BENGAL SREI INFRASTRUCTURE DEVELOPMENT LIMITED

(A Joint Venture Company of WBIDC & SREI)
CIN: U70109WB2004PLC100517

BSIDL/JB/0718/053

30th July, 2018

To
The Commissioner,
Durgapur Municipal Corporation,
City Centre, Durgapur - 713216
Dist: Burdwan (West)

Sub: Consultancy Services for Preparation of DPR for Municipal Solid Waste Management of Durgapur City for Durgapur Municipal Corporation – Third Request and Reminder for release of payment against 1st Invoice no. 301170010 dated 28.03.2017.

Ref:
1) Work order no. DMC/PW/1613 dated 26.08.2016.
2) Agreement between Durgapur Municipal Corporation and Bengal Srei Infrastructure Development Limited dated 03rd November, 2016.
3) Our letter no. BSIDL/DIR/1016/188 dated 28.10.2016 regarding submission of Final DPR to DMC.
4) Your office letter no. DMC/PW/2735 dated 28.10.2016 forwarding the DPR to SUDA.
5) Appraisal Note of M.E.Dte., GoWB approving the Project.
6) Our earlier letter no BSIDL/JB/0317/304 dated 30.03.2017.
7) Our letter no BSIDL/JB/1117/112 dated 17.11.2017.
8) Our Letter no. BSIDL /JB/ 0118/140 dated 17.01.2018.
9) Administrative Approval of the State High Powered Steering Committee under Mission Nirmal Bangla (Urban) / Swachh Bharat Mission (Urban) chaired by the Chief Secretary, Government of West Bengal vide Minutes of the 2nd Meeting dated 28.03.2018
10) Our Letter no. BSIDL/JB/0618/024 dated 18.06.2018

Dear Sir,

This has reference to the above cited work order and agreement with DMC assigning us with the preparation of DPR for Municipal Solid Waste Management of Durgapur City, its subsequent appraisal and approval vide above referred letters by Municipal Engineering Directorate, Govt. of West Bengal and subsequent approval and sanction by the State High Powered Steering Committee under Mission Nirmal Bangla (Urban) / Swachh Bharat Mission (Urban) chaired by the Chief Secretary, Government of West Bengal vide Minutes of the 2nd Meeting dated 28.03.2018.

Ever since sanction of the project , we have been requesting for release of our long overdue payment against our 1st Invoice for Rs. 27,01,142/- (Rupees twenty seven lakhs one thousand one hundred and forty two only) including all taxes towards 50% of the total consultancy fees payable upon approval of the DPR by M.E.Dte Govt. of W.B. and SUDA vide Invoice no. 301170010 dated 28.03.2017 a copy of which is enclosed with the letter.

The matter was discussed several times both telephonically as well as during my visits to your office wherein you have assured to resolve the long pending matter and release the payment.

Hon'ble Mayor, Durgapur Municipal Corporation has also been apprised of the status and he has also assured to look into and expedite the matter.

Registered Office: 'Vishwakarma' 86C, Topsia Road (South), Kolkata - 700 046
Tel: +91 33 2285 0112-0115, 61607734 Fax: +91 33 2285 8501/7542
Website: www.srei.com

It may be noted that we have spent considerable resources for completion of the detailed project report and a long time has elapsed since then. However, despite our several requests and pleas , no action has been initiated on the matter from your end and it continues to be pending.

Since we are facing a lot of hardships. once again we would request you to kindly expedite the release of the long overdue payment at the earliest.

Looking forward to your kind co-operation and early action.

Thanking you,

Yours faithfully,

Jayanta Basu
Associate Vice - President

Copy : 1) **The Hon'ble Mayor,**
Durgapur Municipal Corporation,
City Centre, Durgapur - 713216

2) **The Principal Secretary,**
Urban Development & Municipal Affairs Department.
NAGARAYAN , 5th Floor, Block – DF.
Sector – I, SALT LAKE CITY,
KOLKATA – 700064.

3) **Shri B.N. Kar.**
Additional Director,
State Urban Development Agency,
ILGUS Bhaban,
Block – HC, Sector – III,
SALT LAKE CITY,
KOLKATA - 700106.

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Gmail

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Director, SUDA <sbm.wbsuda@gmail.com>

Fwd: West Bengal Govt.'s proposal for 2018-19 under SBM-U

1 message

Director, SUDA <wbsudadir@gmail.com>
To: Sujay Mitra <sujay.mitra@gmail.com>, sbm.wbsuda@gmail.com

Thu, May 3, 2018 at 10:47 AM

Sutanu Prasad Kar

Director SUDA W.B

——— Forwarded message ———
From: **Mithilesh Mandal** <mkmandalud@gmail.com>
Date: Wed, May 2, 2018 at 4:30 PM
Subject: West Bengal Govt.'s proposal for 2018-19 under SBM-U
To: Manindra Nath Pradhan <wbsudadir@gmail.com>
Cc: Rajendar Jayal <rajjhuni@gmail.com>, "Singh, Pramendra" <pramendrasingh@kpmg.com>, "Jain, Archita" <architajain@kpmg.com>

Respected Sir,

Please find attached file on the above subject for further necessary action.

Regards,

(Mithilesh Kumar Mandal)/(मिथिलेश कुमार मंडल)
Section Officer (SBM-II)/अनुभाग अधिकारी (एस.बी.एम.-II)
Ministry of Housing and Urban Affairs/आवासन एवं शहरी कार्य मंत्रालय
Government of India/भारत सरकार
Room No. 202-A, C Wing/कमरा संख्या - 202-अ, सी विंग
Nirman Bhawan/निर्माण भवन
New Delhi-110011/नई दिल्ली -110011
Tel:23061437/दूरभाष-23061437

West Bengal (02May18).pdf
352K

No. 1/31/2015-SBM
Government of India
Ministry of Housing and Urban Affairs

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Nirman Bhawan, New Delhi
Dated the 12th June, 2018

To

The Pay & Accounts Officer (Sectt.)
Ministry of Housing and Urban Affairs
New Delhi-110011

Subject: Release of 1st installment to Govt. of West Bengal in respect of Solid Waste Management Projects under Swachh Bharat Mission during 2018-19 – reg.

Sir,

I am directed to convey the sanction of competent authority for release of **Rs.111,82,00,000/- (Rupees One hundred eleven crore and eighty two lakh only)** to Govt. of West Bengal towards release of 50% of 35% VGF as 1st installment for **Solid Waste Management Project** under Swachh Bharat Mission (Urban) during 2018-19. Details are as under:-

(Rs. in Crore)

Sl. No.	Name of Projects	Project Cost	35% VGF	1st Installment
1	Durgapur MC	64.31	110.76	55.38
2	Bankura	16.49		
3	Purulia	14.60		
4	Coochbehar	9.35		
5	Burdwan	38.17		
6	Arambag	9.34		
7	Raghunathpur	5.62		
8	Kharagpur	34.07		
9	Panihati	45.22		
10	Kanchrapara	27.03		
11	Baruipur	12.65		
12	Garulia	10.49		
13	Asansol MC (P-II)	29.12		
	Total cost for 13 SWM Projects of 13 ULBs	**316.46**		
14	**Procurement of SWM Vehicles and Equipment for 97 ULBs**	**322.49**	**112.87**	**56.44**
			Total =	**111.82**

2. The sanction will be regulated in accordance with the provisions of GFR, 2017.

3. The expenditure is debitable to Major Head **3601**-(Grants-in-Aid to State Govts.)-**06**-(Centrally Sponsored Schemes)-**101**-(Central Assistance/Share)-**22**-(Swachh Bharat Mission)-**03**-Project Fund-**35**-Grants for creation of Capital Assets under **Demand No. 56** for the year **2018-19** of the Ministry of Housing and Urban Affairs.

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4. The amount will be credited to the State Government's account in RBI as per procedure laid down by Ministry of Finance, Department of Expenditure vide O.M. No. F-II (45/76/SC) dated 22.02.1977.

5. In addition to the entire Scheme being governed by the Guidelines of the Swachh Bharat Mission (SBM) which is available at www.mohua.gov.in and following the same while releasing funds to the beneficiaries/ULBs, the release of funds for the **Solid Waste Management** will be restricted to and governed by the guidelines given in **Paragraph 7** of the SBM guidelines.

6. Entry has been made at **Sl. No. 10** of Grant-in-aid Register for the year 2018-19.

7. No U.C. is pending for this project from Govt. of West Bengal.

8. This issues with the approval of Finance Division vide note on **e-file No. 3125021** dated **11/06/2018**.

Yours faithfully,

(Gopal Jha)
Under Secretary to the Govt. of India
Tel: 23062565

Copy to:-

1. Director General, Audit Central Revenue and Expenditure, Near ITO, AGCR Building, New Delhi-110002
2. Principal Accounts Officer, Ministry of Housing and Urban Affairs, Nirman Bhawan, New Delhi.
3. Chief Secretary, Government of West Bengal, Kolkata.
4. Shri. M.N. Pradhan, Director, State Urban Development Agency (SUDA), ILGUS Bhavan, Sector-III, H-C Block, Bidhannagar, Kolkata - 700 106
5. Finance Division
6. Sanction file

(Gopal Jha)
Under Secretary to the Govt. of India

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Minutes of the 2nd Meeting of State High Powered Committee under Mission Nirmal Bangla (Urban)/Swachh Bharat Mission (Urban)

Date: 28th March 2018	Time: 11.30 AM	Venue: Conference Hall of the Chief Secretary at Nabanna

List of the Members and other Participants Present: Placed at Annexure-I

The Chief Secretary to Government of West Bengal and the Chairman of the State High Powered Committee under Mission Nirmal Bangla (Urban)/Swachh Bharat Mission (Urban) chaired the meeting.

At the outset, the Secretary, Urban Development & Municipal Affairs Department, Government of West Bengal welcomed all the members of the Committee and explained the overall plan and activities under Mission Nirmal Bangla (Urban).

Detailed discussion took place on the progress of the 10 nos. of Solid Waste Management Projects of 14 ULBs under implementation, the proposed 13 nos. of Solid Waste Management Projects of 13 ULBs for approval, Strategy for covering all the ULBs to ensure segregation at source, 100% door to door collection and transportation and action plan of the components for the year 2018-19,

1. Approval of DPRs of Solid Waste Management:

DPRs of following 13 Solid Waste Management Projects of 13 ULBs of West Bengal have been placed before the Committee for consideration. The SWM Projects are technically appraised by Reputed Institutes/Chief Engineers of the Department. Lands for the projects are available with the ULBs in each case. After detailed deliberation, the Committee has approved the DPRs of following SWM Projects:

Sl. No.	ULB	Estimated Cost (Rs. in Lakh)		
		Bulk purchase of Equipments and Vehicles	Construction of SLF, Compost /Bio-gas/Vermi-Compost Plant	TOTAL DPR COST
1	Durgapur MC	2553.47	3877.82	6431.29
2	Bankura	559.63	1088.9	1648.53
3	Purulia	392.72	1066.82	1459.54
4	Coochbehar	266.11	669.16	935.27
5	Burdwan	1683.37	2133.2	3816.57
6	Arambag	298.82	634.86	933.68
7	Raghunathpur	201.61	360.43	562.04
8	Kharagpur	1542.31	1865	3407.31
9	Panihati	1241.04	3281.35	4522.39
10	Kanchrapara	824.37	1879.05	2703.42
11	Baruipur	372.2	892.68	1264.88
12	Garulia	430.4	618.85	1049.25
13	Asansol MC (P-II)	0	2911.69	2911.69
	TOTAL	10366.05	21279.81	31645.86

It was decided that beyond the Government of India share of 35%, the remaining will be borne by the State Government and ULB. This fund sharing pattern between the State Government and ULB will remain same as approved for the earlier Projects i.e. 5% share will be borne by the ULBs having below 10 Lakh Population and 10% share will be borne by the ULBs having above 10 Lakh Population, and the remaining fund will be borne by the State Government as Matching State Share & Additional State Share.

It was decided that for these projects, all the vehicles and equipments will be procured centrally from the end of State Urban Development Agency (SUDA) and construction of Sanitary Landfill & Processing Plants will be done by the ULBs under the supervision of Municipal Engineering Directorate & Kolkata Metropolitan Development Authority.

2. **Procurement of SWM Vehicles and Equipments for 97 ULBs:**

It was decided that to ensure Segregation at source, 100% door to door collection and Transportation in all the ULBs, procurement of all the SWM Vehicles and Equipments of all the ULBs will be done Centrally from SUDA. After that DPR for the ULBs will be prepared for establishment of Processing Plant and Sanitary Landfill site subject to availability of suitable Land.

After detailed deliberation, the Committee has approved the following two DPRs for procurement of SWM Vehicles and Equipments for all the remaining ULBs of West Bengal:

i. A DPR for Improvement of Transportation System of Municipal Solid Waste of the ULBs with total Project Cost of Rs. 64.49 Crore, is prepared by SUDA in consultation with the ULBs and appraised by Municipal Engineering Directorate, Government of West Bengal. Procurement for 23 nos. 8 CuM Movable Compactors, 117 nos. 10 CuM Dumpers, 179 nos. 2.2 CuM Fuel Operated Tippers and 663 nos. Battery Operated Hydraulic Tippers are in progress. In this respect, work order for 23 nos. 8 CuM Movable Compactors has already been issued. Re-tender for the remaining items have been done due to non availability of successful bidders in 1st call.

ii. A DPR for ensuring Segregation at source, 100% door to door collection and Transportation in all the ULBs with total Project Cost of Rs. 258 Crore, have been prepared by SUDA in consultation with the ULBs and appraised by Municipal Engineering Directorate, Government of West Bengal.

Procurement to be made for 10 ltrs Household Bins, 100-120 Ltr. Litter Bin, 240-660 ltrs. Community Bin, Tricycle Van, Battery Operated Cart, Wheel Barrow, Auto Tipper, Compactor (Movable), Dumper, Tractor, TT Container, Jetting cum Suction Machine, Road Sweeping Machine, Cesspool, Loader cum Back Hoe and Safety Measures etc.

3. Annual Action Plan for the Year 2018-19:

The Committee has approved the Annual Action Plan of the Components for the year 2018-19 amounting to total GoI Share of Rs. 237.95 Crore, which will be submitted to Government of India. Details of the Annual Action Plan of all Components for 2018-19 approved by SHPC :

Sl No.	Components	Action Plan	Estimated Project Cost	Total Central Share (Rs in Crore)
1	Community Toilet	Construction of 2000 Seats	Rs. 19.60 Crore (@98000/- per seat)	7.84
2	Public Toilet	Construction of 1000 Toilet Seats	Rs. 9.80 Crore (@98000/- per seat)	3.92
		Construction of 2000 Urinal Seats	Rs. 6.4 Crore (@32000/- per seat)	2.56
3	Solid Waste Management (SWM)	13 Nos of New SWM Projects of 13 ULBs	Rs. 316.46 Crore	110.76
		Procurement of SWM Vehicles for Improvement of Transportation System of Municipal Solid Waste of the ULBs	Rs. 64.49 Crore	22.57
		Procurement of all the SWM Vehicles and Equipments for 97 ULBs to ensure Segregation at Source, 100% Door to Door Collection and Transportation of Grabage	Rs. 258 Crore	90.30
TOTAL				237.95

4. Claim of Fund from GoI in the Year 2018-19:

The Committee has approved the Claim of Fund amounting to Rs. 332.11 Crore from Government of India in the year 2018-19, which will be submitted to Government of India. Details of Claim of Fund from Government of India in the year 2018-19 approved by SHPC:

Rs. in Crore

Sl No	Financial Year	Installment	SWM Amount	CT Amount	PT Amount	PT -Urinal Amount	Total Amount
1	2017-18	2nd	94.16	0	0	0	94.16
2	2018-19		223.63	7.84	3.92	2.56	237.95
TOTAL			295.22	7.84	3.92	2.56	332.11

5. **Miscellaneous:**

- As per direction of Hon'ble Chief Minister to Government of West Bengal a 'Clean & Green City/Ward Competition has been designed to create and maintain a healthy and beautiful environment in the cities and also to develop a competitive environment among the Cities and also among the Wards within the City. In the discussion, it was decided that in the evaluation parameters, cleanliness of Schools should be added.
- The Chef Secretary to Government of West Bengal raised an issue that the market areas & its nearby drains of Darjeeling City remain very much dirty due to accumulation of wastes during ~~piek~~ peak season for the tourists. . In this connection the Secretary, UD & MA Department has explained the activities already taken up through an Integrated Solid Waste Management project under State Plan Fund for Darjeeling City. In the project all kinds of vehicles and equipments are being procured for ensuring segregation at source, 100% door to door and market waste collection and regular Road sweeping. Bio Gas Plant are being constructed for processing of Bio Degradable Wastes and the recyclable items will be sold out. .

Meeting ended with thanks to and from the chair.

(Malay De)
Chief Secretary to Government of West Bengal
& Chairman, SHPC, MNB (U)

Annexure-I

List of Members and Other Participants Present

1. Sri Malay De, IAS, Chief Secretary, GoWB
2. Sri Harekrishna Dwivedi, IAS, Additional Chief Secretary, Finance Department
3. Sri Sanjay K Thade, IAS, Principal Secretary, Backward Classes Welfare Department
4. Sri Arnab Roy, IAS, Principal Secretary, Environment Department
5. Sri D. Nariala, IAS, Principal Secretary, School Education Department
6. Sri Khalil Ahemed, IAS, Municipal Commissioner, Kolkata MC.
7. Sri Onkar Singh Meena, IAS, Secretary, UD & MA Department
8. Sri Arvind Mina, IAS, S.P.D., PBSSM, School Education Department
9. Sri Sutanu Kar, IAS, Director, SUDA
10. Smt. Pragyan Bharati , Wash Specialist, UNICEF

11. Sri J. Chattopadhya , D.L.B., UD & MA Department
12. Sri Amit Das, Chief Engineer, MED, UD & MA Department
13. Sri B. N. Kar, Additional Director, ILGUS, UD & MA Department
14. Sri Subhasish Chattapadhya, Director General (SWM), Kolkata MC
15. Sri K. Ghosh Dastidar, Executive Engineer, Kolkata MC
16. Sri Bijay Krishna Pal, Executive Engineer, SUDA
17. Sri Saumya Bandyopadhyay, Assistant Engineer, M.E.D, UD & MA Department
18. Sri S S S Gous, Programme Coordinator, SUDA
19. Dr. Sujay Mitra, Chief Manager – Planning & Monitoring, SUDA

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सत्यमेव जयते

Government of India

Government of India
Ministry of Urban Development

Guidelines for

Swachh Bharat Mission (SBM)

स्वच्छ भारत
एक कदम स्वच्छता की ओर

December 2014

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CONTENTS:

1. Introduction

1.1. According to Census 2011 India's urban population is 377 million or 31% of the total population. These numbes are expected to increase to 600 million by 2031. The Census 2011 also showed that in 4,041 statutory towns, close to eight million households do not have access › toilets and defecate in the open (7.90 million). Weak sanitation has significant helth costs and untreated sewage from cities is the single biggest source of water reɔurce pollution in India. This indicates both the scale of the challenge ahead of th Indian cities and the huge costs incurred from not addressing them.

1.2. The Swachh Bharat Missi (SBM) emanates from the vision of the Government articulated in the addrs of The President of India in his address to the Joint Session of Parliament on 9th Je 2014:

> "We must not tolerate › indignity of homes without toilets and public spaces lited with garbage. For ensuring hygiene, waste manament and sanitation across the nation, a "*Swachh Bhɛ Mission*" will be launched. This will be our tribute to Natma Gandhi on his 150th birth anniversary to be celeb›d in the year 2019"

SBM is being implemented by the Mtry of Urban Development (M/o UD) and by the Ministry of Drinking Water and Sation (M/o DWS) for urban and rural areas respectively. These guidelines are for implementation of Swachh Bharat Mission (Urban).

2. Swachh Bharat Mission (SBJrban Overview

2.1. Mission Objectives

2.1.1. Elimination of open defecation
2.1.2. Eradication of Manual Scavengir
2.1.3. Modern and Scientific Municipal Waste Management
2.1.4. To effect behavioral change regahealthy sanitation practices
2.1.5. Generate awareness about sanitand its linkage with public health
2.1.6. Capacity Augmentation for ULB's
2.1.7. To create an enabling environmt private sector participation in Capex (capital expenditure) and Opex (o›n and maintenance)

2.2. Duration of the mission

The Mission will be in force till 2nd October 2019

2.3. Mission components

The Mission has the following components:

2.3.1. Household toilets, including conversion of insanitary latrines into pour-flush latrines;
2.3.2. Community toilets
2.3.3. Public toilets
2.3.4. Solid waste management
2.3.5. IEC & Public Awareness
2.3.6. Capacity building and Administrative & fice Expenses (A&OE)

By Public Toilets, it is implied that the are to be provided for the floating population / general public in places such as markets, train stations, tourist places, near office complexes, or other pic areas where there are considerable number of people passing by.

By Community toilets, it is implied that a shared facility provided by and for a group of residents or an entire settlent. Community toilet blocks are used primarily in low-income and/or informettlements / slums, where space and/or land are constraints in providing a hold toilet. These are for a more or less fixed user group.

2.4. Mission Coverage: Cs and target population

2.4.1. All Statutory towns will be covunder the Mission. Definition of statutory towns is at ***Annexure I***.

2.5. Mission Strategy

2.5.1. Comprehensive Sanitation Pla, which includes
(a) City Level Sanitation Plans
(b) State Sanitation Concept As per ***xure IV***
(c) Sate Sanitation Strategy

2.5.2. Behavioral Change Strateg IEC

2.5.3. Enabling Environment for sector participation

2.5.4. Capacity Building

2.5.5. Special focus groups : The State Governments shall pursue the following:

i. All manual scavengers in urban areas are identified, insanitary toilets linked to their employment are upgraded to sanitary toilets, and that the manual scavengers are adequately rehabilitated.
ii. In their efforts to streamline and formalize SWM systems it shall be the endeavor of ULBs that the informal sector workers in waste management (rag pickers) are given priority to upgrade their work conditions and are enumerated and integrated into the formal system of SWM in cities.
iii. All temporary accommodation for migrants and the homeless in urban areas have adequate provision for toilets either on the premises or linked to a public / community toilet.
iv. Mandating that construction labour in urban areas have access to temporary toilets at all sites in urban areas, buildings, parks and roads where construction / maintenance work is taking place or where construction labour is temporarily housed.
v. Priority shall be accorded pro-actively to cover households with vulnerable sections such as pensioners, girl children, pregnant and lactating mothers.

2.6. Mission Outlay

The estimated cost of implementation of SBM (Urban) based on unit and per capita costs for its various components is Rs. 62,009 Crore. The Government of India share as per approved funding pattern amounts to Rs. 14,623 Crore. In addition, a minimum additional amount equivalent to 25% of GoI funding, amounting to Rs. 4,874 Crore shall be contributed by the States as State/ULB share. The balance funds is proposed to be generated through various other sources of fund which are, but not limited to:

a. Private Sector Participation
b. Additional Resources from State Government/ULB
c. Beneficiary Share
d. User Charges
e. Land Leveraging
f. Innovative revenue streams
g. Swachh Bharat Kosh
h. Corporate Social Responsibility
i. Market Borrowing
j. External Assistance

3. Concept Sanitation Strategy:

It is understood that without a proper **city sanitation plan** and resulting **state sanitation strategy**, as indicated in National Urban sanitation policy-2008, comprehensive planning cannot be achieved to attain the objectives of Swachh Bharat Mission. However, both the activities require time and wide consultation at various levels including citizen engagements. It is also understood that although many states and cities have prepared these plans and strategy, many more have not done so.

In order to give a quick start to the Swachh Bharat Mission, it is, therefore proposed that all states may submit a **brief concept Note on state sanitation strategy**, as given in the ***AnnexureIV*** of these guidelines as a part of there initial proposal, in order to claim their first installment for individual household toilets, IEC and Capacity Building as well as the revolving fund for other components.

The concept note and proposal shall be submitted online to MoUD by state governments by 30 January 2015.

The states should however, simultaneously start preparing City sanitation plans for each city and State Sanitation strategy as per National Urban sanitation Policy 2008 as these will be required before any further release can be made to the states.

4. SBM (Urban) Component -I: Household toilets

4.1. SBM (Urban) aims to ensure that

a) No households engage in the practice of open defecation,
b) No new insanitary toilets are constructed during the mission period and
c) Pit latrines are converted to sanitary latrines.

The Target Group for construction of household units of Toilets, thus, is:

(i) 80% of urban households engaging in open defecation
(ii) All households with insanitary latrines
(iii) All households with single-pit latrines

These will be targeted under this component for the construction of household toilets or individual household latrines during the mission period. The remaining 20% of households practicing open defecation are assumed to be catered by community toilets due to constraints of space.

4.2. **Household toilets** constructed under SBM (Urban) will have two main structures – the toilet *superstructure* (including the pan and water closet), and the

substructure (either an on-site treatment system, or a connection to existing underground sewerage system).

4.2.1. Whenever a sewerage system is available within 30 metres from the proposed household toilet, only the toilet superstructure may be constructed and connected to the existing sewerage system. ULBs must facilitate these connections for household toilets under SBM (Urban), wherever applicable and economical.

4.2.2. In the event that a sewerage system is not available within 30 meters from the proposed household toilet, in addition to the construction of the toilet superstructure, an on-site treatment system (such as twin pits, septic tanks, bio-digesters, or bio-tanks) should also be constructed for the collection, treatment and/or disposal off sewage at, or near the point of generation.

4.2.3. ULBs should ensure that all household toilets being constructed under SBM are built in tandem with water supply arrangements in ULBs. Beneficiary households will be responsible for the operation and maintenance of the household toilets. Suggested technical specifications, technologies and tentative cost of household toilets are available at ***Annexure II***

4.3. For this component, ***beneficiary*** shall mean any household that does not have access to an individual household toilet or has an insanitary toilet (dry/ *bahou* and single pit latrine). No other criteria is to be applied.

4.3.1. Selection of Beneficiary Household shall be as per the strategy adopted by ULB under the guidance of state government. However, the following guiding principals may be followed:

(i) Initially, a campaign to create awareness may motivate beneficiaries to come forward on their own. This should be taken at the ULB level and followed up by accepting a simple application and undertaking, to be verified within 7 days and approved at ULB level.

(ii) ULBs are expected to carry out a house-to-house survey. In so doing they shall also take into consideration Census 2011 data or any recent survey available to them. This baseline data shall be put in public domain by 15.02.2015.

(iii) Any Claims and objections received shall be addressed in a transparent manner and continuous modifications can made in the baseline data.

(iv) Based on this house to house survey, all households practicing open defecation shall be identified and ULB's need to approve either a Household toilet or plan for community toilets for each of such identified household/group of household.

4.3.2. Beneficiary households will be targeted under this scheme irrespective of whether they live in authorized/unauthorized colonies or notified / non-notified slums. Under SBM (Urban), tenure security issues are to be de-linked with benefits.

4.3.3. The states and ULB's must ensure that the maximum number of beneficiaries from individual households toilets will be normally limited to the numbers indicated in the Census of India 2011 for each town.

4.4. Central government incentive for the construction of household toilets will be Rs. 4,000 per household toilet for each identified beneficiary household.

4.4.1. 50% of the Central Government incentive (Rs. 2,000/-) will be released to the identified beneficiary household by the ULB as 1st installment on approval by the ULB along with share of the state government. There is no bar on releasing any extra funds at any stage using additional resources generated/provided by state government/ ULB.

4.4.2. The ULB shall verify each application before releasing any incentive. Verification of the application should be completed within 7 working days of its submission of application by the beneficiary.

4.4.3. The remaining 50% of Central Government incentive as 2nd installment should be released to the identified beneficiary household along with the State Government's incentives upon verification of physical progress of construction of the household toilet. The actual process of verification will be as per the directions of the respective State Government.

4.4.4. Final Verification of the construction of the household toilet should be supported by location-based technologies, wherein self-attested geo-tagged photographs of the construction, along with the applicant are taken out. These photographs must be uploaded to the SBM (Urban) MIS and be monitored by the ULBs and the States.

4.4.5. All financial incentives (government and /or private) for this component will be deposited directly (by electronic clearing service) into the bank accounts of the beneficiary households (including accounts opened under the *Pradhan Mantri Jan Dhan Yojana*). No cash/cheque disbursals shall take place.

The ULBs should ensure that financial incentives to beneficiary households are transferred in a timely and hassle-free manner. The State government should evolve standard norms for this throughout the state and ensure the monitoring of its implementation.

5. SBM (Urban) Component II: Community toilets

5.1. Under SBM (Urban), it is estimated that about 20% of the urban households in cities, who are currently practicing open defecation are likely to use community toilets as a solution due to land and space constraints in constructing individual household latrine.

5.2. Community toilet blocks will consist of a given number of toilet seats, as per requirements, toilet superstructure including the pan and water closet, and a substructure (either an on-site treatment system, or a connection to underground sewerage/septage system) shared by all the toilet seats and facilities for hand wash.

5.2.1. Care should be taken to ensure that these facilities have adequate provision for separate toilets and bathing facilities for men, women and facilities for the disabled (e.g. ramp provision, braille signage, etc.).

5.2.2. The norms for connection of the superstructure to an on-site system or connection to an underground sewerage system as defined in paragraphs 4.2.1 and 4.2.2 above will apply here.

5.2.3. ULBs should ensure that all community toilets being constructed under SBM (Urban) are built in tandem with water supply arrangements in ULBs. Suggested technical specifications, technologies and tentative cost of community toilets are available at ***Annexure II***.

5.3. For this component, ***beneficiaries*** shall be groups of households ("beneficiary household group") in urban areas whose members practice open defecation and who do not have access to household toilet, and for whom the construction of individual household toilets is not feasible. Beneficiary household groups under this component of SBM (Urban) shall be identified by the procedure as designed by the ULB. This may be application based or survey based, with or without participation of community based organisations. Involvement of civil society organisations is to be encouraged. NGO's, Area, Ward or Mohalla Sabha's may be used for this purpose. Beneficiary household groups will be targeted under this scheme irrespective of whether they live in authorized/unauthorized colonies or notified / non-notified slums. Under SBM (Urban), tenure security issues are to be de-linked with benefits.

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5.4. Once a sufficient number of households are identified as a group, the ULB shall identify suitable piece of land adjoining their houses/dwelling and design the toilet block. Efforts should be made to look into all possible sources of revenue generation by leveraging land ,use of rooftop or any other means.

5.5. Central government incentive for the construction of community toilets will be in the form of 40% Grant/VGF, for each community toilet block constructed. The remaining funds have to be generated as indicated in para 2.6 above.

5.6. Projects will be prepared and sanctioned by ULBs. In the entire project approval and procurement process, all provisions and procedures as prescribed by respective State Governments for ULBs must be followed in their entirety. The entire approval procedure except for release of Central funds will end at the ULB level. To this end the States are required to empower the ULBs if not already done so. This includes the delegation of powers to allot land (for this purpose) to ULB's and mechanisms to leverage this land to make the Community Toilet a viable project.

5.7. All community toilets constructed under SBM must have a minimum 5 year maintenance contract.

5.8. States will contribute a minimum of 25% funds towards community toilet projects to match 75% Central Share. (10% in the case of North East States and special category states).

6. SBM (Urban) Component -III: Public Toilets

6.1. Under SBM (Urban), States and ULBs will ensure that a sufficient number of public toilets are constructed in each city. All prominent places within the city attracting floating population should be covered.

6.2. Care should be taken to ensure that these facilities have adequate provision for men, women and facilities for the disabled (e.g. ramp provision, braille signage, etc.) wherever necessary. Suggested technical specifications, technologies and tentative cost of public toilets are available at ***Annexure II***.

6.3. ULBs should ensure that all Public Toilets being constructed under SBM (Urban) are built in tandem with water supply arrangements in ULBs.

6.4. There will be no Central Government incentive support for the construction of public toilets under SBM (Urban). States and ULBs are encouraged to identify land for public toilets, and leverage this land and advertisements to encourage the private

sector to construct and manage public toilets through a PPP agreement. Additional funding support by any means other than GoI grant can be used for public toilets.

6.5. The Projects will be prepared, sanctioned and implemented by ULBs. In the entire project approval and procurement process, all provisions and procedures as prescribed by respective State Governments for ULBs must be followed in their entirety. The entire approval procedure should end at the ULB level. To this end the States are required to empower the ULBs if not already done so. This includes the delegation of powers to allot land (for this purpose) to ULB's and mechanisms to leverage this land to make the Public Toilet a viable project.

6.6. All Public Toilets constructed under SBM must have a minimum 5 year maintenance contract.

7. SBM (Urban) Component IV: Solid Waste Management

7.1. Municipal Solid Waste Management (MSWM) refers to a systematic process that comprises of waste segregation and storage at source, primary collection, secondary storage, transportation, secondary segregation, resource recovery, processing, treatment, and final disposal of solid waste. The Manual on Municipal Solid Waste Management, 2000 published by M/o UD and revised from time-to-time, may be referenced for DPR formulation and implementation.

7.2. ULB's are to prepare DPR for Solid waste management of their city in consultation with state governments. Smaller cities can form clusters to become viable entities to attract private investment. 100% Cost reimbursement for preparing the DPR shall be done by GoI as per unit cost and norms set up by NARC.

7.3. State governments may handhold ULB's in quickly preparing DPR's for SWM by empanelling /shortlisting /identifying private or government agencies for the same.

7.4. The DPR's should be bankable, having a viable financial model. These will be prepared emanating from the needs identified in the City Sanitation Plan. DPRs should be aligned with Govt. of India's goals outlined in the NUSP 2008, SWM rules, advisories, CPHEEO manuals (including cost-recovery mechanisms), O&M practices and Service-level Benchmark advisories released by M/o UD from time to time. Street Sweeping and litter control interventions will be part of DPR which is essential for a clean city.

7.5. In order to promote projects of waste to energy, it is clarified that the central government Grant / VGF may also be used for such projects, either upfront or as generation based incentive for power generated for a given period of time.

