

༄༅། །འབྲུག་སྤྱི་གཞི་ལས་འཛིན།

Bhutan Power Corporation Limited



Waste Management SOP Implementation Plan

NOVEMBER 2021

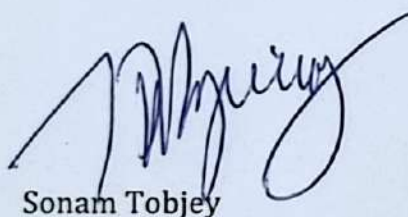
Preparation, Review & Approval of the Document

Prepared by:	Environment, GIS and Survey Division	Drafting Committee: EGSD, ERD 1. Krishna Bahadur Rai, Lead 2. Tshering Dorji 3. Ugyen Dorji 4. Chimi Yangden SQD, HRAS 1. Jambay Dorji 2. Jamba Wangdi 3. Chokey Dorji
Reviewed by:	Engineering and Research Department	GM, ERD
Approved by:	Management, Bhutan Power Corporation Limited, Thimphu. (13 th , October, 2021 – 12 th Management Meeting)	CEO, BPC

FOREWORD

The Druk Holding & Investments (DHI) has developed the Standard Operating Procedure for waste management in DHI & DHI companies-2021 with objectives to make a behavioural change in a participatory manner through end-to-end waste management system of waste management flagship program to ultimately attain National Waste Management Strategy 2019's goal of 'Zero Waste Bhutan by 2030'. In line to this, BPC has come up with its Implementation plan of the Standard Operating Procedure for waste management in DHI & DHI companies-2021 in BPC.

Therefore, it is my sincere wish and hope that all offices, housing colonies and ancillary facilities of BPC will strictly implement the requirements of the Standard Operating Procedure for waste management in order to respond to the grave concern on alarming increase of wastes in the Country in general and to keep all the BPC premises clean of waste in particular.



Sonam Tobjey

Chief Executive Officer

CONTENTS

1. INTRODUCTION & OBJECTIVES	3
2. RESPONSIBILITIES	3
2.1. BPC MANAGEMENT.....	3
2.2. ENVIRONMENT, GIS & SURVEY DIVISION (EGSD).....	3
2.3. SERVICES/DEPARTMENTS/DIVISIONS/SUBDIVISIONS/PROJECT OFFICES.....	4
2.4. INDIVIDUALS	4
2.5. CLEANERS/CARETAKERS:	4
3. WASTE MANAGEMENT COMMITTEES (WMCs)	4
4. HUMAN RESOURCES & CAPACITY DEVELOPMENT	5
5. OCCUPATIONAL, HEALTH & SAFETY (OHS)	5
6. FUND & BUDGET	5
7. ANNUAL PERFORMANCE COMPACTS/TEAM APPRAISAL SYSTEM (TAS)	6
8. DATA REPORTING & MANAGEMENT.....	6
9. MONITORING.....	6
10. TYPES OF WASTE IN BPC.....	6
11. PROCEDURES FOR WASTE MANAGEMENT	8
12. PREVENT, REDUCE AND REUSE	9
13. SEGREGATION.....	9
14. STORAGE	11
15. TREATMENT	11
16. DISPOSAL	11
17. EDUCATION, AWARENESS & CORPORATE SOCIAL RESPONSIBILITY (CSR).....	11
18. COLLABORATION & COORDINATION.....	12
ANNEX 1: TERMS OF REFERENCE (TOR) FOR CLEANERS/CARETAKERS	13
ANNEX 2: LIST OF PPE, TOOLS, OTHER EQUIPMENTS & ESSENTIAL CLEANING SUPPLIES FOR CLEANERS/CARETAKERS	14
ANNEX 3: UNIFORM FOR CLEANERS/CARETAKERS	14
ANNEX 4: ESTIMATE OF BINS REQUIRED	15
ANNEX 5: ESTIMATE FOR PROCUREMENT OF WATER DISPENSER/UV FILTRATION...15	
ANNEX 6: ESTIMATED COST FOR TRAINING, EDUCATION & AWARENESS, ZERO WASTE HOUR & CSR ACTIVITIES OF BPC (PER ANNUM).....	16
ANNEX 7: ESTIMATE FOR WEIGHING MACHINES	16
ANNEX 7: WASTE MANAGEMENT DATASHEET	17
ANNEX-8: BPC WASTE MANAGEMENT MONITORING CHECKLIST	19

