-constitution of BMW Committees, review and monitoring of compliance of BMW Rules could not be ensured by WBPCB. The concerned departments (HFFWD, ARDD and CSD) also did not take proactive steps to ensure compliance with BMW disposal which continued to be disposed unsafely causing environmental pollution and creating health risks to personnel handling BMW as well as the general public.

4.1.10 Solid Waste Management

In terms of the Environment (Protection) Act, 1986, the MoEF&CC introduced the Municipal Solid Waste (Management and Handling) Rules, 2000, which

were subsequently amended by the Solid Waste Management (SWM) Rules, 2016. The management of waste generated from households and commercial establishments, remains the responsibility of elected local self-governments.

In South 24 Parganas District, out of seven municipalities, Maheshtala and Budge Budge were selected for audit.

Framing of Solid Waste Management Plan

SWM Rules, 2016 stipulate preparation of Solid Waste Management Plan (SWMP) by the local authorities.

Audit observed that neither of the two-test checked Municipalities had prepared a SWMP. SUDA (State Urban Development Agency) engaged (September 2019) a micro planning organisation, *'BITAN'* (Non-Government Organisation) to undertake a survey and assessment of waste generated within the cities, study and plan the collection, transportation and processing mechanism of waste alongwith training and capacity building of different stake holders.

'BITAN' was required to submit the report along with detailed operational plan within 75 days of its engagement. However, the plan is yet (February 2020) to be submitted to the two Municipalities. The Municipalities did not take any action for early submission of plans by *'BITAN'*.

Door to door collection and segregation of Solid Waste, storage facility and training

SWM Rules stipulate arrangements for door to door collection of segregated solid waste from all households, including slums and informal settlements, commercial, institutional and other residential premises. Quantities of waste generated by Maheshtala and Budge-Budge Municipality were 180 MT/day and 30-35 MT/day respectively.

Audit observed that door to door collection of solid waste was being done in all 35 wards of Maheshtala Municipality and only three of the 20 wards of Budge Budge Municipality (February 2020).

However, segregation of waste into bio-degradable, non-bio-degradable and domestic hazardous waste[93], has been taken up as a pilot project in four out of 35 wards of Maheshtala Municipality as per decision (February 2020) of the task force set up by the Municipality. Segregation has not been implemented in any of the wards of Budge Budge Municipality.

Further, SWM Rules, 2016 stipulate setting up of secondary storage facilities with sufficient space for sorting of recyclable materials and domestic hazardous waste. However, no such facilities were established by either of the two test checked Municipalities.

Arrangements are to be made by the municipalities for providing training on awareness of SWM to waste pickers and waste collectors as per SWM Rules, 2016. Audit observed that while training had been imparted to staff of Budge Budge Municipality, training is yet to be imparted by the Maheshtala Municipality (February 2020).

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[93] *Means discarded paint drums, pesticides cans, CFL bulbs, tube lights, expired medicines, batteries etc.*

Thus, in absence of door-to-door collection in 17 wards of Budge Budge Municipality and non-segregation of wastes in 31 and 17 wards in Mahestala Municipality and Budge Budge respectively, proper disposal and recycling of waste is not being done in those areas.

Construction of solid waste processing facility

As per SWM Rules, 2016 municipalities should facilitate construction, operation and maintenance of solid waste processing facility on their own or with private sector participation for economic and scientific disposal of solid waste.

No such solid waste processing facility was found to have been set up in either of the two Municipalities. In absence of such facilities, all wastes (including plastic wastes) collected were compressed using compactor machines and dumped in open grounds, causing environmental pollution and health hazard in the area. Further, segregation of wastes in four wards of the Mahestala Municipality taken up as a pilot project was also not a fruitful exercise due to absence of processing facility.

Figure 4.5: Dumping ground of Budge Budge Municipality

Figure 4.6: Dumping ground of Maheshtala Municipality

Discharge of Municipal Waste Water

As per The Water (Prevention and Control of Pollution) Act, 1974, no person shall knowingly cause or permit any poisonous, noxious or polluting matter, determined in accordance with such standards as may be laid down by the State Board, to enter (whether directly or indirectly) into any stream or well or sewer or on land.

Neither Budge Budge nor Maheshtala Municipalities had assessed the quantum of sewage water generated and neither of the Municipalities has any facility for treating such water. Budge Budge Municipality has three[94] and Maheshtala Municipality six[95] canals through which untreated sewage water is discharged into the Hooghly River.

Screens have been placed on all the outfalls to intercept plastic and other solid wastes. However, in some cases they are totally or partially damaged and unable to control the flow of pollutants.

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[94] *Canal at Balughat, Canal at Thanaghat and Irrigation Canal.*

[95] *ChoerMaa Hana Canal, NangiAbadi Canal, Mirpur Canal, Old Monikhali Canal, NayaBastiMithaitala Canal, Bhanga Kali Canal.*

Sewerage Treatment Plant (STP)

As of March 2020, Budge Budge Municipality had no STP. However, an STP with a capacity of 9.3 Million Litres per Day (MLD) was under construction by Kolkata Metropolitan Development Authority (KMDA).

Mahestala Municipality had a STP with capacity of 4.25 MLD, which was found to be non-functional during joint inspection (February 2020).The Municipality could not provide the date from which it was non-functional. The chambers of the STP were in poor condition and let out to the Fisheries Department for Pisciculture.

In absence of any STP in these Municipalities, the generated waste water continued to flow unabated to the river Hooghly. Releasing untreated waste water into the river Hooghly adds to water pollution, effects of which has not been assessed.

4.1.10.1 Plastic Waste

MoEF&CC also notified the Plastic Waste (Management and Handling) Rules, 2011 in February 2011, which were subsequently replaced by the Plastic Waste Management (PWM) Rules, 2016 in March 2016. The State also formulated (January 2018) a Policy and Strategy on plastic waste management for urban areas of the State.

Use of banned Plastic

As per PWM Rules, 2016, carry bags made of virgin[96] or recycled plastic shall not be less than 50 microns. Further, West Bengal Municipal Act, 1993, prohibits use of plastic bags of below 50 microns.

Examination of records in the two test checked Municipalities revealed the following:

- Budge Budge Municipality has not imposed any fine for use of such plastics despite having a Board of Councillors (BoC) resolution (December 2019) whereby it was adopted to impose penalty of ₹ 50 and ₹ 500 upon the user of single use plastic below 50 microns and the seller of such plastic, respectively.
- Maheshtala Municipality had formed (December 2017) a vigilance squad to visit the manufacturing units to ensure strict compliance with the provision of PWM Rules, 2016 and members of the squad are duly authorised to seize carry bags below 50 microns after giving a seizure list to persons from whom such prohibited items were seized. The Municipality also issued (October 2018) instructions to all the market committees under its jurisdiction banning the use of plastic carry bags having density less than 50 microns. Any shopkeeper who intends to use plastic carry bags having density 50 micron or above, is required to make a deposit ₹ 48,000 yearly (₹ 4,000 per month) with the Municipality. However, no such realisation was seen to have been made till February 2020.
- In neither of the two test checked Municipalities, details relating to raids conducted, banned plastics seized, were found in available records.

[96] *plastic material which has not been subjected to use earlier and has also not been blended with scrap or waste*

Status of compliance to PWM Rules, 2016

PWM Rules, 2016 spells out the responsibility of the municipal authority/local body for plastic waste management. The status of compliance to these provisions in the test checked Budge-Budge and Maheshtala Municipalities are discussed below:

- ***Segregation of Plastic waste***

PWM Rules, 2016 stipulate that municipalities should ensure segregation, collection, storage, transportation, processing and disposal of plastic waste.

No segregation of plastic waste was observed in either of the two selected Municipalities which were collecting and transporting plastic waste mixed with other waste and disposing to the landfill sites.

Maheshtala Municipality issued (October 2018) directives to ceremony houses to compulsorily segregate bio-degradable and non-bio degradable waste. Non-compliance of directives could lead to cancellation of license of such ceremony houses and imposition of fine of ₹ 5,000 for each violation. Available records though did not indicate any action taken by the Municipality for inspection of such premises, fines imposed or realised and/or cancellation of licence orders if any.

- ***Setting up of system for plastic waste management and framing of bye-laws incorporating the provisions of PMW Rules***

According to PWM Rules 2016, Municipalities may seek assistance from producers of plastic carry bags/plastic sheets, for setting up a system for plastic waste management within one year from the date of final publication of PWM Rules. Also, the local body should frame bye-laws incorporating the provisions of these rules.

It was, however, observed that neither plastic waste management system had been set up nor any bye-laws framed for plastic waste management by either of the two Municipalities

- ***Non-usage of plastic in formation of roads/energy recovery***

PWM Rules, 2016 state that local bodies are to encourage the use of plastic waste (preferably the waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil *etc*. in compliance with the standards and pollution control norms prescribed by the specified authority.

Scrutiny of records revealed that none of the Municipalities adopted the use of plastic waste in roads/energy recovery.

Thus, failure of these Urban Local Bodies (ULBs) to perform the prescribed responsibilities and devise methods of utilisation of plastic in roads resulted in mismanagement of plastic waste, besides, leading to environmental degradation. The regulation of use of plastic bags and disposal and recycling of plastic waste was seen to have not been comprehensively addressed by either of the test checked municipalities and to that extent plastic waste continued to pollute the environment.

4.1.10.2 Hazardous Waste

Hazardous Waste (HW) means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances. MoEF&CC issued Hazardous Waste (Management & Handling) Rules in July 1989 to ensure management of such waste. These rules were superseded by Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules, 2003 and 2008 and subsequently superseded by Hazardous and Other Wastes (Management and Tran boundary Movement) Rules, 2016 (HOWM Rules) and as amended. These Rules lay down the steps to be followed for management of hazardous and other wastes including their (a) prevention (b) minimisation (c) reuse (d) recycling (e) recovery, utilisation including co-processing, and (f) safe disposal

In South 24 Parganas district, there are five authorised recyclers and four authorised utilisers of Hazardous Wastes. Among the recyclers and utilisers, two recyclers[97] and one utiliser[98] were selected (random sampling) for review of records and joint inspection. The audit findings were discussed in the subsequent paragraphs: -

Audit Findings

i) Monitoring of Hazardous waste

HOWM Rules (2016) provide that WBPCB is responsible to grant and renew authorisation of occupiers[99] generating hazardous wastes. Further, the Rules also provide that the occupier shall submit annual return to WBPCB. In case of failure to comply, penal action under section 5 and 15 of Environment (Protection) Act 1986 may be initiated. The status of authorised hazardous waste generating units and non-submission of annual returns during the year 2016-20 are shown in the **Table 4.11** below:

Table 4.11: Non-submission of annual returns

Year	Units possessing authorisation	No. of units submitted annual returns	
		No.	In *(per cent)*
2016-17	122	82	67
2017-18	122	88	72
2018-19	63	53	84
2019-20	63	43	68

(Source: Annual reports prepared by WBPCB)

WBPCB had no information about the magnitude of generation and extent of disposal of hazardous wastes of such units which had not submitted their annual return. Although WBPCB issued show cause notices to defaulting units from time to time, no penal action was taken against the units as provided in HOWM Rules.

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97 *M/s Bristol Petroleum Pvt. Ltd & Lubrina Recycling (P) Ltd.*

98 *Lubrina Recycling (P) Ltd.*

99 *As per HOWM Rules, "occupier" in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation toany hazardous waste the person in possession of the hazardous waste.*

ii) Irregular storing of HW beyond permissible period

Rule 4(3) of HOWM Rules (2016) provides that the hazardous and other wastes generated in the establishment of an occupier would be sent or sold to an authorised actual user or would be disposed of in an authorised disposal facility. Rule 8(1) of the HOWM Rules (2016) also provides that onsite storage of hazardous waste is not permitted beyond 90 days and this period may be extended upto 180 days maximum in case hazardous waste generation is upto ten tonnes per annum.

Audit observed from the HW records of South 24 Parganas submitted (November 2017) by CHWTSDF (RAMKY), Haldia, to the WBPCB that:-

- two units, namely CLC and Varun Beverages had generated 993.16 MT and 16.56 MT of HW respectively during 2016-17 but stored for more than 90 days within their premises.
- 42 units generated HW below 10 tonnes per annum and stored it for more than 180 days in their premises.
- 39 units generating hazardous waste had become members of CHWTSDF but had never sent waste to the facility.

Incidence of non-compliance with the provisions of HW Rules, irregular storage of hazardous waste may contaminate soil, groundwater and surface water bodies due to spillage and leachate.

iii) Hazardous Wastes Management by Industries

During the audit period, four[100] units which deal mainly with hazardous wastes were selected for joint physical inspection. In two out of the four units, following irregularities were observed by the audit as discussed below:-

M/s Bristol Petroleum Pvt. Ltd.

M/s Bristol Petroleum Pvt. Ltd. located at Budge-Budge, is engaged in the production of reclaimed oil/recycled fuel oil from the used oil/waste oil *etc*. through recycling process.