7.6. The State High Powered Committee (HPC) will authorize institutes of national repute for appraisal of DPRs for the technical and economic appraisal of DPRs for projects recommended by ULBs. No appraisal will be done by MoUD. The cost of DPR appraisal by these institutes shall be an admissible component under administrative costs, subject to norms as approved by MoUD.

7.7. The performance and quality of appraisal by these identified and authorized institutes will be evaluated and monitored by HPEC as well as NARC and corrective actions taken wherever necessary.

7.8. The State Level high power committee will approve the DPR as well as the financial model of solid waste management.

7.9. The implementation of SWM projects will be as per directions of State Level High Power Committee.

7.10. Central government incentive for the SWM projects will be in the form of a maximum of 20% Grant / VGF for each project. The remaining funds have to be generated as indicated in para 2.6 above.

7.10.1. While considering projects under MSWM it will be ensured that there is no duplication in terms of funding under any other scheme or programme.

7.10.2. Detailed technical and financial appraisal of the DPRs will be carried out in the manner prescribed in paragraph 10.5.4. O&M arrangements for the project shall necessarily be an integral part of the project in the DPR.

7.10.3. SWM projects will be sanctioned by the State level HPC which shall include a representative of the MoUD. In the entire project approval and procurement process, all provisions and procedures as prescribed by respective State Governments must be followed in their entirety. The entire approval procedure for MSW projects except for release of Central funds will end at the State Level.

7.10.4. The States shall be free to choose the technology for SWM projects, toilets and street sweeping. The Ministry of Urban Development shall, from time to time, bring to the notice of the States, through advisories and manuals, and other consultative mechanisms, various options available in these fields.

7.10.5. States will contribute a minimum of 25% funds for SWM projects to match 75% Central Share.(10% in the case of North East States and special category states).

8. SBM (Urban) Component -V: IEC & Public Awareness

8.1. A key strategy under SBM (Urban) is behavior change communication to ensure that sanitation as an issue is mainstreamed with the general public at large and should cover issues of open defecation, prevention of manual scavenging, hygiene practices, proper use and maintenance of toilet facilities (household, community or otherwise), etc., and its related health and environmental consequences. Communication material for behavior change shall be designed in consultation with the M/o Information and Broadcasting, M/o Health & Family Welfare, and should be in sync with the material being used under SBM (Rural).

8.2. A total of **15%** of the total central allocation will be earmarked for this component. Of this, **12%** will be earmarked for States to undertake massive public awareness campaigns on sanitation and establishing its link to public health, hygiene and the environment through various means including - radio, social media, documentaries, plays, workshops, etc. The remaining **3%** will be earmarked for the MoUD to draw a national media campaign and developing standard campaign tools for effective awareness and communication on sanitation.

8.3. Expenditure on Newspaper and TV is not an admissible item under this component for the state government or for the ULB's as this is taken care by government of India ministries and organisations.

8.4. States shall prepare an annual action plan, with details of State funding commitment, for Public Awareness & IEC and State HPC shall approve it. At least 50% of the IEC fund in each annual plan, as approved by State HPC, must go to the ULB's for IEC activities at the grass root level.

8.5. HPEC at State level shall be the competent authority to authorize and delegate administrative powers for use of the state level funds within the approved plan. ULB's shall be competent to spend the minimum 50% part of the ULB level funds, as per approved plan.

8.6. Under no circumstance shall this fund be utilized for purchase of vehicles, construction and maintenance of buildings, creation of posts and payment of salary, and purchase of furniture and fixtures.

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States will contribute a minimum of 25% funds towards IEC & Public awareness to match 75% Central Share (10% in the case of North East States and special category states) in each annual plan.

9. SBM (Urban) Component VI : Capacity Building and Administrative & Office Expenses (A&OE)

9.1. **3%** of the total Central Government allocation under the mission will be earmarked for capacity building, administrative and office expenses of States and ULBs.

9.2. **2%** of the total Central Government allocation under the mission will be utilized at MoUD level for capacity building, convening national and regional workshops, various awards and best practice recognition, programme research, studies, international cooperation for capacity building and technology development, A&OE and various eligible purposes in consultation with the Integrated Finance Division (IFD) of the M/o UD.

9.3. States shall propose extensive capacity building activities to be implemented in a mission-mode manner, which will enable the progressive achievement of objectives of SBM (Urban) in a time-bound manner. These will be specified in the comprehensive annual action plan prepared by each state. This will be approved by State Level High Power Committee after sharing and considering suggestions from MoUD. At least 50% of this fund, in each annual plan, as approved by State HPC, must go to the ULB's for activities at the ULB level.

9.4. HPEC at State level shall be the competent authority to authorize and delegate administrative powers for use of these funds. ULB's shall be competent to use the minimum 50% fund, as per approved plan, passed on to them.

9.5. States will be encouraged to use other available capacity building funds to dovetail or integrate capacity building activities of ULB's.

9.6. States and ULBs should identify relevant officials (both senior level officials and field-level functionaries) for training and draw up a calendar of training for them. It will be the responsibility of the State Mission Director to ensure that identified officials undergo adequate capacity building / training to ensure the success of SBM (Urban) in the state. Additionally, states should also identify relevant officials / persons capable of spreading the training on sanitation under SBM (Urban) as "master trainers" who can attend central government training on SBM (Urban) and then organize subsequent training to diffuse the message of SBM (Urban) in the states.

9.7. All support structures for implementing the mission at the state and ULB levels defined in the Mission Management Structure (section 11 of the SBM (Urban) guidelines), *i.e.*, the Programme Management Units (PMUs) at the State level, the Programme Implementation Units (PIUs) at the city level, and Independent Project Review & Monitoring Agencies (IPRMA) etc., engaged on an outsourced basis, shall be funded under this head.

9.8. Under no circumstance shall this fund be utilized for purchase of vehicles, construction and maintenance of buildings, creation of posts and payment of salary, and purchase of furniture and fixtures.

9.9. States will contribute a minimum of 25% funds towards Capacity Building and Administrative & Office Expenses (A&OE) to match 75% Central Share.(10% in the case of North East States *and special category* states) in each annual plan.

10. Funding pattern and financial process

10.1. *Funding pattern:* Guiding Principals:

a) First installment will be released to states on receipt and acceptance of proposal containing the brief concept state sanitation strategy as given in **Annexure IV**.
b) For House Hold Toilets, Funds in the first installment will be released as per number of beneficiary household identified, in the concept sanitation plan, at the rate of Rs. 2000/- Central assistance.
c) For Community Toilets and Solid Waste Management Projects, Adequate funds will be released on the proposal of the State Government for SWM and Community toilet projects. It will be ensured that funds do not remain parked with the state governments GoI share of grant / VGF may be drawn from this pool fund maintained at state level. This will be replenished on demand by states based on progress.
d) For IEC, Capacity Building and Administrative expenditure, appropriate percentages of (a) and (b) above shall be added to the first installment.
e) States will contribute a minimum of 25% funds towards all components to match 75% Central Share. This will be 10% in the case of North East and special category States.
f) Subsequent installments shall be released based on utilization certificates of previous grants, physical and financial progress and other indicators as approved and desired by the National Advisory & Review Committee (NARC).

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10.2. Clarification on Grant v/s VGF

10.2.1. Under Swachh Bharat Mission, projects under PPP mode are encouraged, to invite private capital in urban infrastructure as well as to bring in private sector efficiency in delivery of urban services and O & M. It is also understood that in the current scenario, there may be a requirement for viability gap funding. For solid waste management, revenue streams such as Compost from organic waste, recycled construction material from C & D waste, Power from waste to energy plants can be leveraged.

10.2.2. All ULB's must first explore possibility to take up the projects in a PPP mode for the above reasons. Government of India funds as per prescribed funding pattern will be available for claiming VGF.

10.2.3. State governments can also add or generate funds for ULB's as additional incentives over and above minimum 25% share required to make the projects viable.

10.2.4. Release of VGF grants will be as per contractual arrangement with the private partner and as approved by state government. However, it will be ensured that funds do not remain parked with the state governments.

10.2.5. Adequate funds will be released on acceptance of the proposal of the State Government for SWM and Community toilet projects. ULBs will initiate project preparation and bidding as per the guidelines for community toilets and SWM.

10.2.6. States will release the Central Government share of VGF adding their share in conformity with the contractual requirements of the project taken up on PPP mode.

10.2.7. In case state government feels that a project is not suitable to be taken under PPP methodology, it may then consider the GoI share (as per funding pattern) to be treated as Grant from GoI to the ULB. It will be up to the state government and ULB to arrange for the balance resources for the project, which must be ensured at the time of approving a project.

10.2.8. For PPP Projects, state governments to follow their own policy and rules. No project shall be referred to Government of India.

10.3. Allocation of funds to States / UTs

10.3.1. The mission will be implemented with the following classification of funding to states:

S. No.	Classification	Percentage Allocation (Central Govt. funding)	Total Amount for Mission Period Rs. Crore
i.	Project Fund based on Normative Criteria	60%	8773.80
ii.	Performance Fund based on Performance Matrix	20%	2924.60
iii.	Public Awareness & IEC Activities	15%*	2193.45
iv.	Capacity Building & A&OE	3%	438.69
v.	Research, Capacity Building & A&OE (M/o UD)	2%	292.46

*3% of which to be retained by M/o UD

10.3.2. The **Project Fund** specified in 10.3.1(i) above shall be allocated as follows:

i. The distribution of the Project fund will be as under: (Rs. in Crore.)

a.	Project Funds for States other than the North-East	80%	7019.04
b.	Project Funds to North-East States	10%	877.38
c.	Flexi Funds*	10%	877.38

*Flexi Funds in terms of the Department of Expenditure OM No. F.No.55(5)/PF.II/2011 dated 06.01.2014) will be available to states

ii. Where ever it is required for fund allocation to be divided among States / UTs it will be done by giving :

A) 50% weightage to the ratio of urban population in each State / UT to the total urban population, and

B) 50% weightage to the ratio of number of statutory towns in each State / UT to the total number of statutory towns.

Both ratios shall use Census 2011 data. Details of distribution of Project Fund across States / UTs are at ***Annexure III.***

10.3.3. The **Performance Grant** specified in 10.3.1(ii) above shall be kept with the SBM National Mission Directorate as Performance Grant and released as per the criteria mentioned below for rewarding performing states. The release of the performance grant shall be based on a Performance Matrix and Third Party Evaluation by the Independent Project Review & Monitoring Agency (IPRMA) on the following outcomes:

a. Elimination of open defecation
b. Conversion of insanitary latrines into pour-flush latrines
c. Eradication of manual scavenging
d. Prevention of pollution of water sources
e. Ensuring cleanliness and hygiene in public places
f. Awareness creation
g. Capacity building

The National Advisory & Review Committee (NARC) at the M/o UD may also design other relevant criteria for the release of these funds and shall take a final view regarding the release of this grant keeping in view the progress made and circumstances of each State. This will not be applicable in the first installment. No withholding of 20% shall be done while releasing the first installment to the states.

10.4. Disbursal of funds to States / UTs and ULBs

10.4.1. States / UTs will submit a proposal for release of grant to the Central Government based on projections and authenticated targets with a Concept Note on State Urban Sanitation strategy in the format given in **Annexure IV**. This shall be submitted online to the SBM National Mission Directorate.

10.4.2. On acceptance of the State Government's proposal by the ministry, first installment of funds shall be disbursed to States / UTs in the following manner:

i. 50% of the project fund shall be divided among states as per the formula mentioned at 10.3.2 (see also **Annexure III**).
ii. 12% of Project funds released above shall be released as IEC and the Public Awareness component and,

iii. 3% of the Project funds released above shall be released or the Capacity Building and A&OE funds.

iv. No withholding of 20% shall be done on account of performance grant, while releasing the first installment to the states.

10.4.3. Subsequent installments (including for Capacity Building & IEC, and the Public Awareness and A&OE) shall be released on

(i) Submission of the Utilization Certificate for 75% of the fund released as 1st installments and,

(ii) Satisfactory physical and financial progress as per NARC criteria.

The quantum of subsequent installments will be based on actual demands and projections of expenditure for admissible components as per funding pattern of SBM.

10.4.4. Release of central contribution towards Grants / VGF by States/UTs for projects shall be in a manner described in paragraph 10.1 and 10.2 above.

10.4.5. At the end of the 2nd and 3rd quarters of each Financial Year, the use of allocated funds by States / UTs under the mission shall be reviewed by NARC, and NARC may reallocated funds from non-performing states to performing states based on the potential to utilize funds in a given financial year.

10.4.6. State governments shall evolve a suitable mechanism to release funds along with state share to ULBs within 30 days of release of the central share by M/o UD. Interest at the rate specified by the M/o Finance from time-to-time shall be levied on the State for any delay in release of funds to ULBs beyond 30 days. This will be implemented by appropriate deductions from the state's next installment of fund release under the mission.

10.5. Sanction of projects (DPRs)

10.5.1. Projects will be sanctioned by state government (HPEC) or ULBs as prescribed in these guidelines. This is specified for each for each component of SBM in these guidelines.

10.5.2. Only new projects will be considered under the Mission and it will be ensured that there is no duplication. Projects will be considered as "new" if they are not projects already sanctioned and ongoing under state and central schemes and externally-aided programmes.

10.5.3. Wherever Detailed Project Reports (DPRs) are to be prepared for project sanction, fund release and monitoring, the cost of DPRs for the projects under the Mission shall be reimbursed subject to norms set-up by the NARC.

10.5.4. The State High Powered Committee (HPC) will authorize institutes of national repute for appraisal of DPRs for the technical and economic appraisal of DPRs for projects recommended by ULBs. The cost of DPR appraisal by these institutes shall be an admissible component under administrative costs, subject to norms as approved by MoUD.

11. Mission Management Structure Swachh Bharat Mission (SBM)

Urban will have a three-tier mission management structure as follows:

11.1 National Level

11.1.1. A **National Advisory and Review Committee (NARC)** headed by the Secretary, M/o UD, and comprising representatives of relevant line ministries will be notified by the M/o UD. NARC will meet as per the requirements, but will meet at least once in three months. The functions of NARC will be:

i. Overall monitoring and supervision of SBM (Urban)
ii. Advise the States / UTs to explore avenues for innovative resource mobilization of private financing and leveraging land for PPP in sanitation projects.
iii. Approve installments and release of installment of funds for states / UTs by Central Government under the mission.
iv. Develop and modify performance matrix and criteria for the release of performance grants to States / UTs as specified in paragraph 10.3.3.
v. Monitor outcomes and performance of projects sanctioned under SBM (Urban)
vi. NARC may delegate, as it considers appropriate, some of the functions within prescribed limits, to the National Mission Director (NMD) of the SBM National Mission Directorate to ensure speedy implementation of the mission
vii. Any other issue which may be referred to it by the Government

11.1.2. The **SBM National Mission Directorate** will be headed by a National Mission Director (NMD) who will not be below the rank of Joint Secretary to the Government of India.

i. The NMD will be the overall in-charge of all activities related to SBM (Urban). NMD will be supported by a suitable team of officers at the

National Mission Directorate and will be Member-Secretary of NARC for all matters.

ii. The Mission Directorate shall be supported by a dedicated Project Management Unit (PMU) with 10-12 experts and support staff mainly on an outsourced basis. The PMU shall cover 4 verticals – Programme management, IEC & Media, Information Technology, and Monitoring & Evaluation.

iii. The SBM National Mission Directorate will formulate a framework for support structure for the State Mission Directorates and issue appropriate guidelines / advisories to states from time-to-time.

11.2. State level

11.2.1. A **High Powered Committee (HPC)** under the chairpersonship of the State's Chief Secretary, and with members drawn from concerned departments (including a MoUD representative) shall be responsible for the management of SBM (Urban) at the State / UT level. The functions of the SLMRC will include:

i. Preparation, approval, and online publishing of the State Sanitation Strategy (SSS) for the respective state and City Sanitation Plan (CSP) for all cities covered under SBM (Urban), if not already done.

ii. Finalisation of the Concept Note on the Urban Sanitation Situation before submission to the SBM National Mission Directorate

iii. Empanel consultants of repute and experience for:
   a. Preparation of DPRs under SBM
   b. Conducting independent review and monitoring during execution of projects

iv. Empanel reputed Institutes like IITs, NIT's, State Technical Universities etc. for appraisal of DPRs.

v. Sanction projects relating to Solid Waste Management recommended by the ULBs.

vi. Plan for additional resource mobilization .

vii. Plan for fund flow in the short, medium and long term

viii. Recommend proposals for release of installments of funds for projects under the mission

ix. Monitor outcome and O&M arrangements of projects sanctioned and completed under the mission

x. Review the progress of Capacity Building, IEC, and Public Awareness activities under the mission and approve their annual action plan.

xi. Address violation of norms and conditions

xii. Ensure convergence of action for sanitation in the state and bring about inter-departmental coordination for this purpose as and when required.

xiii. Ensure timely audits of funds released and review the "Action Taken Reports" on various Audit reports of the mission and other similar reports

xiv. Review legal issues, if any

xv. Take up any other matter relevant for the efficient implementation of the mission, or matters referred to it by the SBM National Mission Directorate

11.2.2. The ***SBM State Mission Directorate*** will be located within the Urban Development Department (UDD) in the State / UT.

i. The SBM State Mission Directorate will be headed by a State Mission Director (SMD) of appropriate seniority. The SMD will also function as Member-Secretary to the State Level HPC.

ii. The SMD will create / notify a uniform structure across the state for the planning, designing, project preparation, appraisal, sanction and implementation of sanctioned projects under the mission at the ULB level. This shall be done keeping in mind the advisories issued by the National Mission Directorate from time-to-time.

iii. The Mission Directorate shall be supported by a dedicated Project Management Unit (PMU) on an outsourced basis.

11.3. ULB level

The SBM is envisaged as People's movement (Jana Andolan) for ensuring hygiene, waste management and sanitation across the country. It is therefore essential that in its implementation the ULBs elicit the active participation of the Ward Committees, Area Sabhas, Resident Welfare Associations, NGOs and Civil Society Groups.

12. Monitoring & Evaluation (M&E)

12.1. States / UTs will be required to send in Monthly Progress Reports (MPRs) / Quarterly Progress Reports (QPRs) in prescribed formats with regard to targets and achievements. Apart from these, the Mission Directorate may prescribe other reports that may be considered appropriate from time to time. Given the scale of the mission, a comprehensive and robust IT enabled MIS will be established for tracking of targets and achievements. States / UTs will be required to submit progress reports online once this MIS is operational.

12.2. Monitoring activities will include, but not be limited to, third party evaluation, impact evaluation studies, etc. The evaluation of the mission will be undertaken during the course of its implementation to effect mid-term correction and align the mission to achieve its objectives

12.3. A **District Level Review and Monitoring Committee (DLRMC)** will be constituted with a view to fulfill the objective of ensuring satisfactory monitoring of projects under the Chairpersonship of a Member of Parliament. Detailed guidelines for this purpose will be issued separately by the SBM National Mission Directorate.

13. Logo and Tag line

The Logo and Tagline for the SBM (Urban) is given in ***Annexure V***. This shall be displayed prominently on all projects and literature/publications under the mission.

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Annexure I: Targets and definitions under SBM (Urban)

(Definitions reproduced from "House & Household Series Tables, Census of India 2011)

Targets under SBM (Urban)

For the purpose of SBM (Urban), the following action will have to be taken:

S. No.	Objective	Action under SBM (Urban) (Targets)	Census 2011 definition
i.	Elimination of open defecation	• 80% urban households defecating in the open to be targeted for construction of household toilets	No latrine within premises – open
ii.		• 20% urban households defecating in the open to be targeted for construction of community toilets	No latrine within premises – open
iii.		• Construction of public toilets for floating population (presumed at 5% of total urban population)	Total urban population
iv.	Conversion of insanitary latrines into sanitary latrines	• 100% of urban households having insanitary latrines to be targeted for construction of household toilets	• Night soil disposed into open drain • Service latrine with night soil removed by humans • Service latrine with night soil serviced by animals
v.	Conversion of single pit latrines	• 60% of urban households having	• Pit latrines with slab • Pit latrines with

S. No.	Objective	Action under SBM (Urban) (Targets)	Census 2011 definition
		pit latrines	ventilated improved pit • Pit latrines without slab / open pit
vi.	Solid Waste management	80% of the urban population to be covered by SWM services (allowing for a 2% increase year on year)	• Total urban population

Definition of Types of latrines under Census 2011

As per the Census of India 2011, the following various types of latrine facilities were surveyed:

1. Flush / pour flush latrine connected to piped sewer system: If a pour flush latrine is connected to a system of sewer pipes that collect both human excreta and waste water and removed them from the household environment

2. Flush / pour flush latrine connected septic tank: If a pour flush latrine is connected to a septic tank that collects both human excreta and wastewater and removes them from the household environment

3. Flush / pour flush latrine connected other system: If the pour or pour-flush latrine is connected to any system other than a piped sewer system or septic tank e.g. excreta and waste water gets flushed into the street, yard / plot, drainage ditch or any other location

4. Pit latrines*: defecation into pits dug into the ground for reception of night soil directly without flushing.
    a. Pit latrine with slab: A pit latrine with a squatting slab or platform or set firmly supported on all sides, and raised above the surrounding ground level to prevent surface water from entering the pit, and easy to clean.
    b. Pit latrine with ventilated improved pit: Pit latrines with slabs that are ventilated by a pipe extending above the latrine roof and the open end of the vent pipe is covered with mesh or fly-proof net
    c. Pit latrine without slab / open pit: Pit latrines without a squatting slab or platform or seat

    *Census 2011 does not distinguish between single pit and twin pit latrines. However for SBM single pit latrines will be considered insanitary and shall be converted. Definition of twin pit latrine see Annexure II.

5. Night soil disposed into open drain: Where a latrine facility may exist, but the excreta and waste water is disposed directly into an open drain

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6. Service latrine: where human excreta is collected in a bucket, or other container, or even allowed to collect in the open
    a. With night soil removed by humans: where the human excreta is removed physically by human beings
    b. With night soil serviced by animals: where the human excreta is removed physically by animals

7. No latrine within premises – public latrine: Households have no latrines within the premises of the dwelling unit and use an available public latrine

8. No latrine within premises – open: Households have no latrine within the premises of the dwelling unit and defecate in the open in areas such as open fields, bushes, rivers, streams, railway tracks, etc.

9. Insanitary latrine means a latrine which requires human excreta to be cleaned or otherwise handled manually, either in situ or an open drain or pit into which the excreta is discharged or flushed out, before the excreta fully decomposes in such manner as may be prescribed.(Chapter I Section 2(i)(e) The Prohibition of employment as manual scavengers & their Rehabilitation Act,2013)

The Census of India 2011 defines **two broad kinds of urban areas** as follows:

i. **Statutory towns** are urban areas defined by administrative units that have been defined by 'statute' as urban such as municipal corporations, municipalities, cantonment boards, notified town area committees, town panchayats, or nagar palikas; and
ii. **Census Towns**: All administrative units satisfying the following criteria: (i) it should have a minimum population of 5,000 persons; (ii) at least 75% of the male main working population should have been engaged in non-agricultural pursuits; and (iii) it should have a density of population of at least 400 persons per km^2 (1,000 per $mile^2$)

Annexure II: Technical options for toilets under SBM (Urban)

This note explains the technical options for toilets that are recommended under the Swachh Bharat Mission (SBM) Urban.

On-Site Sanitation (OSS) vs. Underground Sewerage

Wherever a sewerage system is available within 30m from the proposed individual household, community or public toilets only the superstructure (i.e. toilets) may be constructed under SBM and connected to the existing sewerage system. No construction of treatment units such as twin pits, septic tank, bio-digester or bio- tank shall be allowed.

Features of OSS Systems

When sewage is collected, treated and/or disposed off at, or near the point of generation, without the use of an underground sewerage system, the system is called "on-site sanitation" (OSS) system. OSS systems are sanitation facilities provided for the use of individual households, community and the floating population. There are a number of situations when an underground sewerage system may not be feasible or desirable. For example, for smaller cities where construction of sewerage infrastructure may be expensive, or those cities that are in hilly areas or in undulating terrain where it may not be practical to construct a sewer network, or even in many cities that have grown organically and where not all households are connected to the existing sewerage network.

OSS systems consists of two main structures, the toilet (superstructure, including the pan and water closet) and the treatment unit. OSS retains waste in the vicinity of the toilet either in a pit, tank or vault. The treatment ranges from a basic sanitary facility such as twin-pit latrines, to a simple type of treatment system by combining a septic tank and a soak pit, or a bio-digester toilet (aerobic and anaerobic).

The following technological options for OSS are recommended under Swachh Bharat Mission (SBM) Urban for construction of Individual Household Latrines (IHL) / household toilets, group / shared latrines, and, community and public toilets

S. No.	OSS Option	Kind of Latrines				Application
		IHL	Shared Latrines	Community Toilets	Public Toilets	
1.	Twin-pit latrines / Leach Pits	✓				• In low- to medium-density areas, particularly peri-urban areas, where there is space to install pits and where the digested sludge can be applied to

S. No.	OSS Option	Kind of Latrines				Application
		IHL	Shared Latrines	Community Toilets	Public Toilets	
						local fields and/or gardens as a fertilizer and soil conditioner • Where water use is in the range 30–50 liters per capita per day depending upon the characteristics of the soil or groundwater level
2.	Septic Tank System with soak pit	✓	✓	✓	✓	• Septic tanks are widely used to provide partial treatment of wastewater from individual homes, household clusters or institutional buildings where there is no sewerage network. • For soak pits to function, soil conditions must be suitable for infiltration of effluent from septic tanks
3.	Bio-digester toilets (Anaerobic – developed by DRDO)	✓	✓	✓	✓	• Widely used to provide 80% treatment of wastewater from IHL, household clusters or institutional buildings where there is no sewerage network. • The effluent should be passed through a reed bed or soak pit before discharge. • For soak pits to function, soil conditions must be suitable for infiltration of effluent from septic tanks
4.	Aerobic BioTank	✓	✓	✓	✓	• Widely used to provide 100% treatment of

S. No.	OSS Option	Kind of Latrines				Application
		IHL	Shared Latrines	Community Toilets	Public Toilets	
						wastewater from IHL, clusters of houses or institutional building where there is no sewerage networks. The effluent can be directly discharged since it is completely safe; • Chlorination is followed after treatment

Technical features and specification for toilets under SBM (Urban)

The details of technical features and specifications for toilets are given as under. The costs are simply estimates at this point of time and should be verified at the time of selection and installation of the technology.

I. Twin-Pit Latrine

Description	It consists of superstructure (Toilet) and treatment units (two chambers). The two underground chambers (pits) are provided to hold fecal sludge. These are normally offset from the toilet and should be at least 1 meter apart. A single pipe leads from the toilet to a small diversion chamber, from which separate pipes lead to the two underground chambers. The pits should be lined with open-jointed brickwork. Each pit should be designed to hold at least 12 months accumulation of fecal sludge. Wastewater is discharged to one chamber until it is full of fecal sludge. Discharge is then switched to the second chamber. Just before the second chamber is full of fecal sludge, the contents of the first pit are dug out. During the time of storage, digestion should ensure that it is odorless and free of pathogens.
O&M Requirements	The pits must be used alternately and the diversion chamber must be accessible so that flow can be diverted between chambers. Wastewater should never be diverted back to the first chamber before digested sludge has been removed from it. Responsibility for O&M of the twin-pit latrine rests primarily with the householder, who needs to ensure that the pits are used in the correct sequence and are emptied at the appropriate time.

<table>
<tr><td></td><td>However, ULB utility or private contractors are required for emptying and to ensure safe disposal of septage at a treatment plant.</td></tr>
<tr><td>Additional Infrastructure / treatment requirements</td><td>If digested material cannot be used in local fields and gardens, provision will have to be made for transportation to areas outside the city for reuse on agricultural land.</td></tr>
<tr><td>Limitations</td><td>• Households may not understand the system and as a result may not use the pits alternately, or may omit to rest the filled pit at least for one year so that the contents degrade and become harmless.
• Explanation of the operation and maintenance requirements is therefore essential at the time of installation.
• Water may percolate through the soil surrounding the pit and pollute groundwater, which is a potential problem if water is used for drinking.</td></tr>
<tr><td>Specifications</td><td>(a) Size options for Toilet/ Super Structure (as shown in Fig.1):
a. 750 mm x 900 mm x 1900mm; or
b. 800 mm x 1000 mm x 1900 mm
(b) Material – Brick work (as per Fig. 1) / FRP/ Pre-cast Cylindrical Unit
(c) Minimum Land Requirement – 40 Sq. ft. - 60 Sq. ft. (depending upon the location of superstructure and distance between two pits)
(d) Size of Pits is shown in Table -1 below
<table>
<tr><td></td><td colspan="2">5 users*</td><td colspan="2">10 users**</td><td colspan="2">15 users***</td></tr>
<tr><td></td><td>Dia</td><td>Depth (A)</td><td>Dia</td><td>Depth (A)</td><td>Dia</td><td>Depth (A)</td></tr>
<tr><td>Pit size</td><td>900</td><td>1000</td><td>1100</td><td>1300</td><td>1300</td><td>1400</td></tr>
</table>
*- only for IHL
**- Group household toilets
The specification for pits given at Fig 2 may be referred to.</td></tr>
<tr><td>Cost (for 5 users)</td><td>Tentative cost varies from Rs. 15,000/- to Rs. 20,000/- depending upon the construction material.</td></tr>
</table>

DESIGN OF PITS UNDER DIFFERENT CONDITIONS	
Normal conditions	A typical pour flush latrine with circular pits for normal conditions is shown in **Figure 2**. In rocky strata with a soil layer in between, the leach pits can be designed on the same principle as those for low subsoil water level and taking the long-term infiltrative capacity as 20 l/m2/d. However, in rocks with fissures, chalk formations, or old root channels, pollution can flow for very long distances; hence these conditions demand careful investigation and adoption of adequate pollution safeguards. Pits in

	black cotton soil should be designed taking infiltrative rate of 10 l/m^2/d. A vertical fill (envelope) of 300 mm in width with sand, gravel or ballast of small sizes should be provided all round the pit outside the pit lining in rocky strata with fissures and in black cotton soil.
In water-logged areas	The pit top should be raised by 300 mm above the likely level of water above ground level at the time of water logging. Earth should then be filled well compacted all-round the pits up to 1.0 m distance from the pit and up to its top. The raising of the pit will necessitate the raising of latrine floor also. A typical pour flush latrine in water-logged areas is shown in **Figure 3**.
In high subsoil water level	Where the subsoil water level rises to less than 300 mm below ground level, the top of the pits should be raised by 300 mm above the likely subsoil water level and earth should be filled all round the pits and latrine floor raised as stated above. A typical pour flush latrine with leach pits in high subsoil water level is shown in Figure 4.
Where space is a constraint	Where circular pits of standard sizes cannot be constructed due to space constraints, deeper pit with small diameter (not less than 750 mm), or combined oval, square or rectangular pits divided into two equal compartments by a partition wall may be provided. In case of combined pits and the partition wall should not have holes. The partition wall should go 225 mm deeper than the pit lining and plastered on both sides with cement mortar. A typical pour flush latrine with combined pits is shown in Figure 5.

II. Septic Tank

Description	A septic tank is a buried chamber that collects, stores and treats the wastewater under anaerobic conditions. Effluent from septic tanks should be discharged into a soak pit. A well-managed septic tank will remove about 50 to 60 % of the biological load in the wastewater
Mode of operation	Solids settle in the tank and digest anaerobically. This reduces sludge volume and enables wastewater to infiltrate into the ground without clogging the leaching system. Sludge settles in the tank and digests anaerobically over time, releasing methane and other gases.
O&M Requirements	Septage must be removed from septic tanks at least once every 2 or 3 years and transported off-site for treatment prior to disposal. Municipal utility or private contractors are required for desludging of septic tanks and to ensure safe disposal of septage at a treatment plant. However the responsibility for O&M of the septic tank itself lies with the owner of the property
Limitations	• Cost and space requirements for the soak pit. • Though septic tanks are designed for receiving black water, they often receive both black and grey water. As a result, the retention time in the septic tank is insufficient and the soak pit becomes hydraulically overloaded. This means that the septic tanks need to be de-sludged regularly
Specifications	(a) **Size options for toilet / super structure as shown in Fig. 1** • 750 mm x 900 mm x 1900mm or • 800 mm x 1000 mm x 1900 mm (b) **Material** – Brick work (as per Fig. 1) / FRP / Pre-cast Cylindrical Unit (c) **Minimum Land requirement** - 40 Sq. ft. to 50 Sq. ft. (depending upon the location of superstructure) (d) **Soak-pit size** - The seepage pit may be of any suitable shape with the least cross-sectional dimension of 0.90 m and not less than 1 m in depth below the invert level of the inlet pipe. The construction shall be of perforated brickwork

(e) **Recommended sizes of septic tanks** for households (up to 20 users – group / shared toilets) is given in Table 2 below:

No. of users	Length (m)	Breadth (m)	Liquid depth (m) (Cleaning interval of)	
			2 years	3 years
5*	1.5	0.75	1.0	1.05
10**	2.0	0.90	1.0	1.4
15**	2.0	0.90	1.3	2.00
20**	2.3	1.10	1.3	1.80

**- only for IHL*

***- Group household toilets*

Note 1: The capacities are recommended on the assumption that discharge from only WC will be treated in the septic tank

Note 2: A provision of 300 mm should be made for free broad.

Note 3: The sizes of septic tank are based on certain assumption on peak discharges, as estimated in IS: 2470 (part 1) and while choosing the size of septic tank exact calculations shall be made.

Cost (for 5 users)	• Tentative cost varies from Rs. 25,000/- to Rs. 30,000/- depending upon the construction material (toilet and septic tank). • Pre fabricated septic tanks are available at lower cost in the market, which also may be explored to speed up the implementation.