LIST OF TABLES

Table 1: Categories of waste generated in BPC	7
Table 2: Waste segregation as per WMFP's prescribed colour coded bins	10

1. INTRODUCTION & OBJECTIVES

This document has been developed with the objectives to implement the Standard Operating Procedure (SOP) for Waste Management in DHI and DHI Companies (WMDDC), 2021 in Bhutan Power Corporation Limited (BPC) offices, housing colonies and ancillary facilities. BPC shall strive to implement the waste minimisation hierarchy of prevention, reduction, reuse and recycling in BPC offices, housing colonies and ancillary facilities across the country.

This document will clearly outline responsibilities, Occupational Health & Safety (OHS) requirements, human resources & capacity development, education & awareness, corporate social responsibility (CSR), fund & budget, Annual performance compacts/Team appraisal system/ data reporting & monitoring, requirement of waste management (collection, recovery, treatment and disposal) facilities, engagement, collaboration and coordination with private waste service providers / Municipalities / Thromdes/CSOs/NGOs/NECS/Religious organizations Media / Education/ institutions /local government and all other relevant governmental and non-governmental agencies to effectively and efficiently implement the Standard Operating Procedure (SOP) for Waste Management in DHI and DHI Companies, 2021.

2. RESPONSIBILITIES

2.1. BPC MANAGEMENT

2.1.1. The BPC management shall:

- 2.1.1.1. be responsible to mainstream and spearhead the waste management activities of the company.
- 2.1.1.2. be the apex body to oversee the functioning of all Waste Management Committees (WMCs) in BPC.
- 2.1.1.3. provide adequate provision of financial & human resources for effective implementation of SOP for WMDDC-2021 in BPC.

2.2. ENVIRONMENT, GIS & SURVEY DIVISION (EGSD)

2.2.1. The Environment, GIS & Survey Division (EGSD) shall be the focal division to implement all requirements of SOP for WMDDC-2021 in BPC.

2.3. SERVICES/DEPARTMENTS/DIVISIONS/SUBDIVISIONS/PROJECT OFFICES

- 2.3.1. The Heads of all BPC Services/Departments /Divisions/ Subdivisions/Projects shall be responsible for implementation of SOP for WMDDC-2021 in offices/housing colonies/storage yards/other ancillary facilities under their jurisdiction.

2.4. INDIVIDUALS

- 2.4.1. The BPC employees, families and individuals shall:
- 2.4.1.1. fulfil their civic responsibilities and good ethics in waste management.
 - 2.4.1.2. segregate, reduce, reuse and recycle wastes.
 - 2.4.1.3. avoid littering, smearing limes on walls/pillars, and spitting in open spaces.
 - 2.4.1.4. actively participate in waste management activities such as Zero Waste Hour, Cleaning campaigns, etc.
 - 2.4.1.5. strive to reduce use of paper to minimal in offices & homes.
- 2.4.2. The BPC service providers, contractors, vendors, guests and visitors shall strictly adhere to the SOP for WMDDC-2021.

2.5. CLEANERS/CARETAKERS:

- 2.5.1. The BPC cleaners shall:
- 2.5.1.1. ensure cleanliness of office and office premises.
 - 2.5.1.2. segregate and securely store the wastes generated in the office and office premises.
 - 2.5.1.3. ensure that the dust bins provided are maintained well and attended to on a regular basis with a detailed time schedule.
 - 2.5.1.4. ensure that wastes are appropriately disposed of.