- As per conditions of Consent to Operate, M/s Bristol cannot expand/modify without prior permission from WBPCB. However, during joint physical inspection in February 2021, it was found that M/s Bristol without obtaining permission from WBPCB, had constructed three storage tanks having aggregating capacity of 900 MT for storing reclaimed oil/ recycled oil on land adjacent to the plant.

- As per conditions of HW Authorisation issued by WBPCB the unit would store the HW under shade in an environment friendly safe manner within the premises at designated places. However, during inspection, it was found that hazardous waste of oil was stored indiscriminately in open in adjacent land. It was also noticed that hazardous oil had spilled on the ground and its seepage may contaminate the soil. There is

[100] *1. M/s BNM Organics (P) Ltd. 2. M/s Lubrina Recycling Private Limited 3. Calcutta Leather Complex 4. M/s Bristol Petroleum (P) Ltd.*

also chance of fire hazards as the reclaimed oil/recycled fuel oil is highly inflammable.

- Further, as per the Rules, the unit should dispose-off the incinerator ash to the CHWTSDF, Haldia (RAMKY). However, it was found that M/s Bristol had dumped the incinerator ash within the premises. Besides, it was also found that WBPCB had conducted inspection (February 2019) of the unit but nothing was mentioned about this aspect in their inspection report. Further, no penal action was also taken by WBPCB as per the Environment (Protection) Act.

Lubrina Recycling Private Limited (Lubrina)

Lubrina is a used oil, waste oil recycling unit also having a cleaning facility for chemically contaminated drums/containers. It generates different types of hazardous wastes like ETP sludge, spent clay process waste *etc*.

According to HOWM Rules (2016), HW may be stored for a period not exceeding 90 days. The State Pollution Control Board may allow small generators to store up to 10 tonnes per annum for up to 180 days.

Audit observed, from annual return on HW submitted to WBPCB that at the end of each financial year during 2016-17 to 2019-20, Lubrina stored HW more than its permissible limit for more than 180 days as shown in the **Table 4.12** below:

Table 4.12: Year wise different type of hazardous waste stored

Year	ETP Sludge	Spent clay	Process waste	Waste oil/used oil	Total
	Stock of Hazardous waste (MT) at the end of the year				
2016-17	4.03	7.21	10.33	34.03	55.60
2017-18	1.17	7.51	8.50	32.04	49.22
2018-19	2.93	3.76	8.90	87.45	103.04
2019-20	0.46	2.83	7.52	50.83	61.64

WBPCB did not take any action against the units storing HW unauthorisedly. In the absence of timely disposal and excess storage of HW, it may contaminate soil and ground water due to spillage.

4.1.10.3 Battery Waste

Lead-acid batteries are the most recyclable (98 *per cent*) of all batteries but are made up of chemically active components like lead and sulphuric acid. Improper handling and disposal of lead acid batteries poses a serious threat to human health and hence they are considered as hazardous waste. The main source of exposure to lead from lead-acid batteries arise from environmental emissions which can be inhaled and are also deposited onto soil, water bodies and other surfaces. The concentration of lead in human blood above the threshold level (40 µg/dl) can cause hypertension, difficulties with memory, headache and reproductive problems *etc*. Therefore, disposal and recycling of lead-acid batteries should be done in units possessing sound technology.

The Batteries Management and Handling Rules (2001) as amended in 2010 were notified with the objective of channelising the used lead-acid batteries for environmentally sound recycling.

Delay in submission of Annual Compliance Status Reports

Rule 12 of Batteries Rules provides that WBPCB is responsible for ensuring compliance to the provisions of the rules and submit Annual Compliance Status Reports (ACSR) to CPCB by 30th April every year. However, scrutiny of relevant records revealed that WBPCB, during the period 2014-15 to 2019-20, failed to ensure timely submission of ACSRs and submitted returns with delays ranging from three months to two years. The delay was mainly due to delayed submission of ACSRs by the concerned stakeholders of battery wastes.

The non-compliance of the stipulated time of submission of ACSRs resulted in late compilation of data by CPCB and late review of compliance of the rules to improve the collection and recycling of used lead batteries in the State.

Poor authorisation of battery dealers and non-submission of returns

Rule 7 (vii) (a) of Batteries Rules stipulates that every dealer of lead acid batteries should get registered with the State Pollution Control Board for five years. It also has a provision for cancellation of registration for failure to collect the required number[101] of used batteries as per the said Rules and/or non- submission of timely half yearly returns to the WBPCB. However, scrutiny of records relating to registration for dealers of lead acid batteries revealed that WBPCB had issued registration to 664 dealers including 24 in South 24 Parganas district during the period under audit. However, none of the dealers of the South 24 Parganas district had submitted their half yearly/annual returns nor given any details of the collection/sale of the used batteries to WBPCB.

Further, in order to ensure effective implementation of Batteries Rules, CPCB issued directions (April 2017) to all SPCBs for preparation of inventory of all stakeholders[102]. However, scrutiny of records revealed that the WBPCB had not prepared any such inventory. As a result, WBPCB failed to track distribution, collection, sale, buy-back and recycling of lead batteries in the district.

Moreover, as per provision 4 (iii) of Batteries Rule, it is the responsibility of all stakeholders to file half-yearly return of sales and buy-back to WBPCB latest by 30 June and 31 December of every year. However, scrutiny of annual compliance status report for the year 2014-20 revealed that of 75 in South 24 Parganas district, only six stakeholders had submitted their ACSRs to the WBPCB

The WBPCB, instead of cancelling the registration as per provision 7 (vii)(a) of Batteries Rules, issued only show cause notice to the defaulters for non-submission of ACSRs. As a result, WBPCB failed to track distribution, collection, sale, buy-back and recycling of lead batteries in the district. Besides, the primary objective of the batteries rules to channelise the used lead acid batteries for environmentally sound recycling was not met for the district.

4.1.10.4 E- Waste

E-waste refers to waste relating to electrical and electronic equipment including reject from manufacturing, refurbishment and repair processes. It is classified

[101] *1st year- 50 % of the battery sold, 2nd year- 75 % of the battery sold and 3rd year- 90 % of the battery sold.*

[102] *manufacturers, importers, dealers, bulk-consumers, auctioneers, assemblers, re-conditioners and registered recyclers.*

as a hazardous waste because of the presence of elements like lead, mercury, arsenic, cadmium, selenium, hexavalent chromium, *etc*. India generated (2016) two million tonnes of e-waste, 95 *per cent* of which was recycled by the informal sector and only five *per cent* by the formal sector.

In order to control the threats caused by the unscientific disposal of e-waste, MoEF&CC enacted E-waste (Management & Handling) Rules, 2011 which were subsequently superseded by E-waste (Management) Rules, 2016. The designated authority for ensuring compliance with the provisions of E-waste Rules are WBPCB and the Departments of Industry and Labour.

In the State, there were four dismantlers / recyclers[103] of whom two, Lubrina Recycling (P) Ltd and M/s Old N Furniture were located in South 24 Parganas district.

Failure to prepare Inventory of e-waste and integrated plan

As per schedule IV of rule 17 of E-waste (Management) Rules, 2016 WBPCB had to prepare an inventory of E-waste in the State. Though CPCB instructed (June 2017) to complete inventorisation of e-waste within December 2017, WBPCB selected (November 2020) West Bengal Electronics Industry Development Corporation (WBEIDCL) for preparing the inventory, which was not completed till March 2021.

Rule 12(3) of E-waste (Management) Rules, 2016 require that the Department of Environment would prepare an Integrated Plan for effective implementation of E-waste Rules (with feedback of Departments of Labour, Industry and Commerce and Information Technology and Electronics). Study[104] revealed around 1,400 stakeholders in Kolkata and South 24 Parganas district were engaged in e-waste recycling, which involved maximum risk to the environment and health of the workers. To address this, Labour Department would recognise and register the workers involved in dismantling and recycling of e-wastes and ensure their safety and health through regular monitoring. Audit observed (March 2021) that the Integrated Plan for e-waste had not been prepared. Besides, the registration and health monitoring of the unorganised labour involved in e-waste recycling was not initiated till date.

Monitoring and compliance of dismantlers, recyclers and refurbishers

According to the guidelines issued (2017) by CPCB for dismantling and recycling of e-waste, manual dismantling operations should be carried out over the dismantling table with de-dusting system[105] and other pollution control equipment[106] to control emission. These operations should be under acoustic enclosure for noise reduction. Besides, recyclers should install fume hoods connected with bag dust collectors followed by wet (chemical) scrubbers and

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[103] *1. Lubrina Recycling (P) Ltd 2. J.S Pigments Pvt Ltd. 3. P U Steel & Electro Process Pvt Ltd. 4. M/s Old N Furniture.*

[104] *Assessment of e-Waste in West Bengal by Ministry of Electronics and Information, Government of India, 2010.*

[105] *Dedusting is a process that mainly involves using screening and other pneumatic means to remove fine impurities such as dust.*

[106] *The de-dusting system to consist of suction hoods connected with a cyclone, bag filter and a chimney of three-meter height above roof level.*

carbon filters for control of fugitive emissions from furnaces or reactor. Noise control arrangement for equipment like crusher, grinder and shredder needs to be provided.

Scrutiny of records at WBPCB and joint inspection (February 2021) with representatives of WBPCB revealed that both the recycling units in South 24 Parganas were operating without the prescribed air and noise pollution control equipment as discussed below:

a) Old and Furniture Pvt Ltd.

Audit observed that Old and Furniture Pvt. Ltd. was operating without air pollution control device. Besides, the staffs engaged in the dismantling process did not use personal protective gears. It was also observed that the dismantling table did not have any equipment like cable strippers, *etc.* as prescribed in the guidelines. Also, it did not have wheel barrows for movement of dismantled e-waste which was done manually by the staff. Thus, the staffs were exposed to health hazards. The unit did not maintain record of the E-waste material received or of inventory and material recovered from dismantling/recycling.

b) M/s Lubrina Recycling (P) Ltd.

In Lubrina Recycling (P) Ltd, it was observed during physical verification (February 2021) that the recycler did not have any air pollution control devices. Further, in deviation to the prescribed guidelines there was no tube light crusher, compressor cutting machines, cable strippers, fumes collector, wheelbarrow, *etc*. Further, the unit did not maintain any record of dismantled items and recycled materials.

Though WBPCB inspected the dismantlers/ recyclers, it had not taken any action against the violators to restrict the environmental pollution. Besides, WBPCB failed to bring the e-waste generators, dismantlers and recyclers in the district under its monitoring and control and remained largely unregulated in the district contributing to environmental pollution and health risks for the persons engaged in recycling of the waste.

4.1.11 Bio Diversity

Biodiversity refers to all aspects of variability in the living world, including diversity within and between individuals, populations, species, communities and ecosystems. The Sundarbans area in the southern part of the South 24 Parganas district is one of the richest biodiversity hotspots in India. This UNESCO World Heritage site is known for its mangroves, coastal forests that serve as a biological buffer between the land and sea. The unique ecosystem is famous for the royal Bengal tiger, Gangetic dolphin, and estuarine crocodile. It also provides shelter to a large variety of birds, fishes, spiders, reptiles, oysters, and crabs. The forest forms a part of the Ganga Brahmaputra delta, spread across 26,000 square kilometers and distributed amongst 104 islands of South 24 Parganas district.

Regulation and framework regulating State Bio-diversity

Government of India enacted the Biological Diversity Act, 2002 (BD Act 2002) for the protection of biodiversity and to provide conservation, sustainable utilisation and equitable sharing of the benefits of its genetic resources. Besides,

the State has also framed West Bengal Biological Diversity (WBBD) Rules 2006 under the provision of the BD Act 2002. The State has constituted West Bengal Bio-diversity Board (WBBB) in September 2004 as per provisions of the BD Act 2002. The functions of the WBBB are to advise the State Government on matters relating to the conservation of biodiversity and its sustainable use, regulate commercial utilisation or bio-survey and bio-utilisation[107] of any biological resource and perform such other functions as may be prescribed by the State Government.

Scrutiny of relevant files of WBBB, following irregularities were observed by the audit:-

Constitution of Bio-diversity Management Committee (BMC)

As per section 41 (1) of the BD Act, 2002, every local body shall constitute a Biodiversity Management Committee (BMC) within its area. A BMC is the third tier to implement the strategies of biodiversity conservation and are to be constituted in Notified Area Authority, Blocks, Municipalities and Municipal Corporations. Objectives include promoting conservation, sustainable use and documentation of biological diversity (People`s Biodiversity Register[108]) (PBR), including preservation of habitats, conservation of land races[109], folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.

There are 29 blocks, seven municipalities and 312 Gram Panchayats (GPs) in the South 24 Parganas district. Audit observed that while BMCs were constituted (February 2020) in all 29 blocks and seven municipalities of the district, only 33 (10.57 *percent*) out of the 312 GPs had constituted BMCs.

Further, only one[110] block (out of total 29 blocks), one[111] municipality (out of total seven municipalities) and 21 GPs (out of total 312 GPs) of the district had prepared the PBR. Thus, in the absence of such documentation, information on biodiversity remained incomplete and their conservation and sustainable use could not be effectively promoted.