III. Biodigester Toilet (Developed by DRDO)

Description	A bio-digester toilet is an anaerobic multi-compartment tank with inoculum (anaerobic bacteria) which digests organic material biologically. The details of bio-digester toilets are shown in **Figure 7**. This system converts faecal waste into usable water and gases in an eco-friendly manner. It can be connected to the toilet or a series of toilets. The toilet can be a superstructure fixed on the bio-digester or a separate unit. Bio-digester has an inlet, an outlet and a gas pipe. The tank has two components, namely, anaerobic microbial inoculum (seed bacteria) and specially designed fermentation tank. The tank can be made out of Stainless steel, Mild steel, FRP or concrete. Semi-treated water from bio-digester tank is needed to be further disposed into a soak pit or a reed bed arrangement for its treatment to acceptable levels of discharge.
Advantages	• As there is no sludge formation, there is no need for de-sludging and treatment. It is therefore more economical in the long-term as it conserves water and has minimum O&M • Night soil degradation, occurs through microbial reaction which converts it into bio gas and odorless water. • Technology is environmental friendly, maintenance free and efficient without depending on conventional energy sources. • Permits use of toilet cleansing agents. • Suitable for mobile and stationary platforms. • Lifelong usage bio-digester tank does not need recharging, re-shifting or maintenance. • Costs lesser than the conventional toilets. • Easy to transport and install.

<table>
<tr><td></td><td>• One-third to one-fourth capacity of septic tank
• Space requirement is less.</td></tr>
<tr><td>Limitations</td><td>•</td></tr>
<tr><td>Specifications</td><td>
Toilet Superstructure
(a) Size of Toilet / super structure – as shown in Fig. 1
• 750 mm x 900 mm x 1900mm or
• 800 mm x 1000 mm x 1900 mm
(b) Material – Brick work (as per Fig. 1) / FRP/ Pre cast Cylindrical Unit

Bio tank
(a) Land requirement – 25 sq. ft.
(b) Tank internal dimensions – 1336 mm x1036 mm x 900 mm
(c) Diagonal partition wall of 8mm thickness (adequately stiffened by ribs)
(d) Tank is buried 600mm deep and anchored by 300mm long stainless steel (SS316) anchor bolts at corners
(e) FRP tanks of 8mm thickness
(f) Provision of water sealed outlet from the tank
(g) For 5-6 users:
a. Total capacity: 700 litres (1000 mmX700 mm and 1000 mm depth). Where space is a constraint the depth of the tank can be increased to 1.5 m
b. Volume of anaerobic Compartment (30% of total capacity): 210 litres
c. Tank may be constructed with masonry also.

Table 3 - Volume of bio-digester tank for various user groups:
<table>
<tr><th>No. of users</th><th>Size of bio-digester / bio-toilet</th><th>Remarks</th></tr>
<tr><td>4-8 (Single family)</td><td>0.7m^3 (FRP / RCC material)</td><td>Individual</td></tr>
<tr><td>8-15 (two families)</td><td>1.2 m^3 (FRP / RCC material)</td><td>Group / shared</td></tr>
<tr><td>30-50</td><td>3.2 m^3 (FRP / RCC material)</td><td rowspan="4">Community</td></tr>
<tr><td>100-120</td><td>6.0 m^3 (FRP / RCC material)</td></tr>
<tr><td>200-220</td><td>12.0 m^3 (FRP / RCC material)</td></tr>
<tr><td>500-600</td><td>30.0 m^3 (FRP / RCC material)</td></tr>
</table>
</td></tr>
<tr><td>Cost Estimates</td><td>
• Toilet cost between Rs. 12,000 and Rs. 15,000 depending on material of construction;
• Bio-digester tank as per Table 4 below:
<table>
<tr><th>Bio-digester tank -></th><th colspan="3">Material of construction</th></tr>
<tr><th>No. of users / Capacity</th><th>Masonry</th><th>Precast Cylindrical Unit</th><th>Fiber reinforced plastic</th></tr>
<tr><td>5 to 7 users (700 Litre)</td><td>17,100</td><td>11,600</td><td>22,000</td></tr>
<tr><td>10 to 12 users (1000 Litre)*</td><td>19,000</td><td>13,600</td><td>24,000</td></tr>
</table>
*Group / Shared toilets
</td></tr>
</table>

IV. Bio Tank / Bio Toilets (Patented by private operators and approved by the Department of Science and Technology)

Description	This technology differs from that of the bio-digester toilets developed by DRDO since the process adopted is aerobic - which involves a different multi-strain of bacteria which breaks down the waste matter through oxidization. Bio-toilets consist of a purpose built multi-

	chambered bio-tank in which the waste is stored as shown in **Figure 8**. The movement of the waste is slowed down as the waste flows from one chamber to another by a special process in the Bio-tank such that the multi-strain bio-media present in the tank can digest the waste and convert it fully into non-toxic neutral water. This water then passes through the last chamber for disinfection. Here water is treated with Chlorine where the majority of the germs are killed. The resultant water is free from all sorts of E-coli and fecal coliforms. The bricks and mortar Bio-tank is described in the last diagramme of Figure 8.The superstructure is made of bricks and mortar. These are available in both flush and non-flush models.
Advantages	• Aerobic bacteria are very efficient in breaking down organic waste and the waste is decomposed into water by the bacteria within 24 hours. The end products of aerobic degradation are carbon dioxide (CO_2) and water (H_2O). • The aerobic pathway also releases a substantial amount of energy. • The Bio-toilet is available in both, portable as well as fixed models. The advantage of the portable model is that it can be shifted from one location to another as and when required, and the module can be assembled and disassembled easily. • The Bio-toilet eliminates the need for any periodic sludge removal.
Limitations	• The bacteria functions best in temperatures between 4 and 55 degrees centigrade • Bio-toilets need proper bacteria inoculation periodically depending on the usage at particular sites. An in-depth understanding of the operation and use of toilets in a given area must be undertaken BEFORE choosing bio-toilets as a solution. Attention must be given to O&M, especially in dense urban settlements where chances of blockage of bio-toilets increase, making it dysfunctional over a period of time if the inoculation is not done in time. • Phenyl/ Harpic or any strong detergent/acid and bleaching powder should not be used to clean the pan. Only herbal / ayurvedic cleaning agents should be used. • Chlorine dose is necessary for disinfection.
O&M	Responsibility of cleaning the toilet / superstructure is with the owner of the household in the case of IHLs / shared latrines and with the ULB in the case of community / public toilets.
Specifications	(a) **Size of Toilet/ Super Structure as shown in Fig. 1 –** • 750 mm x 900 mm x 1900mm or • 800 mm x 1000 mm x 1900 mm

	(b) **Material** – Bricks and Mortar walls of Bio Digester tank and Superstructure, PCC tank floor, RCC toilet floor, PVC Door and Frame, RCC/PVC/GI sheet Toilet Roof. (c) **The Bio-toilet system consists of:** • Bio digester Tank(Bricks & Mortar/FRP/Steel), • Superstructure(Bricks & Mortar/FRP) • Indian Pan/WC • Size: 4 feet x 4 feet tank base, 4 feet tank height, 6 feet superstructure height. • Maximum usage recommended: 30 defecations/ day/ bio-toilet (no limit on urination) (d) **Land requirement** - 16 Sq. ft.
Cost Estimates	The tentative cost of bio-toilet including super structure is approximately Rs.20,000/– depending upon material of construction. The bio-toilets should be supplied by the manufacturers, and the O&M for at least 5 years (including the feeding of inoculum in the periodicity needed) along with IEC (to train users for O&M) by the manufacturer / supplier also should be built into the undertaking.

Norms & Specifications for Community and Public Toilets

Description	A ***community toilet block*** is a shared facility provided for a group of residents or an entire settlement. Community toilet blocks are used primarily in low-income informal settlements where space and/or land are constraints. Pour flush option is generally used in this kind of OSS systems. It is also advisable to provide facilities like washing, bathing, and a small incinerator in this block for the use of the community ***Public toilets*** are provided for the floating population / general public in places such as markets, train stations or other public areas, where there is a considerable number of people passing by.
Septic tanks for public / community toilets	Recommended sizes of septic tanks for community/ public toilets (up to 300 users) is given below in **Table 5.**

No. of users	Length (m)	Breadth (m)	Liquid depth (cleaning interval of)	
			2 years	3 years
50	5.0	2.00	1.0	1.24
100	7.5	2.65	1.0	1.24
150	10.0	3.00	1.0	1.24
200	12.0	3.30	1.0	1.24
300	15.0	4.00	1.0	1.24

<table>
<tr><td></td><td>Source: Manual on Sewerage and Sewage Treatment Systems, 2013 Part A Engineering
Note 1: A provision of 300 mm should be made for free board.
Note 2: The sizes of septic tanks are based on certain assumptions on peak discharges, as estimated in IS: 2470 (Part 1) and while choosing the size of septic tank exact calculations shall be made.
Note 3: For population over 100, the tank may be divided into independent parallel chambers of maintenance and cleaning</td></tr>
<tr><td>Community Toilet - Norms for toilet seats</td><td>• One seat for 35 men;
• One seat for 25 women
• Adequate bathing facilities</td></tr>
<tr><td>Public Toilets - Norms for toilet seats</td><td>Norms for toilet sets for public toilets are given in Table 6 below:
<table>
<tr><th>S. No.</th><th>Sanitary Unit</th><th>For Male</th><th>For Female (A)</th></tr>
<tr><td>i.</td><td>Water Closet</td><td>One per 100 persons up to 400 persons; For over 400 persons, add at the rate of one per 250 persons or part thereof</td><td>Two for 100 persons up to 200 persons; over 200 persons, add at the rate of one per 100 persons or part thereof</td></tr>
<tr><td>ii.</td><td>Ablution Taps</td><td>One in each W.C.</td><td>One in each W. C.</td></tr>
<tr><td>iii.</td><td>Urinals</td><td>One for 50 persons or part thereof</td><td>Nil</td></tr>
<tr><td>iv.</td><td>Wash basins</td><td>One per W. C. and urinal provided</td><td>One per W. C. provided</td></tr>
</table>
Source: Manual on Sewerage and Sewage Treatment Systems, 2013 Part A Engineering
Note:
i) It may be assumed that two-thirds of the number are males and one-third females
ii) One water tap with drainage arrangements shall be provided for every 50 persons or part thereof in the vicinity of water closet and urinals.
* At least 50% of female WCs may be Indian pan and 50% EWC
iii) Separate seat may also be provided for trans-genders
iv) Special arrangements may be made for physically challenged.</td></tr>
<tr><td>Treatment units</td><td>1. Bio Digester with reed bed systems/ soak pits
2. Bio Tank
3. Septic Tank with Soak Pits</td></tr>
<tr><td>Cost</td><td>Tentative basic cost for community toilets is Rs. 65,000/- per seat and public toilets is Rs. 75,000/- per seat. However, the cost per seat would vary depending upon the construction material, quality of construction, type of treatment technology adopted and O&M for specified period etc. However the cost of toilet in bio-digester given by NBCC are as under.</td></tr>
</table>

	Superstructure 5 Cubicle for 200 users		
	Pre Painted galvanized Sheets	Masonry	Cement Board
	Rs. 1,63,000.00/-	Rs.95,000.00/-	Rs. 80,000.00/-
	Superstructure 10 Cubicle for 400 users		
	Pre Painted galvanized Sheets	Masonry	Cement Board
	Rs.3,26,000.00/-	Rs. 1,80,000.00/-	Rs. 1,60,000.00/-
	Bio Digester Tank 10 KLD for every 200 users		
	Masonry		
	Rs. 1,74,000.00/- per 200 user		
Additional Infrastructure	It must be ensured that adequate water supply arrangement shall be made for proper functioning and upkeep of toilets. Wherever possible, ULBs should ensure that public and community toilets are outfitted with solar panels for the generation of electricity to ensure uninterrupted power supply and bring down O&M costs.		
Implementation Mode	All toilets shall be constructed through PPP mode with inbuilt provision of O&M for at least a period of 5 years.		

For additional details the guidelines developed by NBCC can be downloaded. (www.nbccindia.gov.in)

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Figures

Figure 1: Detailed layout of toilet

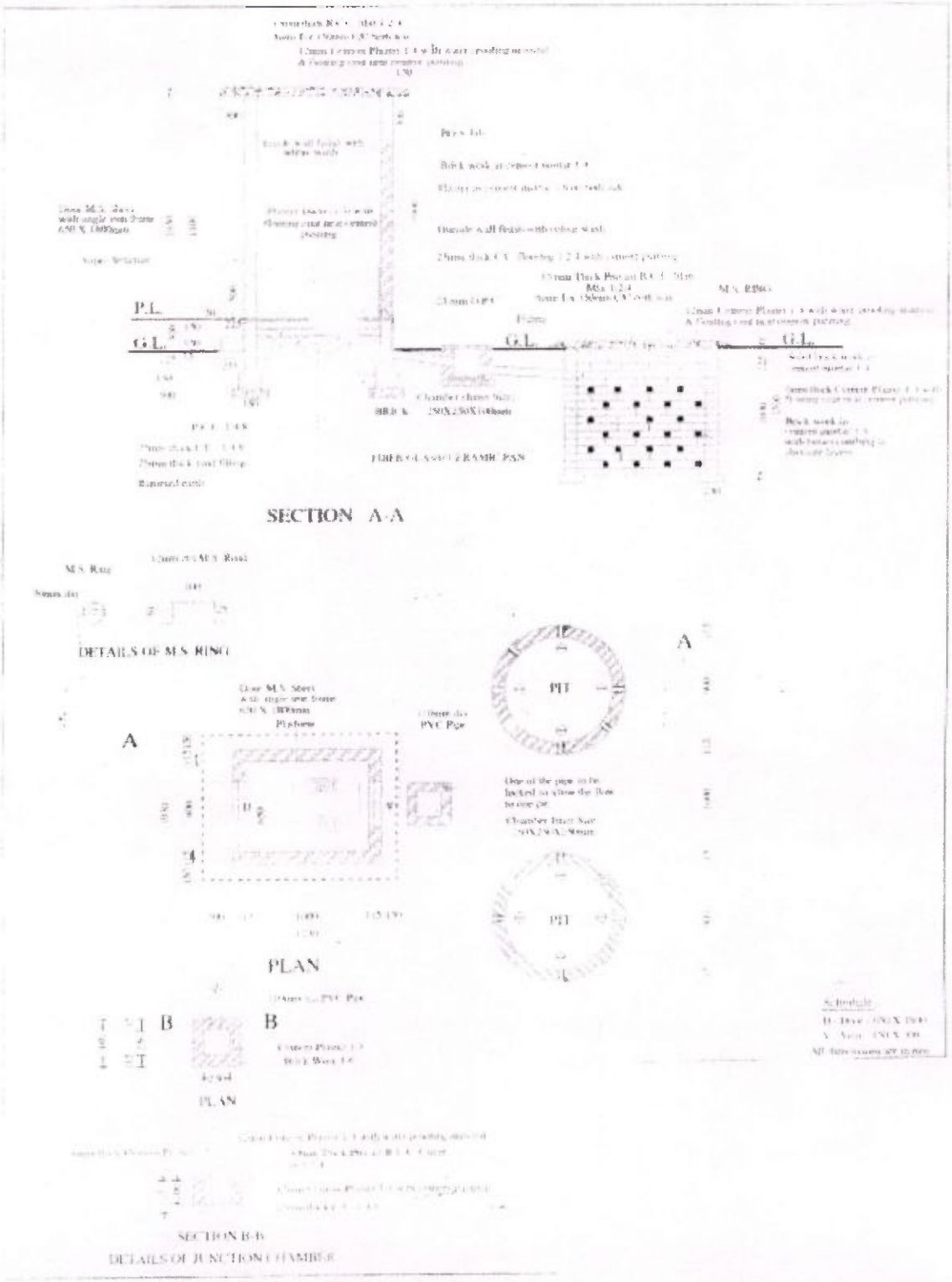
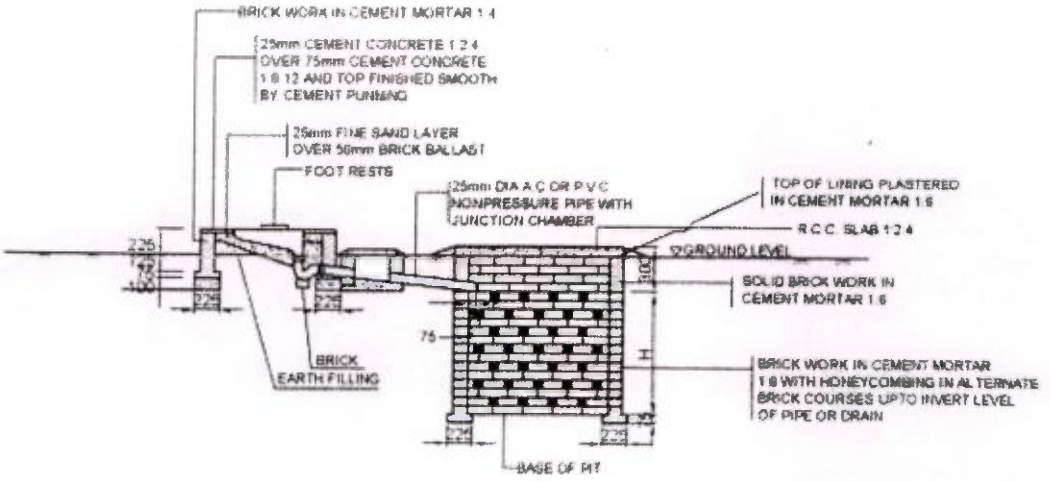
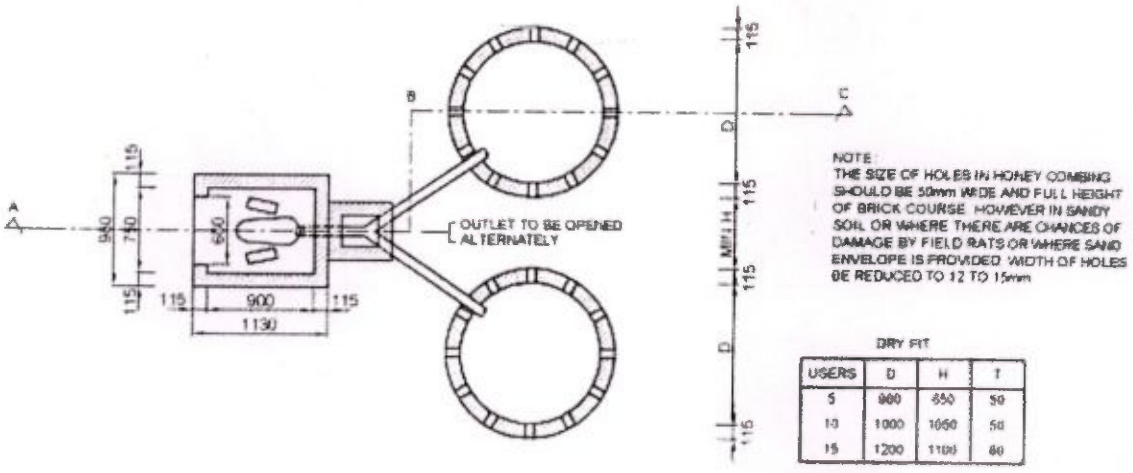


Figure 2: Pour-flush latrine with circular pits

(Source: Manual on Sewerage and Sewage Treatment Systems, 2013, Part A: Engineering)



SECTION A B C



DRY PIT

USERS	D	H	T
5	900	650	50
10	1000	1050	50
15	1200	1100	80

PLAN

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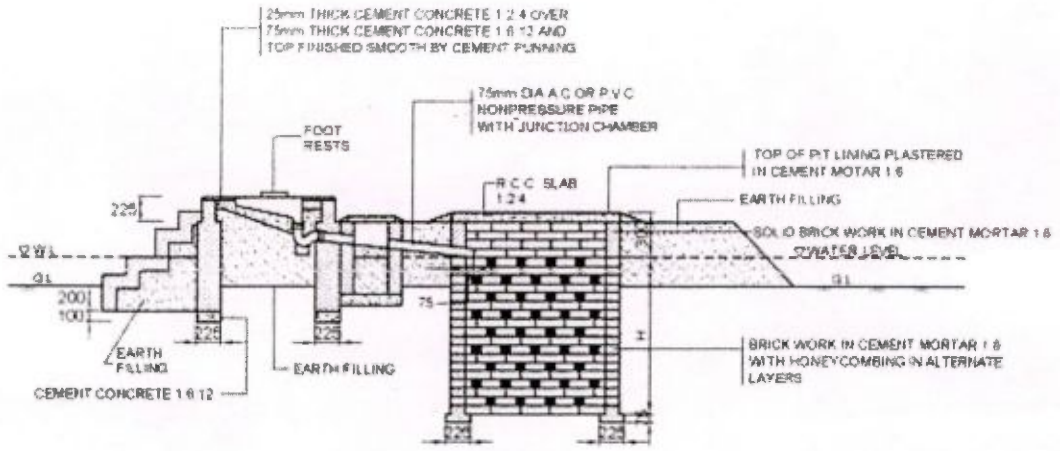
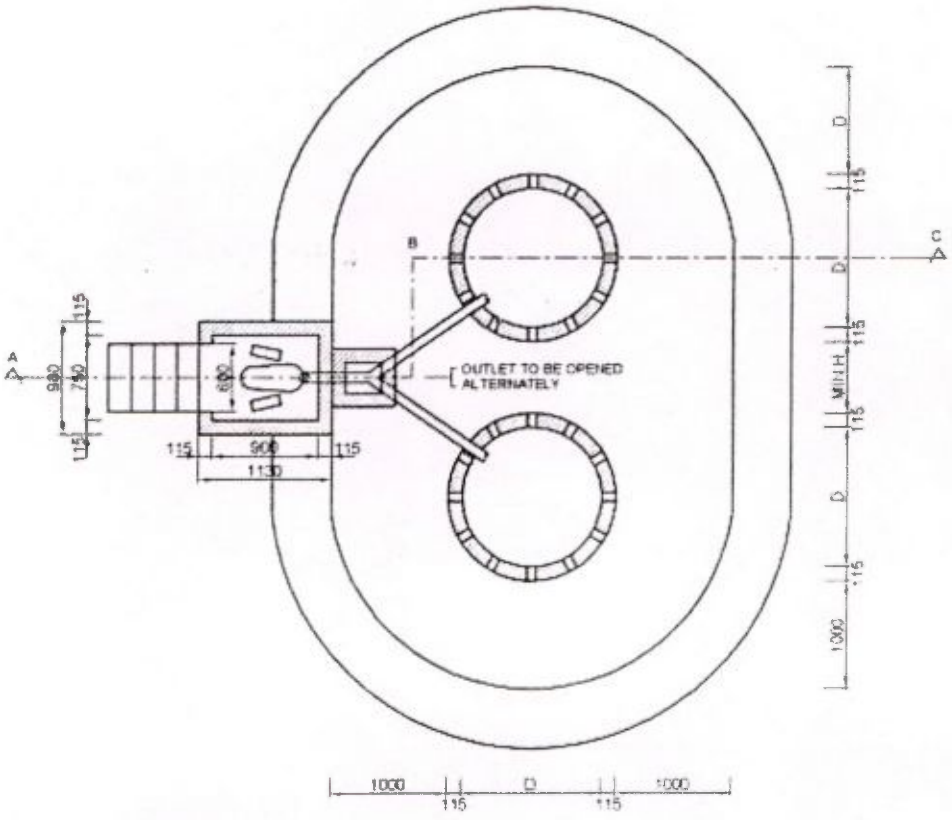
Figure 3: Pour-flush latrine in water-logged areas

(Source: Manual on Sewerage and Sewage Treatment Systems, 2013, Part A: Engineering)



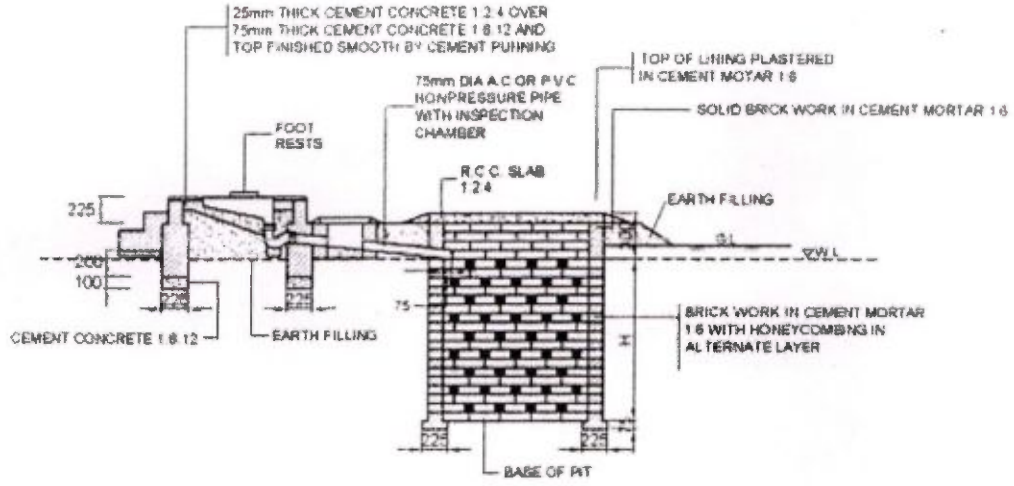
SECTION A B C



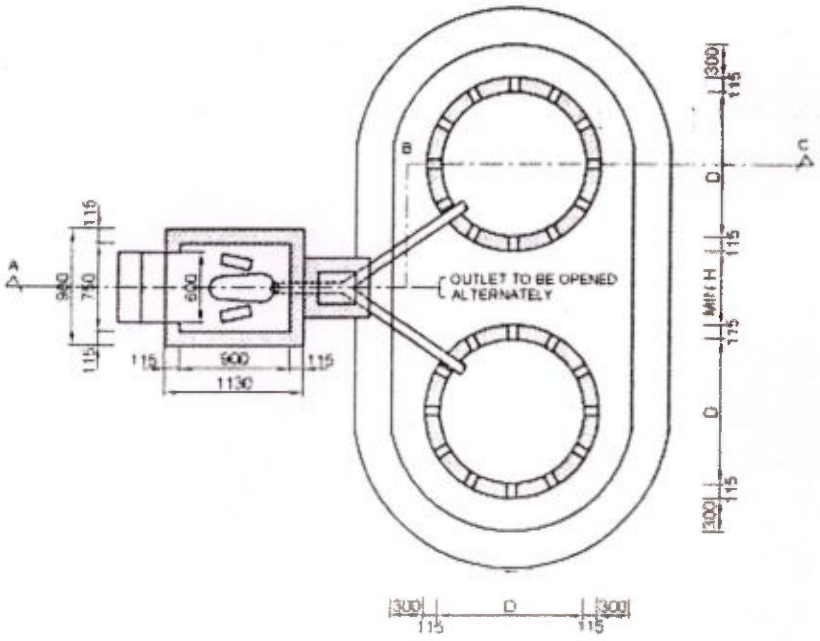
PLAN

Figure 4: Leach pits in high subsoil water level

(Source: Manual on Sewerage and Sewage Treatment Systems, 2013, Part A: Engineering)



SECTION A B C



PLAN

Figure 5: Pour-flush latrine with combined pits

(Source: Manual on Sewerage and Sewage Treatment Systems, 2013, Part A: Engineering)

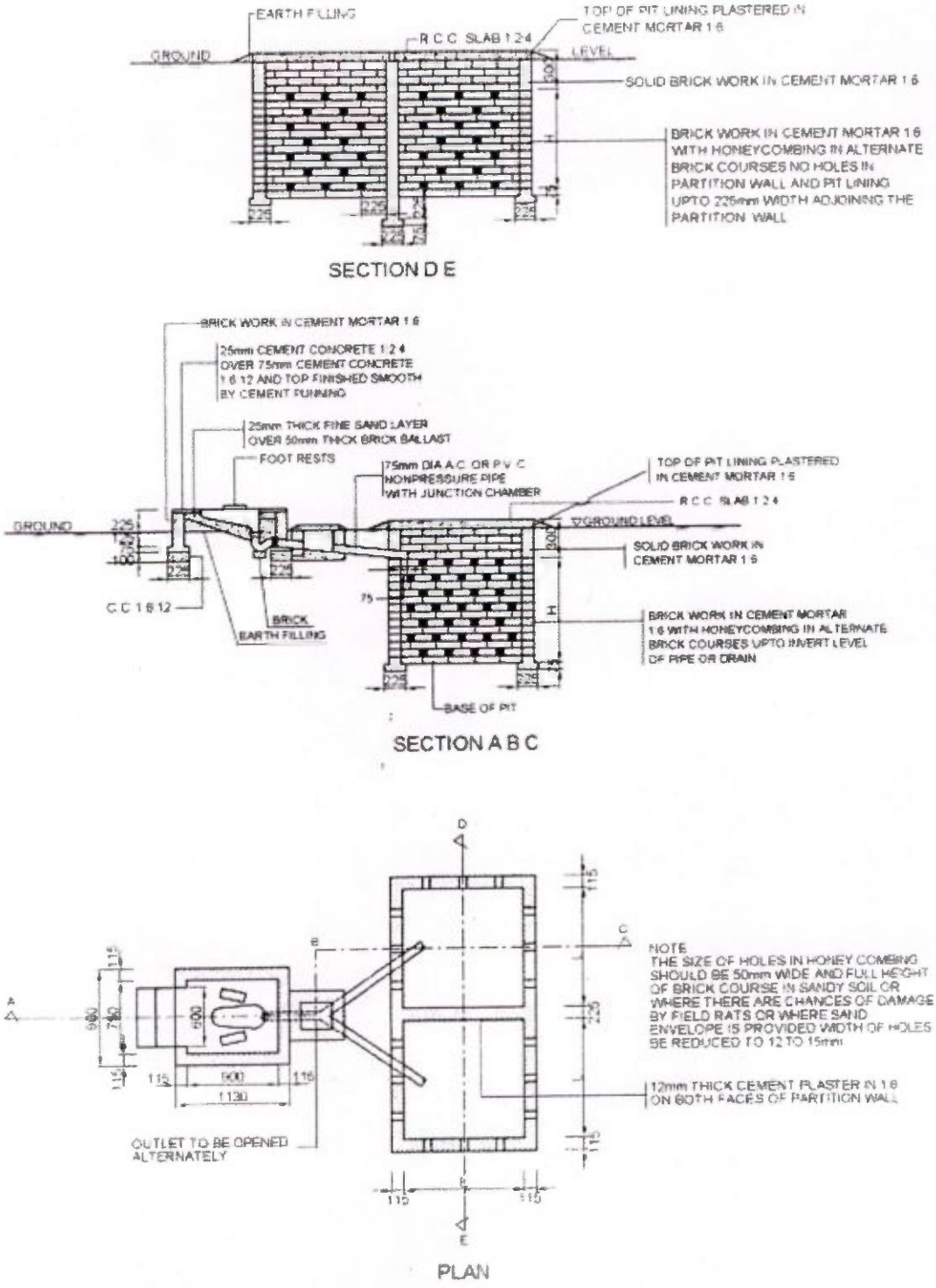
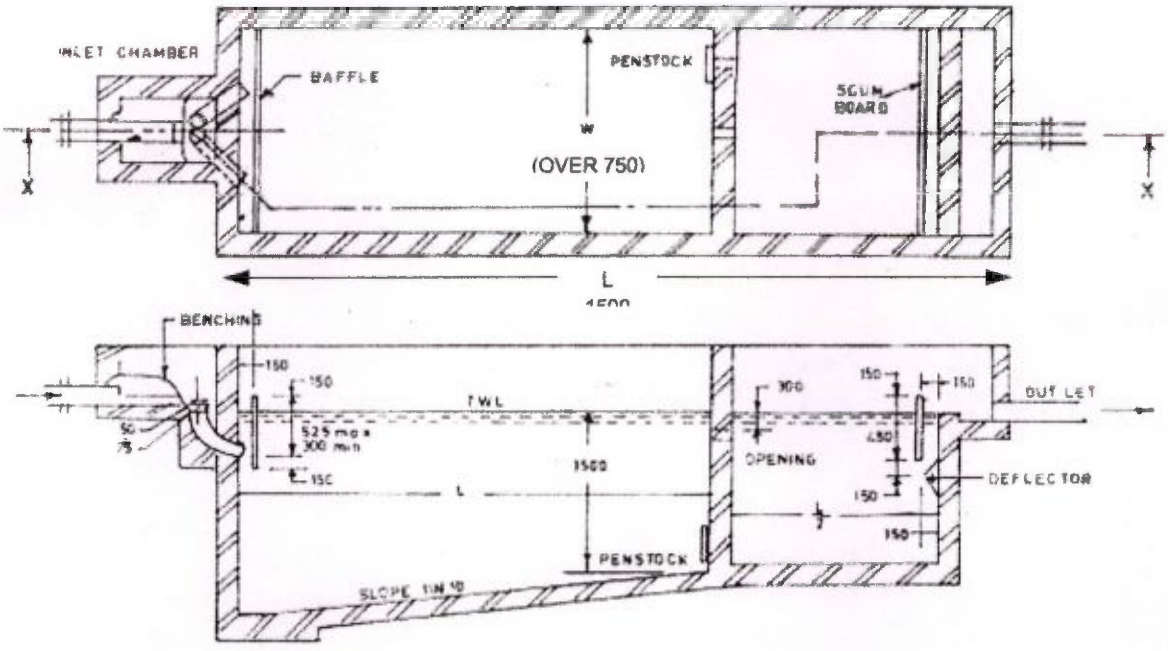


Figure 6: Typical sketch of two-compartment septic tank for 5 users

(Source: Manual on Sewerage and Sewage Treatment Systems, 2013, Part A: Engineering)

(Dimensions in mm)



30

Figure 7: Details of bio-digester with reed bed

(Source: DRDO)