3. WASTE MANAGEMENT COMMITTEES (WMCs)

- 3.1. BPC Services/Departments /Divisions/ Subdivisions/Project offices shall form a Waste Management Committee (WMC) to implement the SOP for WMDDC-2021 within its jurisdiction.
- 3.2. The Waste Management Committee (WMC) shall be comprised of:
- 3.2.1. Head of respective offices as the Chairman

3.2.2. Waste management focal person as member secretary

3.2.3. Cleaners/caretakers as members

4. HUMAN RESOURCES & CAPACITY DEVELOPMENT

4.1. The BPC Management shall approve the recruitment of adequate numbers of cleaners/caretakers for effective implementation of SOP for WMDDC-2021.

4.2. EGSD shall coordinate with Ministry of Labour and Human Resources (MOLHR) approved training institutes to provide induction training/refresher training/workshops on proper handling of waste, waste segregation, proper use of personal protective equipment (PPE) to cleaners/caretakers in BPC.

4.3. Services/departments/divisions/subdivisions/project offices under BPC shall recruit cleaners/caretakers as and when required. (Annex-1: ToR for cleaners/caretakers).

5. OCCUPATIONAL, HEALTH & SAFETY (OHS)

5.1. The BPC cleaners/caretakers shall be provided with appropriate PPEs and tools (Annex-2) adequately to carry out their functions effectively.

5.2. The BPC cleaners/caretakers shall be provided with uniform as per BPC SRR (Annex-3).

6. FUND & BUDGET

6.1. All BPC services/departments/divisions/subdivisions/projects offices shall keep appropriate annual budget provision to meet the requirements of SOP for WMDDC-2021.

6.2. EGSD shall earmark a budget annually for capacity development of cleaners/caretakers.

6.3. EGSD shall earmark the budget requirement for continuous monitoring of implementation of SOP for WMDDC-2021 in BPC.

6.4. The fund collected (if any) from the sale of waste (dry waste and compost products) shall be used to improve the waste management practices of the company or to incentivise people directly engaged in waste management.

The records of the money generated from the waste shall be reported and maintained by respective offices in the format provided as Annex-7.

7. ANNUAL PERFORMANCE COMPACTS/TEAM APPRAISAL SYSTEM (TAS)

- 7.1. Implementation of SOP for WMDDC-2021 shall be included in the annual compact of BPC (*weightage to be decided by Management*).
- 7.2. Implementation of SOP for WMDDC-2021 shall be included in the annual targets of Team appraisal system (TAS) of all services/departments/divisions/ subdivisions/projects offices in BPC with weightage of 10% (Annex-8: BPC Waste Management Monitoring Checklist).

8. DATA REPORTING & MANAGEMENT

- 8.1. The Waste management committees (WMC's) shall submit the records of waste collected in the prescribed format (Annex-7) on monthly basis to respective Departmental focal person and will further submit to EGSD latest by every 10th day of subsequent month.
- 8.2. EGSD shall compile and keep records of the reports from WMCs and submit to NECS with a copy to DHI by 15th day of subsequent month.

9. MONITORING

- 9.1. WMC shall continuously monitor the implementation of SOP for WMDDC-2021 in its jurisdiction on a day-to-day basis.
- 9.2. EGSD shall carry out periodic (ad-hoc or scheduled) monitoring of implementation of SOP for WMDDC-2021 in BPC.

10. TYPES OF WASTE IN BPC

Table 1 below details the categories of waste produced and source of its generation in BPC.

Table 1: Categories of waste generated in BPC

Category	Sub-Category	Waste	Sources
Wet waste	Biodegradable	<ul style="list-style-type: none"> ▪ Food waste of all kinds cooked & uncooked, including egg shells and bones ▪ Flower, fruit and waste including juice ▪ Vegetables/fruit peels ▪ Household garden/plant wastes ▪ soiled papers (used tissue paper, paper towels) ▪ Other biodegradable materials 	Offices, residential colonies, canteens
Dry waste	Biodegradable & non-biodegradable	<ul style="list-style-type: none"> ▪ PET bottles ▪ Rags ▪ Paper (newspaper, notebooks) ▪ Cardboard & carton boxes ▪ Containers & packaging materials ▪ Compound packaging (tetra packs) ▪ Plastics ▪ Wood ▪ Discarded clothing ▪ Others with potential for recovery and reuse 	offices. residential colonies, canteens
Hazardous waste	hazardous	<ul style="list-style-type: none"> ▪ Used/old batteries ▪ Bulbs (CFL, LED, incandescent) ▪ used/expired cosmetic products 	offices, residential colonies, canteens