4.1.12 East Kolkata Wetlands

East Kolkata Wetlands (EKW) is a unique peri-urban ecosystem. It lies on the eastern fringes of Kolkata, covering an area of about 12,500 hectares[112] spread over 37 mouzas of South and North 24 Parganas districts. EKW was designated as a 'Wetland of International Importance' and also recognised (2002) as a

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[107] *"bio-survey and bio-utilisation" means survey or collection of species, subspecies, genes, components and extracts of biological resource for any purpose and includes characterisation, inventorisation and bioassay.*

[108] *PBR contains comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.*

[109] *Dynamic population of a cultivated plant with a historical origin distinct identity and associated with set farmers practices of seed selection and field management.*

[110] *Basanti block.*

[111] *JoynagarMajilpur Municipality.*

[112] *5,852.14 ha is primarily water body oriented area, 4,718.56 ha is agricultural land, 602.78 ha is productive farming area and 1,326.52 ha is urban / rural settlement area.*

Ramsar site[113]. EKW comprises of 35 mouzas in South 24 Parganas and two mouzas in North 24 parganas districts and has more than 250 water bodies of varying sizes ranging from 2 ha to over 20 ha. It also supports a resident population of over 1.30 lakh.

The area has traditionally been used as dumping ground where the city sewage is dumped by Kolkata Municipal Corporation and is treated naturally in the water bodies, which offers a unique system of sewage treatment. Besides, the sewage fed water bodies are also used for pisci-culture and produce an estimated 10,500 MT of fish annually.

The East Kolkata Wetlands Management Authority (EKWMA) consist of 13 members, was constituted under section 3 of the EKW (Conservation and Management) Act, 2006 (henceforth referred as EKW Act) for conservation and management of the area and for matters connected therewith and incidental thereto.

Boundaries, maps and action plans

a) Failure to delineate boundaries

As per section 4 (1) of the EKW Act 2006, EKWMA would demarcate the boundaries of the East Kolkata Wetlands. The area was under intense pressure due to urban development and unauthorised development activities. EKWMA decided (September 2012) that the EKW area would be demarcated using 2,540 boundary pillars at a cost of ₹ 29.25 lakh to prevent encroachment using satellite data and GIS. Before installing the pillars, each point would be geo-referenced and plotted on the map.

Chief Technical Officer (CTO), EKWMA proposed (April 2014) that each of the 2,540 points must be verified through inspection with District Land and Land Reforms Officer (DL & LRO). The survey was commenced in October 2014, but the work stopped in July 2015 due to rain and water logging, by the time ground truthing[114] of only 1,036 points had been completed. Subsequently, due to objection (February 2016) by local people, the survey work was suspended and was not taken up thereafter (March 2021).

Meanwhile, CTO, EKWMA proposed (February 2018) to Environment Department (DoE), GoWB to demarcate the boundary of EKW using 1,793 monolith pillars at an estimated cost of ₹ 49.80 lakh which DOE sanctioned in April 2018. DOE entrusted (May 2018) the work to Land and Land Reforms and Refugee Relief and Rehabilitation Department to be implemented by Director of Land Reforms (DLR). However, DLR did not initiate the work till March 2021, EKWMA did not take up the inaction of DLR with higher authority and failed to demarcate the boundary even after 15 years from the enactment of the EKW Act in 2006 and could not restrict illegal encroachment of the area.

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[113] *Ramsar sites are wetlands of international importance that have been designated under the criteria of the Ramsar Convention on Wetlands for containing representative, rare or unique wetland types or for their importance in conserving biological diversity.*

[114] *Ground truthing and the collection of ground-truth data on location enables calibration of remote-sensing data, and aids in the interpretation and analysis of what is being sensed.*

b) Preparation of Land Use and Land Cover maps of EKW

EKWMA proposed (July 2016) to prepare current Land Use and Land Cover[115] (LULC) map of EKW using multispectral high resolution satellite imagery. Accordingly, EKWMA requested Department of Science and Technology (DS&T), GoWB to prepare the maps. DS&T, GoWB, ordered (August 2016) high resolution multispectral satellite data of the year 2016 for commencement of the work. Thereafter, EKWMA procured (April 2017) satellite data of 273 square km of EKW from National Remote Sensing Agency at a cost of ₹ 2.09 lakh. However, it had not completed the work of LULC maps till March 2021 due to lack of in-house technical expertise.

Action Plans and Policies

4.1.12.1 Management Plan not prepared

According to section 4 (1) (f) of the EKW Act, 2006, EKWMA would prepare action plan and update the land use maps of the East Kolkata wetlands and implement and monitor the activities specified in the action plan.

EKWMA proposed (July 2017) to prepare a Management Plan for EKW and constituted a Steering Committee headed by Additional Chief Secretary for the same. The Steering Committee met thrice (November 2017, December 2017 and June 2018) to select an agency for preparation of the Plan. EKWMA offered (July 2018) the work to Wetlands International South Asia (WISA) including the work of identification of illegal construction and encroachment at an outlay of ₹ 15 lakh, to be completed within five months. However, EKWMA could not award the work to WISA as it had not observed extant norms (e-tendering process) in the selection process.

Thereafter, EKWMA invited (September 2018) tender for the preparation of the Plan in which only one bidder participated. The Chief Technical Officer directed (November 2018) for re-tendering, EKWMA, however, cancelled (November 2018) the tender without any recorded reason.

Meanwhile, Jawaharlal Nehru University (JNU) expressed (October 2018) its interest to update the EKW Management Plan (prepared in 2011) without any financial implication. DOE offered (November 2018) the work to JNU who submitted the draft Management Plan in February 2019. The Steering Committee evaluating the Management Plan observed (February 2019) that the JNU has updated the plans using old land use maps and data of 2009 and requested JNU to procure latest satellite data and prepare present LULC map and complete the management plan by May 2019. JNU submitted (March 2019) an estimate of ₹ 89.60 lakh for the work. However, EKWMA did not revert to JNU. Instead, it invited (October 2019) Expression of Interest for the work of preparation of Management Plan in which two agencies[116] participated. Audit, however, observed that EKWMA had not processed further the work of preparation of Management Plan which remained incomplete till March 2021. Resultantly, the subsequent works of conservation and management remained unattended.

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[115] *Land cover indicates the physical land type such as forest, water body etc. whereas land use documents how people are using the land.*

[116] *Beyond Built Pvt. Ltd and Geoenvitech Research and Consultancy Pvt. Ltd*

4.1.12.2 Functioning of Expert Committees

According to section 4 (1)(o) of the EKW Act, EKWMA constituted (November 2005) four expert committees with following duties as shown in **Table 4.13** below:

Table 4.13: Responsibilities of the Expert Committees

Expert Committee	Responsibilities
Standing Committee on Sewage and Fisheries	Develop an immediate action plan for smooth flow of storm water and development of fisheries.
Standing Committee on Land Management	To carry out detailed enumeration of the households in the settlement areas and list out unauthorised constructions in EKW since 1992
Standing Committee on Hygiene, Sanitation and Welfare	To promote solid waste management in the rural and urban settlements in EKW, sanitation and potable drinking water, *etc*.
Standing Committee on Biodiversity Conservation	To prepare an action plan for bio diversity and wildlife conservation in EKW area.

Besides, it also constituted a local level committee to advice on the implementation of conservation and monitoring activities in EKW.

Audit, however, observed that neither the standing committees nor the local level committees ever met or expressed opinion on any wetland issue. As such, the intended purpose of the committees to assist the EKWMA to discharge its functions as envisaged in the EKW Act, 2006 remained frustrated.

4.1.12.3 Prevention & control of unauthorised use of EKW

i) Uncontrolled transfer of land resulted in change of character of EKW

According to DoE, GoWB, EKWMA was not empowered to grant sanction for change of character or mode of use of a land, unless the change was for improvement or upkeep of the local environment and surroundings. The Wetlands (C&M) Rules, 2010 issued by GoI also prohibited any construction of permanent nature. DoE, GoWB issued (March 2008) an order which prohibited any occupier of EKW area from transferring land without obtaining prior clearance from EKWMA.

To identify the current owners of plots where violation was reported, Chief Secretary directed (May 2013) EKWMA to prepare a map of the existing water bodies within the EKW and provide the police with GPS coordinates to prevent filling up. Besides, EKWMA should verify the status of the land near the urban / rural settlement area where the possibility of encroachment / violation cases was highest. EKWMA observed (22nd meeting dated February 2014) that registration and mutations were prevalent in nine mouzas[117] without the permission of EKWMA and building plans were approved by local panchayat bodies. EKWMA did not take any action in the nine mouzas to prohibit the sale of land. Though EKWMA was directed to identify the present owners of plots where violation was reported, it had not undertaken the process.

[117] *sale of land was prevalent in nine mouzas namely Hatgacha, Tardaha Kapasati, Kheyadaha, Bhagabanpur, Kulberia, Jagatipota, Karimpur, Chowbagha, etc.*

ii) Lack of effective action by EKWMA

According to section 4 (1) (b) of the EKW Act, 2006, EKWMA would take measures to prevent any unauthorised development project in EKW area. Further, section 18 (1) of the Act, 2006 provides that whoever fails to comply with any provision of this Act shall be guilty of an offence and be punished with imprisonment for a term which may extend to three years or with fine which may extend to one lakh rupees or with both and, in case such failure or contravention continues, with an additional fine which may extend upto five thousand rupees for every day.

EKWMA conducts inspections to identify unauthorised constructions in EKW area. After any unauthorised construction is identified, EKWMA issues show cause notice and registers FIR with the police. From the available records, it was seen that between 2007 and 2019, 357 cases of violation were identified against which EKWMA registered FIRs with police stations.

EKWMA proposed (April 2013) to conduct joint inspections with Police (Home Department) and DM South 24 Parganas and initiate legal action. To expedite the action, EKWMA requested (December 2019) police of the North and South 24 Parganas to expedite the processing of FIRs and administration to take initiative for demolition and restoration work.

However, audit observed that

a) the process of identification of violators had not progressed. It was also observed that EKW had restricted its punitive measures to complaints with police and had not imposed fines or appealed in any court of law.

b) In absence of effective measures by EKWMA, water bodies were dried up and filled illegally. Since 2007, EKWMA had identified 357 cases of violation out of which 101 cases were identified between December 2015 and March 2020. On scrutiny of show cause notices issued to the 101 violators, audit observed that 51 cases were of construction of unauthorised two / three storied buildings, marble godowns, motorbike and car showrooms, 23 cases of drying up and filling of water bodies and 27 cases of construction of boundary walls in the EKW area; these altered the ecological character of the wetlands and therefore, were in gross violation of the EKW Act.

iii) Illegal constructions in the EKW area

a) Real Estate

EKWMA had accorded permission (2013) for only vegetative fencing of land earmarked for seven (07) ecotourism projects[118], though the projects were not approved. However, EKWMA noticed that instead of vegetative fencing the project proponents had undertaken construction of permanent nature and so cancelled (February 2014) the permission and issued orders for stopping the construction. Subsequent inspection (September 2014) by EKWMA revealed that four project proponents[119]started constructional activities. Further one of the members of the EKWMA informed (September 2015) that colleges namely

[118] *Bengal Sunny Rock Estates Housing, Unnayan Developers, Greentech farm and Agro, Green Concretex, Shyam Greenfield Developers, Sankalp Vanijya, Kalyan Bharati Foundation.*

[119] *Unnayan Developers, Shyam Greenfields, Sankalp Vanijya and Kalyan Bharati.*

Megnadh Saha Institute, Heritage College, Rupa College and Netaji Subhash Engineering College were under construction (during 2014-15) by illegally filling up water bodies (bheels) and without permission of EKWMA. The member requested EKWMA for initiating legal process and demolishing the illegal structures. However, no action has been initiated by the EKWMA in this regard.

b) Religious centres in EKW

EKWMA initially observed (July 2011) that a religious society called Sant Nirankari Mandal (SNM) had undertaken unauthorised construction in EKW and lodged FIR and issued show cause notice (February 2012) for such unauthorised construction. Despite the show cause, EKWMA observed (January 2014) that the SNM continued its activities in the area. SNM proposed (December 2014) to commercially develop its 143.95 acres of EKW land by building educational and health facilities, vocational training centres, parks, modern swimming pool, playground, solid waste management facilities, water treatment facilities, *etc*. The organisation proposed to develop the area by filling up existing water bodies with earth and fly ash.

EKWMA permitted (February 2015) SNM to fence the land. Subsequently SNM again applied (January 2016) for levelling of land, gardening, construction of park, development of health and educational facilities, *etc*. EKWMA observed that SNM had dried up two water bodies and filled (February 2017) those with soil and sand and issued notice to SNM to stop constructional work. EKWMA also requested (November 2017) District Administration (DM, South 24 Parganas) for initiating action, however, no action was taken. Meanwhile, the SNM continued the development work unabated.