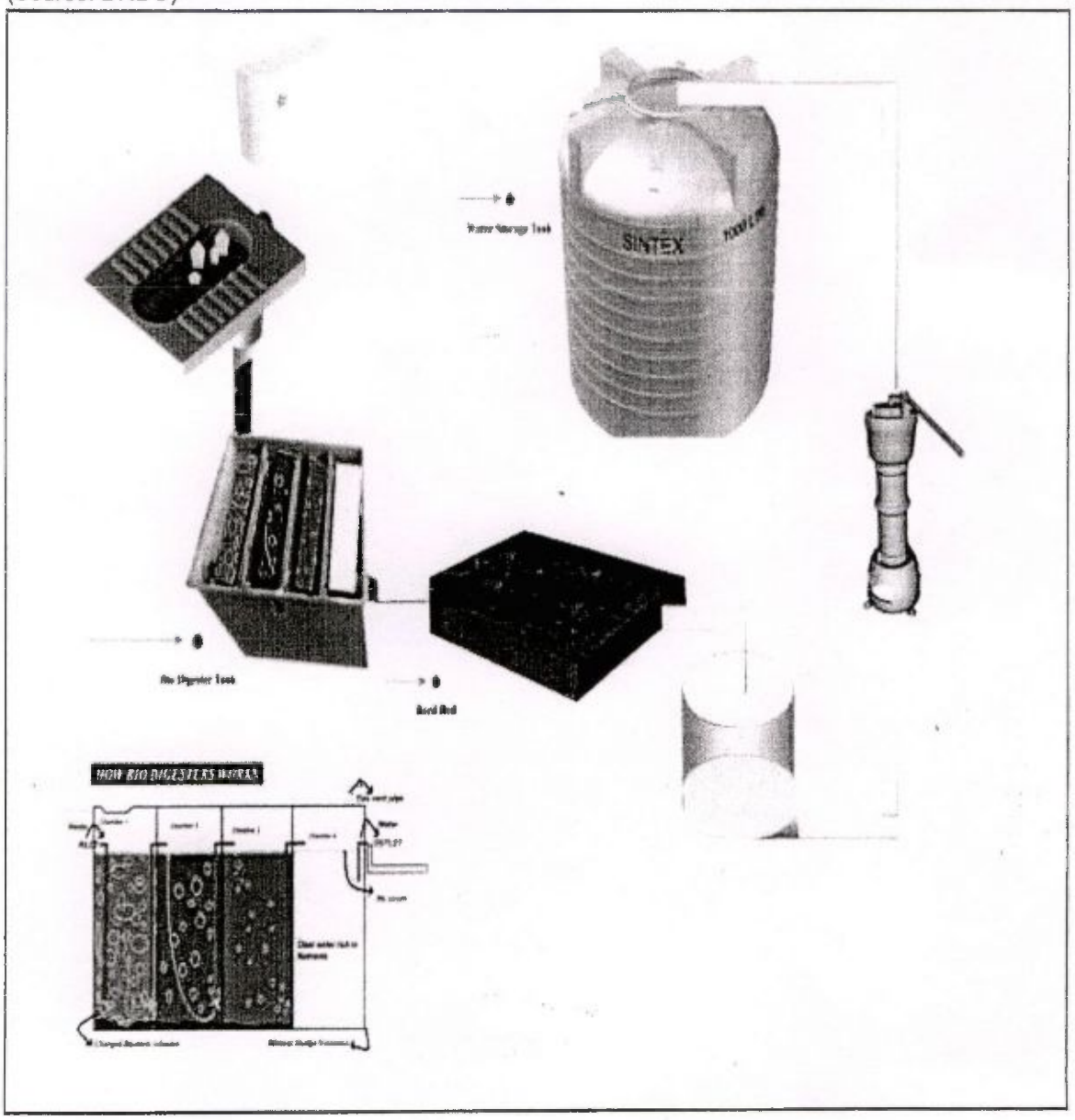
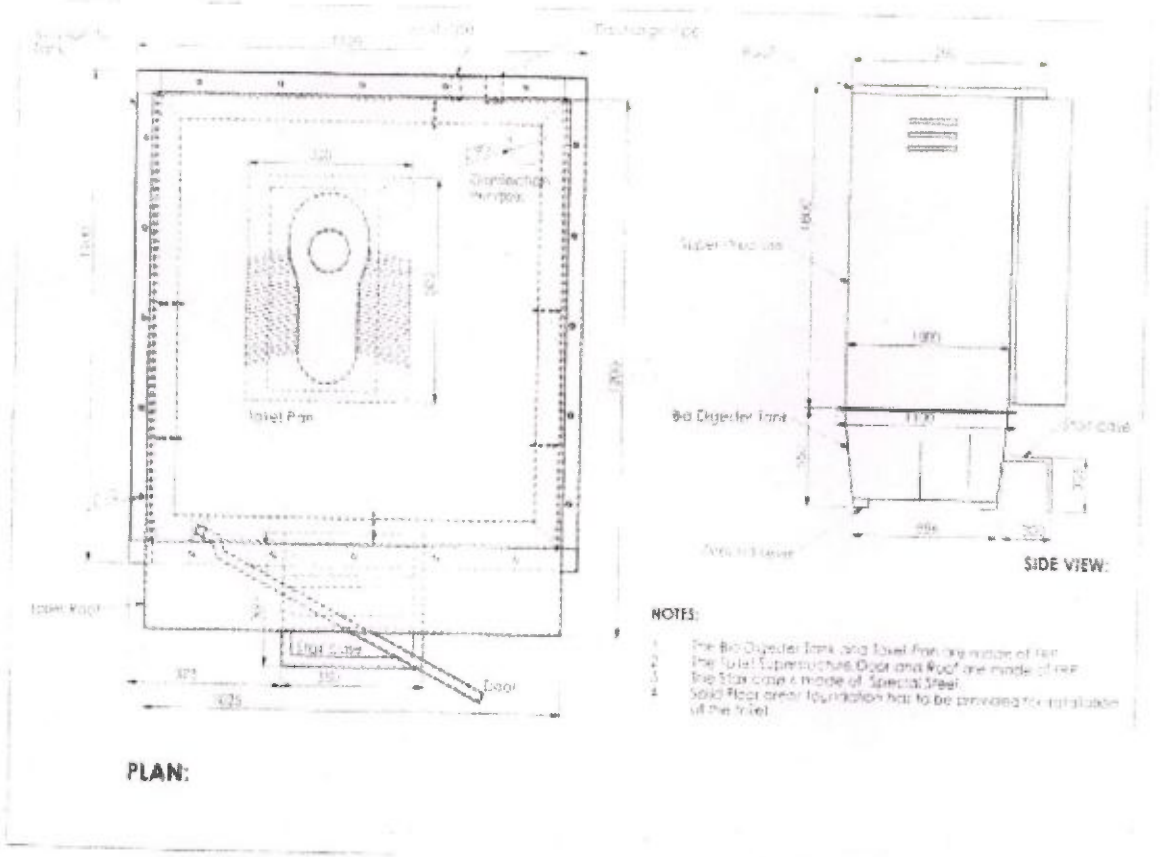
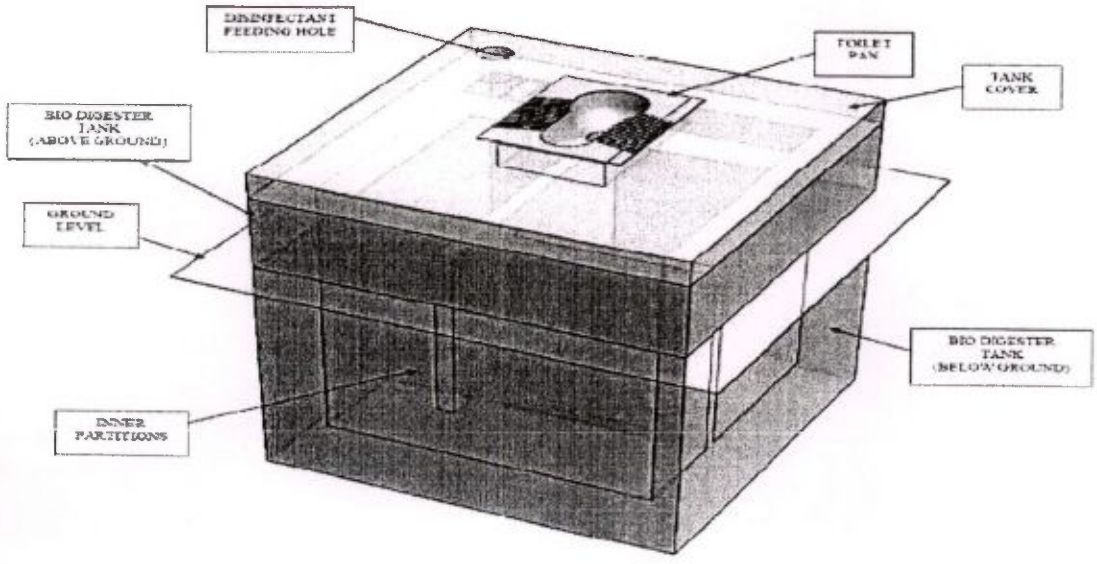


Figure 8: Details of Bio-Toilet
(Source: Private Agency)





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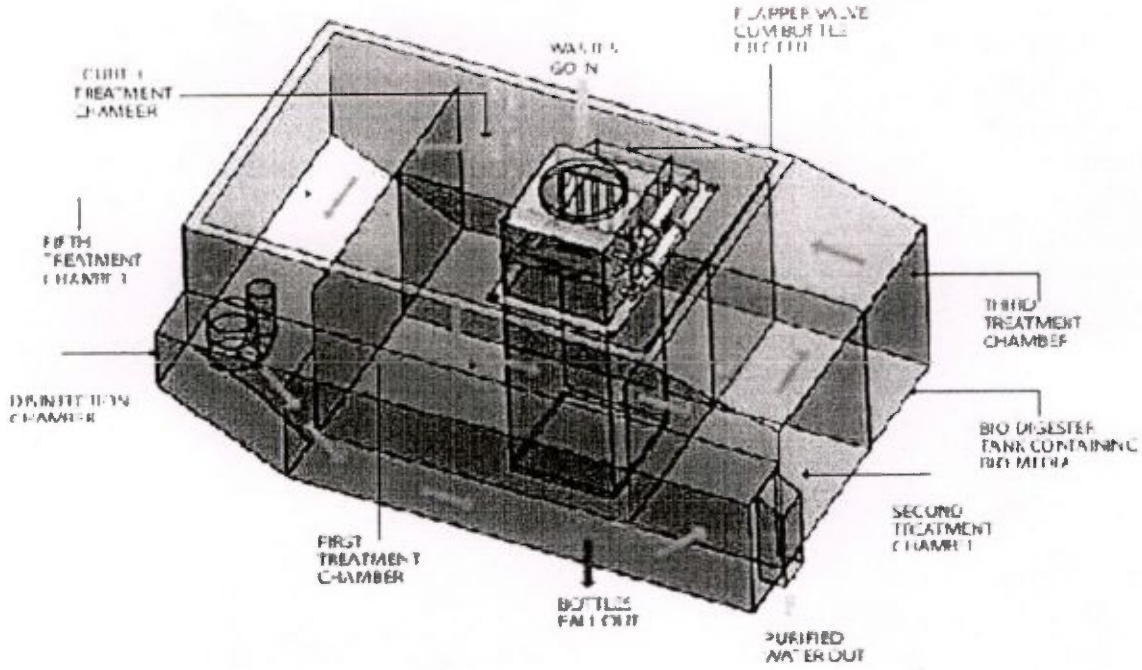

FLAPPER VALVE
THIRD
TREATMENT
CHAMBER
BIO DIGESTER
SECOND
TREATMENT
FIRST
TREATMENT
CHAMBER
PURIFIED
WATER OUT

Annexure III: Distribution of the Project Fund across States / UTs under SBM (Urban)

States/UTs	POPULATION OF STATUTORY TOWNS		STATUTORY TOWNS		OPEN DEFECATION		Fund Share*
	Pop. (minus OG)	Population Share (%)	No.	ST Share %	HHs	HH Share %	(%)
ALL India	**31,85,49,793**		**4,041**		**79,02,614**		
NON-NE STATES	**31,20,08,498**		**3,823**		**78,59,648**		
ANDAMAN & NICOBAR ISLANDS	1,08,058	0.03%	1	0.03%	1,209	0.02%	0.03%
ANDHRA PRADESH	2,30,04,396	7.37%	125	3.27%	5,81,673	7.40%	5.32%
BIHAR	1,12,41,824	3.60%	139	3.64%	5,46,409	6.95%	3.62%
CHANDIGARH	9,61,587	0.31%	1	0.03%	6,397	0.08%	0.17%
CHHATTISGARH	56,87,885	1.82%	168	4.39%	4,15,147	5.28%	3.11%
DADRA & NAGAR HAVELI	98,265	0.03%	1	0.03%	1,992	0.03%	0.03%
DAMAN & DIU	68,273	0.02%	2	0.05%	678	0.01%	0.04%
GOA	4,01,929	0.13%	14	0.37%	5,788	0.07%	0.25%
GUJARAT	2,31,88,334	7.43%	195	5.10%	3,88,836	4.95%	6.27%
HARYANA	78,61,917	2.52%	80	2.09%	1,28,059	1.63%	2.31%
HIMACHAL PRADESH	6,58,036	0.21%	56	1.46%	10,911	0.14%	0.84%
JAMMU & KASHMIR	29,40,098	0.94%	86	2.25%	44,501	0.57%	1.60%
JHARKHAND	53,05,359	1.70%	40	1.05%	2,54,374	3.24%	1.37%
KARNATAKA	2,21,63,498	7.10%	220	5.75%	5,34,829	6.80%	6.43%
KERALA	52,47,614	1.68%	59	1.54%	18,429	0.23%	1.61%
MADHYA PRADESH	1,87,83,104	6.02%	364	9.52%	7,89,555	10.05%	7.77%
MAHARASHTRA	4,67,83,521	14.99%	256	6.70%	6,94,830	8.84%	10.85%
NCT OF DELHI	1,14,02,709	3.65%	3	0.08%	62,210	0.79%	1.87%
ODISHA	59,69,842	1.91%	107	2.80%	4,08,170	5.19%	2.36%
PUDUCHERRY	7,48,267	0.24%	6	0.16%	18,941	0.24%	0.20%
PUNJAB	95,55,705	3.06%	143	3.74%	1,02,026	1.30%	3.40%
RAJASTHAN	1,57,17,489	5.04%	185	4.84%	4,31,290	5.49%	4.94%

States/UTs	POPULATION OF STATUTORY TOWNS		STATUTORY TOWNS		OPEN DEFECATION		Fund Share*
	Pop. (minus OG)	Population Share (%)	No.	ST Share %	HHs	HH Share %	(%)
TAMIL NADU	2,98,32,766	9.56%	721	18.86%	11,28,692	14.36%	14.21%
UTTAR PRADESH	4,06,94,476	13.04%	648	16.95%	9,65,922	12.29%	15.00%
UTTARAKHAND	24,89,380	0.80%	74	1.94%	19,206	0.24%	1.37%
WEST BENGAL	2,10,94,166	6.76%	129	3.37%	2,99,574	3.81%	5.07%
NE STATES	**65,41,295**		**218**		**42,966**		
ARUNACHAL PRADESH	3,13,557	4.79%	26	11.93%	4,241	9.87%	8.36%
ASSAM	33,19,375	50.74%	88	40.37%	27,900	64.94%	45.56%
MANIPUR	6,36,625	9.73%	28	12.84%	3,427	7.98%	11.29%
MEGHALAYA	3,75,930	5.75%	10	4.59%	1,887	4.39%	5.17%
MIZORAM	5,71,771	8.74%	23	10.55%	1,019	2.37%	9.65%
NAGALAND	5,05,440	7.73%	19	8.72%	2,279	5.30%	8.22%
SIKKIM	1,47,695	2.26%	8	3.67%	719	1.67%	2.96%
TRIPURA	6,70,902	10.26%	16	7.34%	1,494	3.48%	8.80%

5

(25)

Annexure IV

Concept Note on State Urban Sanitation Strategy for the State of _____

PART A: Parameters determining the existing urban sanitation situation

1	**State Profile**	
1.1	Name of the state	
1.2	Total Urban Population as per 2011 Census	
1.3	Number of Statutory towns 1 as per Census 2011	
1.4	Number of Census towns 2 as per Census 2011	
1.5	Population of statutory towns (as per Census 2011)	
1.6	Population of census towns (as per Census 2011)	
1.7	Total number of urban households	

2	**Status of Sanitation Situation as per Census 2011*[FOR STATUTORY TOWNS ONLY]***	**Total nos. as per Annexure 1 (State)***
2.1	Number of urban households resorting to open defecation (not in premises – open)	
2.2	Number of urban households having pit latrines	
2.3	Number of urban households having insanitary latrines	

3	**Solid waste management (tentative quantity based on per capita waste generation) [FOR STATUTORY TOWNS ONLY]**	**Total (State)***
3.1	Total Solid waste generated (in MT)	
3.2	Total Waste collected (in MT)	
3.3	Total Waste Transported (in MT)	
3.4	No. of cities with SWM Disposal Facility	
3.5	Total Waste treated (in MT)	

*City-wise information may also be added wherever available.

PART B: Institutional Mechanism for Swachh Bharat Mission (SBM) - Urban

	Provide Details		
Name of the Nodal Agency for SBM	*[Provide name of Nodal Agency; else if not designated, provide details of process by which nodal agency will be appointed]*		
Name and Designation of Nodal Officer with contact no.	*[Provide name of Nodal Officer; else if not designated, provide details of process by which nodal officer will be appointed]*		
Institutional Mechanism		**Start date (Month / Year)**	**End date (Month / Year)**
a. Constitution of the State-level High Powered Committee (S- HPC)	*[Provide details of S- HPC; else if not constituted. provide details of process by which S- HPC will be constituted; timeline should be max. within 1 month of submission of concept note]*		
b. Setting up of State Mission Directorate	*[Provide details of Mission Directorate; else if not constituted, provide details of process by which Mission Directorate will be constituted; timeline should be max. within 1 month of submission of concept note]*		
c. Setting up of PMU at the state-level under SBM	*[Provide details of PMU set-up; else if not set-up, provide details of process by which PMU will be put in place; timeline should be max. within 3 months of submission of concept note]*		
Submission of State Sanitation Strategy as per the National Urban Sanitation Policy, 2008 (please refer Ministry's website www.moud.gov.in)		**Start date (Month / Year)**	**Date of submission (Month / Year)**

PART C: Component-wise action plan for Swachh Bharat Mission (SBM) – Urban

Physical Targets

1.		Targets	*Baseline 2014*	*Cumulative Estimated Projection upto2019*	*Reasons/Justification based on 2001-2011 data and other factors*	*Target 2014-15*	*Target 2015-16*	*Target 2016-17*	*Target 2017-18*	*Target 2018-19 (up to Oct, 2019)*	*Cumulative Target (2014-19)*
A*	a	Construction of new individual household latrines (IHL)	*[80% of Part A, 2.4]*								*[100% of 2014 baseline]*
	b	Conversion of pit latrines into sanitary latrines	*[Part A, 2.2.4]*								*[60% of 2014 baseline]*
	c	Conversion of insanitary latrines into sanitary latrines	*[Part A, 2.2.5]*								*[100% of 2014 baseline]*
B*		Construction of Community toilets [NORM: 1 seat / 25 women and 1 seat / 35 men]	*[20% of Part A, 2.4]*								*[100% of 2014 baseline]*
C*		Construction of Public Toilets [NORM: 1 seat / 50 women and 1 seat / 100 men up to specified numbers**]	*[Part A, 1.2]*								*[5% of 2014 baseline]*
D		Solid waste Management	*[No. of cities proposed to be covered]*								*[100% excluding the on-going project]*
E		Capacity Building	*[Part A, 1.3]*								*[100% of cities]*
F		Public Awareness & IEC	*[Part A, 1.3]*								*[100% of cities]*

*Efforts shall be made to construct the toilets within two years i.e. upto 2016-17.

**Please also refer Manual on Sewerage & Sewerage Systems, Part A for more details (page No. 8-16)

Financial Targets

(Rs in Crores)

2	**Funding [As per the funding pattern in the SBM Urban Guidelines]**	*2014-2019 (TOTAL)*		*2014-15*		*2015-16*		*2016-17*		*2017-18*		*2018-19 (upto Oct. 2019)*		*Remarks*
		Tentative / estimated	*Central Share*	*Tentative / estimated*	*Central Share*	*Tentative / estimated*	*Central Share*	*Tentative / estimated*	*Central Share*	*Tentative / estimated*	*Central Share*	*Tentative / estimated*	*Central Share*	
A	a. Construction of new individual household latrines (IHL)(Based on the cost													

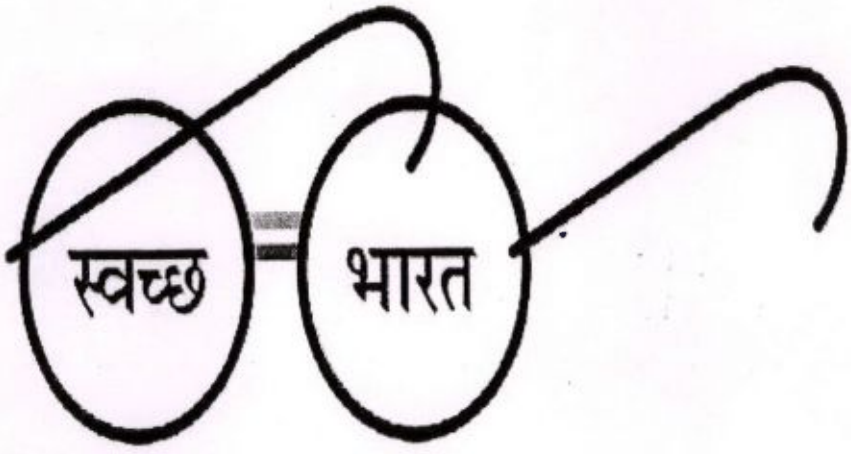
2

(23)

	per household toilets)													
	b. Conversion of pit latrines into sanitary latrines (based on the cost per household toilets)													
	c. Conversion of insanitary latrines into sanitary latrines (based on the cost per household toilets)													
B	Construction of Community toilets [NORM: 1 seat / 25 women and 1 seat / 35 men] (based on cost per seat)													
C	Construction of Public Toilets [NORM: 1 seat / 50 women and 1 seat / 100 men up to specified numbers](Based on cost per seat)		-		-		-		-		-		-	
D	Solid Waste Management (based on per capita cost of Rs.1500/ capita may be considered less or more with proper justification in a separate sheet)													
E	Capacity Building & A&OE (5% on Central share)													
F	Public Awareness & IEC (15% on Central share)													
	Total													

Annexure-V

(2)



एक कदम स्वच्छता की ओर

No. 20/1/2016-SBM-I
Government of India
Ministry of Urban Development

18th July 2016

OFFICE MEMORANDUM

Sub: Revisions/ Modifications of the operational guidelines of Swachh Bharat Mission (Urban)

This is to notify that the following changes have been made to the guidelines with respect to Swachh Bharat Mission (Urban):

1. State High Powered Committees (SHPCs) are given the flexibility to re-determine targets for IHHLs and CTs, subject to overall state-wise funds envelope (sum of allocation under IHHL and CTs, for the entire mission period) remaining unchanged.

2. Increase in base unit cost of CTs to Rs 98,000 per seat, wherein VGF/Grant will be upto 40% of project cost (i.e. VGF/Grant of Rs 39,200 per seat). This will be subject to overall state-wise funds envelope (sum of allocation under IHHL and CTs, for the entire mission period) remaining unchanged. This marks a shift from monitoring of toilet construction to monitoring of ODF status achievement.

3. Extension of VGF/Grant of upto 40% as available for CTs to Public Toilet projects as well (i.e. VGF/Grant of Rs 39,200 per seat). Unit cost of PTs to be same as CTs. Targets for PT to be set under CT component. This will be subject to overall state-wise funds envelope (sum of allocation under IHHL and CTs, for the entire mission period) remaining unchanged

4. Inclusion of urinals in ODF component, wherein VGF/grant of upto 40% to be given on lines of CTs/PTs, and base cost of urinals to be Rs. 32,000 per unit (i.e. VGF/Grant of Rs 12,800 per unit). Targets for urinals to be set under CT component. This will be subject to overall state-wise funds envelope (sum of allocation under IHHL and CTs, for the entire mission period) remaining unchanged.

5. The central assistance for Municipal Solid Waste Management component be raised from present 20 percent to 35 percent. This will be subject to overall state-wise funds envelope, for the entire mission period, for SWM remaining unchanged.

This issues with the approval of competent authority.

(V.K. Kushwaha) 18.7.16
Under Secretary to the Government of India
Tel: 23062654

To:

1) Chief Secretaries of all States/ Union Territories
2) Principal Secretaries/ Secretaries of Urban Development of all States/ Union Territories
3) Mission Directors (SBM) of all States/ Union Territories

Copy for information to: (i) PSO to Secretary (UD) (ii) JS&FA, MoUD (iii) JS (SBM) (iv) Director (SBM-I)/DS (SBM-II)

(90)

ADDA ASANSOL DURGAPUR DEVELOPMENT AUTHORITY

(A Statutory body of the Government of West Bengal)

Durgapur Office :
1st Administrative Building
City Centre, Durgapur 713216
Phone : 0343 2546815, 2546716, 2546835
Fax : 0343 2546655
E-mail: adda_durgapur@yahoo.com
adda.dgp@gmail.com

Asansol Office :
Sahara Apartment, Kumarpur
G.T.Road Asansol
Phone: 0341 ...
Fax: 0341 ...

Ref. No. ADDA/DGP/PC-408/14-15/2397 **Date.** 22/01/2015

AE
P/ma
22/01/15

To,
The Commissioner,
Durgapur Municipal Corporation,
City Centre, Durgapur – 713216.

<u>Sub: Allotment of Land for Solid Waste Management.</u>

Sir,

Apropos the above subject and in reference to your prayer, we are pleased to inform you that the proposal of land allotment was placed in the 126th Board Meeting of ADDA held on 03.12.2014 and the Board duly approved the proposal for sending it to the Urban Development Department for final approval with a request to accord permission to handover advance possession.

A layout map showing the earmarked plot at Sankarpur has been attached for your ready reference. You are hereby requested to give us the consent related to the proposed plot for allotment so that the Authority can take up further action.

Enclosure: as stated.

Yours faithfully,
(Signature)
Chief Executive Officer
Asansol Durgapur Development Authority

Memo No..Dated......................

Copy forwarded for necessary information to:

1. Hon'ble Mayor, DMC.
2. P.A. to Hon'ble Chairman ADDA.

(Signature)
Chief Executive Officer
Asansol Durgapur Development Authority

(19)

Thereafter Shri Sarkar had filed a court case before Hon'ble High Court, Calcutta which was registered as W.P. No. 14931 (w)/ 2011 (Ranjit Kumar Sarkar-Vs-Asansol Durgapur Development Authority & Ors.) challenging the order of resumption issued by the Authority. The latest position of the said court case reveals that on 26th April, 2013 due to non-appearance of the petitioner the Writ Petition was dismissed by Hon'ble High Court, Calcutta.

In the 124th Board Meeting it was decided by the Board that the land will be resumed and the matter case shall be defended properly in the court. However, the record reveals that the land was resumed by the ADDA on 10th August, 2011 vide Memo No. ADDA/DGP/L-259 (2)/09 (ZC) and 12th September, 2011 was fixed for taking back possession of the land but, the Authority could not take back the possession, because, Shri Sarkar had filed a Writ Petition before Hon'ble High Court, Calcutta before 12th September, 2011 and on 7th September, 2011 Hon'ble High Court, Calcutta was pleased to direct the parties to maintain status quo till 14th December, 2011.

Thought the Court case at this stage is not existing, however, the possession has not been back by the Authority, hence, no Land premium has been refunded and Shri Sarkar on 2nd August, 2014 has appealed before the Authority for settling the case mutually and considering his old age, in such circumstance, if approved by the Board following decision may be taken:-

The Resumption Order may be recalled and Shri Sarkar may be asked to pay Difference of Land Premium for 2.89 cottahhs of land at present rate of the Authority and thereafter may be allowed to enjoy the leasehold right with a condition to strictly abide by the duty to construct the building upon the demised land within a period of two years from the date of receiving possession of the said land from the ADDA, in the event of default, the entire lease shall be determined by the Authority.

The Board may kindly decide.

Decision:

Board decided that this case would be reviewed in the context of action taken in similar cases previously (if any); pending cases with similar nature might also be studied (if any) and then policy proposal (if required) to be placed before the board.

12.8 PROPOSAL FOR ALLOTMENT OF 3 ACRES OF LAND TO DURGAPUR MUNICIPAL CORPORATION FOR SOLID WASTE MANAGEMENT:

Durgapur Municipal Corporation is thriving hard to get rid of the rising Waste Generation of DMC area. So, in order to facilitate the waste management process and as per the prayer of Commissioner, DMC, a 3 acres of plot has been earmarked abutting to

the non-operational WMP (Waste Management Plant) plant at Shankarpur, Mouza – Kaliganj; J.L. No – 83.

This is an urgent requirement of the corporation to improve the Waste Management scenario of Durgapur and to provide a better quality of life to the people of Durgapur.

The Board may kindly discuss & decide.

Decision:

Board approved the proposal for sending it to the Urban Development Department for approval with a request to accord permission to handover advance possession.

12.9 PROPOSAL TO MODIFY THE SYSTEM OF COUNTING OF TIME OF COMPLETION OF BUILDING ON LASEHOLDLAND.

In general this Authority allows its lessees to construct the building over the leasehold plot within a specified period (three years for residential plots) from the date of execution of lease deed or possession of land whichever is earlier.

But, at present, it is seen that in few cases this Authority handed over the possession after a long gap from the date of execution of lease deed. Then these lessees did not get the three year time in full to complete the construction.

In this context, this Authority may consider the date of handing over of possession of the plot (after execution of lease deed) as the starting point of the specified period to complete the construction ;provided that if after execution of the lease deed the lessee fails to take possession of the land despite being informed to do so in writing for at least twice giving one month time on each occasion and if it is found that the lessee is solely responsible for the delay in taking over possession, the authority shall reserve the right to calculate the period for completion of construction from the date of execution of the lease deed.

The Board kindly may approve.

Decision:

Board approved the proposal imposing following condition:-

If after execution of the lease deed, the lessee fails to take possession of the plot despite being informed to do so in writing giving one month time and if it is found that the lessee is solely responsible for the delay in taking over possession, the authority shall have the right to calculate the period for completion of construction from the date of execution of the lease deed.

(17)

SHOWING THE LAND EARMARKED FOR DURGAPUR MUNICIPAL CORP. FOR SOLID WASTE AGEMENT. MEASURING AN AREA MORE OR LESS 3.00 ACRES.MARKED IN RED COLOUR.

MOUZA :KALIGANJ
J.L. NO.:83
P.S. : DURGAPUR
R.S. PLOT NO.: 5(P),6(P),8(P),
18(P),19(P),109(P),110(P),111(P),
112(P),1470(P),

(16)

ASANSOL DURGAPUR DEVELOPMENT AUTHORITY

(A Statutory body of the Government of West Bengal)

Durgapur Office :
1st Administrative Building
City Centre, Durgapur 713216
Phone : 0343 2546815 2546... 2546889
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E-mail: adda_durgapur@yahoo.com
adda.dgpr@gmail.com

Asansol Office :
Sahara Apartment, Kumarpur
G.T.Road Asansol
Phone: ...
Fax: ...

Ref. No. ADDA/DGP/PC-408/14-15/2397 Date. 22/01/2015

AE
PMA
22/01/15

To,
The Commissioner,
Durgapur Municipal Corporation,
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Enclosure: as stated.

Yours faithfully,

Chief Executive Officer
Asansol Durgapur Development Authority

Memo No.................................Dated...................

Copy forwarded for necessary information to:

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2. P.A. to Hon'ble Chairman ADDA.

Chief Executive Officer
Asansol Durgapur Development Authority

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The Board may kindly decide.

Decision:

Board decided that this case would be reviewed in the context of action taken in similar cases previously (if any); pending cases with similar nature might also be studied (if any) and then policy proposal (if required) to be placed before the board.

6.2.8 PROPOSAL FOR ALLOTMENT OF 3 ACRES OF LAND TO DURGAPUR MUNICIPAL CORPORATION FOR SOLID WASTE MANAGEMENT:

Durgapur Municipal Corporation is thriving hard to get rid of the rising Waste Generation of DMC area. So, in order to facilitate the waste management process and as per the prayer of Commissioner, DMC, a 3 acres of plot has been earmarked abutting to

(14)

the non-operational WMP (Waste Management Plant) plant at Shankarpur, Mouza – Kaliganj, J.L. No – 83.

This is an urgent requirement of the corporation to improve the Waste Management scenario of Durgapur and to provide a better quality of life to the people of Durgapur.

The Board may kindly discuss & decide.

Decision:

Board approved the proposal for sending it to the Urban Development Department for approval with a request to accord permission to handover advance possession.

6.2.9 PROPOSAL TO MODIFY THE SYSTEM OF COUNTING OF TIME OF COMPLETION OF BUILDING ON LASEHOLDLAND.

In general this Authority allows its lessees to construct the building over the leasehold plot within a specified period (three years for residential plots) from the date of execution of lease deed or possession of land whichever is earlier.

But, at present, it is seen that in few cases this Authority handed over the possession after a long gap from the date of execution of lease deed. Then these lessees did not get the three year time in full to complete the construction.

In this context, this Authority may consider the date of handing over of possession of the plot (after execution of lease deed) as the starting point of the specified period to complete the construction provided that if after execution of the lease deed the lessee fails to take possession of the land despite being informed to do so in writing for at least twice giving one month time on each occasion and if it is found that the lessee is solely responsible for the delay in taking over possession, the authority shall reserve the right to calculate the period for completion of construction from the date of execution of the lease deed.

The Board kindly may approve.

Decision:

Board approved the proposal imposing following condition:-

If after execution of the lease deed, the lessee fails to take possession of the plot despite being informed to do so in writing giving one month time and if it is found that the lessee is solely responsible for the delay in taking over possession, the authority shall have the right to calculate the period for completion of construction from the date of execution of the lease deed.