		<ul style="list-style-type: none"> ▪ Expired medicines ▪ Broken mercury thermometers ▪ Needles & syringes ▪ Discarded paint drums/cans ▪ used/expired pesticide/herbicides ▪ used diapers and sanitary pads ▪ optical fiber waste ▪ unserviceable bank batteries ▪ used burnt transformer oil ▪ used facemasks, gloves, sanitizer containers 	
E-waste	E-waste	<ul style="list-style-type: none"> ▪ all electrical and electronic equipment out of life or damaged beyond economical repair 	Offices, residential colonies, canteen
Other waste		<ul style="list-style-type: none"> ▪ paint waste, metal chips, broken pipes, roofing, insulating materials, plasterboard, construction waste , old furniture & fixtures, tyres, etc. 	Offices, residential colonies, canteen

11. PROCEDURES FOR WASTE MANAGEMENT

BPC shall follow the procedure prepared by the Waste Management Flagship Program (WMFP) to manage wastes as depicted in Fig. 1:

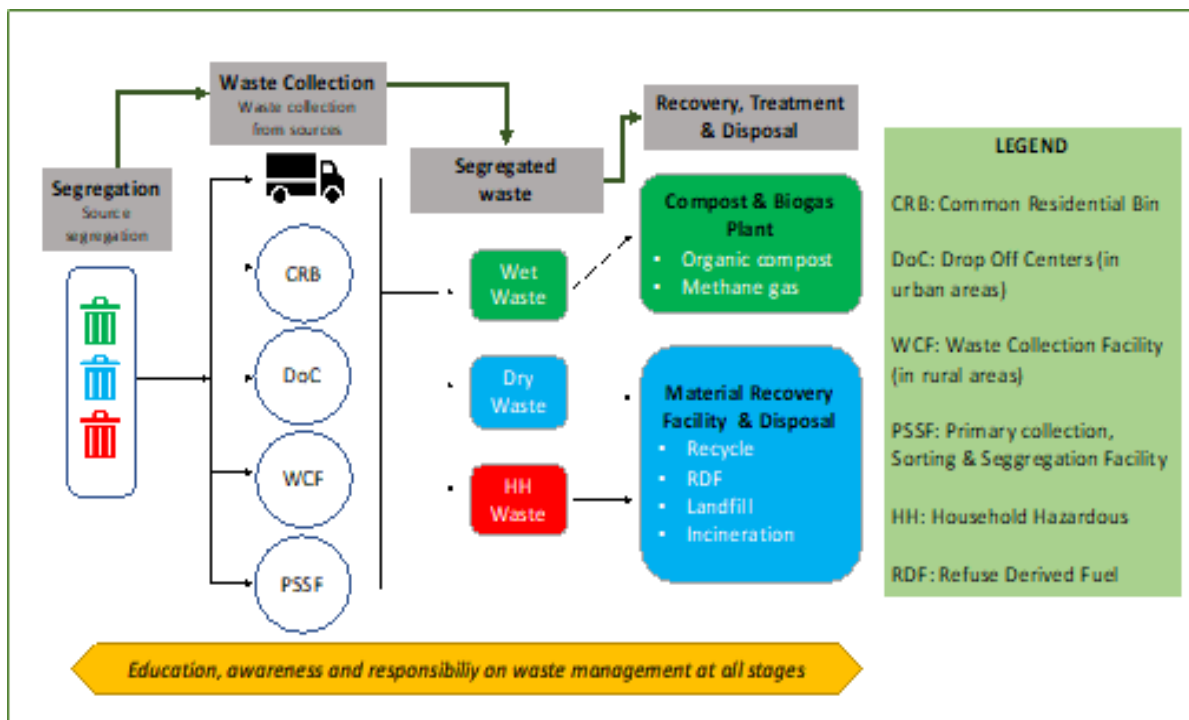


Figure 1: Flowchart of procedure for waste management as per Waste Management Flagship Program (WMFP)