Audit observed that EKWMA was aware of all the constructional activity; however, it had not pursued the matter with Department of Environment or initiated any legal action against the violators.

iv) Encroachments of wetlands by plastic industries

EKWMA entrusted (February 2014) Kolkata Municipal Corporation (KMC) for the removal of the illegal plastic and rubber factories in the wetland adjoining Basanti highway. In compliance, KMC completed (June 2014) identification of 380 illegal plastic, rubber and leather factories along the Basanti Highway through joint inspection with police and proposed to initiate eviction with immediate plantation of trees in the evicted sites. However, KMC postponed (September 2014) the removal of illegal plastic, rubber and leather factories in EKW without any recorded reason.

Subsequently, KMC formed (November 2014) a committee for undertaking the removal of illegal factories and requested WBPCB to assess the air pollution along Basanti Highway. WBPCB also observed air pollution in the area due to illegal fertilizer manufacturing unit which were using leather cutting, trimming, *etc*. as fuel. WBPCB (June 2015 to July 2015) tested ambient air quality in three[120] locations. Test results revealed that in one location[121] both PM_{10} and

[120] *Basanti Highway, Chowbagha and Kolkata Leather Complex.*

[121] *Basanti Highway.*

$PM_{2.5}$ exceeded the limits while in two[122] other stations PM_{10} values exceeded the limits during night hours.

KMC planned (March 2016) to rehabilitate the illegal factories within EKW on suitable land along the Basanti Highway, to which Chief Secretary directed to submit a detailed plan within three months (June 2016). Thereafter neither the detailed plan of relocation was submitted, nor the evictions done. During the last four years, the issue was not discussed any further.

Audit observed that EKWMA had not filed FIRs, issued show cause notices or taken up the matter with WBPCB for shutting down of these illegally operating industries within EKW along the Basanti Highway. Besides, it had not initiated any legal action against the encroaching industries.

4.1.12.4 Conservation of wetland

a) Failure to preserve the wetlands in the Bhagabanpur mouza

According to section 4 (1) (k) of EKW Act, EKWMA would enforce land use control in the substantially water body oriented areas and other areas in the EKW.

An Expert (Ecology) member of EKWMA had undertaken (January 2017) a research to compare the conversion of water body over 2002 to 2016. The study was undertaken in Bhagabanpur mouza of the EKW. According to the research, 88 *per cen*t water area (2002) was reduced to 16 per cent in 2016 and the population grew from 3,126 (2001) to 11,777 (2011), out of which large population had migrated from other areas and were not related to wetland activities.

Analysis of the change (2002-16) in land use pattern in Bhagabanpur mouza based on the study revealed the following:

- Areas under full water bodies and embankments decreased from 522.94 ha in 2002 to 116.07 ha in 2016 due to encroachment. Study further revealed that in the mouza, out of 47 bheries (fish ponds) functional in 1998, only 10 bheries were left in 2017. Thus, EKWMA had failed to preserve the wetlands in the Bhagabanpur mouza.

b) Avoidable expenditure of ₹ 47.38 lakh due to inaction of EKWMA

An owner of a land in EKW complained (January 2015) to EKWMA that an adjacent water body was filled up illegally, divided into small plots and sold out. EKWMA was requested to take prompt action against wrong doers to maintain the character of the area.

After two months EKWMA conducted (March 2015) a field inspection and observed that the water body was filled up and was cultivated. Besides, a temporary room was also constructed on the filled up water body. EKWMA lodged (March 2015) a complaint with police against the violation. No further action was initiated by the EKWMA and subsequently the temporary room was converted into a two storied building. The owner of the adjacent plot

[122] *Chowbagha and Kolkata Leather Complex.*

lodged a writ petition in the High Court of Calcutta, which directed (May 2017) to restore the water body. In compliance with the directions of High Court, Environment Department demolished the construction (July 2018) incurring an expenditure of ₹ 47.38 lakh.

Thus, EKWMA failed to protect the water body by restricting the constructional activity, which led to avoidable expenditure of ₹ 47.38 lakh on demolition. It was further observed that though the constructions were demolished and cleared, the water body was not restored till date (February 2020).

4.1.13 State Wetland Authority

MoEF&CC, Government of India enacted (26 September 2017) the Wetlands (Conservation and Management) Rules, 2017 (henceforth referred to as the Rules, 2017) and constituted (September 2017) the State Wetlands Authority (SWA) in each State. These rules were applicable on wetlands categorised under the Ramsar Convention and those notified by the Central or State Government. The infirmities observed in the functioning of SWA are discussed in the following paragraphs:

4.1.13.1 Inventory of wetlands

According to the Rules, 2017, the SWA would prepare a list of all wetlands in the State within three months (December 2017) and notify them within six months (March 2018). Besides, within one year (September 2018), SWA would prepare a comprehensive digital library of all wetlands under Rule 4 (d).

SWA decided (November 2017) that Fisheries Department would prepare a list of wetlands with areas upto 20 ha. SWA had requested (July 2019) Institute of Environmental Studies and Wetlands Management (a sister organisation under DoE, GoWB) to share Survey of India topological maps (scale 1:50000) of the State for preparation of database of wetlands. Replying to a query (July 2019) of MoEF&CC about the progress, SWA informed (August 2019) that preparation of list and digital library were complete while the brief documents and list of wetlands to be notified were under progress. Audit observed that Fisheries Department had not provided any list of wetlands and SWA had also not pursued the case with Fisheries Department. It was further observed that between September 2017 and March 2021, SWA had not undertaken any exercise to update digital inventory of the wetlands or prepare a list of wetlands.

Thus, even after four years of the promulgation of the Act, SWA failed to update the database and digitise the library of wetlands.

4.1.13.2 100 Wetlands program of MoEF&CC

MoEF&CC initiated (August 2019) a programme for restoration of 100 wetlands including wetlands of East Kolkata and Sundarbans in West Bengal. SWA was to prepare brief document, health card and Integrated Management Plan for restoration of wetland and constitution of Wetland Mitra[123] within September 2019 for taking care of the identified wetlands across the State. Management Plan so prepared was to be implemented from October 2019.

[123] *Wetland Mitra is the citizens network to enable participation of local stakeholder in wetland conservation and its wise use.*

In a meeting conducted by Zoological Survey of India, Forest Department, GoWB submitted (September 2019) to MoEF&CC health card, brief document and integrated management plan (IMP) for Sundarban while EKWMA for East Kolkata Wetlands.

Audit observed that SWA had not constituted Wetland Mitra (citizens network) till March 2020. As such, the local stakeholders could not be engaged in conservation and wise use.

4.1.13.3 National Wetland Inventory and Assessment (NWIA) project not taken up

Space Application Centre (SAC) was engaged by MoEF&CC for National Wetland Inventory and Assessment (NWIA) project[124], (2017-18) for decadal change detection of the wetlands with respect to 2006-07 status. In this connection, SAC requested (May 2019) SWA to take up the work for the State.

The project was to be carried out over two years (February 2019 - March 2021) with fund amounting to ₹ 22.60 lakh earmarked for the State. SAC forwarded (June 2019) the Work Plan for confirmation by SWA. According to the schedule of works of the project, SWA was to update the maps, analyse the changes in the wetlands, inventories the wetlands by drawing up maps and conduct field verification to be completed by January 2020.

Audit observed that SWA had neither sent its confirmation to undertake the work till March 2020 nor initiated the project.

4.1.14 West Bengal State Coastal Zone Management Authority

The length of the coastline in West Bengal is 280 km which includes Hooghly estuarine plain characterised by a network of creeks encompassing small islands with mangrove vegetation and off-shore linear tidal shoals from Sagar Island to the border of Bangladesh.

4.1.14.1 Delay in preparation of CZMP

According to the CRZ Notification, 2011, Environment Department, GoWB would prepare a Coastal Zone Management Plan (CZMP) of the coastal areas of the State. CZMP encompassed preparation of CZM maps (1:25000 scale) and local level CZM maps (1:4000 scale) by the SCZMAs. Local level CZM maps were to be prepared for use of local bodies for determining the Coastal Regulation Zone[125] (CRZ) and to enable them to facilitate implementation of the CZMP. Further the CZMP should comprise of classification of CRZ areas including land use plan, fishing villages, water areas, existing authorised developments, road networks *etc*. All developmental activities listed in CRZ Notification 2011 were to be regulated by State Government/ the local authority/ West Bengal State Coastal Zone Management Authority (WBSCZMA) within

[124] *Updating Wetland inventory (WI) of West Bengal (1:50000 scale) of 2006-07 and creation of WI GIS database for 2017-18, change analysis between WI of 2017-18 and 2006-07, Preparation of WI of West Bengal (1:25000 scale) of 2017-18 and creation of WI GIS database for 2017-18 and Preparation of state level project report and Atlas.*

[125] *CRZ is the land area from High Tide Line to 500 mts on the landward side along the sea front. All development activity in the CRZ shall be regulated by the government.*

the framework of such approved CZMPs as the case may be in accordance with provisions of this notification;

According to CRZ Notification, 2011 GoWB was required to prepare and submit its CZMP by January 2013 to MoEF&CC for approval. GoWB entrusted (November 2012) Institute of Environmental Studies and Wetland Management (IESWM), an autonomous body under Department of Environment (DoE), GoWB to prepare the CZMP (CZM maps and local level maps), which was approved by MoEF&CC in October 2018.

Audit observed that the preparation of local level CZM maps and classification of CRZ areas as envisaged in the CRZ Notification remained incomplete till March 2020. As a result, there were instances of violations in CRZ areas.

4.1.14.2 Irregularities in Project appraisals and approvals

According to CRZ 2011, project proponents[126] were to apply and submit various documents[127] to WBSCZMA for prior clearance of permitted activities for projects in designated CRZ areas.

WBSCZMA was to examine the documents in accordance with the approved CZMP and in compliance with CRZ Notification and make recommendations within a period of 60 days from the date of receipt of application. WBSCZMA was to forward recommendations to MoEF&CC or State Environmental Impact Assessment Authority (SEIAA) for projects attracting provisions of Environment Impact Assessment Notification, 2006. MoEF&CC/SEIAA was to consider such projects for clearance, based on the recommendations of WBSCZMA.

Audit observed that between April 2014 and March 2020, WBSCZMA had given CRZ clearances to five projects in the selected district.

Sl. No.	Name of the Projects	WBSCZMA recommendation	Para No.
1	Eco-tourism project in Sagar Island (ICZM)	Feb-Mar 2014	-
2A	25 Multi-Purpose Cyclone Shelters (MPCS)	September 2014	Refer to Para 14.2.a.i
2B	86 sites of MPCS under NCRMP-II	September 2014	Refer to Para 14.2.a.ii
3	Marine Cluster in Kulpi	May 2017	Refer to Para 14.2.b
4	Hovercraft station of Indian Coast Guard	June 2018	Refer to Para 14.2.c
5	Helipad Project in Sagar islands	February 2020	Refer to Para 14.2.d

Discrepancies noticed in Audit regarding project appraisal by WBSCZMA are discussed below:

a) Multipurpose Cyclone Shelters (MPCS)

i) Disaster Management Department (DMD) submitted (July 2014) application to WBSCZMA for CRZ clearance for construction of 25 MPCS at different

[126] *parties interested to undertake any activities in CRZ*

[127] *i) Rapid EIA Report, ii) Comprehensive EIA, iii) Disaster Management Report, iv) Risk Assessment Report and Management Plan, v) CRZ map indicating HTL and LTL, vi) Project layout superimposed on the map, vii) CRZ map covering seven km radius around the project site, viii) CRZ map indicating the CRZ I, II, III and IV areas including other notified ecologically sensitive areas and ix) No Objection Certificate from the concerned SPCB for the projects involving discharge of effluents, solid wastes, sewage etc.*

sites of South 24 Parganas district for construction of cyclone shelters. DMD submitted along with Form I, a CRZ report and five sheets of maps containing five sites each prepared by IESWM in 1:25000 scale. WBSCZMA informed (September 2014) DMD that map in 1:4000 scale was mandatory as per CRZ Notification, 2011Act. However, without obtaining such map, WBSCZMA accorded (September 2014) CRZ clearance for 25 cyclone shelters. CRZ clearance, in absence of 1:4000 scale map was irregular and resulted in non- compliance of the CRZ notification.

ii) DMD again approached (August 2014) DoE, GoWB for clearance of another 86 MPCS. WBSCZMA intimated (16 September 2014) DMD that for CRZ clearance, submission of Form I, EIA report, Social Impact Assessment[128] (SIA) report and CRZ maps were mandatory. DMD submitted (September 2014) one Form I for all 86 sites including 24 sites of South 24 Parganas. WBSCZMA again requested (25 September 2014) that though Form I was submitted by proponent, the EIA and SIA reports and maps were not furnished. Besides, the permission for extracting ground water was not submitted. WBSCZMA in its meeting (September 2014) observed that due to want of time the maps were not prepared and approved 86 sites of MPCS on the grounds of exigency in construction of the shelters. CRZ clearance to 86 cases without the requisite documents was irregular. Audit further observed that, 57 (including all 24 sites of South 24 Parganas) out of 86 sites were in CRZ-I, which include Ecologically Sensitive Areas (ESA). In absence of maps, WBSCZMA was unable to judge whether ESAs like mangroves etc. were sacrificed.

b) Marine Industrial Cluster at Kulpi

CRZ Notification, 2011 prohibited (i) setting up of new industries and expansion of existing industries within CRZ, (ii) disturbing the natural course of seawater by land reclamation (iii) reclamation of sea for commercial purposes *etc.* Besides, the Notification classifies the ecologically sensitive areas like mangroves as CRZ-I and prohibits new construction.