(13)

PROVISIONAL CERTIFICATE OF POSSESSION

Certified that I have this..... 19th .....day of.....March '09.....received Possession at the hand of Sri Achintya Kr. Ghosh Surveyor, Asansol Durgapur Development Authority of an area measuring more or less 439.67 Cottahas or 7.267 acres of land mentioned in the schedule below situated in Mouza-Kaliganj, J.L. No. 83 P.S.-(Durgapur, Faridpur, Dist.- Burdwan out of the area received possession from Collector on 19.04.65 acquired vide L.A. case no. 72/64-65 under declaration No. L.A. 18198 dated 28.10.64 published at page No 2854, part-I, Calcutta gazette. Showing the area is handed over to M/s. HANJER BIO-TECH ENERGIES (DURGAPUR) PVT. LTD. FOR MUNICIPAL SOLID WASTE MANAGEMENT AT DURGAPUR.(Reg. No. DGP-JN-132/2008-2009 by Asansol Durgapur Dev. Authority

SCHEDULE OF PLOTS

Location	Layout Plot no. & Sector	Area in Cottah/ Acre	C.S. Plot No.	Touzi No.	Khatian No.	Paragana	Sub-Rged. Office	Dimension of the plot
Mouza- Kaliganj, J.L. No. 83, P.S.- Durgapur, Dist.- Burdwan	H-1 at Kaliganj Durgapur	439.67 cottahs or 7.267 acres	2 (part) 3 (part) 4 5 (part) 6 (part) 7 8 (pa 112(part) 11 115(part) 116(part) 117(part) 1478(P 1479(P	Nil	Nil	Nil	Durgapur City Centre DGP-16	N

Area altogether measuring more or less 439.67 Cottah or 7.267 Acre bounded in red line on the plan attached .....

Bounded on the North By ADDA Land & Nalla
Bounded on the South By ADDA Land
Bounded on the East By 40' Wide Road
Bounded on the West By ADDA Land

Possession made over by

Name
Designation
Date

Possession taken over by

Name P
Address
Date 19.03.09

Name
Designation
Date

Countersigned by

Urban Development (T&CP) Dept.
&

ASANSOL DURGAPUR DEVELOPMENT AUTHORITY
CITY CENTRE. DURGAPUR-16

ADDA

PLAN SHOWING THE LAND FOR PROVISIONAL POSSESSION TO M/S HANJER BIO-TECH ENERGIES (DURGAPUR) PVT. LTD. FOR MUNICIPAL SOLID WASTE MANAGEMENT AT DURGAPUR

MEASURING AN AREA MORE OR LESS ..439.67..COTTAHS OR ..7.267..ACREs BOUNDED IN RED LINE.

SCHEDULE OF THE PLOT

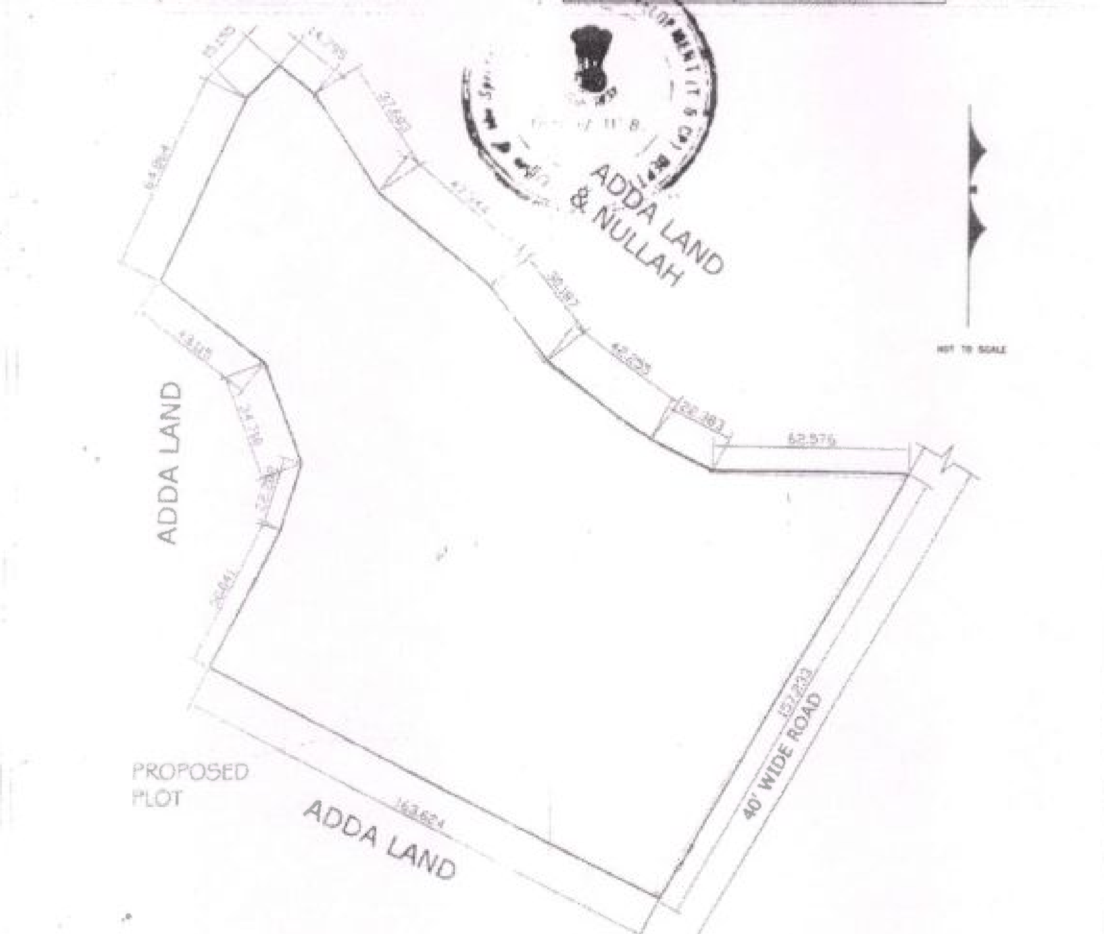
LOCATION	AREA	C.S PLOT NO	PLOT NO	PARGANA	SUB-REGD.OFFICE
MOUZA- KALIGANJ , J.L NO- 83 P.S- DURGAPUR FARIDPUR , DIST-BURDWAN.	29409.6 sq.m or 7.267 acres (more or less)	8(part),1470(part),479(P) 2(part),3(part),7, 6(part),5(part),4, 112(part),113,11?(part) 116(part),117(?)			CITY CENTRE DURGAPUR-16

BOUNDARY OF THE PLOT

ON THE NORTH	ADDA LAND & NULLAH
ON THE SOUTH	ADDA LAND
ON THE EAST	40' WIDE ROAD
ON THE WEST	ADDA LAND

DIMENSION OF THE PLOT

ON THE NORTH	14.79m,37.89m,47.34m,30.19m, 62.25m,22.38m,62.57m
ON THE SOUTH	163.62m
ON THE EAST	157.23m
ON THE WEST	58.04m,22.20m,24.71m,43.11m, 64.86m,15.15m



POSSESSION MADE OVER BY			POSSESSION TAKEN OVER BY	COUNTER SIGNED BY
SURVEYOR	DRAWN BY	A.E.O(LAND)		SIGNATURE OF LESSOR SPECIAL OFFICER URBAN DEVELOPMENT(T .& CP) DEPTT. GOVT. OF WEST BENGAL

(11)

ASANSOL DURGAPUR DEVELOPMENT AUTHORITY
CITY CENTRE, DURGAPUR-16

ADDA

PLAN SHOWING THE LAND FOR PROVISIONAL POSSESSION TO M/S HANJER BIO-TECH ENERGIES (DURGAPUR) PVT. LTD. FOR MUNICIPAL SOLID WASTE MANAGEMENT AT DURGAPUR

MEASURING AN AREA MORE OR LESS 439.67 COTTAHS OR 7.267 ACRES BOUNDED IN RED LINE.

SCHEDULE OF THE PLOT

LOCATION	AREA	C.S PLOT NO	PLOT NO	PARGANA	SUB-REGD.OFFICE
MOUZA- KALIGANJ, J.L NO- 83 P.S- DURGAPUR-FARIDPUR, DIST-BURDWAN	29409.6 sq.m or 7.267 acres (more or less)	[illegible]			CITY CENTRE DURGAPUR-16

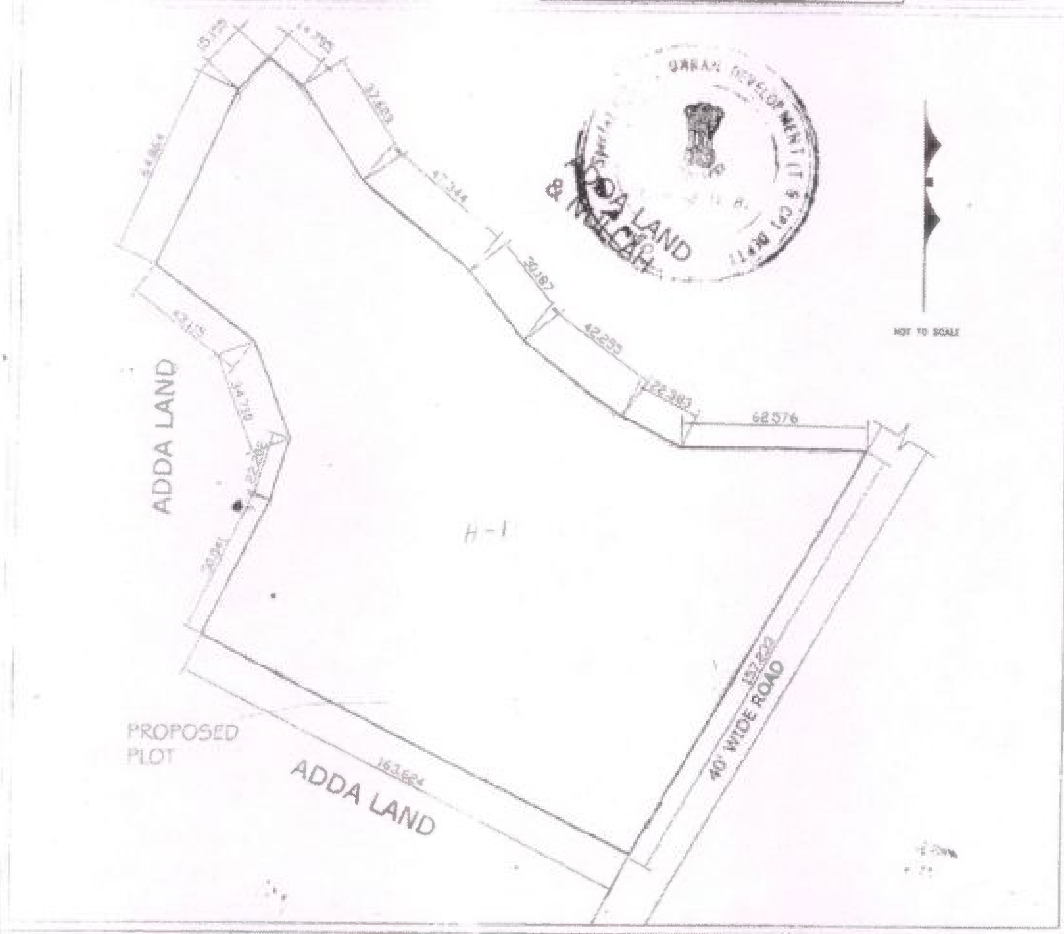
BOUNDARY OF THE PLOT:

ON THE NORTH	ADDA LAND & NULLAH
ON THE SOUTH	ADDA LAND
ON THE EAST	40' WIDE ROAD
ON THE WEST	ADDA LAND

DIMENSION OF THE PLOT

ON THE NORTH	[illegible]
ON THE SOUTH	163.62m
ON THE EAST	137.23m
ON THE WEST	[illegible]

SITE MAP NOT TO SCALE



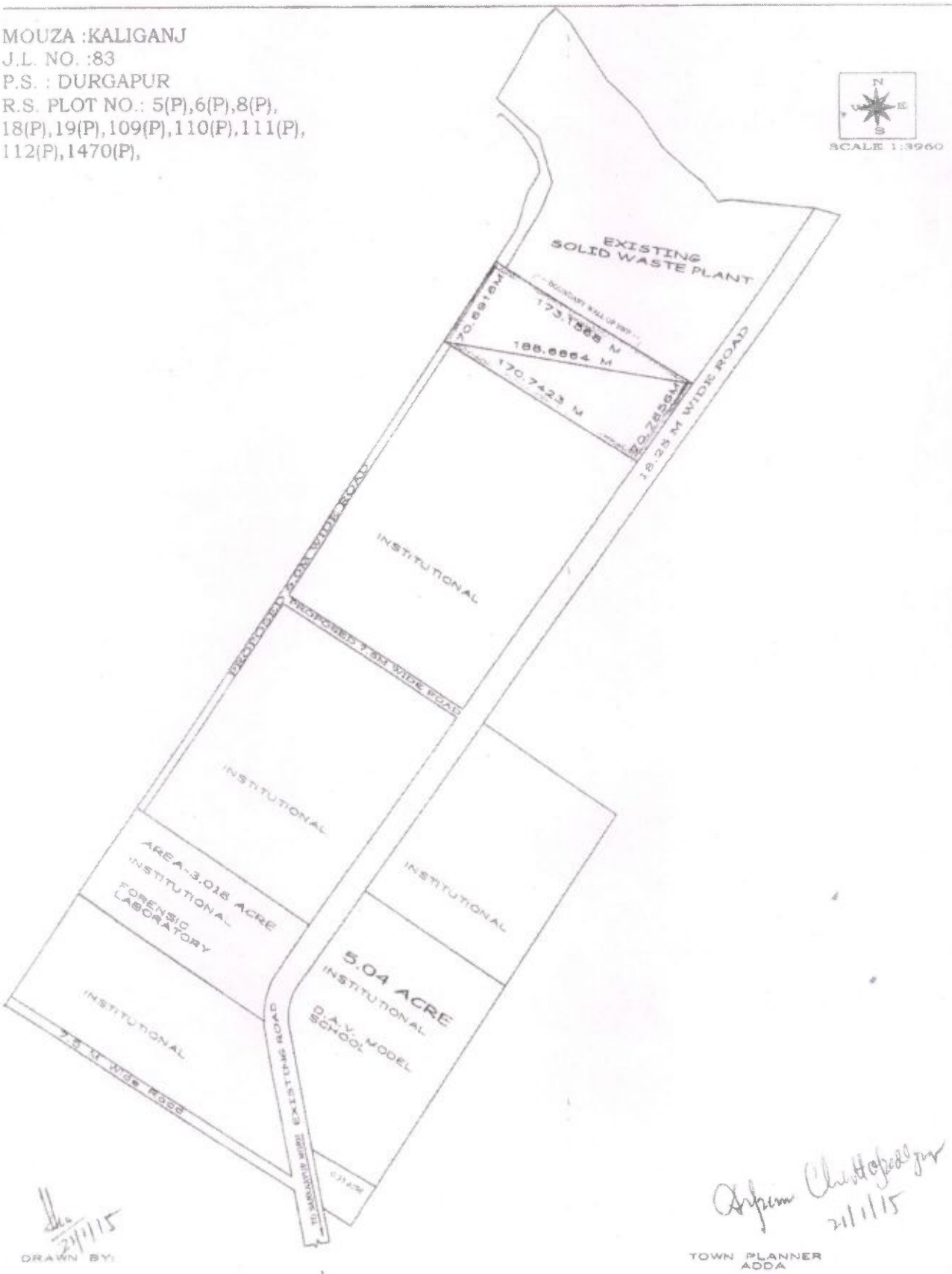
POSSESSION MADE OVER BY			POSSESSION TAKEN OVER BY	COUNTER SIGNED BY
SURVEYOR	DRAWN BY	A.E.O(LAND)	19.03.08	SIGNATURE OF LESSOR SPECIAL OFFICER URBAN DEVELOPMENT (T.& CP) DEPTT. GOVT. OF WEST BENGAL

Special Officer, Urban Development (T & CP) Deptt. Government of West Bengal

(10)

SHOWING THE LAND EARMARKED FOR DURGAPUR MUNICIPAL CORP. FOR SOLID WASTE AGEMENT. MEASURING AN AREA MORE OR LESS 3.00 ACRES.MARKED IN RED COLOUR.

MOUZA :KALIGANJ
J.L. NO. :83
P.S. : DURGAPUR
R.S. PLOT NO.: 5(P),6(P),8(P),
18(P),19(P),109(P),110(P),111(P),
112(P),1470(P),



21/1/15
DRAWN BY

21/1/15
TOWN PLANNER
ADDA

(9)

GOVERNMENT OF WEST BENGAL
OFFICE OF THE CHIEF ENGINEER
Municipal Engineering Directorate

BikashBhawan, South Block (1st Floor) Salt Lake, Kolkata – 700091
Phone No: (033)2337-1331/ (033)2358-3347 \ Fax: (033) 2337-5472 /2337-5474
E-mail: ce_medte@yahoo.com

o/c

No. ME/ 2389 / 1P- 48 / 2015 Dated 02. 01. 2017

From : The Chief Engineer
M. E. Dte.
Bikash Bhavan

To : The Director,SUDA
And Mission Director, SBM
ILGUS Bhaban, H.C.Block, Sector-III,
Salt Lake, Kolkata- 700 106.

Sub: Appraisal report of Municipal Solid Waste Management Project within Durgapur Municipal Corporation
Ref: This office Memo. No.- ME/2366/1P-48/2015 Dated 31.12.16.

Sir,

With reference to the subject cited above I am sending herewith appraisal report of DPR for MSWM project within Durgapur Municipal Corporation for your kind perusal and taking further course of necessary action.

This may kindly be noted that, the DPR is apprised subject to fulfillment of all suggestions communicated to the Durgapur Municipal Corporation authority vide Memo. under reference.

Yours faithfully,

02.01.17.

Chief Engineer, MED

Enclo : 1. Appraisal report.
2. DPR in duplicate.
3. Copy of referred memo.

No. ME/ 2389 / 1 / 1P-48 / 2015 Dated 02. 01. 2017

Copy forwarded for information to:
1. The Commissioner, Durgapur Municipal Corporation.

02.01.17

Chief Engineer, MED

APPRISAL REPORT

1.	Name of the Project	Solid Waste Management Project under Durgapur Municipal Corporation			
2.	Sectoral area	Urban			
3.	Total Financial outlay	**6431.29 Lakh**			
4.	Financial arrangement				
Funds being made available by					*Total*
Implementing agency		*GoI Share*	*State Share*	*Others, if any(Addl. State share)*	
Durgapur Municipal Corporation		2250.95 Lakh	750.32 Lakh	3430.02 Lakh	1819.14 lakh
5.	Project duration (dates/months/years)	24 Months			
6.	Location of project	Durgapur Municipal Corporation in Burdwan District, West Bengal			
7.	Previous phases, if any	No			
8.	Statutory required	Clearance/Permission from concerned authority such as State Electricity Board, State Pollution Control Board (SPCB), Highways, PWD etc. (wherever applicable).			
9.	Statutory obtained	To be obtained after approval of the project by the ULB.			
10.	Details of Feasibility Studies done (if any)	The project is technically and financially feasible subject to agreement with Industries for selling of compost and RDF.			
11.	Implementing agency	Durgapur Municipal Corporation with technical assistance from MED, Govt. of West Bengal			
12.	Basic design of the project				
i)	Goals and Objectives	The main objective is conversion of waste to compost through Windrow method and production of Refuse derived fuel (RDF).			
ii)	Activities involved	Collection, transportation and conversion of waste to compost through Windrow method and production of Refuse derived fuel (RDF, sanitary land filling for inert as per relevant manuals and guidelines of Govt. of India.			
iii)	Outputs of the project	Waste free city with minimum discharge to landfills.			
iv)	Outcome of the project	The day to day hazards of waste mechanism will be addressed with due importance to socio-economic view points, as well the municipal revenue infrastructure will be soundly built in a new form.			
13.	Target population				
i)	As per Census 2011	563557			
ii)	Base Year (2018)	629568			
iii)	Intermediate Year (2030)	912135			
iv)	Final Year (2045)	1345553			
14.	Per capita expenditure proposed				
i)	Considering Census population 2011	Rs. 1141.20			
ii)	Considering Base Year population (2018)	Rs. 1021.54			
15.	Quantitative and qualitative (verifiable) target Indicators	As per CPHEEO Manual published by MoUD, Govt. of India			

16.	Environmental sustainability of the project	The project does not affect the green belt. No tree is required to be cut. No water body is affected by the proposed project. No natural outlays are also affected by the proposed project. There is no possibility of soil erosion.
17.	Land acquisition / Resettlement and Rehabilitation involved	Land already procured (as stated by DMC)
18.	Operation and Maintenance	Durgapur Municipal Corporation
19.	Finance Plus Criteria	
(i)	Innovations and piloting of new approaches	RDF
ii)	Innovations in financing and leveraging	Surplus income will be generated after meeting Operation and Maintenance costs if DMC can tie-up with industries for selling Composts and RDF
).	Whether the project is recommended for Sanction or not (Y/N).	Yes
	If not, please mention reasons and area for improving DPR.	Not Applicable
	Estimated cost for consideration & approval (INR Lakh)	**Rs. 6431.29 Lakh**

Chief Engineer
Municipal Engineering Directorate
Govt. of West Bengal

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GOVERNMENT OF WEST BENGAL
OFFICE OF THE CHIEF ENGINEER

O/C

Municipal Engineering Directorate

Bikash Bhawan, South Block (1st Floor) Salt Lake, Kolkata – 700091.

Phone No: (033)2337-1331/ (033)2358-3347Fax: (033) 2337-5474

E-mail: ce_medte@yahoo.com

No. ME/ 2366/IP-48/2015 **Dated** 30/12/16.

From: The Chief Engineer,
Municipal Engineering Directorate.

To: The Mayor,
Durgapur Municipal Corporation.

Sub: Technical appraisal of Integrated Municipal Solid Waste Management Project for Durgapur City.

Sir,

With reference to the subject cited above this may please be noted that we have go through the DPR placed from your good office. And we have discussed with the persons involved in DPR preparation on 27.12.16 at the office of the undersigned.

After detailed discussion several issues had been dissolved. However, the following issues need to be addressed from your end for appraisal of the DPR at an early date.

1. Documents on support of marketing feasibility of compost and R.D.F.
2. Secondary transportation may involve different types of vehicles along with compactors.
3. Optimization of use of secondary transportation vehicles including existing vehicles in use.
4. Consideration of existing vehicles for calculation of O & M costs.
5. Detailed estimates required to be provided with reference of rates considered.
6. A project at a glance / project summery in one or two pages may be prepared.

This is for your kind information and necessary action please.

Yours faithfully

30.12.16

Chief Engineer, MED

No. ME/ 2366/1(1)/IP-48/2015 **Dated** 30/12/16.

Copy forwarded for information & necessary action to;-

1. *The Director, SUDA & Mission Director, Swacch Bharat Mission.*

30.12.16

Chief Engineer, MED

[D:\...\Technical appraisal_Durgapur City.doc]

(5)

DURGAPUR MUNICIPAL CORPORATION

CITY CENTRE, DURGAPUR - 713216, DIST. - BURDWAN
EPABX ⟹ (0343) 2545842, 2546994, 2546107 * Mayor : 2545828 * Fax No. : 254-6472
Website : durgapurmunicipalcorporation.org * E-mail : durgapurcorporation@gmail.com

Ref. No. DMC / PW/2735 Date 28/10/2016

2 NOV 2016 8509

To,
Director, SUDA
& State Mission Director, SBM (U)
SUDA, ILGUS Bhavan
HC Block, Sector-3
Bidhannagar, Kolkata-106

AMD (SBM)
3/11/16

Through: Superintend Engineer (Planning) South, M.E. Directorate,
Bikash Bhavan, Saltlake, Kolkata -700091

BMF
7/11/2016

Sub: Submission of DPR of Solid Waste Management under SBM

Sir,

Enclosed please find the 04(Four) copies of Detailed Project Report (DPR) and 1 (one) soft copy of DPR of Solid Waste Management under Swachh Bharat Mission on behalf of Durgapur Municipal Corporation for favour of your kind perusal and necessary action please.

Thanking you.

Yours faithfully,

28/10

Commissioner
Durgapur Municipal Corporation

28/10

Enclosure:
1. 04(Four) copies of DPR
2. 1 (one) Softcopy in DVD

DURGAPUR MUNICIPAL CORPORATION

CITY CENTRE, DURGAPUR - 713216, DIST. - BURDWAN

EPABX ⟹ (0343) 2545842, 2546994, 2546107 ✳ Mayor : 2545828 ✳ Fax No. : 254-6472

Website : durgapurmunicipalcorporation.org ✳ E-mail : durgapurcorporation@gmail.com

(A)

Ref. No. **DMC** / AMRUT/2910 *Date* 10/11/16

8970
16 NOV 2016

To
The Director
State Urban Development Agency
ILGUS Bhavan, Sector-III
Saltlake City, Kolkata-106

Sub: Regarding Payment of Municipal Solid Waste Management Project

Respected Sir,

The Detailed Project Report on Municipal Solid Waste Management of Durgapur has already been submitted. The whole project is expected be done phase wise from Dec, 2016 to Mar, 2018 as per the project milestone. As discussed with Hon'ble Mayor, DMC we like to affirm that we will bear the rest amount of the total project cost as ULB share in access of central and state share and it would be better for us to execute the work phase wise as per the project milestones.

Your early response is highly solicited.

Yours Faithfully

Commissioner
Durgapur Municipal Corporation

Ref. No. DMC/..... Date.....

Copy to

1. Hon'ble Mayor, DMC
2. The Secretary, Department of Municipal Affairs,Prasashan Bhawan, DD-I, Sector-I, Salt Lake City,Kolkata-700064.
3. MIC (PWD), DMC
4. The Secretary, DMC

Commissioner
Durgapur Municipal Corporation

GOVERNMENT OF WEST BENGAL
OFFICE OF THE CHIEF ENGINEER
Municipal Engineering Directorate

Bikash Bhawan, South Block (1st Floor) Salt Lake, Kolkata – 700091.
Phone No: (033)2337-1331/ (033)2358-3347Fax: (033) 2337-5474
E-mail: ce_medte@yahoo.com

AMD SWM 15/06/17

PME 15/6/2017

No. ME/ 607/IP-48/2015 **Dated** 13/06/17

From: The Chief Engineer,
Municipal Engineering Directorate.

To: **The Director, SUDA**
&
Mission Director, Sachh Bharat Mission,
ILGUS Bhaban, H.C.Block, Sector-III,
Salt Lake, Kolkata- 700106.

State Urban Development Agency 3176 13 JUN 2017

Sub: ***Appraisal report of Municipal Solid Waste Management Project within Durgapur Municipal Corporation***

Ref: ***This office Memo no.***
(i) ME/2389/IP-48/2015 dt. 02.01.2017.
(ii)ME/2366/Ip-48/2015 dt. 31.12.2016.

Sir,

With reference to the subject cited above this may kindly be noted that the Durgapur Municipal Corporation has already been submitted the reply of memo under ref. (ii) which seems to be satisfactory.

I am sending herewith two copies of the same for your kind perusal and necessary action please.

Yours faithfully

13.06.17

Chief Engineer, MED

Enclo:- As Stated.

[D:\Abhijit\NEW\saumya sir\SWm Durgapur Municipal Corporation.doc]

SOLID WASTE MANAGEMENT : DURGAPUR MUNICIPAL CORPORATION
PROJECT SUMMARY

A) AREA		154.20 Sq. Km	
B) NO. OF WARDS		43 Nos.	
C) DEMOGRAPHIC PROFILE			
POPULATION		Per Capita Generation, gm/day	Waste (TPD)
2011 Census	563557	-	-
2016	**611300**	**404**	**247**
2018	629568	415	261
2023	673163	442	298
2028	713797	472	337
2033	751468	503	378
2038	786177	537	422
2045	829794	588	488

D) QUANTITY OF SOLID WASTE GENERATION

1. Solid Waste generated by Residential Households

Per Capita Generation of household waste in gm./day	294.97
Population of Durgapur - 2016	611300
Total Quantity of Waste Generated, T/day	**180.3 TPD**

2. Solid Waste generated by Commercial Establishments

Type of Establishments	Quantity	Unit Waste Solid Waste Generation Rate, kg/unit/day	Waste Generation in T/day
Markets	14	32735.1	32.7
Hotels	125	32.5	4.1
Restaurants	34	22	0.7
Community Hall	31	22	0.7
Guest House	9	18	0.16
Total			**38.36 TPD**

3. Solid Waste generated by Institutional Establishments

Type of Establishments	Quantity	Unit Waste Solid Waste Generation Rate, kg/unit/day	Waste Generation in T/day
Higher Secondary School	23	45	1.04
Secondary School	9	34	0.31
Primary School	104	23	2.4
Sishu Shikka kendra	78	16	1.23
Research Institute & Engg. College	22	81	1.8
ICDS Center	188	13	2.4
Hospital	43	44	1.9
Municipal Maternity Home	2	22	0.04
Regional Diagnostic Center	2	12	0.03
Extended Specialist Out Patient Dpt.	2	20	0.04
Municipal Health Sub-center	59	16	0.9

2/6/17
Assistant Engineer
Durgapur Municipal Corporation

Commissioner
Durgapur Municipal Corporation

Park & Garden	52	18	1.0
Play Ground	81	14	1.1
Bus Terminus	3	15	0.04
Public Library	3	20	0.06
Burial Ground	8	23	0.18
Total			**14.47 TPD**
4. Street Sweeping, Drain Silting & Construction Debris			**14 TPD**
Total Quantity of Solid Waste Generated by Durgapur			**247.13 TPD**
E) COMPOST PLANT & RDF PLANT			
1. Area			**7 ACRE**
2. Capacity			**320 TPD**
F) LANDFILL FACILITY			
1. Area			**3 ACRE**
2. Disposal Period			**4 YEAR**
G) PROJECT COST			
Estimated Cost for SWM System			
A. Collection System			
Procurement of vehicles for Primary Collection & Secondary Transportation			203161000
Procurement PP Equipments for primary collection			4018720
			20,71,79,720
B. Processing Plant			
Construction of Compost Plant and RDF Plant			2346,21,247
Procurement of Machineries for the plant			557,75,000
Procurement of vehicles for Operation of the plants			117,30,000
			30,21,26,247
C. Sanitary Landfill			
Construction of Sanitary Landfill			795,40,734
Procurement of Vehicles for Operation of the landfill			290,00,000
			10,85,40,734
D. Social Awareness Program (Per Year)			**65,50,000**
Sub Total			**62,43,96,701**
Contingency – 3%			1,87,31,901
Administrative Expenses – 1%			62,43,967
Total			**64,93,72,569**
H) O&M COST			
Operational Monthly Expenditure			
O & M cost of Primary collection and Secondary transportation			66,61,340
O & M of Processing plant and Sanitary landfill			14,64,053
Total (O & M Cost per month)			**81,25,393 (INR)**

2/6/17

Assistant Engineer
Durgapur Municipal Corporation

Commissioner
Durgapur Municipal Corporation

O & M Cost per year	9,75,04,716 (INR)
I) REVENUE GENERATION COST	
Total Revenue Generation	
Revenue from Proposed User Charges	18,43,247
Revenue from selling out the recyclable items	12,48,000
Revenue from Compost	17,33,333
Proposed user Charges for sanitation services	41,77,820
Total monthly Revenue generation	**90,02,400 (INR)**
Total yearly Revenue generation	**10,80,28,800 (INR)**
SURPLUS (Monthly)	**8,77,007 (INR)**
SURPLUS (Yearly)	**1,05,24,084 (INR)**

2/6/17

Assistant Engineer
Durgapur Municipal Corporation

Commissioner
Durgapur Municipal Corporation

Compliance Report on suggestions given by MED on Draft Project Report on Integrated Municipal Solid Waste Management for Durgapur City

With reference to the observations made by Municipal Engineering Directorate, Government of West Bengal pertaining to Technical Appraisal of Integrated Municipal Solid Waste Management Project for Durgapur City, please find enclosed herewith the relevant comments, workings and supporting documents. The clarification follows the same order as was iterated in the letter issued by MED to DMC bearing no. ME/2366/IP-48/2015 dated 30.12.2016.

1) Comment : Document supporting marketing feasibility of compost and RDF

   Please refer to Annexure 1 containing MoU entered with DMC and Vision Green regarding commercial exploitation of compost.

2) **Comment : Secondary Transportation may involve different types of vehicles along with compactors**

Compliance:

For Secondary transportation the DPR has considered four different types of vehicles

- Movable Compactors - 12 Nos out which 2 are existing and 10 will be new procurements
- Stationary Compactors - 3 Nos all are new procurements
- The existing Dumper Placer Vehicles – 9 Nos . this are currently used by municipalities
- Existing Dump Truck – 13 Nos – currently used by municipalities

3) **Comment: Optimization of use of secondary transportation vehicles including existing vehicles in use.**
   - Secondary transportation of waste :
   - Life of the secondary transportation vehicles will be around 7 years i.e till 2025 and approx quantity of waste generation will be 300 TPD.
   - Density of the MSW will be 0.415 T/m3
   - Quantity of waste to be transported = 300/0.415 = 722 m3

Waste secondary Transportation calculation using proposed and existing vehicles

Vehicles/ Equipment Type	Total Nos available (proposed + existing)	Number of trips (Nos)	Total Quantity transported
Movable compactor - 14.5 m3	12	2	14.5x12x2 = 348 m3
Dumper placer -6 m3 (Existing)	9	3	6x 9x 3 = 162m3
Hook Loader- 12m3	3	4	12 x3x4= 144m3
DumpTruck – 4 m3 (Existing)	13	4	4x 13x4 = 104 m3
Total			758 m3

Actual requirement is transportation of 722 m3 and DPR has proposed 758 m3 which is almost equal and also required because their may be chance of breakdown of the vehicles so the additional vehicles will support the transportation and system will not suffer.

4) **Comment :**
Consideration of existing vehicles for calculation of O & M cost.