12. PREVENT, REDUCE AND REUSE

- 12.1. BPC shall advocate to reduce waste generation at source by promoting minimalistic way of life as opposed to consumerist society by encouraging consumption of durable products with less packaging materials, using reusable carry bags for shopping, going paperless, reviving traditional practices, using of water dispensers instead of PET bottled water, reduce single use plastics, plates, cups and utensils during public gatherings (picnic, seminars, conferences, workshops & trainings).
- 12.2. BPC shall encourage repairing items and donating it to charity and community groups or selling items to reduce waste.

13. SEGREGATION

- 13.1. All offices, residential colonies and ancillary facilities under BPC shall strictly segregate waste at source. Waste Management Flagship Program (WMFP's) standardized three colour coded bins (green, blue and red) shall

be provided to all the offices and households for free of cost to ensure segregation of waste at source (Annex 4).

- 13.2. The waste will be segregated and use the WMFP's prescribed colour-coded bins as presented in Table 2.

Table 2: Waste segregation as per WMFP's prescribed colour coded bins

Wet waste (GREEN)	Dry waste (BLUE)	Hazardous waste (RED)
<ul style="list-style-type: none"> ▪ Food waste of all kinds cooked & uncooked, including egg shells and bones ▪ Flower, fruit and waste including juice ▪ Vegetables/fruit peels ▪ Household garden/plant wastes ▪ soiled papers (used tissue paper, paper towels) ▪ Other biodegradable materials 	<ul style="list-style-type: none"> ▪ PET bottles ▪ Rags ▪ Paper (newspaper, notebooks) ▪ Cardboard & carton boxes ▪ Containers & packaging materials ▪ Compound packaging (tetra packs) ▪ Plastics ▪ Wood ▪ Discarded clothing ▪ Others with potential for recovery and reuse 	<ul style="list-style-type: none"> ▪ Used/old batteries ▪ Bulbs (CFL, LED, incandescent) ▪ used/expired cosmetic products ▪ Expired medicines ▪ Broken mercury thermometers ▪ Needles & syringes ▪ Discarded paint drums/cans ▪ used/expired pesticide/herbicides ▪ used diapers and sanitary pads ▪ optical fiber waste ▪ unserviceable bank batteries ▪ used/burnt transformer oil ▪ used facemasks, gloves ▪ all electrical and electronic equipment out of life or damaged

		beyond economical repair (E-waste)
--	--	------------------------------------

14. STORAGE

- 14.1. Wherever required, BPC shall construct small storage sheds in consultation with WMFP at its premises to segregate and store the waste.
- 14.2. BPC shall properly store and dispose of the hazardous waste according to the User Manual, Standard Operating Procedure or relevant legislation of the country.
- 14.3. BPC shall properly store old furniture and fixtures, vehicle parts, tyres, wastes from construction sites as per requirements of WMFP and relevant legislations of the land.

15. TREATMENT

- 15.1. BPC shall encourage offices and individuals to recycle their waste by proper segregation and facilitate linking to the nearest recycling firms/waste service providers.
- 15.2. The BPC housing colonies shall be encouraged to treat wet waste within the campus by developing composting pits with technical support from WFMP, thromdes and municipalities.

16. DISPOSAL

- 16.1. After the waste is properly segregated and collected within the BPC premises, BPC shall coordinate with the Dzongkhag Administration / Municipality/Waste Service Providers for regular collection and transportation to the waste recovery or treatment facilities through scheduled collection by the waste service providers. However, wherever such scheduled collection facilities are not available, BPC shall use its pool vehicle for collection and transportation of waste to disposal sites.