Bengal Shipyards limited (BSL) applied (January 2017) to WBSCZMA for CRZ clearance for a Marine Industrial Cluster project in Kulpi, South 24 Parganas. According to the EIA report, the proponent would construct shipyard for ship building, repair and recycling, cargo handling facility, building large machines for marine industry, logistics and support services and other allied marine industries over 554 acres. WBSCZMA granted (May 2017) CRZ clearance to the project.

Audit observed the following lapses on the part of WBSCZMA in recommending the project:

i) The project area included 13,976.26 sq m of mangroves which was considered ecologically sensitive and to be classified as CRZ I where no construction was permissible. However, WBSCZMA, had recommended new residential and industrial construction, sacrificing the large mangrove area, which was irregular.

[128] *Social impact assessment (SIA) reviews the social effects of infrastructure projects in relationships between local communities, project proponents and states.*

ii) According to the EIA report, the site comprised of a tidal influenced natural drainage channel (Manteshwar channel). Reclamation of the tidal influenced natural drainage channel for construction of industry was prohibited by CRZ 2011 and transfer of land was in violation of the CRZ Notification.

iii) Land and Land Reforms Department had transferred the land, which lay within the CRZ area for construction of industry without consulting DoE regarding the transfer of CRZ land prior to sale. This revealed lack of coordination among the Departments, which resulted in sale of ecologically sensitive area within CRZ and violation of provisions of CRZ Notification.

c) Hovercraft Station in Frazerganj

According to CRZ Notification, 2011, manufacture or handling oil storage and facilities for receipt and storage of petroleum products was prohibited in CRZ. Further, area up to 200 mts from High Tide Level (HTL) on the landward side in case of seafront was "No Development Zone" (NDZ) in which no construction of buildings was permissible.

Indian Coast Guard (ICG) applied (September 2017) for CRZ clearance for setting up a hovercraft station in Frazergang. According to the site plan, ICG would construct guard room, officers mess and accommodation, park, fuel bunk, sailors institute, holiday home, playground, married officers' accommodation, *etc*. WBSCZMA recommended (June 2018) the project to MoEF&CC who accorded CRZ clearance in July 2019.

Audit observed that WBSCZMA had recommended the project in violation of the CRZ notification on following issues:-

i) Though storage of petroleum was prohibited in CRZ area, WBSCZMA had allowed permission for the same.

ii) According to CRZ Notification, 2011, area upto 200 mts from High Tide Line on the landward side in case of seafront was to be earmarked as No Development Zone (NDZ) and no construction was permitted within NDZ. According to the CRZ maps, the entire project site lay within the NDZ and the proposal for setting up pump house within NDZ was in violation to the CRZ provisions. Besides, sinking of bore well in NDZ may lead to ingress of saline water in the land.

iii) Though CRZ Notification disallows construction of residential buildings in NDZ, yet CRZ clearance by WBSCZMA for construction of the buildings for accommodation, parks and security facilities was against the Notification.

d) Construction of three Helipads and VIP Rest-house in CRZ-I area

According to CRZ Notification, 2019, CRZ-I areas are environmentally most critical as those areas constitute ecologically sensitive areas (ESAs) like mangroves, corals and coral reefs, etc. The geo-morphological features of these areas play an important role in maintaining the integrity of the coast. No new construction shall be permitted in CRZ-I.

GoWB submitted the Coastal Zone Management Plan in April 1996. MoEF, GoI approved (September 1996) the CZMP subject to specific conditions. MoEF in the approval directed that Gangasagar island be categorised as CRZ-I, thus any new construction was prohibited there.

PWD (Roads) Department proposed (12.09.2019) to construct three helipads and VIP accommodation in Sagar Island. According to report furnished by IESWM, 24,961 sq m of tidal waterbody was to be developed in the project. Besides, more than 1,000 sq m of mangrove area (designated as ecologically sensitive area) was also to be developed for the project.

In a meeting (December 2019) with the project proponent, WBSCZMA decided to categorise the project under dock, jetty/processing plant/ storage category which was permissible in the CRZ notification and subsequently gave CRZ clearance (February 2020) to the project.

Thus, approval of constructional activity in CRZ-I area compromising mangroves and categorisation of helipads and VIP rooms as dock, jetty/processing plant/ storage was irregular and in violation of extant provisions of laws governing CRZ areas.

4.1.14.3 Enforcement and compliance of CRZ regulations

As per CRZ 2011, development or construction activities in different categories of CRZ were to be regulated by the concerned CZMA in accordance with features, regulations or norms as on February 1991 and development/ re-development in CRZ areas without clearance of WBSCZMA were to be treated as violations. WBSCZMA was to inquire into cases of alleged violations, issue specific directions, file complaints, review cases, and refer such cases with comments to NCZMA. WBSCZMA could also take up cases suo-motu or on the basis of complaints made by individual/ representative bodies/ organisations/ DLCs, and take action to verify the facts concerning the issues.

4.1.14.4 Violations of CRZ Norms in Sundarban

i) Eco-tourism project at Jharkhali

GoWB had undertaken (October 2015) a project of Eco-tourism Hub at Jharkhali in Sunderbans after clearing 69 acres of mangrove. Even the river channel, breeding place of crocodiles, was claimed in the project. According to Forest Department Report, in 2014, 70 baby crocodiles were rescued from the channel. The same channel was closed down to build new roads to the tourism hub. The eco-tourism project was undertaken jointly by GoWB and Techno India Group, where construction of hotels, motels, cottages, university campus, golf club, food court, *etc*. was undertaken.

CRZ Notification, 2011 designated Sunderbans as Critically Vulnerable Coastal Area (CVCA) and any development in Sundarban requires permission of WBSCZMA. Audit observed that no permission of WBSCZMA was taken before construction of the eco-tourism hub at Jharkhali. Besides, the project had resulted in the destruction of mangroves, riverine channels and natural habitats of wildlife.

ii) Tiger Rescue Centre/Children's park

Forest Department had established (December 2014) a Tiger Rescue Centre (TRC) on the banks of Harobhanga River in Sundarbans by cutting down mangroves. The TRC was made to provide immediate medical relief to injured tigers and other animals of Sundarbans.

A watch tower, a sulabh shauchalaya (public toilet), cottages, sitting arrangements, stairways and footbridges were also constructed. Besides, a Butterfly Park and a children's park were also created inside the Tiger Rescue Centre, which were visited by tourists daily.

Audit observed that the TRC, Butterfly Park and the Children's Park were not permissible activities as per CRZ Notification, 2011 and Forest Department had not taken permission of WBSCZMA. Further, the development of Butterfly Garden, Children's Park and Tourist Centre contradicted the rationale for the establishment of the TRC.

iii) Avoidable expenditure of ₹ 5.27 crore due on construction of Gadkhali Tourist Lodge in CRZ-I area.

Tourism Department had taken up the construction of Gadkhali Tourist Lodge (GTL) in Sunderbans in September 2012 with Central Financial Assistance. An expenditure of ₹ 3.67 crore was incurred till July 2015. National Green Tribunal (NGT) observed (March 2016) that the GTL was constructed in CRZ-I area where no construction was permissible and also in the buffer zone of Sunderban in violation of the CRZ notification. It directed the State Government to demolish the illegal structure. Chief Secretary, GoWB requested (April 2016) that the GTL was constructed at a huge cost to promote tourism in Sunderbans and the demolition of the GTL would lead to wastage of public money requesting that the said buildings be allowed to be converted into a desalination plant. Tribunal directed (February 2018) that the work of conversion of the tourist lodge into desalination plant should be expedited. However, Tribunal in March 2019 observed that the project was not a desalination plant as stated by the Chief Secretary but a "RO Filtration Plant" and imposed Performance Guarantee (PG) of ₹ 50 Lakh for inconsistent and contradictory stand of the Government. Since the State Government failed to complete the work on the desalination plant after several extension of time, NGT directed (October 2018) to forfeit the PG of ₹ 50 lakh and further imposed ₹ 10 lakh PG and extended the completion period till February 2019. Finally, observing non-compliance of its directions, NGT ordered (July 2019) the State Government to demolish GTL within one month and also forfeited the PG of ₹ 10 lakh and imposed environmental compensation of ₹ 1 crore. Thus, the State exchequer had to bear avoidable burden of ₹ 5.27 crore[129] due to demolition of illegal construction of GTL.

4.1.14.5 Discharge of untreated effluents/ management of solid wastes in the coastal areas

DoE, GoWB notified (25.03.2009) that vessels plying in coastal waters should abide by the guidelines dealing with prevention and containment of pollution

[129] *Cost of construction of GTL-₹ 3.67 crore), PG of ₹ 0.60 crore and environmental compensation of ₹ 1 crore.*

of sea by oil. It directed the licensing authorities issuing permission for plying of vessels to identify the vessels which did not conform to the standards and restrain those from plying.

As per CRZ Notification 2011, no untreated sewage, effluent, ballast water, ship washes, fly ash or solid waste from any activity, including from aquaculture operations was to be let off or dumped near the sea. Pollution from oil and gas exploration and drilling, mining, boat house and shipping activities were also to be regulated.

The Monitoring Committee on Sunderbans headed by Chief Secretary directed (July 2015) WBPCB to check adulterated fuel and set up the necessary infrastructure required for testing samples of fuel.

WBPCB had conducted (in December 2017) two inspections of three government owned marine vessels, namely MV Paramhansa, MV Chitrelekha and MV Sarbajaya used for tourism in Sunderbans. It was seen that the three vessels ran on engines and generators using diesel. In none of the vessels, the engines and generators had emission control devices and acoustic enclosures to control emission and noise pollution, respectively. The noise of the engines ranged between 103 dB(A) and 106.6 dB(A), which exceeded the ambient limits of 62 dB(A). Besides, the liquid effluents and solid wastes of the vessels were discharged directly into the river . It was also seen that two (MV Chitrelekha and MV Sarbajaya) out of three vessels did not have requisite environmental clearance (EC) and were operating without registration of Inland Vessel Act. MV Paramhansa though received EC in 2006, had not complied with any of the applicable environment laws as mentioned.

Audit observed that WBPCB after conducting inspection in December 2017, had neither conducted any check of adulterated fuel nor had set up necessary infrastructure required for testing samples of fuel as per Chief Secretary order. Besides, WBPCB had also not monitored the noise pollution caused by the engines of the vessels.

4.1.14.6 Post clearance monitoring

According to CRZ Notification, 2011, it is mandatory for the project proponents to submit half-yearly compliance to WBSCZMA on 1 June and 31 December every year and host the report on the website of WBSCZMA. Audit observed that none of the project proponents had submitted half-yearly compliance reports to WBSCZMA. Between April 2014 and February 2020, Disaster Management Department had submitted a compliance report in December 2017 for the MPCS. Except this stray case, none of the project proponents of South 24 Parganas had submitted compliance report. Audit observed that WBSCZMA had however not issued instructions to the project proponents for submission of such reports.

4.1.15 Conclusion

The Department of Environment (DoE), GoWB, has the responsibility to ensure compliance of the various environmental laws in the State, through its various parastatal agencies like the West Bengal Pollution Control Board (WBPCB), West Bengal State Coastal Zone Management Authority (WBSCZMA), etc.

Audit of the status of compliance of all applicable environmental laws in the selected district of South 24 Parganas was intended to check whether the DoE and its parastatals were effectively monitoring the application of laws and provisions on environment by the concerned stakeholders, including Government Departments and agencies, generating or handling substances that had damaging effects on the air, water, soil and the bio-diversity of the district.

It was observed that there were significant shortcomings in the compliance by stakeholders including general public, public authorities, local bodies, etc. The DoE and its parastatal bodies were slow to investigate or book violations of legal provisions and laws and when they did do so, it was rarely followed up with punitive action, even mild ones like imposition of fines.

Segregation of waste was not being enforced effectively, whether it was medical waste or household waste. In fact, several Health Care Facilities were found to have been operating without BMW authorisation. Basic facilities like STPs and solid waste treatment facilities were found to be lacking in this critical district, which also includes the Kolkata Municipal Corporation (KMC) area and several important industrial and peri-urban areas. As a result, untreated waste, waste water and sewage continued to pollute land and water bodies in the district, including the river Hooghly.

There were inadequate number of monitoring stations for measuring quality of air and water, given the large population of the district and where there were, rectificatory action to abate air or water pollution seems to have not been enforced, almost as if the monitoring stations were an end in itself. No action was seen to have been taken against industries violating EC conditions.

The district is home to the Sundarbans as well as the Ramsar site EKW. There were illegal constructions in EKW and CRZ areas in Sundarbans. However, such violations of rules even in these ecologically fragile areas were rarely found to have been penalised; on the couple of rare occasions they were done, it was in compliance of Kolkata High Court orders.