Comply : The DPR has missed the calculation for use of existing vehicles for calculation of O & M and the same is mentioned below :

a) **Operation cost of Auto tipper** :
Average distance covered in one trip = 14 km (7+7)
Number of trip per day = 5 trip to cover 2000 household
Average distance travel per day = 14 x 5 = 70 km
Fuel consumption = 8 km/ lit = 8.75 lit approx 9 lit
Unit price of diesel =60 Rs
Operation days =30 days
Operation cost = 9 x60x30 = 16200 / month
Maintenance Cost : 10 % of the operation cost = 1620 per vehicle per month

b) Operation cost of Movable compactor :
Movable compactor will travel and collect waste from stationary compactor placed at different location.
In One trip movable compactor can take waste from 10 to 12 locations and then transport the collected waste to the processing plant which is approx 10 km from the municipal area
Average distance covered in one trip = collection in city (10km) +10(transportation to site)+10(come back to new location) = 30 km
Number of trip per day = 2 trip
Average distance travel per day = = 60 km
Fuel consumption = 3.5 km/ lit = 18 lit per day
Unit price of diesel =60 Rs
Operation days =30 days
Operation cost = 18 x60x30 = 32400 / month
Maintenance Cost : 10 % of the operation cost = 3240 per vehicle per month

c) Operation cost of Hook loader or Stationary compactor :
Stationary compactor will travel and collect waste from stationary compactor placed at different location.
In One trip movable compactor can take waste from one container of 10 m3 capacity
Average distance covered in one trip =7.5 (transportation to site)+7.5(come back to new location) = 15 km

Number of trip per day = 4 trip
Average distance travel per day = = 60 km
Fuel consumption = 3.5 km/ lit = 18 lit per day
Unit price of diesel =60 Rs
Operation days =30 days
Operation cost = 18 x60x30 = 32400 / month
Maintenance Cost : 10 % of the operation cost = 3240 per vehicle per month

d) Operation cost of existing Dumper placer (DP):
Dumper placer will carry waste from DP containers located at different location
In One trip DP can take two container of 3.0 m3 capacity
Average distance covered in one trip =7.5 (transportation to site)+7.5(come back to new location) = 15km
Number of trip per day = 3 trip
Average distance travel per day = 45 km
Fuel consumption = 5 km/ lit = 9 lit per day
Unit price of diesel =60 Rs
Operation days =30 days
Operation cost = 9 x60x30 = 16200/ month
Maintenance Cost : 10 % of the operation cost = 1620 per vehicle per month

e) Operation cost of existing dump tipper truck:
Capacity of one dump tipper truck – 4 m3
Average distance covered in one trip =7.5 (transportation to site)+7.5(come back to new location) = 15km
Number of trip per day = 4 trip
Average distance travel per day = 60 km
Fuel consumption = 5 km/ lit = 15 lit per day
Unit price of diesel =60 Rs
Operation days =30 days
Operation cost = 15x60x30 = 27000/ month
Maintenance Cost : 10 % of the operation cost = 2700 per vehicle per month

Operation & Maintenance cost Summery of Vehicles (Proposed and Existing)

Sl. No	Description	Total Equipment Numbers (Existing + proposed)	Operation Cost per unit per month	Total operation cost	Maintenance Cost	Total
1	Auto tipper	27	16200	437400	1620	43740
2	Movable compactor	12	32400	388800	3240	38880

3	Hook loader – stationary compactor	3	32400	97200	3240	9720
4	Existing dumper placer	9	16200	145800	1620	14580
5	Existing Dump truck tipper	13	27000	351000	2700	35100
O & M cost of Vehicles				**14,20,200**		**1,42,020**

Maintenance Cost of Equipments (Proposed + Existing)

Sl. No	Description	Equipment Numbers(Proposed + existing)	Maintenance Cost	Total
1	Tri- cycle Cart- 6 nos. 50 lit bin	333	500	166500
2	Handcart with 4 nos. of 60 lit bin (Street Sweeping)	324	500	162000
4	Compactor Garbage Bins 1100 lit	813	500	406500
5	Stationary compactor container - 10 m3	12	800	9600
8	Compactor station maintenance	6	3000	18000
9	Wheel barrow for Drain Cleaning	296	500	148000
				910600

Comment 5: Detail Estimate required to be provided with reference of rates considered
Please refer to Annexure 2 for details

Comment 6 : A project at A glance summery in one or two page may be prepared
Please refer to Annexure 3 for details

Along with the above documents, please also find enclosed herewith the following:

- Annexure 4: Land Map of the proposed processing zone
- Annexure 5: Quotations

Annexure 1

Document supporting marketing feasibility of compost and RDF
Provided by Durgapur Municipal Corporation- MoU with Vision Green

Memorandum of Understanding

This Memorandum of Understanding (**MoU**) is entered into on this 3rd day of January 2017 at Durgapur, West Bengal,

By and Between

Durgapur Municipal Corporation, represented by The Commissioner and having its registered office at City Centre, Durgapur– 713216, District: Burdwan(hereinafter referred as "**First Party**"), which expression unless repugnant to the context or meaning thereof includes its successors and permitted substitutes) of the **First Part**

And

M/s Green Vision, a company incorporated under the Companies Act, 1956 and having its registered office at **The City Residency, Sahid Khudiram Sarani, City Centre, Durgapur-713216**,(hereinafter referred as "**Second Party**"), which expression unless repugnant to the context or meaning thereof includes its successors and permitted substitutes) of the **Second Part**

The parties are individually referred to as Party and collectively as Parties.

A. And whereas,Durgapur Municipal Corporation has proposed development of a comprehensive Municipal Solid Waste Management programme consisting of door to door waste collection system and processing of the waste.

B. The Detailed Project Report pertaining to the project has been submitted to the concerned department of Government of West Bengal for approval and necessary funding. It is quite pertinent that through the processing of municipal solid waste as proposed by the aforementioned project initiative, Durgapur Municipal Corporation shall be producing nearly 4 tons (approx.) of compost (fertilizer/ end product) per annum tentatively after 2 years from project initiation.

C. Durgapur Municipal Corporation wishes to enter into a marketing arrangement for commercial utilization of the composts / fertilizers thus produced.

D. The Second Party is in the business of producing and marketing of fertilizers and having a unit in Barjora, Bankura, West Bengal.

E. And Whereas, the Parties now intend to enter into this MOU for stating the terms and conditions with respect to the rights and obligations of the Parties towards each other pertaining to the commercial utilization of the compost/fertilizer [The Produce];

IT IS HEREBY AS MUTUAL UNDERSTANDING OF THE PARTIES AGREED AND DECLARED AS FOLLOWS:

i. COMMERCIAL PURPOSE

a. It is hereby agreed by both parties that:
   i. The First Party shall propose an "offer for sale" of the compost/fertilizers thus produced through the processing of municipal solid waste management programme on a half yearly basis to the Second Party once the produce is ready for commercial exploitation.
   ii. The quantum of compost/fertilizer to be offered for sale to be in metric tons
   iii. The Second party hereby offers its righteous inclination to 'procure' the produce upon availability of the 'offer for sale' from First Party.
   iv. The Second Party shall offer the "best price" for the produce in consistence with the market dynamics, quality and marketability at the time as prevalent during the "offer for sale".
   v. The First Party reserves the right to withdraw the "offer for sale" if it feels that the "best price" is not conducive and/or shall have the right to negotiate.

b. The Parties shall be jointly and severally liable for the execution of the sale contract that to be signed on finalization of the offer for sale.

c. Each Party shall keep other Parties informed of all discussions and communication pertaining to the 'offer for sale".

ii. EXCLUSIVITY

The Parties agree that this MOU shall be on an exclusive basis.

iii. INDEMNITY

i. Each Party agrees to indemnify and hold harmless the other Party from only those claims which directly arise out of indemnifying party's scope of services,

ii. Neither Party shall be liable to the other Party for failure to perform any of its services hereindue to reason of force majeure or other cause beyond the

reasonable control of the Party. In such an event the Parties shall mutually agree upon an extended time schedule for completion of the Project.

iii. Each Party of the Consortium shallbe liable to bear its own tax liability.

iv. CONFIDENTIALITY

I. In consideration of the confidentialinformation made and being made available by the Parties, each Party undertake to treat all confidentialinformation as secret and confidential and not to disclose it to any third party other than its professional advisers, to take all necessary steps to preserve such confidentiality and not to use any confidentialinformationfor any other purpose other than for this Project.

II. The Parties agree that confidential information shall not include any information which was in prior possession or knowledge of the Party.

v. THIRD PARTIES

i. No person who is not a party to this MOU shall have any right to enforce it pursuant to the Contracts (Rights of Third Parties) Act 1999 but this does not affect any right or remedy of any third party which exists or is available apart from the Act.

VI. COUNTERPARTS

This MOU may be executed in any number of counterparts, but shall not take effect until each party has executed at least one counterpart. Each counterpart shall constitute an original but all the counterparts together shall constitute a single MOU

vii. ENTIRE MOU

This MOU constitutes the entire understanding of the parties and supersedes any previous agreement between the parties relating to the subject matter of this agreement and no additions, amendment to or modifications of this agreement shall be effective unless it is in writing and duly signed on behalf of the parties.

viii. GOVERNING LAW

This MoU shall be governed in accordance with the laws of India and courts in Durgapur shall have exclusive jurisdiction to adjudicate disputes arising from the terms herein.

ix. TERMINATION

This MoU shall come into effect on the date of signing by the Parties and, unless terminated earlier, shall terminate upon occurrence of any of the events listed below:

a) The proposal is officially rejected by any of the parties after negotiation;

b) By mutual written agreement between the Parties hereto to terminate this MoU.

x. AMENDMENT
Modification of the terms and conditions of this MoU, may only be made by written agreement between the Parties.

In witness whereof the Parties affirm that the information provided is accurate and true and have caused this MoUto be duly executed on the date and year above mentioned.

For Durgapur Municipal Corporation	For M/S Vision Green.
03/01/17	3/1/17.
SrimatiKasturiSengupta Commissioner Commissioner Durgapur Municipal Corporation	For. Vision Green.

VISION GREEN

Agreement

I have herby Agreed to purchase the compost/fertilizers that produced through the processing of municipal solid waste management programme from Durgapur Municipal Corporation.

3/1/17

The Citi Residenci | Sahid Khudiram Sarani | City Centre | Durgapur – 713216
Email: visiongreen@citiresidenci.com | Web: visiongreen.in

ANNEXURE 2

Detail Cost Estimation with Reference of Rates

SWM: DURGAPUR MUNICIPAL CORPORATION
DETAILED ESTIMATION

DPR for MSW Management- Durgapur						Remarks	Calculation			
Abstract - Security Room - 3.75 m x 3.25 m										
Sl. No	Description of Item	Units	Qty	Rate	Amount					
				in INR	in INR					
1	Surface Dressing of the ground in any kind of soil including removing vegetation inequalities not exceeding 15 cm depth and disposal of the rubbish within a lead upto 75 m as directed.	sqm	30.19	11.00	332.06	PWD SOR Vol-I , Page no. 1	30.1875			
2	Earth work in excavation of foundation trenches or drains, in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete. Depth of excavation not exceeding 1,500 mm.	cum	20.13	120.47	2425.06	PWD SOR Vol-I , Page no. 1	20.13	12.1875	1.21875	13.40625
3	Anti termite treatment to back filling of the masonry foundation with chemical emulsion by admixing chloropyrofos emulsifiable concentrates (1% concentration) with water by weight at the rate	sqm	12.19	94	1145.63	PWD SOR Vol-I , Page no. 4	12.1875			

	of 7.5 Litres per sq. m. of the vertical surface of the									
	substructure for each side of the foundation.. The									
	work shall be carried out as per specification									
	described in 6.2.2. of code IS-6313 (part -II) 1981.									
	(Mode of measurment will be vertical area treated.)									
4	Cement concrete with graded jhama khoa (30 mm size)	cum	6.16	4996	30775.36	PWD SOR Vol-I , Page no. 12	6.16			
	excluding shuttering									
	In ground floor and foundation. 1:3:6 proportion									
5	Rainforced cement concrete									
	Reinforcement for reinforced concrete work in all sorts of	kg	809.82	61.787	50036.32	PWD SOR Vol-I , Page no. 28	809.8195	100kg per cum of concrete		
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.									
	For works in foundation, basement and upto roof of ground									
	floor/upto 4 m- SAIL/ TATA/RINL									
6	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	8.10	5063	41001.16	PWD SOR Vol-I , Page no. 15	8.098195			

	chips (20 mm nominal size) excluding shuttering and									
	reinforcement if any, in ground floor as per relevant IS codes.									
	Pakur Variety									
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	25.00	351	8775.00	PWD SOR Vol-I , Page no. 27	25			

	direction of Engineer-In-Charge.									
8	Brick work with 1st class bricks in cement mortar (1:6)	cum	17.94	5155	92467.81	PWD SOR Vol-I , Page no. 30	17.9375			
	foundation and plinth									
9	Brick work with 1st class bricks in cement mortar (1:6)									
	In superstructure, ground floor	cum	8.96	5380	48218.25	PWD SOR Vol-I , Page no. 30	8.9625			
10	Plastering									
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar									
	including rounding off or chamfering corners as directed and									
	raking out joints including throating, nosing and drip course,									
	scaffolding/staging where necessary (Ground floor).[Excluding									
	cost of chipping over concrete surface]									
	15 mm thick plaster with 1:6 cement mortar	sqm	46.35	144	6674.40	PWD SOR Vol-I , Page no. 164	46.35			
11	Painting									
	Applying Interior grade Acrylic Primer of approved quality and brand									
	on plastered or concrete surface old or new surface to receive									
	Distemper/ Acrylic emulsion paint including scraping and preparing									
	the surface throughly, complete as per									

	manufacturer's specification									
	and as per direction of the EIC. **(In Ground Floor)**									
	Two Coats- Solvent based interior grade Acrylic Primer	sqm	46.35	53.03	2457.94	PWD SOR Vol-I , Page no. 172	46.35			
	Dry Distemparing to interior walls or ceiling including washing, cleaning									
	washing, smoothening surface - Two Coats	sqm	46.35	51	2363.85	PWD SOR Vol-I , Page no. 174	46.35			
12	With Sand Cement Mortar (1:4) 20 mm thick & 2 mm thick									
	cement slurry at back side of tiles using cement @ 2.91									
	Kg/Sq.m & joint filling using white cement slurry @									
	0.20kg/Sq.m.									
	Area of each tile above 0.09 Sq.m/ Coloured decorative	sqm	11.72	1023	11993.65	PWD SOR Vol-I , Page no. 54	11.724			
13	Earth work in filling in foundation trenches or plinth									
	with good earth, in layers not exceeding 150 mm.									
	including watering and ramming etc. layer by layer									
	complete. (Payment to be made on the basis of									
	measurement of finished quantity of work) With earth obtained by fresh excavation									
	(including cost of excavation upto 1,800 mm. depth)									
	from land arranged by the Deptt. within a lead of 100 m.	cum	3.10	138.55	429.51	PWD SOR Vol-I , Page no. 1	3.1			

14	Supplying, fitting and fixing windows and ventilators with or	sqm	5.70	1330	7581.00	PWD SOR Vol-I , Page no. 84	5.7			
	without integrated grills conforming to IS 1038-1975 and									
	manufactured from rolled steel sections conforming to IS 7452-1974									
	with non-friction projecting type, box type hinges, glazing clips,									
	lugs locking bracket, handle plate etc, including hoisting in									
	position, straightening if required, fixing lugs in cement concrete (									
	1:2:4) with stone chips 20 mm down cutting holes and mending									
	good damages to match with existing surface complete in all respect									
	excluding glazing.									
	(a) Fixed type steel windows as per IS sizes with horizontal glazing bars.									
	Total				**306677.00**					

DPR for MSW Management- Durgapur						Remarks	Calculation				
Abstract - Weighbridge - 9.3 m x 3.6 m & Cabin 3.5 m x 2.0 m											
Sl. No	Description of Item	Units	Qty	Rate	Amount						
1	Earth work in excavation of foundation trenches or	cum	66.792	120.47	8046.4322	PWD SOR Vol-I , Page no. 1	66.792	33.48	3.348	36.828	44.528
	drains, in all sorts of soil (including mixed soil but							7	0.7	7.7	
	excluding laterite or sandstone) including removing,										
	spreading or stacking the spoils within a lead of 75										
	m. as directed. The item includes necessary trimming										

	the sides of trenches, levelling, dressing and										
	ramming the bottom, bailing out water as required										
	complete. Depth of excavation not exceeding 1,500 mm.										
2	Anti termite treatment to back filling of the masonry foundation with chemical emulsion by	sqm	44.528	94	4185.632	PWD SOR Vol-I , Page no. 4	33.48	3.348	36.828	44.528	
	admixing chloropyrofos emulsifiable concentrates						7	0.7	7.7		
	(1% concentration) with water by weight at the rate										
	of 7.5 Litres per sq. m. of the vertical surface of the										
	substructure for each side of the foundation.. The										
	work shall be carried out as per specification										
	described in 6.2.2. of code IS-6313 (part -II) 1981.										
	(Mode of measurment will be vertical area treated.)										
3	Cement concrete with graded jhama khoa (30 mm size)	cum	5.1	4996	25479.60	PWD SOR Vol-I , Page no. 12	5.1	12			
	excluding shuttering										
	In ground floor and foundation. 1:3:6 proportion										
4	Filling in foundation or plinth by silver sand in	cum	6.6792	54.495	363.983	PWD SOR Vol-I , Page no. 2	6.6792				
	layers not exceeding 150 mm as directed and										
	consolidating the same by thorough saturation with										
	water, ramming complete including the cost of										
	supply of sand. (payment to be made on										
	measurement of finished quantity)										
4	Rainforced cement concrete										

	Reinforcement for reinforced concrete work in all sorts of	kg	3271.2375	61.787	202119.95	PWD SOR Vol-I , Page no. 28	3271.2375				
	structures including distribution bars, stirrups, binders etc										
	initial straightening and removal of loose rust (if necessary),										
	cutting to requisite length, hooking and bending to correct										
	shape, placing in proper position and binding with 16 gauge										
	black annealed wire at every intersection, complete as per										
	drawing and direction.										
	For works in foundation, basement and upto roof of ground										
	floor/upto 4 m- SAIL/ TATA/RINL										
5	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	32.712375	5063	165622.75	PWD SOR Vol-I , Page no. 15	32.712375				
	chips (20 mm nominal size) excluding shuttering and										
	reinforcement if any, in ground floor as per relevant IS codes.										
	Pakur Variety										
6	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)										

	necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete										
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	85	351	29835.00	PWD SOR Vol-I , Page no. 27	85				
	direction of Engineer-In-Charge.										
7	Brick work with 1st class bricks in cement mortar (1:6)	cum	7.0125	5155	36149.44	PWD SOR Vol-I , Page no. 30	7.0125				
	foundation and plinth										
8	Brick work with 1st class bricks in cement mortar (1:6)										
	In superstructure, ground floor	cum	5.0575	5380	27209.35	PWD SOR Vol-I , Page no. 30	5.0575				
9	Plastering										
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar										

ANNEXURE- I

TECHNICAL SPECIFICATION FOR PORTABLE REFUSE COMPACTOR OF 10.5 Cu.M CAPACITY

Sl. No.	Item Description
1.	**General Description**
	A Portable Type Compactor is an integral unit incorporating the Compactor and Container and is fitted with a detachable hydraulically operated loading bucket for receiving the garbage from handcart/tricycle rickshaw, loading and compaction of the garbage into the container. The Unit is mounted on specially designed frame with rollers and can be handled by a Hook loader mounted on a 16T GVW truck chassis. The hook loader is capable of picking-up the loaded Compactor Unit, transportation to the dumping ground, discharging the garbage by hydraulic tipping, thereafter transporting the compactor back to the Waste Collection Centre and unload safely on to the ground.
2.	**Technical Specification**
a)	Total Volume - Min 10.5 m^3
-	Charge Chamber Volume - 0.8 Cu.M Approx.
-	Loading Cycle Time - 40 – 45 sec
-	Compaction Cycle Time - 30 – 50 sec
-	Operating pressure - 200 – 220 bar
-	Compaction Thrust - 230 - 240 KN
-	Electric Motor - 5 HP
-	Exterior dimension(approx) L= 4880 mm. W=2250 mm H=2040 mm
-	The compactor shall be of front loading type With a hydraulic operated Bucket (App. approx. 450 litre Capacity) to receive waste from hand cart approx 5 to 6 hand carts / 2 to 3 tricycle vans at a time and Unload the same waste in to the charge chamber of the equipment.
-	All Hydraulic Cylinders and allied components and all hydraulic pumps must be from Manufacturers of ISO 9001:2008 Certified.
b)	The compactor shall be made of Anti Corrosive Steel, SAIL CORE or equivalent.
-	The rear door shall be bubble gate type, side hinged & provided with heavy duty water tight full "P" seal which shall be easily replaceable.
-	The container shall have adequate side taper on both sides for easy unloading of garbage at dump site.
-	The Loading Bucket shall be detachable type and shall be detached when the compactor is taken to the dumping ground.
-	Ratchet mechanism shall be provided in the door in order to compress the door seal properly.
-	The container shall be provided with leachate collection tray for collection of leachate during compaction of garbage & there should be suitable drainage system to discharge the leachate into the nearby drain. The Leachate should not drop on road during transportation.
-	The floor of charge chamber is made of approx. 10mm thick plate & shall be supported by longitudinal members Intermediate bracing. All side walls & top of the container are strong enough for smooth service throughout it's service life.

Sl. No.	Item Description
c)	The compactor head shall be powered by Hydraulic power Unit.
-	All electrical circuits shall be enclosed in control box with start reverse & stop buttons
-	The Compactor head shall be equipped with suitable electric motor directly coupled to a suitable rotary hydraulic pump.
-	The total power pack to be mounted on the compactor unit.
-	The compactor shall be furnished with a cycle control system utilized hydraulic cylinder in conjunction with a solid state circuit that operated at minimum pressure levels except at the time when packing of solid waste is done.
3.	**BRIEF DISCRIPTION OF OPERATION**
-	The Portable Refuse Compactor is installed in a Waste Collection Centre. The Waste is brought to the Centre using handcart/tricycle rickshaws and is unloaded into a Bucket which can receive garbage from 5 to 6 hand cart or 2 to 3 tricycle rickshaws. When the Bucket is full, the Bucket is lifted hydraulically to discharges the garbage into the charge chamber of the Equipment.
-	On actuation of the hydraulic system, a compacting head travel through the charge box into the container through an aperture and compacts the garbage. On completion of the compaction cycle which takes about 30 – 50 seconds, the compaction head will return to its retracted position till the next charge is loaded.
	As the container start fillings up, with every movement of the compaction head, the waste is compacted.
-	The incoming garbage to be compacted to 800-900 kg./cu. (approx.) Compactor shall be equipped with electronic system in order to monitor the machines operation operational hours, level of loading, periodic maintenances, malfunctions, etc. All these functions shall be visible on a LCD screen.
4.	**SAFETY FEATURES** All the Operating Buttons requires for operation of the Equipment such as start/stop buttons, loading and compaction buttons, Full unit lights are located just above the loading door to facilitate easy operation. The Equipment is provided with the following Safety Features :- - Door interlocks so that compaction does not start when the door is open. - The compaction will not start unless the loading door is securely fastened. - The unit automatically stops operation once it reaches to its full capacity. - Indicating lamps are provided to Indicate the status the operation.
5.	**SURFACE FEATURES AND FINISH** Both the exterior and interior surfaces of the compactor will be thoroughly sanded prior to spray painting. The compactor's exterior will be spray-painted with two coats of superior quality anticorrosive primer and two coats enamel metal paint of a reputed make of approved shade. To resist corrosion, the compactor's interior to be coated with 2 coats of superior quality anti-corrosive gray epoxy paint.

TECHNICAL SCHEDULE FOR PORTABLE REFUSE COMPACTOR OF 10.5 CUBIC METER CAPACITY

Sr. No.	Item Description	Technical Requirement
1	Type	Stationary Portable Type Compactor
2	Electric Motor	5 HP
3	Total Volume	Min. 10.5 M3
4	Protection Against Solid Waste Corrosion	By Anti Corrosive Gray epoxy paint to interior
5	Loading Cycle time	45 Sec. (Approx.)
6	Packing Pressure	200 Bar (Min.)
7	Compaction Efficiency	Large Garbage to be compacted to 800 to 900 kg/cum (Approx.)
8	Waste Receiving Unit	Hydraulically operated waste receiving Unit
9	Compaction Force	230-240 KN
10	Anti Corrosive Steel	SAILCORE or equivalent
11	All hydraulic Cylinders allied components and Hydraulic Pumps	ISO 9001:2008 Certified Companies
12	Transportation	By Hook Loader mounted on 16T GVW truck Chassis

ANNEXURE-II

TECHNICAL SPECIFICATIONS OF TRUCK MOUNTED HOOK LOADER MOUNTED ON 16 T GVW BS – III TRUCK CHASSIS

Product Description:

Truck Mounted Hook Loader, suitable for lifting the Portable Compactor with integral container unit of 10.5 Cum hydraulically, is designed to pick up the loaded or empty compactor unit, transport, dumping of material and thereafter unload the skip containers safely and faster.

The telescopic Jib enables proper load distribution on the chassis.

Technical Features:

Designed to handle Portable Compactor with integral container unit of 10.5 cum. The dumping mode is achieved by operating the main rams, actuating arm and tilting frame, with jib extended, pivoting around the rear shaft.

- A sub-frame made out of bend steel plates and cross members is mounted on the truck chassis frame.
- A tilting frame hinged to the sub frame with a steel shaft carry the rear centering rollers.
- A main arm hinged on the tilting frame with a mechanical locking mechanism allows the dumping mode.
- A telescopic jib, sliding in the arm, supporting a wide-open lifting hook enables loading of container.

Hydraulic Specifications:

Pump	-	High Performance Vane Type Pump
Controls	-	low pressure hydraulic – Manual
Filter	-	10 micron, return line with replaceable cartridge
Arm cylinders (lift cylinders)	-	2 Nos., double acting, equipped with counter balance valves and built in by pass valves.
Jib cylinder (slide cylinders)	–	1 No. Double acting, equipped with built in counter balance valves, Hoses, tubes & fittings.
Container Locking Cylinder	-	1 No., Double Acting
Boom Locking Cylinder	-	1 No., Double Acting

Stabilizers are provided at suitable locations along the rear of the vehicle to ensure vehicle stability during the loading & unloading cycle of operation.

All Hydraulic Cylinders, allied components and all hydraulic pumps shall be supplied from manufacturer of ISO 9001:2008 certified company.

SAFETY DEVICES	-	Safety valve prevents jib operation during dump Mode

- Automatic locks on arm
- Slide through container catches

TRUCK CHASSIS

The Equipment shall be mounted on Standard 16 T GVW BS – III Truck Chassis with Non Sleeper's Driver's Cabin and PTO.

The details of Truck Chassis are as under:-

GVW	:	16 T BS - III
Wheel Base	:	4200 mm. (min)

Welding

Structure welding confirming to relevant IS standards.

Hook for Lifting

The hook for lifting the Compactor Unit would be integral to the structure. It shall be provided with the necessary reinforcement to handle the design weight for lifting with adequate factor of safety. The shape and size would as per design of the lifting tackle.

ANNEXURE-III

SL. NO.	DESCRIPTION	QTY	UNIT PRICE (RUPEES)	EXCISE DUTY @12.5%	SALES TAX @ 14.5%	FREIGHT/ TRANSIT INSURANCE	Entry Tax, Registration & insurance	TOTAL UNIT PRICE (RUPEES)
1	2	3	4	5	6	7	8	9
1	Solid Waste Portable Compactor Model SRC1200 with integral 10.5 Cum Container unit including Hydraulic Loading Bucket/ Shovel arrangement as per technical specifications enclosed as Annexure-I.	1	13,75,000/-	1,71,875/-	1,99,375/-	55,000/-	BY Client	18,01,250/-
2	Hook loader suitable to be mounted on 16 T GVW BS-III Truck Chassis capable of handling the compactor unit with 10.5 cum volume container unit as per technical specifications as Annexure-II.	1	30,00,000/-	Exempted	4,35,000/-	65,000/-	BY Client	35,00,000/-

Note: The above prices are based on the Terms and conditions enclosed as Annexure-IV.

ANNEXURE – IV

TERMS AND CONDITIONS

01	Price basis	Ex-Works Bhiwadi – Rajasthan
02	Truck Chassis	The Hook Loader Equipment is suitable for mounting on Standard 16 T GVW Truck Chassis with minimum wheel base 4200 mm with Non Sleeper's Driver's Cabin and
03	Excise Duty	**FOR COMPACTOR UNIT (Item No.1)** Extra as applicable. The Present Rate of Excise Duty 12.5% on the portable Compactor unit (Item No. 1). However, being a government levy, the payment for Excise duty shall be governed by the rules as shall be applicable at the time of supply. **FOR HOOK LOADER (Item No 2)** Being a "Special Purchase Motor Vehicle" As per present rules Excise duty is Exempted on the truck mounted machines provided full Excise duty has been paid on the cost of truck chassis and no "CENVAT CREDIT" has been claimed on the cost of truck chassis. However, being a government levy, the payment for Excise duty shall be governed by the rules as shall be applicable at the time of supply.
04	Sales Tax	Extra as applicable. The Present Rate of Sales Tax is 2% against Form "C" otherwise 14.5%. Any Variation plus or minus in the sales tax by the government shall be to the account of the client.
05	Service Tax	Extra as applicable. The Present Rate of Service Tax is 14%. Any Variation plus or minus in the service tax by the government shall be to the account of the client.
06	Entry Tax, Octroi and other government taxes and duties	Our quoted prices do not include Entry Tax, Octroi or any other State and Central Government Taxes. Such taxes shall be paid by the client directly or in case, we are advised to pay these taxes the same shall be reimbursed to us as per actuals.
07	Firmness of Price	The quoted Ex-work Prices is firm. However any variation Plus or Minus in taxes and duties shall be to the account of Client.
08	Freight	As quoted/By Client
09	Transit Insurance	As quoted/By Client
10	Vehicle Registration & Comprehensive Insurance	By Client

11	Delivery	120 days or earlier Ex-works, Bhiwadi from the date of receipt of your technically and commercially clear and acceptable order along with advance.
12	Payment Terms	a) 100% cost of Truck Chassis against Performa Invoice b) 30% of Basic Price as advance along with Order against Bank Guarantee c) 70% against Performa Invoice at the time of delivery.
13	Guarantee	The equipment shall be under warranty against defects in material and workmanship for a period of 18 months from the date of dispatch or 12 months from the date of commissioning whichever is earlier.
14	Commissioning	We shall depute one of our Commissioning Engineers for a period of 3~4 days for commissioning of the Machine and for Training 2~3 personnel of the Client in Operation and Maintenance of the Machine. The Client has to provide all the Consumables such as Diesel, Oil etc. for commissioning of the Machine.

	including rounding off or chamfering corners as directed and										
	raking out joints including throating, nosing and drip course,										
	scaffolding/staging where necessary (Ground floor).[Excluding										
	cost of chipping over concrete surface]										
	15 mm thick plaster with 1:6 cement mortar	sqm	27.23	144	3921.12	PWD SOR Vol-I , Page no. 164	27.23				
10	Painting										
	Applying Interior grade Acrylic Primer of approved quality and brand	sqm	27.23	53.03	1444.01	PWD SOR Vol-I , Page no. 172	27.23				
	on plastered or concrete surface old or new surface to receive										
	Distemper/ Acrylic emulsion paint including scraping and preparing										
	the surface throughly, complete as per manufacturer's specification										
	and as per direction of the EIC. (In Ground Floor)										
	Two Coats- Solvent based interior grade Acrylic Primer										
11	Earth work in filling in foundation trenches or plinth	cum	65	138.55	9005.75	PWD SOR Vol-I , Page no. 1	65				
	with good earth, in layers not exceeding 150 mm.										
	including watering and ramming etc. layer by layer										
	complete. (Payment to be made on the basis of										
	measurement of finished quantity of work) With earth obtained by fresh excavation										
	(including cost of excavation upto 1,800 mm. depth)										

	from land arranged by the Deptt. within a lead of 100 m.											
	Total				**513383**							

DPR for MSW Management- Durgapur												
Abstract - Administration Building - 14.250 x 8.50 m						Remarks	Calculation					
Sl. No	Description of Item	Units	Qty	Rate	Amount							
1	Surface Dressing of the ground in any kind of soil	sqm	170.63	11.00	1876.88	PWD SOR Vol-I , Page no. 1	170.63					
	including removing vegetation inequalities not											
	exceeding 15 cm depth and disposal of the rubbish					1mt outside periphery						
	within a lead upto 75 m as directed.											
2	Earth work in excavation of foundation trenches or	cum	199.86	120.47	24076.68	PWD SOR Vol-I , Page no. 1	199.8563	121.125	12.1125	133.2375		
	drains, in all sorts of soil (including mixed soil but											
	excluding laterite or sandstone) including removing,											
	spreading or stacking the spoils within a lead of 75											
	m. as directed. The item includes necessary trimming					1mt inside						
	the sides of trenches, levelling, dressing and											
	ramming the bottom, bailing out water as required											
	complete. Depth of excavation not exceeding 1,500 mm.											
3	Anti termite treatment to back filling of the masonry foundation with chemical emulsion by	sqm	121.13	94	11385.75	PWD SOR Vol-I , Page no. 4	121.125					
	admixing chloropyrofos emulsifiable concentrates											
	(1% concentration) with water by weight at the rate											
	of 7.5 Litres per sq. m. of the vertical surface of the											

	substructure for each side of the foundation.. The										
	work shall be carried out as per specification										
	described in 6.2.2. of code IS-6313 (part -II) 1981.										
	(Mode of measurment will be vertical area treated.)										
4	Cement .concrete with graded jhama khoa (30 mm size)	cum	86.18	4996	430555.28	PWD SOR Vol-I , Page no. 12	86.18				
	excluding shuttering										
	In ground floor and foundation. 1:3:6 proportion										
5	Rainforced cement concrete										
	Reinforcement for reinforced concrete work in all sorts of	kg	6149.38	61.787	379951.43	PWD SOR Vol-I , Page no. 28	6149.375				
	structures including distribution bars, stirrups, binders etc										
	initial straightening and removal of loose rust (if necessary),										
	cutting to requisite length, hooking and bending to correct										
	shape, placing in proper position and binding with 16 gauge										
	black annealed wire at every intersection, complete as per										
	drawing and direction.										
	For works in foundation, basement and upto roof of ground										
	floor/upto 4 m- SAIL/ TATA/RINL										
6	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	61.49	5063	311342.86	PWD SOR Vol-I , Page no. 15	61.49375	22.2875	13.14844	13.6125	6.342188
	chips (20 mm nominal size) excluding shuttering and							6.103125			
	reinforcement if any, in ground floor as per relevant IS codes.										