17. EDUCATION, AWARENESS & CORPORATE SOCIAL RESPONSIBILITY (CSR)

- 17.1. All offices under BPC shall observe 2nd day of every month as 'Zero Waste Hour' themed 'my waste, my responsibility'

- 17.2. BPC shall organize periodic and sustained awareness programs on waste management to its employees.
- 17.3. BPC shall carry out regular cleaning campaigns, tree plantations, etc. as a part of CSR engaging nearby communities.
- 17.4. BPC shall do away with use of PET bottles and single use plastics during public gatherings and meetings.
- 17.5. BPC shall engage the Civil Society Organizations (CSOs) and the Media to educate the general public on waste management through social and mainstream media as enshrined in section 22.e of the Waste Prevention and Management Act, 2009.
- 17.6. BPC shall involve religious institutions and influential figures to advocate on the adverse effects of improper waste management
- 17.7. BPC shall collaborate with relevant agencies/private entities/NGOs to develop and disseminate Information, Education and Communication (IEC) materials targeting people from all walks of life with added emphasis on children on waste management.

18. COLLABORATION & COORDINATION

- 18.1. BPC all collaborate and coordinate with Thromde Administrations / Municipalities / Dzongkhag Administrations/Waste Service Providers for timely collection, transportation, and disposal of waste.
- 18.2. BPC shall coordinate with Thromde Administrations / Municipalities / Dzongkhag Administrations/ Waste Service Providers to install adequate and appropriate facilities such as household bins, common residential bins, waste collection facilities, drop-off centres etc. at strategic locations in collaboration with Waste Management Flagship Program (WMFP).
- 18.3. BPC shall coordinate and request for technical backstopping in regards to waste management from National Environment Commission Secretariat (NECS)/Thromde Administrations/Municipalities/Dzongkhag Administrations/Waste Service Providers whenever necessary.

ANNEX 1: TERMS OF REFERENCE (TOR) FOR CLEANERS/CARETAKERS

1. Always adhere to the vision, mission and values of the BPC and the code of conduct as stated in BPC Service Rules and Regulations (SRR).
2. Clean the specified area of the office/colonies to the required standard as instructed by the supervisor.
3. Sweep and vacuum floors, dust off surfaces of furniture & office equipment.
4. Mop the floors as required.
5. Clean the restrooms at required intervals and make sure that tissue papers, hand wash, soap, air freshener, water, etc. are available at all times.
6. Empty bins and dispose of rubbish from the office premises as and when required.
7. Use power cleaning equipment as directed.
8. Undertake non-routine cleaning as instructed by the supervisor.
9. Report any damages to the office properties or other relevant matters to the concerned personnel.
10. Ensure to carry out a daily cleaning routine and fill the cleaner's checklist.
11. Comply with the requirements of the BPC's Occupational Health and Safety (OHS) requirements and always use the proper Personal Protective Equipment (PPE's) when at work.
12. Segregate and securely store the wastes generated in the office and its premises.
13. Ensure that the dust bins provided are maintained well and attended to on a regular basis with a detailed time schedule.
14. Ensure that the wastes are appropriately disposed of.

ANNEX 2: LIST OF PPE, TOOLS, OTHER EQUIPMENTS & ESSENTIAL CLEANING SUPPLIES FOR CLEANERS/CARETAKERS

PPEs:	Essential cleaning supplies:
<ul style="list-style-type: none"> ▪ hairnets-cleaning ▪ apron (heavy duty & normal) ▪ gumboots/shoe covers ▪ gloves ▪ mask ▪ safety goggles 	<ul style="list-style-type: none"> ▪ buckets/jugs ▪ toilet bowl cleaning detergents/chemicals ▪ cautionary signage ▪ cleaning trolley ▪ toilet papers/air-fresheners ▪ bin liner/trash bags ▪ hard/soft brooms & dust pan ▪ mop set ▪ waste basket ▪ duster cloths ▪ glass cleaning solutions ▪ vacuum cleaners ▪ toilet bowl cleaning brush ▪ hand washing soap/liquid ▪ disinfectants (surface & hand sanitizers)

ANNEX 3: UNIFORM FOR CLEANERS/CARETAKERS

Uniforms shall be provided to cleaners/caretakers as per BPC SRR-2016. (subject to amendments of Clause 4.3.11 in BPC SRR-2016).