There appears to be a severe lack of coordination between the DoE and its parastatals and the stakeholders especially other Government Departments, which is evident from the fact that violations were not properly followed up with the concerned Departments. It is essential to ensure that requisite environmental issues are adequately addressed as a routine in the process of activities of the Departments. Stricter enforcement of compliance at all levels of Government, including local bodies, and effective monitoring by DoE and its parastatals is critical if treatment of environmental hazards and pollutants are to be made a priority for the sake of overall well-being of the environment and the bio-diversity it sustains, including the human population.

Public Works Department

4.2 Avoidable expenditure due to not using nearest available quality materials

The Superintendent Engineer, Northern Circle, Public Works Department did not use nearest available quality stone materials in strengthening of road works. This led to an avoidable expenditure of ₹113.36 lakh along with committed liability of ₹46.81 lakh on carriage of stone materials.

As per rule 21 of General Financial Rules (GFR) 2005, every officer incurring or authorising expenditure from public money should be guided by high standards of financial propriety. Every officer should also enforce financial order and strict economy and ensure that all relevant financial rules and regulations are observed, by his own office and by subordinate disbursing officers. Every officer is expected to exercise the same vigilance in respect of expenditure incurred from public moneys as a person of ordinary prudence would exercise in respect of expenditure of his own money.

As per para 9.2 of Indian Roads Congress (IRC): SP:72-2015, for successful performance of a rural road pavement, it is necessary that adequate lateral support be provided by roadside shoulders. The shoulder material should be selected using the same principles as for gravel roads or a sub-base to carry construction traffic. Further, as per clause 401 of Ministry of Road Transport & Highways (MORT&H) and para 2.16.2 of Schedule of Rates - 2015, Public Works Department (PWD), the materials to be used for the sub-base as well as shoulder work shall be natural sand, crushed gravel, crushed stone, crushed slag, or a combination thereof, depending upon the grading required. Use of materials like brick metal, Kankar and crushed concrete shall be permitted in the lower sub-base.

The Superintendent Engineer, Northern Circle, Public Works Department (PWD) awarded (February, 2018) strengthening works of two roads[130] to two contractors at a tendered cost of ₹ 10.78 crore and ₹ 7.81 crore for completion by October 2018 and July 2018, respectively. The Division paid ₹ 12.16 crore in respect of the 1st work and ₹ 3.64 crore in respect of the 2nd work. The works were still ongoing.

The works, *inter alia*, consisted of construction of one metre width shoulder on each side of the road with North Bengal variety River Bed Materials (RBM) of thickness 325 mm. The North Bengal variety RBM were to be transported from a quarry at Balasoon River Bed, distanced more than 190 km from the work sites. Audit observed that the Pakur quarry was at a distance of 54.50 km (in respect of 1st work) and 50.00 km (in respect of 2nd work) from the work sites while the quarry from which North Bengal variety RBM was used for construction of shoulders were 198.50 km and 194.00 km away from the work

[130] *1st work: Strengthening to Road from Pirgachi (Dostir More at NH-34) to Kunor via Malgaon chainage from 0.00 Kmp to 15.40 kmp. during the year 2017-18 under RIDF-XXIII. 2nd work : Strengthening of road from FCI more to Bangalbari More via Ghulghuli more from from 0.00 kmp to 11.10 kmp during the year 2017-18 under RIDF-XXIII.*

sites. Therefore, due to longer carriage, the cost of North Bengal variety RBM used in the works were higher compared to Pakur stones. The quality of stone materials from Pakur are also far more superior to that of North Bengal variety RBM.

Thus, by not using local and nearest available quality stone materials from Pakur quarry for construction of shoulder, the Division incurred an avoidable expenditure of ₹ 113.36 lakh along with committed liability of ₹ 46.81 lakh (***Appendix-16)***.

Chief Engineer, North Zone, PWD replied (December 2019) that "huge quantity of Pakur variety stone was required for that project which was not easily available due to Farakka Barrage issue and Quarry Problem (GST Problem)". The reply is not tenable as the Department vide notifications dated July 2016 and July 2018 strictly directed all the Divisions to use pakur/panchami varieties stone aggregates instead of North Bengal variety stone materials[131] in construction works due to inferior quality of North Bengal variety RBM against Pakur stone materials. Further, the contention of the Department regarding non-availability of the pakur stone materials was also not tenable as in the instant work, pakur quarry stone materials were used for laying 17,240 cum of bituminous and non-bituminous items, whereas quantity of North Bengal variety RBM used was only 5,437 cum.

4.3 Avoidable expenditure due to non-consideration of relevant Schedule of Rates

Public Works Department in construction of concrete pavement considered the Schedule of Rates (SoR) for Building Works instead of SoR for Road & Bridge Works, which resulted in an avoidable expenditure of ₹ 0.89 crore.

The Ministry of Road Transport & Highway (MORTH) in its Guidelines[132] recommends laying Dry Lean Concrete (DLC) as sub-base course and Cement Concrete Pavement as base course in a Concrete Pavement. Further, as per general conditions of Schedule of Rates (SoR) of Public Works Department (PWD) with effect from 1st July 2014, for contracts made specifically for Building works, only PWD Schedule Volume I (Building Works) & Volume II (Sanitary & Plumbing Works) will be operative. For contracts in respect of Road works, Volume III (Roads & Bridges Works) will be applied.

The Chief Engineer (South Zone), Public Works Directorate technically sanctioned (August 2015) the work of 'Improvement of riding surface of Amtala-Baruipur Road from 0.280 kmp to 1.550 kmp. The Superintending Engineer (SE), Southern Highway Circle awarded (November 2015) the work to an agency at a tendered cost of ₹ 4.82 crore (at 2.99 percentage above rate) for completion within May 2016. The work *inter-alia* consisted of laying of 150 mm ordinary cement concrete as sub base and 300 mm M-40 grade concrete as base course.

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[131] *Consists of stone chips, stone aggregate, shingles, gravels, bazree, boulder, river bed materials, river grit etc.*

[132] *under Section 600 related to Concrete pavement.*

Scrutiny of estimate of the work revealed that the proposed concrete pavement was constructed with ordinary cement concrete,[133] followed by Ready mix concrete[134] of M-40 Grade[135]. Both the items were found to be taken from PWD, SoR Volume-I (Building Works), which is applicable for building works only. However, as per PWD, SoR Volume III (Roads & Bridges Works), which is applicable for road works, there are items for concrete pavement namely Dry lean concrete[136] (DLC) as sub base course and Cement concrete pavement as base course, which are also recommended by MORTH. Further, it was observed that the cost for concrete pavement from Volume III (Roads & Bridges Works) is more economical compared to Volume I (Building Works). This led to an avoidable expenditure of ₹ 0.89 crore as shown in the table below:

Table 4.14: Difference in rates between items in PWD, SoR Volume I and Volume III

Items from SoR for Building Works (Vol.- I)	Rate/m^3	Items from SoR for Roads & Bridge Works (Vol.-III)	Rate /m^3	Difference in rate/m^3	Quantity executed in m^3	Avoidable expenditure incl. contractual percentage of 2.99%
Ordinary Cement Concrete	₹ 6,234.21	Dry Lean Cement Concrete	₹3,603.36	₹ 2,630.85	1,411.87	₹ 3,82,5479.29
Ready Mix Concrete of M-40 Grade	₹ 8,904.80	Cement Concrete Pavement (M-40 Grade)	₹ 7,039.57	₹ 1,865.23	2,671.20	₹ 51,31,376.21
Total						**₹ 89,56,855.50**

Thus, the Department incurred an avoidable expenditure of ₹ 0.89 crore in construction of a concrete pavement due to non-consideration of relevant SoR.

In reply, the concerned SE stated (July 2017) that for speedy completion of the work within the scheduled period in the congested bazaar area, the Ready Mix Concrete item available in Building schedule was used in the estimate; as DLC requires batching plant with electronic sensor paver for rolling it could not be used considering small volume of DLC in the work. The reply was not tenable as the Department was required to execute cement concrete road works as per extant SoR of PWD, Volume III (Roads & Bridges Works). Further, the contention of the Department regarding speedy completion of the work was unfounded as the said work was delayed for eight months from the scheduled time of completion.

4.4 Avoidable expenditure

Avoidable expenditure of ₹18.10 crore due to execution of unnecessary and excess thickness of BM and costlier bituminous wearing course.

Indian Roads Congress (IRC) guidelines (IRC: 37 - 2012) include the pavement design catalogue to be used for determination of design pavement thickness for

[133] *Cement content 314.3 kg /m^3 of concrete.*

[134] *Concrete produced in computerised batching plant using designing concrete mix and the mix is transported with agitation in transit mixer to work site.*

[135] *Cement content 450 kg/m^3 of concrete.*

[136] *Cement content 150 kg/m^3 of concrete.*

road construction. The guidelines stipulate thickness of road and specification of each layer of road pavement to be constructed on the basis of strength of soil (CBR[137]) and projected traffic volume (*msa*[138]) during the design life of the road. Further, Note (a) under clause 10 of the guidelines also stipulate that for traffic below two *msa*, IRC: SP: 72 – 2007 should be referred to. Moreover, the guidelines recommend bituminous wearing course of 25 mm Semi-Dense Bituminous Concrete (SDBC) for design traffic from two *msa* to five *msa* and Bituminous Concrete (BC) for design traffic more than five *msa*. The design traffic parameter has been expressed in terms of the cumulative Equivalent Standard Axle Load (ESAL)[139]. As per provision of IRC: SP: 72-2015, the value of cumulative ESAL above 15,00,000 only warrants the use of Bituminous Macadam (BM).

4.4.1 Unnecessary use of Bituminous Macadam in roads of low volume traffic

Superintending Engineer (SE), Central Circle, Public Works Department (PWD) and SE, Western Highway Circle-I, Public Works (Roads) Directorate executed two road works[140] under Nadia Division, PWD and Asansol Highway Division, PWRD at a tendered cost of ₹ 5.23 crore (estimated amount ₹ 5.44 crore) and ₹ 16.99 crore (estimated amount ₹ 16.51 crore), respectively. The works were completed in June 2020 and January 2017 at a cost of ₹ 5.22 crore and ₹ 16.86 crore, respectively. The works *inter alia* consist of laying 50 mm BM on both the roads.

Applying IRC SP: 72-2015, Nadia Division, PWD calculated cumulative ESAL of the road as 15,06,080 considering ESAL per day as 314.09. Audit, however, observed that actual ESAL per day of the road was 117.95 and accordingly, the actual value of cumulative ESAL of the road would be 5,67,451. As the road had a cumulative ESAL value less than 15,00,000, BM layer should not have been laid; Audit, however, observed that the Division laid 50 mm BM layer.

Similarly, in Asansol Highway Division, PWRD, *msa* of the road was calculated as 1.22. The road being a low volume traffic load having *msa* below 2, IRC: SP-72 should have been referred to for design of the road, where there was no requirement of BM layer. However, the Department laid 50 mm BM along the entire stretch of the road.

As per provision of IRC SP: 72-2015 (Fig.4, pavement design catalogues), instead of laying BM on both the roads, Open Grade Premix Carpet (OGPC) was sufficient to cater to the traffic.

Thus, the Department incurred an excess expenditure of ₹ 4.66 crore due to use of bituminous macadam in the low volume roads as detailed in ***Appendix-17***.

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[137] *California Bearing Ratio.*

[138] *Million Standard Axles.*

[139] *he estimated or projected magnitude and occurrence of the various traffic loading are converted to the total number of passes of equivalent standard axle loading (ESAL),*

[140] *1. Strengthening work of Haripur Bazar to Kanainagar Ghat Road from 0.00 km to 10.80 km of PWD, Nadia Division,*
2. Widening & strengthening of Bhedia Chora from 0.00 km to 16.80 km of Asansol Highway Division.

4.4.2 Avoidable use of Bituminous Macadam and costlier wearing course beyond the scope of IRC

The Superintending Engineer (SE), Northern Highway Circle, P.W. (Roads) Directorate executed four[141] Strengthening works in 2017-18 at an aggregate tendered cost of ₹ 28.84 crore and SE, Central Highway Circle, P.W. (Roads) Directorate executed one Widening and Strengthening work[142] in 2018-19 at a cost of ₹ 5.96 crore, respectively. The Department incurred an aggregate expenditure of ₹ 21.04 crore in respect of the five works. All the five works were in progress (between June and December 2019). The works *inter alia* consisted of laying 50 mm BM as base course and 25 mm SDBC/OGPC as wearing course.

Granular Sub-base and base courses were designed considering design life of the road of 15 years and the bituminous binder and wearing courses were designed considering five years design life. All the five roads were designed considering IRC: 37 – 2012 and accordingly, *msa* of the roads for five-year design period was calculated as 1.17, 1.20, 1.20, 1.30 and 0.904. As all the roads have *msa* below 2, the design of the roads should have been done as per IRC: SP-72-2015, wherein there is no provision for laying BM and SDBC.