	Pakur Variety										
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete										
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	450.00	351	157950.00	PWD SOR Vol-I , Page no. 27	L.S				
	direction of Engineer-In-Charge.										
8	Brick work with 1st class bricks in cement mortar (1:6)	cum	11.82	5155	60906.33	PWD SOR Vol-I , Page	11.82				

						no. 30					
	foundation and plinth										
9	Brick work with 1st class bricks in cement mortar (1:6)										
	In superstructure, ground floor	cum	67.45	5380	362882.94	PWD SOR Vol-I , Page no. 30	67.450 36	12.84 75	5.275	5.3075	11.748 75
								5.512 5	6.006 25	5.3062 5	4.8153 6
10	Plastering							4.542 5	4.613 75	1.475	
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar										
	including rounding off or chamfering corners as directed and										
	raking out joints including throating, nosing and drip course,										
	scaffolding/staging where necessary (Ground floor).[Excluding										
	cost of chipping over concrete surface]										
	15 mm thick plaster with 1:6 cement mortar	sqm	745.4 9	144	107350.74	PWD SOR Vol-I , Page no. 164	745.49 12	137.2 175	65.18	55.45	120.90 33
								57.91 25	65.05	55.45	48.962 5
								44.35	50.27 304	44.742 4	
11	Painting										
	Applying Interior grade Acrylic Primer of approved quality and brand	sqm	719.8 5	53.03	38173.63	PWD SOR Vol-I , Page no. 172	719.84 96	137.2 175	65.18	55.45	120.90 33
	on plastered or concrete surface old or new surface to receive							57.91 25	65.05	55.45	48.962 5
	Distemper/ Acrylic emulsion paint including scraping and preparing							44.35	50.27	19.100	

									304	8	
	the surface throughly, complete as per manufacturer's specification										
	and as per direction of the EIC. (In Ground Floor)										
	Two Coats- Solvent based interior grade Acrylic Primer										
	Dry Distemparing to interior walls or ceiling including washing, cleaning	sqm	719.85	51	36712.33	PWD SOR Vol-I , Page no. 174	719.8496	137.2175	65.18	55.45	120.9033
	washing, smoothening surface - Two Coats							57.9125	65.05	55.45	48.9625
								44.35	50.27304	19.1008	
12	With Sand Cement Mortar (1:4) 20 mm thick & 2 mm thick	sqm	158.41	1023	162053.61	PWD SOR Vol-I , Page no. 54	158.4102	32.375	2.59284	11.25	1.275
	cement slurry at back side of tiles using cement @ 2.91							8.56	1.75542	21.8302	2.22086
	Kg/Sq.m & joint filling using white cement slurry @							1.3209	12	15	1.479
	0.20kg/Sq.m.							11.25	1.275	9	1.122
	Area of each tile above 0.09 Sq.m/ Coloured decorative							3.7175	1.1424	17.7423	1.50176
13	Earth work in filling in foundation trenches or plinth	cum	80.00	138.55	11084.00	PWD SOR Vol-I , Page no. 1	LS				
	with good earth, in layers not exceeding 150 mm.										
	including watering and ramming etc. layer by layer										
	complete. (Payment to be made on the basis of										
	measurement of finished quantity of work) With earth obtained by fresh excavation										
	(including cost of excavation upto 1,800 mm. depth)										
	from land arranged by the Deptt. within a lead of										

	100 m.										
14	Supplying, fitting and fixing steel rolling shutter profile type with	sqm	21.10	2688	56716.80	PWD SOR Vol-I , Page no. 80					
	18 B.G . of approved type steel latche section 75mm wide, fitted										
	with coil wire spring to necessiate the fitting of required Nos. of C.I.										
	Pulleys on heavy type solid drawn seamless steel tube complete with										
	locking arrangements both inside and outside specially builtup side										
	guide channels including providing a hood for the steel rolling										
	shutter in the room, painting two coats of approved aluminium paint										
	over a coat of red lead primer complete.										
15	Supplying, fitting and fixing windows and ventilators with or	sqm	35.3056	1330	46956.45	PWD SOR Vol-I , Page no. 84	35.3056				
	without integrated grills conforming to IS 1038-1975 and										
	manufactured from rolled steel sections conforming to IS 7452-1974										
	with non-friction projecting type, box type hinges, glazing clips,										
	lugs locking bracket, handle plate etc, including hoisting in										
	position, straightening if required, fixing lugs in cement concrete (										
	1:2:4) with stone chips 20 mm down cutting holes and mending										
	good damages to match with existing surface complete in all respect										
	excluding glazing.										
	(a) Fixed type steel windows as per IS sizes with										

	horizontal glazing bars.										
16	Supplying, fitting & fixing UPVC pipes A- Type and fittings conforming to	Metre	10	291	2910.00		L.S				
	IS:13592-1992 with all necessary clamps nails, including making holes in										
	walls, floor etc. cutting trenches in any soil through masonry concrete										
	structures etc if necessary and mending good damages including joining										
	with jointing materails (Spun Yarn, Valamoid/Bitumen/M-Seal etc)										
	complete.										
	UPVC Pipes: 110 mm. Dia										
17	Plumbing & Sanitary Works	ls	1	125000	125000.00						
18	Elevation Work	ls	1	110500	110500.00						
	Total				**2438385.70**						

DPR for MSW Management- Durgapur							Calculation			
Abstract - Vehicle Wheel Wash - 25.0 m x 5.0 m										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks				
1	Surface Dressing of the ground in any kind of soil	sqm	189.00	11.00	2079.00	PWD SOR Vol-I , Page no. 1	189			
	including removing vegetation inequalities not									
	exceeding 15 cm depth and disposal of the rubbish					1mt outside periphery				
	within a lead upto 75 m as directed.									
2	Earth work in excavation of foundation trenches or	cum	206.2	120.4	24846.937	PWD SOR Vol-	206.25	125	12.5	137.5

			5	7	5	I , Page no. 1				
	drains, in all sorts of soil (including mixed soil but									
	excluding laterite or sandstone) including removing,									
	spreading or stacking the spoils within a lead of 75									
	m. as directed. The item includes necessary trimming									
	the sides of trenches, levelling, dressing and									
	ramming the bottom, bailing out water as required									
	complete. Depth of excavation not exceeding 1,500 mm.									
2	Anti termite treatment to back filling of the masonry foundation with chemical emulsion by	sqm	125.00	94	11750	PWD SOR Vol-I , Page no. 4	125			
	admixing chloropyrofos emulsifiable concentrates									
	(1% concentration) with water by weight at the rate									
	of 7.5 Litres per sq. m. of the vertical surface of the									
	substructure for each side of the foundation.. The									
	work shall be carried out as per specification									
	described in 6.2.2. of code IS-6313 (part -II) 1981.									
	(Mode of measurment will be vertical area treated.)									
3	Cement concrete with graded jhama khoa (30 mm size)	cum	1.30	4996	6511.96	PWD SOR Vol-I , Page no. 12	1.303434			
	excluding shuttering									
	In ground floor and foundation. 1:3:6 proportion									
4	Rainforced cement concrete									
	Reinforcement for reinforced concrete work in all sorts of	MT	5411.00	61.787	334329.46	PWD SOR Vol-I , Page no. 28	5411			
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									

	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.									
	For works in foundation, basement and upto roof of ground									
	floor/upto 4 m- SAIL/ TATA/RINL									
5	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	54.11	5063	273958.93	PWD SOR Vol-I , Page no. 15	54.11			
	chips (20 mm nominal size) excluding shuttering and									
	reinforcement if any, in ground floor as per relevant IS codes.									
	Pakur Variety									
6	Supplying and laying brick Khoa of ordinary bats of size (38	sqm	125.00	173	21625.00	PWD SOR Vol-I , Page no. 12	125			
	mmx 63 mm)of approved quality in 100 mm layer (loose) filling									
	in gaps with small ones rammed and compact as directed true									
	to level and grade.									
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)									

	necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	95.00	351	33345.00	PWD SOR Vol-I , Page no. 27	115			
	direction of Engineer-In-Charge.									
8	Earth work in filling in foundation trenches or plinth	cum	35.00	138.55	4849.25	PWD SOR Vol-I , Page no. 1	35			
	with good earth, in layers not exceeding 150 mm.									
	including watering and ramming etc. layer by layer									
	complete. (Payment to be made on the basis of									
	measurement of finished quantity of work) With earth obtained by fresh excavation									
	(including cost of excavation upto 1,800 mm. depth)									
	from land arranged by the Deptt. within a lead of 100 m.									
	Total				**713295.5**					

					3					

DPR for MSW Management- Durgapur							Calculation			
Abstract - Facultative Aerated Lagoon - 30.0 m x 22.0 m										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks				
1	Surface Dressing of the ground in any kind of soil including removing vegetation inequalities not exceeding 15 cm depth and disposal of the rubbish within a lead upto 75 m as directed.	sqm	768.00	11.00	8448.00	PWD SOR Vol-I , Page no. 1 1mt outside periphery	768			
2	Earth work in excavation of foundation trenches or drains, in all sorts of soil (including mixed soil but excluding laterite or sandstone) including removing, spreading or stacking the spoils within a lead of 75 m. as directed. The item includes necessary trimming the sides of trenches, levelling, dressing and ramming the bottom, bailing out water as required complete. Depth of excavation not exceeding 1,500 mm.	cum	1650.00	120.47	198775.5	PWD SOR Vol-I , Page no. 1	1650			
3	Filling in foundation or plinth by silver sand in layers not exceeding 150 mm as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of sand. (payment to be made on measurement of finished quantity)	cum	129.60	54.495	7062.55	PWD SOR Vol-I , Page no. 2	129.6			

4	Ordinary Cement concrete (mix 1:2:4) with graded stone chips	cum	876.00	4271	3741396.00	PWD SOR Vol-I , Page no. 12	876.00			
	(20 mm nominal size) excluding shuttering and reinforcement,if									
	any, in ground floor as per relevant IS codes.									
5	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	1500.00	351	526500.00	PWD SOR Vol-I , Page no. 27	1500.00			
	direction of Engineer-In-Charge.									

6	Reinforcement for reinforced concrete work in									
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.	kg	87600.00	61.787	5412541.20	PWD SOR Vol-I , Page no. 28	87600.00	876.00		
7	Supplying & laying Double Wall Corrugated (with external	meter	1200.00	705	846000.00	PWD SOR Vol-II w. e. f. 1.12.2015 page no. 19	1200			
	annular corrugation and smooth internal walls) High									
	Density Polyethelene Pipes conforming to IS 16098									
	(Part-II):2013 having Stiffness Class of SN 8 with									
	Ring Stiffness not less than 8.00 KN/Sqm. and Impact									
	Resistance TIR value not more than 10% including necessary									
	jointing materials for non-pressure underground									
	Drainage, Sewerage & Cross drainage application.									
	(ii) 200mm internal dia.									
8	Surface Aerators are designed and manufactured for application	nos	16.00	100000	1600000					
	in treatment of wastewater. The floating surface aerators are high									
	speed equipment, which boost of having excellent aeration efficiency and									
	high capacity agitation. These simply constructed aerators consist of an axial									

	flow impeller, which rotates at motor speed.									
9	Supplying and laying of 1.5 mm thick flat cost geomembrane to correct profile	sq m	3208.00	300	962400.00	http://www.indiamart.com/kohinoorproofing/hdpe-geomembrane.html#hdpe-geomembrane	3208			
	as per drawing and specification including unrolling, cutting ,testing ,placing									
	in proper position and jointing the side through welding and									
	anchoring the side anchor trench.									
10	Supplying, testing and installation of 1.0-2.0 m wide Woven Jute	sq m	1460.80	96.7	141259.36	Volume III: Road & Bridge Works	1460.8	1328	132.8	
	Geotextile (JGT) 724 gm/sqm possessing tensile strength of 25 kN/m					Page no. 239				
	(+10%, -5% tolerance) with a porometry around 150 to 400 micron and									
	thickness 2 mm. Jute fabric should be laid with overlaps									
	of 150 mm crosswise and 300 mm longitudinally duly secured to subgrade									
	by U-shaped M.S. staples (11 gauge)/ round head country nail of 150 mm									
	length at an interval of 750 mm or as per direction of the Engineer-in-Charge									
	Using Treated Woven Jute Geotextile with									
	approved rot-resistant (eco-friendly) additive.									
11	Construction of embankment with approved material	cum	8512.00	85.6	728627.2	Volume III: Road & Bridge	8512	16		
	obtained from borrow pits with a lift upto 1.5 m,					Work; Page no.				

						236				
	transporting to site, spreading, grading to required									
	slope and compacting to meet requirement of Tables									
	300.1 and 300.2 with a lead upto 1000 m as per									
	Technical Specification Clause 301.5 for Rural Roads of									
	MORD. (Mode of measurement: pre works and post works)									
12	Supplying & laying 3mm thick pre-fabricated plastomeric water proofing	sqm	2320.00	466	1081120	PWD SOR Vol-I , Page no. 302	2320			
	membrane conforming to EN 12311-1 & ASTMD 5147, manufactured with									
	atactic poly propylene (APP) modified premium grade asphalt , specially									
	reinforced with non-woven polyester core with polyester reinforcement @160									
	gms per sqm & both faces covered with thermo-fusible polyethylene film									
	/MineraL on top face over a coat of primer @ 0.40 lit/sqm of manufacturer's									
	specification on smooth,clean dry surface prepared wherever required.									
	Lap joint shall be provided of 75 mm in longitudinal & 100 mm in transverse									
	direction and fused using LPG/ Propane torch employing extra care ensuring									
	full bondage,complete removal of entrapped air and sealing edges into									
	grooves in appropriate manner as per direction of Engineer -in-charge									
	complete including materials,labour and applicable taxes.									
	Payment shall be made on the basis of finished surface area.).									
13	Furnishing and laying of the live sods of perennial turf	sqm	1152.	17.2	19814.4	Volume III:	1152			

			00			Road & Bridge				
	forming grass on embankment slope, verges or other					Work; Page no. 238				
	locations shown on the drawing or as directed by the									
	Engineer including preparation of ground, fetching of									
	sods and watering as per Clause 307 of Specifications									
	for Road & Bridge Works of MoRT&H (5th Revision).									
14	Soling or dry pavement with one brick-on-edge laid in herring	% sq m	768.00	74.04	56862.72	PWD SOR Vol-I , Page no. 202	768.00			
	bone pattern on a layer of brick flat (thickness 75 mm. plus 125 mm)									
	Total				**15273944.21**					

DPR for MSW Management- Durgapur							Calculation			
Abstract - Substation Room - 9 m x 6.5 m										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks				
				in INR	in INR					
1	Surface Dressing of the ground in any kind of soil	sqm	93.50	11.00	1028.50	PWD SOR Vol-I , Page no. 1	93.5			
	including removing vegetation inequalities not									
	exceeding 15 cm depth and disposal of the rubbish									
	within a lead upto 75 m as directed.									
2	Earth work in excavation of foundation trenches or	cum	96.53	120.47	11628.37	PWD SOR Vol-I , Page no. 1	96.525	58.5	5.85	64.35
	drains, in all sorts of soil (including mixed soil but									
	excluding laterite or sandstone) including removing,									

	spreading or stacking the spoils within a lead of 75									
	m. as directed. The item includes necessary trimming									
	the sides of trenches, levelling, dressing and									
	ramming the bottom, bailing out water as required									
	complete. Depth of excavation not exceeding 1,500 mm.									
3	Anti termite treatment to back filling of the masonry	sqm	58.50	94	5499.00	PWD SOR Vol-I , Page no. 4	58.5			
	foundation with chemical emulsion by									
	admixing chloropyrofos emulsifiable concentrates									
	(1% concentration) with water by weight at the rate									
	of 7.5 Litres per sq. m. of the vertical surface of the									
	substructure for each side of the foundation.. The									
	work shall be carried out as per specification									
	described in 6.2.2. of code IS-6313 (part -II) 1981.									
	(Mode of measurment will be vertical area treated.)									
4	Cement concrete with graded jhama khoa (30 mm size)	cum	24.00	4996	119904.00	PWD SOR Vol-I , Page no. 12	24			
	excluding shuttering									
	In ground floor and foundation. 1:3:6 proportion									
5	Rainforced cement concrete									
	Reinforcement for reinforced concrete work in all sorts of	kg	2488.13	61.787	153733.78	PWD SOR Vol-I , Page no. 28	2488.125			
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									

	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.									
	For works in foundation, basement and upto roof of ground									
	floor/upto 4 m- SAIL/ TATA/RINL									
6	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	24.88	5063	125973.77	PWD SOR Vol-I , Page no. 15	24.88125			
	chips (20 mm nominal size) excluding shuttering and									
	reinforcement if any, in ground floor as per relevant IS codes.									
	Pakur Variety									
7	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)									

	HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	95.00	351	33345.00	PWD SOR Vol-I , Page no. 27	95			
	direction of Engineer-In-Charge.									
8	Brick work with 1st class bricks in cement mortar (1:6)	cum	5.38	5155	27708.13	PWD SOR Vol-I , Page no. 30	5.375			
	foundation and plinth									
9	Brick work with 1st class bricks in cement mortar (1:6)									
	In superstructure, ground floor	cum	23.58	5380	126833.50	PWD SOR Vol-I , Page no. 30	23.575			
10	Plastering									
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar									
	including rounding off or chamfering corners as directed and									
	raking out joints including throating, nosing and drip course,									
	scaffolding/staging where necessary (Ground floor).[Excluding									
	cost of chipping over concrete surface]									
	15 mm thick plaster with 1:6 cement mortar	sqm	172.30	144	24811.20	PWD SOR Vol-I , Page no. 164	172.3			
11	Painting									

	Applying Interior grade Acrylic Primer of approved quality and brand									
	on plastered or concrete surface old or new surface to receive									
	Distemper/ Acrylic emulsion paint including scraping and preparing									
	the surface throughly, complete as per manufacturer's specification									
	and as per direction of the EIC. **(In Ground Floor)**									
	Two Coats- Solvent based interior grade Acrylic Primer	sqm	113.80	53.03	6034.81	PWD SOR Vol-I , Page no. 172	113.8			
	Dry Distemparing to interior walls or ceiling including washing,									
	cleaning , washing, smoothening surface - Two Coats	sqm	172.30	51	8787.30	PWD SOR Vol-I , Page no. 174	172.3			
12	With Sand Cement Mortar (1:4) 20 mm thick & 2 mm thick									
	cement slurry at back side of tiles using cement @ 2.91									
	Kg/Sq.m & joint filling using white cement slurry @									
	0.20kg/Sq.m.									
	Area of each tile above 0.09 Sq.m/ Coloured decorative	sqm	22.95	1023	23472.74	PWD SOR Vol-I , Page no. 54	22.945			
13	Earth work in filling in foundation trenches or plinth									
	with good earth, in layers not exceeding 150 mm.									
	including watering and ramming etc. layer by layer									
	complete. (Payment to be made on the basis of									
	measurement of finished quantity of work) With earth obtained by fresh excavation									
	(including cost of excavation upto 1,800 mm. depth)									
	from land arranged by the Deptt. within a lead of 100 m.	cum	25.00	138.55	3463.75	PWD SOR Vol-I , Page no. 1	25			

14	Supplying, fitting and fixing windows and ventilators with or	sqm	7.60	1330	10108.00	PWD SOR Vol-I , Page no. 84	7.6			
	without integrated grills conforming to IS 1038-1975 and									
	manufactured from rolled steel sections conforming to IS 7452-1974									
	with non-friction projecting type, box type hinges, glazing clips,									
	lugs locking bracket, handle plate etc, including hoisting in									
	position, straightening if required, fixing lugs in cement concrete (									
	1:2:4) with stone chips 20 mm down cutting holes and mending									
	good damages to match with existing surface complete in all respect									
	excluding glazing.									
	(a) Fixed type steel windows as per IS sizes with horizontal glazing bars.									
15	Supplying, fitting and fixing steel rolling shutter profile type with	sqm	10.60	2688	28492.80	PWD SOR Vol-I , Page no. 80	10.6			
	18 B.G . of approved type steel latche section 75mm wide, fitted									
	with coil wire spring to necessiate the fitting of required Nos. of C.I.									
	Pulleys on heavy type solid drawn seamless steel tube complete with									
	locking arrangements both inside and outside specially builtup side									
	guide channels including providing a hood for the steel rolling									
	shutter in the room, painting two coats of approved aluminium paint									
	over a coat of red lead primer complete.									

16	Supplying, fitting & fixing UPVC pipes A- Type and fittings conforming to	Metre	10.00	291	2910.00		10	L.S		
	IS:13592-1992 with all necessary clamps nails, including making holes in									
	walls, floor etc. cutting trenches in any soil through masonry concrete									
	structures etc if necessary and mending good damages including joining									
	with jointing materails (Spun Yarn, Valamoid/Bitumen/M-Seal etc)									
	complete.									
	UPVC Pipes: 110 mm. Dia									
	Total				**713734.64**					

DPR for MSW Management- Durgapur							Calculation			
Abstract - Compost Plant - 157 x 106 m										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks				
1	Surface Dressing of the ground in any kind of soil	sqm	68688.00	11.00	755568.00	PWD SOR Vol-I , Page no. 1	68688			
	including removing vegetation inequalities not									
	exceeding 15 cm depth and disposal of the rubbish					1mt outside periphery				
	within a lead upto 75 m as directed.									
2	Earth work in excavation of foundation trenches or	cum	27459.30	120.47	3308021.87	PWD SOR Vol-I , Page no. 1	27459.3	16642	1664.2	18306.2
	drains, in all sorts of soil (including mixed soil but									
	excluding laterite or sandstone) including removing,									
	spreading or stacking the spoils within a lead of 75									
	m. as directed. The item includes necessary trimming					1mt inside				

	the sides of trenches, levelling, dressing and									
	ramming the bottom, bailing out water as required									
	complete. Depth of excavation not exceeding 1,500 mm.									
3	Anti termite treatment to back filling of the masonry	sqm	16642.00	94	1564348.00	PWD SOR Vol-I , Page no. 4	16642			
	admixing chloropyrofos emulsifiable concentrates									
	(1% concentration) with water by weight at the rate									
	of 7.5 Litres per sq. m. of the vertical surface of the									
	substructure for each side of the foundation.. The									
	work shall be carried out as per specification									
	described in 6.2.2. of code IS-6313 (part -II) 1981.									
	(Mode of measurment will be vertical area treated.)									
4	Filling in foundation or plinth by silver sand in	cum	2575.80	54.495	140368.221	PWD SOR Vol-I , Page no. 2	2575.8			
	layers not exceeding 150 mm as directed and									
	consolidating the same by thorough saturation with									
	water, ramming complete including the cost of									
	supply of sand. (payment to be made on									
	measurement of finished quantity)									
5	Construction of Sub Base using Local Materials,	cum	5151.60	317	1633057.2	Volume III: Road & Bridge Works	5151.6			
	spreading in uniform layers with Motor grader on					Page no. 244				
	prepared surface, including screening the metal as									
	necessary, mixing by mix in place method with									
	Rotavator at OMC, and compacting with vibratory									
	roller to achieve the desired density, lighting,									
	guarding and barricading including cost and									
	carriage of all materials and making necessary									

	earthen bundh of one metre wide on each side to									
	protect the edges complete as per Clause 401 of									
	Specifications for Road & Bridge Works of MoRT&H									
	(i) For Construction of Sub Base by compacting 1st									
	class brick aggregates (40 mm down) and									
	sand (in proportion of 60:40).									
6	Cement concrete with graded jhama khoa (30 mm size)	cum	236.70	4996	2514786.56	PWD SOR Vol-I , Page no. 12	236.7			
	excluding shuttering									
	In ground floor and foundation. 1:3:6 proportion									
7	Rainforced cement concrete									
	Reinforcement for reinforced concrete work in all sorts of	kg	382120.00	61.787	23610048.44	PWD SOR Vol-I , Page no. 28	382120			
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.									
	For works in foundation, basement and upto roof of ground									
	floor/upto 4 m- SAIL/ TATA/RINL									
8	Ordinary Cement concrete (mix 1:1.5:3) with graded stone	cum	503.36	5063	2548511.68	PWD SOR Vol-I , Page no. 15	503.36			
	chips (20 mm nominal size) excluding shuttering and									
	reinforcement if any, in ground floor as per relevant IS codes.									

	Pakur Variety									
9	Supplying ready mixed concrete of M 20 Grade with well	cum	3317.84	6411	21270672.24	PWD SOR Vol-I , Page no. 21	3317.84			
	graded stone chips of 20 mm nominal size containing designed									
	quantity of cement per Cu.m of wet concrete produced in									
	computerised batching plant under controlled condition using									
	approved super plastisizer, designing concrete mix following									
	I.S. 10262 and I.S. 456, transporting the mix with agitation in									
	transit mixer to work site depositing the mix on a platform									
	erected for the purpose at required levels of concreting and									
	then placing the mix in its final location of form work,									
	compacting and curing the same complete as per specification									
	& direction of the Engineer-in-charge including computerised									
	batching plant transit mixer with all accessories vibrators etc.									
	inclusive of all other incidental charges in this connection									
	complete but excluding cost of hire charge of platform and its									
	supporting staging which would be paid through separate item.									
	[Cement to be supplied by the Manufacturer or supplier]									
	With approved concrete pump.									
10	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout									

	props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	1250.00	351	438750.00	PWD SOR Vol-I , Page no. 27	1250			
	direction of Engineer-In-Charge.									
11	Brick work with 1st class bricks in cement mortar (1:6)	cum	2291.88	5155	11814641.40	PWD SOR Vol-I , Page no. 30	2291.88			
	foundation and plinth									
12	Brick work with 1st class bricks in cement mortar (1:6)									
	In superstructure, ground floor	cum	227.32	5380	1222981.60	PWD SOR Vol-I , Page no. 30	227.32			

13	Plastering									
	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar									
	including rounding off or chamfering corners as directed and									
	raking out joints including throating, nosing and drip course,									
	scaffolding/staging where necessary (Ground floor).[Excluding									
	cost of chipping over concrete surface]									
	15 mm thick plaster with 1:6 cement mortar	sqm	5364.64	144	772508.16	PWD SOR Vol-I , Page no. 164	5364.64			
14	Painting									
	Applying Interior grade Acrylic Primer of approved quality and brand	sqm	2682.32	53.03	142243.43	PWD SOR Vol-I , Page no. 172	2682.32			
	on plastered or concrete surface old or new surface to receive									
	Distemper/ Acrylic emulsion paint including scraping and preparing									
	the surface throughly, complete as per manufacturer's specification									
	and as per direction of the EIC. (In Ground Floor)									
	Two Coats- Solvent based interior grade Acrylic Primer									
15	Earth work in filling in foundation trenches or plinth	cum	1250.00	138.55	173187.50	PWD SOR Vol-I , Page no. 1	1250			
	with good earth, in layers not exceeding 150 mm.									
	including watering and ramming etc. layer by layer									
	complete. (Payment to be made on the basis of									
	measurement of finished quantity of work) With earth obtained by fresh excavation									
	(including cost of excavation upto 1,800 mm. depth)									

	from land arranged by the Deptt. within a lead of 100 m.									
16	Supplying, fitting and fixing glass reinforced polyester	sqm	2050 0.00	1133	23226500. 00	PWD SOR Vol- I , Page no. 65	20500			
	translucent fiber glass sheet to match with GCI Corrugation									
	as per IS: 12866 - 1989 in roof fitted and fixed with 10 mm									
	dia "J" or "L" hook, bolts and nuts, limpet and bitumen									
	washers and putty with 150mm end lap and one corrugation									
	minimum side lap complete.									
	b) 2.0mm +/- 0.2 mm thick sheet.(3.25Kg/Sq.m)									
	Fire retardant milky white									
17	M.S. structural works in roof trusses with tubular sections	MT	918.2 3	7249 6	66568000. 00	PWD SOR Vol- I , Page no. 75	918.23	16642	665680 00	
	conforming to IS: 806-1957 & IS: 1161- 1958 cnnected to one									
	another with bracket, gusset cleats as per design, direction of									
	Engineer-in-charge complete including cutting to requisite size,									
	fabrication with necessary metal arc welding conforming to IS: 816-									
	1956 & IS: 9595 using electrodes of approved make and brand									
	conforming to IS:814- 1957, haulage, hoisting and erection all complete.									
	The rate includes the cost of rolled steel section, consumables such									
	as electrodes, gas and hire charge of all tools and plants and labour									
	reqired for the work including all incidental chages such as									

	electricity charges, labour insurance charges etc.									
	Payment to be made on the basis of calculated weight of structural									
	tubular memebrs as specified in relevent IS code in finished work.									
	Payment for gusset, bracket, cleat may be made by adding the									
	actual weight of such items with weight of finished structural									
	members. The rates are considered for a height of erection 8 m. /									
	2nd floor level from the ground. Add 1.5 % extra over the rate for									
	each additional floor or 4m. beyond the initial 8 m. or part thereof.									
	for trusses spanning above 20.00 m and up to 30 .00m									
	Total				**161704194.3**					

DPR for MSW Management- Durgapur							Calculation			
Abstract -Road - 5.0 wide										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks				
1	Surface Dressing of the ground in any kind of soil	sqm	3185.00	11.00	35035.00	PWD SOR Vol-I , Page no. 1	3185			
	including removing vegetation inequalities not									
	exceeding 15 cm depth and disposal of the rubbish					1mt outside periphery				
	within a lead upto 75 m as directed.									
2	Earth work in excavation of foundation trenches or	cum	6230.	120.4	750576.28	PWD SOR Vol-	6230.4	3080	32	3.2

			40	7	8	I , Page no. 1				
	drains, in all sorts of soil (including mixed soil but									
	excluding laterite or sandstone) including removing,									
	spreading or stacking the spoils within a lead of 75									
	m. as directed. The item includes necessary trimming									
	the sides of trenches, levelling, dressing and									
	ramming the bottom, bailing out water as required									
	complete. Depth of excavation not exceeding 1,500 mm.									
3	Filling in foundation or plinth by silver sand in	cum	1603.50	54.495	87382.7325	PWD SOR Vol-I , Page no. 2	1603.5			
	layers not exceeding 150 mm as directed and									
	consolidating the same by thorough saturation with									
	water, ramming complete including the cost of									
	supply of sand. (payment to be made on									
	measurement of finished quantity)									
4	Water Bound Macadam Sub Base by consolidating	cum	682.50	419	285967.5	Volume III: Road & Bridge Works	682.5			
	Jhama metal / Laterite chelly or stone metal /					Page no. 244				
	shingles of specific size in hard crust to requisite									
	thickness (measured after compaction) in layers									
	including screening of metals etc. as necessary,									
	hand packing, sweeping, watering and rolling in									
	stages with power roller to proper line, grade and									
	camber, lighting, guarding & barricading and									
	making necessary earthen bundh of one metre									
	width on each side where necessary to protect									
	edges and preparing the bed by necessary cutting									
	or filling and rolling all complete including the cost of									

	all materials and hire and labour charges of all men									
	and machineries and compacting to the required									
	density, as per Clause 404 of Specifications for Road									
	& Bridge Works of MoRT&H (5th Revision).									
	(i) For Construction of Sub Base by consolidating									
	screening :									
5	Providing and laying dense bituminous macadam	cum	341.25	1307	446013.75	Volume III: Road & Bridge Works	341.25			
	with Hot Mix Plant producing an average output of					Page no. 250				
	75 tonnes per hour using coarse aggregate,									
	fine aggregate, filler and bituminous binder as per design									
	Job Mix Formula conforming Marshall Method as per									
	specification, including screening, cleaning of chips									
	and preparing a uniform and quality mix in Hot Mix									
	Plant and ensuring a homogeneous mix, in which all									
	particles of the mineral aggregates are coated									
	uniformly, transporting the hot mix to work site, laying									
	the mixed materials at specified laying temperature									
	with a hydrostatic paver finisher with sensor control to									
	the required grade, level and alignment over									
	prepared surface coated with tack coat, rolling with									
	smooth wheeled, vibratory and tandem rollers for									
	break down, inter-mediate and finished rolling to									
	achieve the desired density of at least 98% of that of									
	Laboratory Marshall specimen, hand packing and									
	pinning to give an even surface including cost and									
	carriage of bitumen, coarse and fine aggregates									
	and filler materials and hire charges of machinery									
	and equipment for construction and quality control,									

	fuels and lubricants and wages of operational staff									
	complete as per Clause 505 of Specifications for									
	Road & Bridge Works of MoRT&H (5th Revision).									
	For Grading 1 (37.5 mm nominal size, 75-100 mm thick.)									
	Using Batch Type HMP of minimum capacity 100-120 TPH.									
6	Construction of embankment with approved material	cum	6835.50	85.6	585118.8	Volume III: Road & Bridge Works	6835.5			
	obtained from borrow pits with a lift upto 1.5 m,					Page no. 236				
	transporting to site, spreading, grading to required									
	slope and compacting to meet requirement of Tables									
	300.1 and 300.2 with a lead upto 1000 m as per									
	Technical Specification Clause 301.5 for Rural Roads of									
	MORD. (Mode of measurement: pre works and post									
7	Providing & laying Semi-dense Bituminous Concrete	cum	341.25	1278	436117.5	Volume III: Road & Bridge Works	341.25			
	(SDBC) as wearing coarse by Hot Mix Plant, using					Page no. 251				
	coarse aggregates, fine aggregates, filler materials									
	and binder of required specification and grading as									
	per approved job mix formula, over thoroughly									
	cleaned surface coated with tack coat, including									
	screening, cleaning of aggregates, mixing the									
	components as per approved Job Mix Formula with									
	hot binder, carrying the mixture by tipper truck or									
	any other approved suitable arrangements, laying									
	the mixture uniformly, maintaining the specified									
	laying temperature, thorough rolling with power roller									

	with necessary hand packing and pinning to give an									
	uniform surface to achieve the desired density of at									
	least 98% of that of Laboratory Marshall specimen									
	including the cost and carriage of aggregates, filler									
	and binder, heating the binder, preheating the									
	aggregates, and filler to the specified temperature									
	including the hire charges of Hot Mix Plant and other									
	machineries, pay of operators, cost of fuel and lubricants									
	and all other incidental charges complete.									
	For Grading 1									
	(13 mm nominal size, **35-40 mm thick.**)									
	Using Batch Type HMP of minimum capacity									
	100-120 TPH.									
8	Construction of granular sub-base by providing	cum	682.50	397	270952.5	Volume III: Road & Bridge Works	682.5			
	graded material, mixing in Wet Mix Plant at					Page no. 251				
	OMC, carriage of mixed material to work site,									
	spreading in uniform layers with Motor grader									
	on prepared surface in proper grade and									
	camber, compacting with vibratory power									
	roller to achieve the desired density, including									
	lighting, guarding, barricading, including cost									
	of all materials, machinery, tools and plants and									
	cost of quality control complete as per Clause									
	401 of Specifications for Road & Bridge Works of									
	MoRT&H (5th Revision).									
	(i) Grading – I									