ANNEX 4: ESTIMATE OF BINS REQUIRED

SN	Office/colonies	Bin capacity & nos.		
		Large (240L)	Medium (120L)	Small (20L)
1	All offices within Thimphu	49	87	153
2	All colonies within Thimphu	129	-	-
3	All SMDs	78	15	219
4	All TMDs	57	9	165
5	All offices under TCD	12	3	30
6	All ESDs	54	63	262
7	All ESSDs	48	9	112
8	All offices under DCD	15	-	20
9	All offices under PSD	12	6	20
10	All CMDO offices	3	-	8
11	All BPC colonies	205	-	-
Total		840	279	1,142

ANNEX 5: ESTIMATE FOR PROCUREMENT OF WATER DISPENSER/UV FILTRATION**Installation Cost (Head office campus)**

SN	Items	Unit price (Nu.)	Nos.	Total Cost (Nu.)	Remarks
1	Housing filter	17,500.00	3	52,500.00	Approximate estimate based on proposal from firms dealing with water filtration technology in Thimphu.
2	UV sterilizer	15,500.00	3	46,500.00	
3	Dispenser sink	30,000.00	3	90,000.00	
4	Pipes and fittings		3	12,375.00	
5	Dismantling and installation charges		3	11,025.00	
TOTAL				212,400.00	

Annual Maintenance Cost

SN	Items	Cost (Nu.)	Remarks
1	Housing filter candle replacement & cleaning (3 nos.)	66,000.00	Approximate estimate based on proposal from firms dealing with water filtration technology in Thimphu.

ANNEX 6: ESTIMATED COST FOR TRAINING, EDUCATION & AWARENESS, ZERO WASTE HOUR & CSR ACTIVITIES OF BPC (PER ANNUM)

SN	Items	Estimated cost (Nu. in millions)
1	Education & Awareness	1.0 M
2	Training (cleaners/caretakers)	1.2 M
3	Tree plantation & beautification	1.0 M
4	Zero waste hour	3.3 M
Total		6.5 M

ANNEX 7: ESTIMATE FOR WEIGHING MACHINES

SN	Item	Unit Price (Nu.)	Total nos.	Total Cost (Nu.)	Remarks
1	Weighing scale (digital machine with maximum capacity of 100kg)	3,000.00 (estimate based on online price)	246	738,000.00	Weighing scale has to be provided to all offices to fulfil clause 4.2; vii of SOP for WMDDC-2021

ANNEX 7: WASTE MANAGEMENT DATASHEET

Name of the Office:							
Address:							
Area (Office/Store Yard/Project Site/Colony):							
Date:							
Type of Waste Generated/Segregated	Total Quantity (in kg)	Quantity of waste treated/ recovered on campus (in kg)	Amount generated (in Nu.)	Quantity of waste transported to the waste treatment and recovery facilities (in kg)	Amount generated (in Nu.)	Total amount generated (in Nu.)	Total amount of waste disposed of (in kg)
Dry							
Wet							
Household Hazardous							

<i>Hazardous/Chemical waste</i>							
<i>E-waste</i>							
<i>Total</i>							

ANNEX-8: BPC WASTE MANAGEMENT MONITORING CHECKLIST

Name, Designation & Office address of the monitoring officer:				
Name & location of the office/housing colony/storeyard/other BPC ancillary facilities being monitored:				
Date of monitoring (DD/MM/YR)				
SN	Items	Yes (Tick)	No (Tick)	Remarks
1	Is waste segregated into Green, Blue & Red at offices/colonies/stores/any other ancillary facilities?			
2	Is waste stored properly?			
3	Is waste treated properly?			
4	Is waste disposed of properly?			
5	Are cleaners/caretakers provided with proper and adequate PPEs?			
6	Are cleaners/caretakers using proper PPEs while at work?			
7	Is Zero Waste Hour observed every month?			
8	Are PET bottles used?			
	Is the monthly waste generated			

9	report submitted within time?			
Any other observations/Recommendations:				
Signature with seal of Monitoring Officer			Signature with seal of the waste management focal person of the office	