The Department laid 50 mm BM and costlier wearing course SDBC violating the IRC guidelines which resulted in an avoidable expenditure of ₹ 6.37 crore including committed liability of ₹ 1.07 crore as shown in ***Appendix-18***.

Department in reply stated (September 2021) that as per IRC SP:72-2015 (Clause 1.5), rural roads are to be designed for 10 years and in such case the calculated msa for each road would be more than 2. The Department further stated that as per IRC:37-2018, the design traffic for stage construction would be 1.67 times the design traffic estimated for five years. However, the fact remains that for msa below 2, IRC: 37-2012 prescribes use of catalogue of SP: 72-2007 for designing road pavement. Further, Department's intention to calculate traffic for 10 years as per IRC: 72-2015 for constructing bituminous course was against its order dated June 2017 wherein it was stated that design of bituminous layers should be for five years. Further, IRC: 37-2018 was not relevant as it was effective from November 2018 and the present work was technically sanctioned in October 2017.

4.4.3 Laying of excess thickness of Bituminous Macadam and costlier wearing course

The Superintending Engineer (SE), Southern Highway Circle, P.W. (Roads) Directorate awarded (September 2017) Strengthening works[143] of a road under Howrah Highway Division to a contractor at a tendered cost of ₹ 6.40 crore (estimated amount ₹ 8.32 crore) for completion by February 2018. The work

[141] 1. *Strengthening work of Maharajahat-Bhatol Road from 0.00 km to 11.70 km,*
2. *Strengthening work of Kamlabari to Kachinmuha Road via Ghulghuli more from 0.00 km to 11.00 km,*
3. *Strengthening work of Jantahat to Bhulki Road from 0.00 km to 13.40 km and*
4. *Strengthening work of Rampur-Chakulia Road from 0.00 km to 7.33 km.*

[142] *1. Strengthening of Bethuadahari Agradwip Ferryghat Road from 0.00 to 5.00 kmp*

[143] *1. Strengthening of Bagnan-Bainan-Gaighata road from 0.00 km to 4.80 km*

was completed in April 2018 and ₹ 8.12 crore was paid to the contractor. Similarly, SE, Western Highway Circle-II, P.W. (Roads) Directorate executed three different Widening & Strengthening works[144] under Bankura Highway Division at a tendered cost of ₹ 29.96 crore, ₹ 18.20 crore and ₹ 17.60 crore respectively in 2018-19. The first two works were completed in August 2019 and May 2019 at a cost of ₹ 30.53 crore and ₹ 19.01 crore, respectively whereas remaining one work was still in progress and up-to-date expenditure incurred on the work was ₹ 7.71 crore.

Audit observed that Granular Sub-base and base courses were made considering design life of road of 10/15 years and the bituminous binder and wearing courses were made considering five years design life. As per IRC: 37-2012, *msa* of the roads were calculated in the estimates as shown in the **Table 4.15** below:

Table 4.15: Calculation of *msa* of the roads

Howrah Highway Division		Bankura Highway Division					
		Work -I		Work -II		Work -III	
***msa* for 10 years**	***msa* for 5 years**	***msa* for 15 years**	***msa* for 5 years**	***msa* for 15 years**	***msa* for 5 years**	***msa* for 15 years**	***msa* for 5 years**
3.18	1.4	6.85	1.75	6.99	1.79	7.6	1.90

As per IRC: 37-2012, laying of 50 mm BM and 20 mm Open Graded Premix Carpet (OGPC) was sufficient for the works of Bankura Division as the *msa* value of the roads ranged between 1.5 and 2. Similarly, for the road work under Howrah Division, PWD the value of *msa* was close to 1.5 (i.e. 1.4). Therefore, the Divisions should have laid 50 mm BM and 20 mm OGPC as per relevant IRC guidelines.

However, Audit observed that Bankura Highway Division, PWD, laid 50 mm DBM and 25 mm SDBC/30 mm BC on the three road works, beyond the scope of IRC for traffic below 2 *msa*. Whereas, Howrah Division, PWD laid 75 mm BM and 25 mm SDBC without any justification on record, though there was no provision for laying BM on the road for *msa* of 1.40 as per the IRC guidelines.

Thus, the Divisions executed excess thickness/costlier grade of bituminous base course (75 mm BM/50 mm DBM instead of 50 mm BM) and costlier bituminous wearing course (25 mm SDBC/30 mm BC instead of 20 mm OGPC) beyond the scope of the IRC without giving any justification. This resulted in avoidable extra expenditure of ₹ 3.15 crore as shown in ***Appendix- 19***.

The Department in reply stated (September 2021) that as per SP:72-2015, stage construction is only relevant to very low volume rural road. Accordingly, if SP:72-2015 was to be used, design life of 10 years was to be considered and accordingly use of 75 mm BM and 25 mm SDBC is justified. However, the fact remains that for msa below 2, IRC: 37-2012 prescribes use of catalogue of SP: 72-2007 for designing road pavement. Further, Department's intention to calculate traffic for 10 years as per IRC:72-2015 for constructing bituminous

[144] *1. Widening & Strengthening of Jhatipahari-Kashipur (Purulia Boarder) Road from 0.00 km to 12.10 km,*
2. Widening & Strengthening of Mejia to Kusthal Road from 0.00 km to 11.20 km and
3. Widening & Strengthening of Ranibandh-Barikul Road from 0.00 km to 14.50 km

course was against its order dated June 2017 wherein it was stated that design of bituminous layers should be for five years.

4.4.4 Unnecessary laying of costlier wearing courses

The Superintending Engineer, Southern Highway Circle, P.W.(Roads) Directorate awarded (in May 2018 and June 2018) two works[145] to two different contractors at a cost of ₹ 6.91 crore and ₹ 6.78 crore. Pavement compositions of the works were designed following IRC: 37-2012. The design trafic of both the roads were calculated for five years design life with *msa* of 2.05 and 3.37. Bituminous wearing course of 30 mm BC was laid on both the roads instead of 25 mm SDBC as recommended by the IRC for traffic below 5 *msa* without any justification on record. As a result, the Division incurred total extra expenditure of ₹ 45.81 lakh, which was avoidable ***(Appendix-20)***.

Department in reply stated (September 2021) that due to occurrence of drizzling rain for long duration impervious wearing course of BC was used instead of semi permeable/permeable surface layer like SDBC on impervious layer of DBM considering the past experience. The reply was, however, not tenable as the IRC guidelines prescribed use of SDBC for designing roads considering all the aspects. Further, it was also noticed that almost all the divisions were following the IRC provision and laid SDBC without facing any difficulties. It was also noticed that there was no justification placed in the project report for deviating the IRC clause. Moreover, Audit observed that in earlier occasion (2016-17), the SE, SHC laid SDBC as wearing course over DBM in Munshirhat-Penro-Khila-Rajapur Road.

4.4.5 Consideration of higher value of lane distribution factor

As per para 4.5.1 (ii) of IRC: 37-2012, the design for two lane single carriageway roads should be based on 50 *per cent* of the total number of commercial vehicles in both directions.

The Superintending Engineer, South Western Highway Circle, P.W. (Roads) Directorate took up (February 2017) strengthening work on Dharsa-Belpahari Road from 0.00 kmp to 3.00 kmp at a tendered cost of ₹ 5.44 crore (estimated cost ₹ 7.37 crore). The work was completed in February 2018 at a cost of ₹ 6.74 crore. The work *inter alia* consisted of laying 70 mm BM.

Audit observed that the pavement thickness of the road was designed as per IRC: 37-2012. The Division considered lane distribution factor of the road as 1 instead of 0.50 for two lane single carriageway road and calculated the cumulative number of standard axles as 2.35 *msa*. Audit calculated that actual *msa* of the road was 1.19, considering the lane distribution factor as 0.50.

[145] 1. "*Strengthening of Dhundulia – Shyampur road from 0.00 km to 9.40 km" and*
2. *Improvement of riding quality of Patihal – Khadarghat road from 0.00 km to 6.987 km and widening and strengthening from 6.987 km to 7.780 km*

As the *msa* of the road is lower than 2, IRC: SP: 72-2007 should have been used for pavement design wherein there is no provision for laying BM below 1.5 *msa*. Thus, the Division incurred an avoidable expenditure of ₹ 76.11 lakh **(*Appendix-21*)** due to laying of 70 mm BM violating the provision of IRC.

The Department accepted the audit contention on lane distribution factor and also stated (December 2018) that the road being important connecting different NHs, the pavement of the road was designed as per IRC: 37-2012. However, the reply is not tenable as the projected *msa* of the road for the design life of the road was below 2, which warrants consideration of IRC: SP: 72-2007.

4.4.6 Consideration of higher value of Vehicle Damage Factor

The flexible pavement of a road is designed on the basis of its projected traffic (in *msa*), i.e, cumulative number of standard axles which *inter alia* depends on 'Vehicle Damage Factor[146]' (VDF). IRC: 37-2012 guidelines provide indicative values of VDF for plain and hilly areas on the basis of commercial vehicles per day.

The Superintending Engineer (SE), North Bengal Construction Circle-II, PWD awarded (September 2014) the work of a road[147] in a hilly area to a contractor at a tendered cost of ₹ 11.30 crore for completion within February 2015. The work was completed in October 2015 and ₹ 11.26 crore was paid to the contractor.

Scrutiny of sanctioned estimate of the work revealed that the Division calculated the *msa* as 4.6 against the corresponding number of commercial vehicles per day by taking into consideration the VDF applicable for plain area (here 3.5) instead of the VDF for hilly area (here 1.5). As a result the value of *msa* was inflated against the actual value of 1.94 *msa*[148]. Accordingly, only one layer of 50 mm BM was required as base course whereas, in the name of Profile Corrective Course a full thickness of 50 mm BM along with a separate 50 mm BM layer *i.e* total 100 mm BM was laid by the Division.

Thus, by considering higher value of VDF, the Department had to incur an avoidable expenditure of ₹ 2.70 crore on laying of extra layer of 50 mm BM.

4.5 Excess expenditure

Department, in construction of a concrete road, laid an extra sub-base layer of Water Mixed Macadam in violation of the Indian Roads Congress Guidelines which resulted in excess expenditure of ₹ 1.45 crore.

Indian Roads Congress (IRC) Guidelines 58 - 2011 for Design of Plain Jointed Rigid Pavements for Highways stipulate that Pavement Quality Concrete

[146] *It is defined as equivalent number of standard axles per commercial vehicle.*

[147] *Improvement of upper Rishi road from 17.00 kmp to 30.00 kmp of Darjeeling Division, PWD.*

[148] *N (msa)=[365 × {(1+r)^n -1} × A × f × F]/ r × 10^6 where, r=traffic growth rate, n= design life in years, A=initial traffic in the year of completeion of construction, f=lane distribution factor, F=Vehicle Damage Factor Here, N (msa)=[365 × {(1+0.05)10 -1} × 572 × 0.05 × 1.5]/0.05 × 10^6=1.94 msa.*

(PQC) shall be laid over a Dry Lean Concrete[149] (DLC) sub-base[150]. Further, the guidelines[151] for the use of DLC as sub-base for rigid pavement recommends that, to facilitate quick disposal of water that is likely to enter the sub-grade[152], a drainage layer of Granular Sub-Base (GSB) shall be provided below the sub-base throughout the road width.

Barasat Highway Division-I under Public Works Roads Directorate (PWRD) took up (in February 2018) the work of construction of rigid pavement in a Village Road[153] by Superintending Engineer (SE) of Eastern Highway Circle at a tendered cost of ₹ 26.36 crore for completion by August 2019. The work was completed in November 2019, and ₹ 31.47 crore was paid to the contractor.

Audit observed that 150 mm Granular Sub-Base (GSB) was laid over the prepared sub-grade followed by 150 mm Water Mixed Macadam (WMM) and 150 mm Dry Lean Concrete (DLC) as sub-base and 300 mm Pavement Quality Concrete (PQC) as base course. The relevant IRC Guidelines[154] recommend laying of GSB as drainage layer over the sub-grade followed by DLC as sub-base and PQC as base course; there is no provision for laying WMM between GSB and DLC.

Thus, the Department in violation of the Indian Road Congress guidelines executed an unnecessary sub-base layer of 150 mm WMM, which resulted in an excess expenditure of ₹ 1.45 crore.

Department replied (September 2021) that IRC 58 recommends laying of not only drainage layer but also filter layer, as WMM is porous will serve the purpose of drainage layer. Besides, only GSB cannot sustain the load and to keep the road traffic worthy during construction 150 mm thickness of each layers (GSB and WMM) is preferred. The reply is not acceptable as MoRTH's specification recommends that GSB should be used as drainage cum filter layer and not WMM. Further, laying of 150 mm WMM to sustain the traffic load was not backed by any guidelines.

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[149] *Dry Lean Concrete (DLC) is a plain concrete with a large ratio of aggregate to cement than conventional concrete and generally used as a base/ sub base of rigid pavement.*

[150] *Sub-base is the layer of aggregate material laid on the sub-grade (the native material underneath a constructed road), on which the base course layer is laid.*

[151] *IRC-SP:49-2014.*

[152] *The native material underneath a constructed road.*

[153] *Haroa Auto Stand to Natunhat Road (0.00 kmp to 9.50 kmp).*

[154] *IRC-58: 2011 and IRC-SP:49-2014.*

Micro, Small & Medium Enterprises & Textiles Department

4.6 Inefficient cash management of surplus fund

West Bengal Small Industries Development Corporation Limited (WBSIDCL) did not avail the auto swift facility of the current account and thereby lost the opportunity to earn interest of ₹ 3.50 crore.

Comprehensive guidelines for management of funds were issued[155] by the Finance Department, Government of West Bengal (GoWB). As per the guidelines, Departmental Controlling Officer and officers operating bank accounts in Government Departments, Directorates, Regional and District Offices, Companies, Corporation, Autonomous/Statutory/Local Bodies should exercise prudence while depositing money in the bank account or fixed deposit and be cautious enough not to be carried away by unreasonably high rates of interest, however, alluring the rates may be.

The West Bengal Small Industries Development Corporation Limited (WBSIDCL) develops business hubs, industrial area development work; entrepreneur stalls *etc.*, which are funded by Government of West Bengal through capital grants. Besides this, WBSIDCL also allots plots or stalls to small industries on lease or rent basis and realises amount as fixed by its Board of Directors from time to time. The WBSIDCL parks the funds so collected in its bank accounts in order to facilitate release of various payments to contractors, suppliers, salaries to employees *etc*. Prudent management of funds entails maintenance of adequate liquidity to meet the expenses and optimal return on surplus funds. Importance of fund management of WBSIDCL was observed by the fact that an official was assigned in April 2019, exclusively to look into the matter of short term deposits and its renewal.

Audit observed that the management of WBSIDCL kept surplus funds ranging from ₹ 4.43 crore to ₹ 127.87 crore during 2016-17 to 2020-21 in current accounts with four leading banks[156]. Although such huge amounts were kept in the banks, the WBSIDCL did not earn any interest as the funds were kept in current accounts which fetch no interest. The Management did not avail of auto sweep facility for those current accounts which would earn interest on the surplus fund at the rate ranging from 2.5 *per cent* to 5.50 *per cent* during the said period. This resulted in loss of ₹ 1.71 crore**.**

Further, Audit observed that 33 Fixed Deposits (FDs) valuing ₹ 41.11 crore matured between October 2019 to February 2020 at Indian Bank, Central Avenue Branch. The amount was parked with no interest for 224 to 347 days in a current account having no auto sweep facility till 23 September 2021, leading to loss of ₹ 1.79 crore towards interest**.**

Thus, by parking unutilised/ surplus funds in current accounts without auto sweep facility, the WBSIDCL lost interest income of ₹ 3.50 crore**.**

The matter was issued to Government (August 2021), reply not yet (October 2021) received.

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[155] *vide memo no. 585-F(Y) dated 21 January 2013 read with 2261F(Y) dated 15 March 2013.*

[156] *Indian Bank, HDFC Bank, ICICI Bank and Axis Bank.*

4.7 Extra expenditure on VAT

West Bengal Khadi and Village Industries Board under MSME&T Department extended undue benefit of ₹ 85.50 lakh as VAT to the contractors in addition to payment of ₹ 1.53 crore towards GST.

The Goods and Service Tax (GST), which has replaced most of the Central and State indirect taxes such as Value Added Tax (VAT), excise duty, service tax, *etc*. was implemented from 1st July 2017 to ensure common indirect tax rates and its structures across the country, thereby increasing certainty and for ease of doing business irrespective of the choice of place.

West Bengal Khadi and Village Industries Board[157] (WBKVIB) under Micro, Small & Medium Enterprises and Textiles (MSME&T) Department had taken up (during June 2017 to March 2019) 34 different infrastructural works. The contractors submitted bill of ₹ 12.52 crore for the works done and also claimed of ₹ 1.53 crore towards GST. The payments were made (between September 2017 and March 2020) accordingly to the contractors including amount of ₹ 1.53 crore for GST.

Audit observed that estimates of the works were prepared based on the Schedule of Rates (SoR) of Public Works Department (PWD) effective from April 2014 and 2015, including latest corrigenda. The item rates in the contract documents were taken from the SoR, PWD, which included taxes like VAT. Audit calculated that the amount of VAT payable by the contractors for the work done was ₹ 85.51 lakh as per Rule 30 of West Bengal VAT Rules 2005. Audit observed that while making payment not only was this VAT amount included in the bills but WBKVIB, in addition paid a sum of ₹ 1.53 crore towards GST. Payment of both VAT and GST to the contractor for the same work was irregular, as only GST was applicable from July 2017. Therefore, WBKVIB, before making payment of GST to the contractors was required to deduct the amount of VAT already included in the bills of the contractors.

Thus, payment of ₹ 85.50 lakh as VAT, in addition to GST to the contractors led to extra expenditure as shown in ***Appendix-22***.

The matter was referred to Government in August 2021, the reply is still awaited (October 2021).

[157] *An autonomous body set up to generate large employment opportunities in the rural areas at a low capital cost as well as to create entrepreneurship development through local initiatives, cooperation and spirit of self-reliance and at the same time help in utilisation of available manpower in rural areas for processing locally available raw materials by adoption of simple techniques.*

Land and Land Reforms Refugee Relief & Rehabilitation Departmrnt

4.8 Non-realisation of lease rent and interest

Non-realisation of annual lease rent and interest of ₹ 3.96 crore in case of 33 lessees in possession of 2,156.41 acres of land.

Rule 235 of the "The West Bengal Land and Land Reforms (WBL & LR) Manual, 1991 provides that the rent on short-term lease on land shall be payable annually according to the Bengali calender year (BS)[158]. The rent falls due on the last day of the year in respect of which it is to be paid. Rule 303 prescribes interest at the rate of 6.25 *per cent* per annum on delayed payment. Further, as per rule 227, leases should be entered in a separate Register 'X' by Block Land and Land Reforms Officers (BL&LROs). BL&LROs shall periodically review the register X and take appropriate action for timely realisation of rent.

Out of 1,048 lease registers and case records in seven District Land and Land Reforms Offices (DL and LROs)[159], Audit test checked[160] 453 lease registers and case records of lessees. Audit found that annual lease rent and interest of ₹ 3.96 crore in respect of periods between 1414 BS (2007-08) and 1426 BS (2019-20) was not realised in 43 cases from 33 lessees in possession of 2,156.41 acres of land. The BL & LROs did not take any action for timely realisation of lease rent, which resulted in non-realisation of annual lease rent and interest of ₹ 3.96 crore (annual lease rent ₹ 3.60 crore and interest ₹ 0.36 crore).

After this was pointed out, six DL&LROs[161] accepted (between September 2019 and March 2021) the audit observations in 40 cases involving ₹ 3.91 crore and stated that:

- BL&LROs would be instructed to realise the rent in 31 cases involving ₹1.96 crore and
- Demand notices would be issued to realise the rent in nine cases involving ₹ 1.95 crore.

In the remaining three cases, involving ₹ 4.63 lakh, DL&LRO, Hooghly did not furnish any specific reply (July 2021).

The matter was reported to the Government between October 2019 and May 2021, the reply was awaited (October 2021).

[158] *Bengali year (Bengali Saka-BS) commences on the first day of Baisakh i.e. 14/15 April each year.*

[159] *Coochbehar, Darjeeling, Hoogly, Howrah, Paschim Bardhaman, Paschim Medinipur and South 24 Parganas.*

[160] *Between September 2019 and March 2021.*

[161] *Coochbehar, Darjeeling, Howrah, Paschim Bardhaman, Paschim Medinipur and South 24 Parganas.*

4.9 Non-settlement of long term lease

The L&LR RR&R Department failed to settle 67 cases of long-term leases involving 141.91 acres of land with the unauthorised occupants within the prescribed time limit; Revenue of ₹ 51.75 crore (*salami* ₹ 50.51 crore and rent ₹ 1.24 crore) was realisable in these cases.

Rule 238 of the West Bengal Land & Land Reforms (WBL&LR) Manual, 1991 provides that Government land remaining in the possession of a person(s), though unauthorisedly, may be offered to such person(s) on long term settlement for non-agricultural purpose on realisation of rent and salami[162] at the prescribed rates. Further, rule 225 of the Manual prescribes that the procedure of long term settlement (LTS) should be completed by the Department within five months from the date of its initiation.

Audit checked[163] 800 out of 2,736 case records relating to LTS cases in eight test checked District Land and Land Reforms Offices (DL&LROs)[164]. It was found that 141.91 acres of land was under unauthorised occupation in 67 cases. The occupants had applied between December 2000 and February 2019[165] for long term settlement of the land for non-agricultural purposes. It was observed that:

- In 46 cases, the proposals for long term lease were not forwarded by the concerned DL&LROs[166] for approval to the Land and Land Reforms Refugee Relief and Rehabilitation (L&LR RR& R) Department, involving ₹ 32.53 crore, on account of realisation of rent and *salami.*
- In the remaining 21 cases involving ₹ 19.22 crore, proposals were pending with the L&LR RR& R Department from January 2015 to December 2020.

Thus, the L&LR RR&R Department failed to settle the land through lease agreement with the unauthorised occupants within the prescribed time limit. Audit calculated that revenue of ₹ 51.75 crore[167] (*salami* ₹ 50.51 crore and rent ₹ 1.24 crore) was realisable from such unauthorised occupants.

No specific reasons, however, were found on record for delay in finalisation of long term lease cases.

Six[168] out of eight test checked DL&LROs accepted the audit observations in 62 cases involving ₹ 49.56 crore. Report on finalisation of the leases was, however, not furnished. In the remaining five cases, the DL&LROs did not furnish any specific reply (July 2021).

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[162] *Salami means the lump sum amount payable by the lessee in the case of settlement of Government land.*

[163] *Between December 2019 and March 2021*

[164] *Coochbehar, Darjeeling, Howrah, Hooghly, Murshidabad, Paschim Bardhman, Paschim Medinipur and Purba Medinipur*

[165] *In four cases, the process of LTS was found to have been initiaited; however, the date of application for LTS was not available in case records.*

[166] *Coochbehar, Darjeeling, Howrah, Hooghly, Paschim Medinipur and Purba Medinipur.*

[167] *In the absence of the current market value, the realisable revenue was calculated based upon the old figures noted in departmental records.*

[168] *Coochbehar, Darjeeling, Howrah, Paschim Bardhman, Paschim Medinipur and Purba Medinipur.*

The matter was reported to the State Government between January 2020 and May 2021. Their reply was awaited (October 2021).

4.10 Non-renewal of long term lease

In nine cases, lease rent of ₹ 64.15 lakh was not realised due to inaction of the Department to renew expired leases.

Rule 219 of the West Bengal Land & Land Reforms Manual, 1991 provides that a Long Term Lease (LTL) shall ordinarily be for a period of 30 years and on expiry of the period, the lessee shall be entitled to opt for successive renewal of the lease for the same duration. Further, rule 226(i) provides that rent shall be realised at the rate of four *per cent* of the market price of the land at the time of the renewal of the lease for industrial or commercial purposes and 15 times the annual rent previously payable or four *per cen*t of the market price of the land at the time of renewal of the lease, whichever is less, for homestead or residential purposes.

Out of 826 files relating to renewal of LTL cases in seven District Land and Land Reforms Offices (DL and LROs)[169], Audit test checked[170] 197 case records of lessees. It was observed that in nine cases, 3.57 acres of land had been settled on long term basis between April 1963 and January 1989. The period of leases expired between April 1993 and April 2018. Though the occupants had applied between December 1992 and May 2018 for renewal of LTL, it was observed that:

- In four cases involving ₹ 56.65 lakh, the proposal for renewal of the leases were pending with the Land and Land Reforms Refugee Relief and Rehabiliation (L&LR RR&R) Department from March 2011 to April 2021; and
- In remaining five cases involving ₹ 7.50 lakh, the proposals (received between November 2012 to November 2019) for renewal of leases were not forwarded by the concerned DL&LROs to the L&LR RR&R Department.

Thus, in absence of any action on the expired leases by the L&LR RR&R Department, the leases were not renewed. As a result, rent of ₹ 64.15 lakh could not be levied and realised.

After this was pointed out, six DL&LROs[171] accepted (between December 2019 and February 2021) the audit observations in eight cases involving ₹ 54.92 lakh. Report on finalisation of renewal of the leases was, however, not furnished.

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[169] *Coochbehar, Darjeeling, Hoogly, Murshidabad, Nadia, Paschim Medinipur and Purba Medinipur.*

[170] *Between December 2019 and March 2021.*

[171] *Coochbehar, Darjeeling, Murshidabad, Nadia, Paschim Medinipur and Purba Medinipur.*

In the remaining one case, involving ₹ 9.23 lakh, DL&LRO, Hooghly did not furnish any specific reply (July 2021).

The matter was reported to the Government in August 2021. Reply was awaited (October 2021).

KOLKATA
The

(REENA SAHA)
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Countersigned

NEW DELHI
The

(GIRISH CHANDRA MURMU)
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