9	Providing and laying bituminous macadam with Hot Mix Plant using approved crushed aggregates of specified grading as per Table 500.7 premixed with bituminous binder, transported to site laid over a previously prepared surface at specified laying temperature with paver finisher to the required grade, level and alignment and rolled with suitable power roller for break down, inter-mediate and finished rolling as per specification to achieve the desired - compaction including cost and carriage of stone materials and bitumen, hire charges of machinery and equipment, cost of fuel and lubricants and wages of operational staff, quality control complete as per Clause 504 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). **For Grading 2 (19 mm nominal size, 50-75 mm thick.)** Using Drum mix Type HMP of minimum capacity 40-60 TPH.	cum	227.50	1136	258440	Volume III: Road & Bridge Works Page no. 249	227.5			
10	Cement concrete with graded jhama khoa (30 mm size) excluding shuttering In ground floor and foundation. 1:3:6 proportion	cum	30.00	4996	149880.00	PWD SOR Vol-I , Page no. 12	30			
11	Supplying ready mixed concrete of M 20 Grade with well graded stone chips of 20 mm nominal size containing	cum	20.00	6411	128220.00	PWD SOR Vol-I , Page no. 21	20			

	designed									
	quantity of cement per Cu.m of wet concrete produced in									
	computerised batching plant under controlled condition using									
	approved super plastisizer, designing concrete mix following									
	I.S. 10262 and I.S. 456, transporting the mix with agitation in									
	transit mixer to work site depositing the mix on a platform									
	erected for the purpose at required levels of concreting and									
	then placing the mix in its final location of form work,									
	compacting and curing the same complete as per specification									
	& direction of the Engineer-in-charge including computerised									
	batching plant transit mixer with all accessories vibrators etc.									
	inclusive of all other incidental charges in this connection									
	complete but excluding cost of hire charge of platform and its									
	supporting staging which would be paid through separate item.									
	[Cement to be supplied by the Manufacturer or supplier]									
	With approved concrete pump.									
12	Brick work with 1st class bricks in cement mortar (1:4)	cum	160.00	5505	880800.00	PWD SOR Vol-I , Page no. 30	160.00			
	(a) In foundation and plinth									
13	Reinforcement for reinforced concrete work in									
	structures including distribution bars, stirrups, binders									

	etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.	kg	5000.00	61.787	308935.00	PWD SOR Vol-I , Page no. 28	5000	50.00		
14	Supplying, fitting and fixing glass reinforced polyester	sqm	80.00	1133	90640.00	PWD SOR Vol-I , Page no. 65	80			
	translucent fiber glass sheet to match with GCI Corrugation									
	as per IS: 12866 - 1989 in roof fitted and fixed with 10 mm									
	dia "J" or "L" hook, bolts and nuts, limpet and bitumen									
	washers and putty with 150mm end lap and one corrugation									
	minimum side lap complete.									
	b) 2.0mm +/- 0.2 mm thick sheet.(3.25Kg/Sq.m)									
15	M.S. structural works in columns, beams etc. with simple rolled	MT	5.00	68292	341460.00	PWD SOR Vol-I , Page no. 74	5	32	128000	1.874304
	structural members (e.g. joists, angle, channel sections conforming									
	to IS: 226, IS: 808 & SP (6)- 1964 connected to one another with									
	bracket, gussets, cleats as per design, direction of Engineer-in-									
	charge complete including cutting to requisite shape and length,									
	fabrication with necessary bolting, metal arc welding conforming to									

	IS: 816- 1956 & IS: 1995 using electrodes of approved make and									
	brand conforming to IS:814- 1957, haulage, hoisting and erection									
	all complete. The rate includes the cost of rolled steel section,									
	consumables such as electrodes, gas and hire charge of all tools									
	and plants and labour required for the work including all incidental									
	chages such as electricity charges, labour insurance charges etc.									
	I) For structural members of specified sections weighing less than									
	22.5 Kg./m									
16	Brick soling with picked jhama bricks including preparation of bed as	sqm	2040.00	638	1301520.00	PWD SOR Vol-I , Page no. 201	2040			
	necessary with brick joints properly filled in and packed with powdered									
	earth and including necessary cushion of similar material below the									
	soling (and in between layers when more than one layer is used)									
	completes as per direction.									
	(b) Double brick flat soling (thickness 150 mm.)									
17	Providing and laying of hot applied thermoplastic	sqm	450.00	584	262800.00	Volume III: Road & Bridge Works	450			
	compound 2.5 mm thick including reflectorising glass					Page no. 266				
	beads @ 250 gms per sqm area, thickness of 2.5 mm									
	is exclusive of surface applied glass beads as per									
	IRC:35. The finished surface to be level, uniform and									
	free from streaks and holes complete as per Clause									
	803 of Specifications for Road & Bridge Works of									

	MoRT&H (5th Revision).									
18	Construction of subgrade and earthen shoulders with	cum	258.00	94.8	24458.40	Volume III: Road & Bridge Works	258			
	approved material obtained from borrow pits with all					Page no. 236				
	lifts and leads, transporting to site, spreading, grading									
	to required slope and compacted to meet									
	requirement of Table 300.2 with lead upto 1000 m as									
	per Technical Specification Clause 303.1 for Rural									
	Roads of MORD. (Borrow pit /pre work post work									
	measurement)									
	Total				**6644317.47**					

DPR for MSW Management- Durgapur										
Abstract -Landfill -										
Sl. No	Description of Item	Units	Qty	Rate	Amount	Remarks	Calculation			
1	Surface Dressing of the ground in any kind of soil	sqm	22646.00	11.00	249106.00	PWD SOR Vol-I , Page no. 1	22646			
	including removing vegetation inequalities not									
	exceeding 15 cm depth and disposal of the rubbish					1mt outside periphery				
	within a lead upto 75 m as directed.									
2	Earth work in excavation of foundation trenches or	cum	56048.85	120.47	6752204.96	PWD SOR Vol-I , Page no. 1	56048.85	33969	3396.9	37365.9
	drains, in all sorts of soil (including mixed soil but									

	excluding laterite or sandstone) including removing,									
	spreading or stacking the spoils within a lead of 75									
	m. as directed. The item includes necessary trimming									
	the sides of trenches, levelling, dressing and									
	ramming the bottom, bailing out water as required									
	complete.									
	a) Depth of excavation not exceeding 1,500 mm.									
	(b) Depth of excavation for additional depth beyond									
	1,500 mm. and upto 3,000 mm. but not requiring									
	shoring.									
3	Filling in foundation or plinth by silver sand in	cum	8712.00	54.495	474760.44	PWD SOR Vol-I , Page no. 2	8712	5445		
	layers not exceeding 150 mm as directed and									
	consolidating the same by thorough saturation with									
	water, ramming complete including the cost of									
	supply of sand. (payment to be made on									
	measurement of finished quantity)									
4	Construction of embankment with approved material	cum	23131.00	85.6	1980013.60	Volume III: Road & Bridge Works	23131	2385	8734	12012
	obtained from borrow pits with a lift upto 1.5 m,					Page no. 236				
	transporting to site, spreading, grading to required									
	slope and compacting to meet requirement of Tables									
	300.1 and 300.2 with a lead upto 1000 m as per									
	Technical Specification Clause 301.5 for Rural Roads of									
	MORD. (Mode of measurement: pre works and post									

8	Filling in foundation or plinth by silver sand in layers not exceeding 150 mm as directed and consolidating the same by thorough saturation with water, ramming complete including the cost of supply of sand. (payment to be made on measurement of finished quantity)	cum	3248.00	54.495	176999.76	PWD SOR Vol-I , Page no. 2	3248			
9	Construction of Sub Base using Local Materials, spreading in uniform layers with Motor grader on prepared surface, including screening the metal as necessary, mixing by mix in place method with Rotavator at OMC, and compacting with vibratory roller to achieve the desired density, lighting, guarding and barricading including cost and carriage of all materials and making necessary earthen bundh of one metre wide on each side to protect the edges complete as per Clause 401 of Specifications for Road & Bridge Works of MoRT&H (5th Revision). For Construction of Sub Base by compacting gravel, coarse sand and moorum (A.I. value of more than 6): (in proportion of 35:40:25)	cum	1377.00	217	298809.00	Volume III: Road & Bridge Works Page no. 244	1377			
10	Supplying & laying Double Wall Corrugated (with external annular corrugation and smooth internal walls) High	meter	2500.00	705	1762500.00	PWD SOR Vol-II w. e. f. 1.12.2015 page no. 19	2500			

	Density Polyethelene Pipes conforming to IS 16098									
	(Part-II):2013 having Stiffness Class of SN 8 with									
	Ring Stiffness not less than 8.00 KN/Sqm. and Impact									
	Resistance TIR value not more than 10% including necessary									
	jointing materials for non-pressure underground									
	Drainage, Sewerage & Cross drainage application.									
	(ii) 200mm internal dia.									
11	**Supplying, testing and installation of 1.0-2.0 m wide Woven Jute**	sq m	1429 1.20	96.7	1381959.04	Volume III: Road & Bridge Works	14291.2	12992	1299.2	
	Geotextile (JGT) 724 gm/sqm possessing tensile strength of 25 kN/m					Page no. 239				
	(+10%, -5% tolerance) with a porometry around 150 to 400 micron and									
	thickness 2 mm. Jute fabric should be laid with overlaps									
	of 150 mm crosswise and 300 mm longitudinally duly secured to subgrade									
	by U-shaped M.S. staples (11 gauge)/ round head country nail of 150 mm									
	length at an interval of 750 mm or as per direction of the Engineer-in-Charge									
	Using Treated Woven Jute Geotextile with									
	approved rot-resistant (eco-friendly) additive.									
12	Soling or dry pavement with one brick-on-edge laid in herring	% sq m	4312.00	74.04	319260.48	PWD SOR Vol-I , Page no. 202	4312.00			
	bone pattern on a layer of brick flat (thickness 75 mm. plus 125 mm)									
13	Earth work in filling in foundation trenches or plinth	cum	3416.00	138.55	473286.80	PWD SOR Vol-I , Page no. 1	3416.00			

	with good earth, in layers not exceeding 150 mm.									
	including watering and ramming etc. layer by layer									
	complete. (Payment to be made on the basis of									
	measurement of finished quantity of work) With earth obtained by fresh									
	excavation (including cost of excavation upto 1,800 mm. depth)									
	from land arranged by the Deptt. within a lead of 100 m.									
14	Ordinary Cement concrete (mix 1:2:4) with graded stone chips	cum	1594.70	4271	6810963.70	PWD SOR Vol-I , Page no. 12	1594.70			
	(20 mm nominal size) excluding shuttering and reinforcement,if									
	any, in ground floor as per relevant IS codes.									
15	Hire and labour charges for shuttering with centering and necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor) necessary staging upto 4 m using approved stout props and thick hard wood planks of approved thickness with required bracing for concrete slabs, beams and columns, lintels curved or straight including fitting, fixing and striking out after completion of works (upto roof of ground floor)									

	HIRE, LABOUR CHARGES FOR CENTERING & SCAFFOLDING - Unsupported Height up to 3.66 M Steel scaffolding pipes, jack Props, wallers, Foot plates, brackets, steel Centering Plates, etc., complete									
	(a) 25 mm to 30 mm thick wooden shuttering as per decision &	sqm	2508.00	351	880308.00	PWD SOR Vol-I , Page no. 27	2508.00			
	direction of Engineer-In-Charge.									
16	Reinforcement for reinforced concrete work in									
	structures including distribution bars, stirrups, binders etc									
	initial straightening and removal of loose rust (if necessary),									
	cutting to requisite length, hooking and bending to correct									
	shape, placing in proper position and binding with 16 gauge									
	black annealed wire at every intersection, complete as per									
	drawing and direction.	kg	187310.00	61.787	11573322.97	PWD SOR Vol-I , Page no. 28	187310.00	1873.10		
17	Plaster (to wall, floor, ceiling etc.) with sand and cement mortar									
	including rounding off or chamfering corners as directed and									
	raking out joints including throating, nosing and drip course,									
	scaffolding/staging where necessary (Ground floor).[Excluding									
	cost of chipping over concrete surface]									
	(ii) With 1:4 cement mortar									
	(a) 20 mm thick plaster	sqm	3049.44	191	582443.04	PWD SOR Vol-I , Page no. 164	3049.44			

18	Neat cement punning about 1.5mm thick in wall,dado,window									
	sill,floor etc.	sqm	981.00	38	37278.00	PWD SOR Vol-I , Page no. 166	981.00			
19	Turfing with Sods									
	Furnishing and laying of the live sods of perennial turf									
	forming grass on embankment slope, verges or other									
	locations shown on the drawing or as directed by the									
	Engineer including preparation of ground, fetching of									
	sods and watering as per Clause 307 of Specifications					Volume III: Road & Bridge Works				
	for Road & Bridge Works of MoRT&H (5th Revision).	sqm	6500.00	17.2	111800.00	Page no. 238	6500.00			
20	Supplying, fitting and fixing in position reinforced cement polymer									
	concrete manhole /gully pit cover with matching frame.As per I.S-12592(M.D)									
	iii) 20 MT load bearing capacity round manhole cover provided with	each	10.00	3966	39660.00	PWD SOR Vol-II, page-87	10.00			
	two lifter hooks fitted with matching frame of size									
21	Box cutting or filling in Road embankment in all sorts of soil including					Volume III: Road & Bridge Works				
	spreading the spoils properly over the flank as necessary or on berm to	sqm	20025.00	14.4	288360.00	Page no. 237	20025.00			
	approximate grade & camber and rolling the sub-grade with power roller									
	including uprooting and removing plants and jungles when and where									
	necessary. Depth up to 150 mm.									

22	Brick work with 1st class bricks in cement mortar (1:4)	cum	654.00	5505	3600270.00	PWD SOR Vol-I , Page no. 30	654.00			
	(a) In foundation and plinth									
23	Ordinary Cement concrete (mix 1:2:4) with graded stone chips	cum	278.40	4271	1189046.40	PWD SOR Vol-I , Page no. 12	278.40			
	(20 mm nominal size) excluding shuttering and reinforcement, if									
	any, in ground floor as per relevant IS codes.									
	Total				**47372954.11**					

ANNEXURE 3

Project Summary

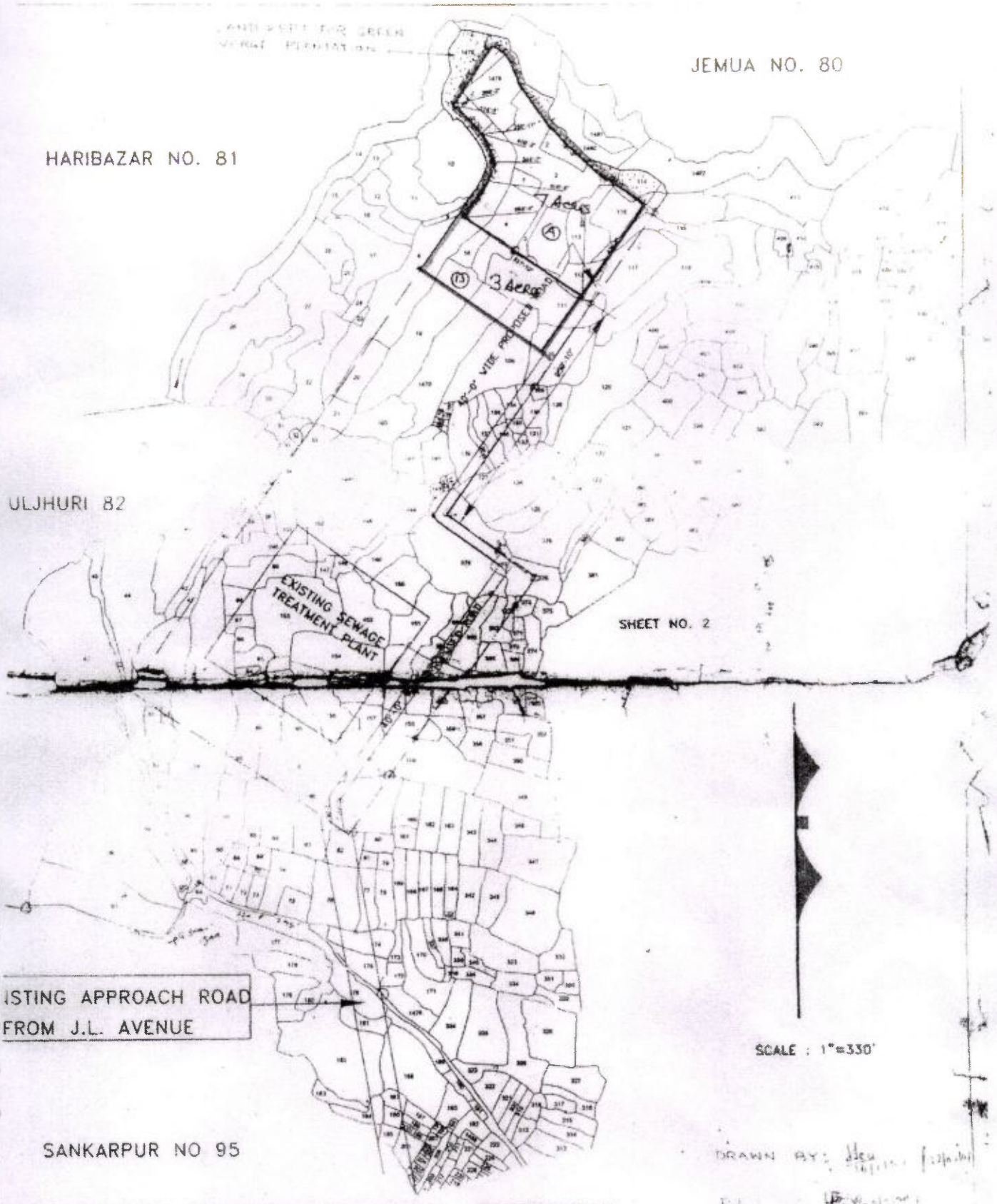
SWM: DURGAPUR MUNICIPAL CORPORATION
PROJECT SUMMARY

A) AREA		154.20 Sq. Km	
B) NO. OF WARDS		43 Nos.	
C) DEMOGRAPHIC PROFILE			
POPULATION		Per Capita Generation, gm/day	Waste (TPD)
2011 Census	563557	-	-
2016	**611300**	**404**	**247**
Base year - 2018	629568	415	261
2023	673163	442	298
2028	713797	472	337
2033	751468	503	378
Design year 2038	786177	537	422
D) QUANTITY OF SOLID WASTE GENERATION			
Solid Waste generated by Residential Households			
			180.3 TPD
Solid Waste generated by Commercial Establishments			
			38.36 TPD
Solid Waste generated by Institutional Establishments			
			14.47 TPD
Street Sweeping, Drain Silting & Construction Debris			**14 TPD**
Total Quantity of Solid Waste Generated by Durgapur			**247.13 TPD**
Per capita Waste generation			**404 gm/ person/ per day**
E) COMPOST PLANT & RDF PLANT			
1. Area			**7 ACRE**
2. Capacity			**320 TPD**
3. Life period			**20 years**
F) LANDFILL FACILITY			
1. Area			**3 ACRE**
2. Disposal Period			**4 YEAR**
G) PROJECT COST			
Estimated Cost for SWM System			
A. Collection System			
Procurement of vehicles for Primary Collection & Secondary Transportation			203161000 Page No 165
Procurement PP Equipments for primary collection			4018720 Pg No 165
			20,71,79,720
B. Processing Plant			
Construction of Compost Plant and RDF Plant			2346,21,247 Pg 173

Procurement of Machineries for the plant	557,75,000
Procurement of vehicles for Operation of the plants	117,30,000
	30,21,26,247
C. Sanitary Landfill	
Construction of Sanitary Landfill	795,40,734
Procurement of Vehicles for Operation of the landfill	290,00,000
	10,85,40,734
D. Social Awareness Program (Per Year)	**65,50,000**
Sub Total	**62,43,96,701**
Contingency – 3%	1,87,31,901
Administrative Expenses – 1%	62,43,967
Total	**64,93,72,569**
H) O&M COST	
Operational Monthly Expenditure	
O & M cost of Primary collection and Secondary transportation	**66,61,340**
O & M of Processing plant and Sanitary landfill	14,64,053
Total (O & M Cost per month)	**81,25,393 (INR)**
O & M Cost per year	**9,75,04,716 (INR)**
I) REVENUE GENERATION COST	
Total Revenue Generation	
Revenue from Proposed User Charges	18,43,247
Revenue from selling out the recyclable items	12,48,000
Revenue from Compost	17,33,333
Proposed user Charges for sanitation services	41,77,820
Total monthly Revenue generation	**90,02,400 (INR)**
Total yearly Revenue generation	**10,80,28,800 (INR)**
SURPLUS (Monthly)	**8,77,007 (INR)**
SURPLUS (Yearly)	**1,05,24,084 (INR)**

ANNEXURE 4

Land Map



AND EARMARKED FOR DURGAPUR MUNICIPAL CORPORATION
FOR DUMPING AND DISPOSAL OF MUNICIPAL SOLID WASTE
(AREA MORE OR LESS 7 ACRES): SHOWN THUS ▭

Subp- A = 7 Acres
B = 3 Acres
10 Acres

ASANSOL DURGAPUR DEVELOPMENT AUTHORITY, CITY CENTRE DURGAPUR 713216

03/01/17

Commissioner
Durgapur Municipal Corporation

K. K. ENVIRO TECH PVT. LTD.

Natural Geotextiles - Geosynthetics

ENVIRONMENT & GEOTECHNICAL SOLUTIONS COMPANY

8, Townshend Road, Kolkata - 700 025, INDIA.

T +91 33 2485 1541 F +91 33 2474 0897 ● Web : www.florafab.com, E Mail : info@florafab.com

CIN No : U02005WB2010PTC144492

Kind Attn. Mr. Ajeet Kumar Singh

Quotation

Invoice t Environmenta Engineering services Kolkata	Quot. No: KKETPL/2016/0012 Date : 11-Nov-16
	Customer Reference : Verbal
	Terms of Payment : Adavnce or 30 days LC
Ship to: As per PO	Quotation Validity : 30 Days from the date of Quotation.
	Transportation Charges : Included

Sr. No.	Product Description	Quantity	UOM	Unit Price INR	Basic Amount INR
	Supply & Installation Material				
1	Supply & Installation of 1.5mm HDPE GRI-GM13 standard (Roll Size- 8m x 120m)	15,000.0	Sqms.	456.00	6,840,000.00
2	Supply & Installation of 400 gsm Geotextile	15,000	Sqms.	196.00	2,940,000.00
3	Supply & Installation HDPE Pipe 300mm	200	RM	6,875.00	1,375,000.00

Freight & Tax Included
Insurance to your account
Octroi if applicable to your account

DELIVERY WITH IN 20 DAYS FROM THE DATE OF PURCHASE ORDER AND PAYMENT CONFIRMATION

Bank Account details of KK Enviro are as follows:
K K Enviro Tech Pvt Ltd
Bank Name- ICICI Bank
Branch Adress:-95, Sarat Bose Road, Kolkata- 700026
Current Account No- 0372 0500 2343
IFSC Code:-ICIC0000372

(This is an computer generated document. No signature will appear.)

2 January 2017

KOLKATA METROPOLITON DEVELOPMENT AUTHORITY.
UNNYAN BHAWAN, DJ – 11, SECTOR – II, 3RD FLOOR
BLOCK A, 2ND & 3RD FLOOR BLOCK – G, SALT LAKE
KOLKATA – 700 091

BREAK UP OF PRICE FOR 30TON 9M X 3M, PITLESS WEIGHBRIDGE

DESCRIPTION	RATE (IN RUPEES)
BASIC PRICE	846600
EXCISE DUTY@12.5% ON BASIC PRICE	105825
BASIC + EXCISE DUTY	952425
ADD: V.A.T @5%	47621
TOTAL COST FOR WEIGHBRIDGE	10,00,046
TOTAL COST FOR WEIGHBRIDGE INCLUDING SOFTWARE	10,00,046

CHARGES FOR 01 NO. COMPUTER, 01 NO. 80 COL.DOT MATRIX PRINTER & 01 NO. 600VA OFFLINE U.P.S. ARE INCLUDED IN THE PRICE.

STAMPING CHARGES & FREIGHT COST ARE INCLUDED.

CHARGES FOR SUPERVISION OF INSTALLATION ARE INCLUSIVE IN THE PRICE. BUT AT THE TIME OF INSTALLATION, YOU WILL HAVE TO ARRANGE CRANE/HYDRA, UNLOADING AT YOUR SITE, MANUAL LABOUR, FOODING & LODGING OF OUR ENGINEER ETC. CIVIL FOUNDATION WILL BE DONE BY YOU AT YOUR SOURCE & COST ACCORDING TO OUR FOUNDATION DRAWING.

ORGANIZATION PROFILE

The **Decade of 50s** has a significant importance in the History of our Nation. Our Country had just gained independence & was hardly Five years young at that time. During that nascent stage of Independence, Our Countrymen were bubbling with string of activities to contribute towards the Economic Development of our Vibrant Nation. However, **A rare few Countrymen** through their sheer vision were thinking differently to spearhead the Economic Activities.

It was during that golden era of "**1952**" , Our Organization "**Tulsi Trading Company**" was formed under the able guidance of **Late Visionary "Mr Tulsi Ram Tikmany".**

The Organization started its Integrated Operations based at "**Kolkata**" for identifying & catering to the Weighing needs of the Industries in **India & few of Its South Asian Neighbouring Countries**. The Journey of the Organization so far has been commendable, right from manufacturing of Mechanical Weighbridges initially to transforming itself to Design, Develop & Cater to the overall Electronic Weighing needs of the Consumers.

Apart from being Pioneers in Static Weighing, We have recently set our foot in the Exclusive Club of Dynamic Weighing too. Our Weighbridges are installed across the Country & Abroad, Performance of which speaks for its ergonomic engineering design, robust structural strength & electronic precision. Our Corporate Operations are respected for its transparency & ethical practices. Our Presence & Continuity in the Industry since past 60 Years boasts about the vibrancy of the Organization.

The Quality & Accuracy of our Product range is of envy to our Competitors. **Our Weighbridge Intelligent Terminal is armed with Anti Theft Features**, which restricts manipulation at the Weighing level.

We have a smart marketing network comprising of Sales & Service professionals operating from strategic locations of the country. Our Service professionals are equipped with necessary breakdown spares & groomed for addressing the Service issues of our esteemed Customers within a timely deadline.

TULSI WEIGH SOLUTIONS PRIVATE LIMITED CIN : U74999WB2011PTC170312
Corporate Address: 68, Ballygunge Circular Road, Flat - 3E, 3rd Floor, Annapurna Apartment, Kolkata 700019, West Bengal, India
Phone Nos.: 033 - 40010701 - 704 Fax No.: 033 - 40010706, Email ID: info@tulsiweigh.com, Website: www.tulsiweigh.com
Factory Address: Jalan Industrial Complex, Gate No : 3, P.O. - Begri, Village - Baniara, Jangalpur, Howrah 711411, West Bengal, India

Quotation No :	TWSPL/1015/2016-17	Your Ref. No.	NIL
Date :	02-Jan-2017 12:	Enquiry No :-	EM/000274 /16-17
		Date :-	02-Jan-2017 12

KOLKATA METROPOLITON DEVELOPMENT AUTHORITY.
AJIT BABU

UNNAYAN BHAWAN, DJ-11, SECTOR - II
3RD FLOOR, BLOCK- A & 2ND & 3RD FLOOR, BLOCK - G
SALT LAKE, KOLKATA - 700 091

E Mail : ajit_msu@yahoo.co.in

Phone : 98300 68733,

Site Address :-

VARIOUS SITE

Sub : **OFFER FOR WEIGHBRIDGE**

Sir,

With referenceto your enquiry, we are pleased to submit our offer as under.

Sl No	Product Name	Capacity Desc	Platform Desc	Graduation	Quantity	Rate
1	FULLY ELECTRONIC WEIGHBRIDGE (PIT LESS)	30000 KG	9M X 3M	05 KG	1	@ Rs. 625000.00 /- Each

1. Technical Details In Annexure 1
2. Terms & Conditions In Annexure 2

All other Terms & Conditions wil beas per General terms & Conditions enclosed herewith.
Thanking you and awaiting to receive your valued order which will have our bestattention at all time.

Yours faithfully,
For **TULSI WEIGH SOLUTIONS PVT. LTD.**

SRIKANT KEJRIWAL (C.E.O)

ANNEXURE 1

TECHNICAL FEATURES

LOAD STRUCURE

The Rugged Structure comprises of widely Flanged Steel Beams of robust sections equipped with superior graded Certified / Tested Steel. The entire structure is fabricated with Precision, wherein Side Flanges and other structural members are built up to the highest Engineering standards & can be mounted on a Pit thereby resulting in further reduction of Construction Cost (Foundation). In order to avoid skidding, Ribbed M S Plates are provided for non weighing Platform of the Structure.

LOAD CELLS

Heavy Duty Strain Gauge type Load Cells (Hermitically Sealed) armed with a Flexible Mounting assembly is provided to ensure precise output. Smart Design of the assembly can absorb the temperature variations caused due to expansion / contraction between the Steel Structure & the foundation. Free aligning of Load cell helps eliminating the Horizontal forces.

ALPHA NUMERIC INDICATOR

Our Indicator has been designed & manufactured with the latest available technology to meet your Weighing application. The enclosure provided is equipped for Dust Proof protection. Stability of display is confined to within 5 seconds, which thereby helps speeding up the Weighing process. Anti Theft features has been incorporated through Dynamic Locking provision with protected password. Transmission of Weighing data to PC - Printer is through an additional provision of Alpha Numeric Key Board. A Giant storage provision has been allotted for 200000 memories of weighing data. The display stablises in less than 5(five) seconds to speed up your weighing. Capable of operation on 220 volts, single phase 50C/AC supply

CHARGES FOR COMPUTER, 01 NO. 80 COL. DOT MATRIX PRINTER, 01 NO. 600VA OFFLINE U.P.S. ARE INCLUDED IN THE PRICE.

ANNEXURE 2

COMMERCIAL TERMS & CONDITIONS	
Terms name	**Terms And Conditions**
Delivery	Within 8 – 10 weeks after receipt of purchase order and credit of advance payment.
Excise Duty	Extra applicable during the time of despatch from our works. The Prevalent rates presently are @ 12.5% on the basic price. (In order to avail MODVAT benefits, please mention your ECC Number).
Jurisdiction	Disputes if any, arising out of this offer will be subject to Kolkata Jurisdiction
Maintenance	Our Service Engineers are positioned at all strategic locations across the Country equipped with emergency stock of Spares & groomed for minimising the Break Down period of the Machine
Packing & Forwarding	NIL
Payment	Advance @ 40 % of the Basic value along with Purchase order & remaining 60 % (plus all taxes as applicable) against Proforma Invoice
Prices	FREIGHT CHARGES INCLUSIVE.
Stamping	STAMPING CHARGES INCLUDED
Statutory Levy	In case of any increase in the existing duties / tax structure or Introduction of any new Duty / Tax before the course of despatch, the same will be borne by the client
Supervision of erection charges	Supervision of Installation & Commissioning process would be NIL. The availability of Crane at site, unloading & handling at site, fooding & lodging of our engineer, all workshop facilities, provision of unskilled labour will be in the Scope of our esteemed client.
Test Weights	Under the guidelines of Legal Metrology, User of the Weighbridge has to maintain one ton of Cast Iron Test weights (20 kg x 50 units) before the stamping & verification process & than kept inside the weigh cabin. If desired by the client, this can be arranged & supplied by us at an additional cost. (THIS IS FOR WEST BENGAL, FOR OTHER STATES IT WILL BE APPLICABLE ACCORDING TO THEIR RULES)
VAT / C.S.T	V.A.T@5% Extra applicable during the time of despatch from our works. (Please mention your V.A.T / C.S.T No.in your order to avail VAT/ CST credit).
Warranty	Our product is covered under warranty against manufacturing defect for a period of one year from the date of despatch.

ANNEXURE-I

TECHNICAL SPECIFICATION OF 14 CUBIC METER VOLUME REFUSE COMPACTOR VEHICLE

SPECIFICATION OF REFUSE COMPACTOR VEHICLE (RCV)

The Refuse Compactor Vehicle shall be easy to handle and allow the bin handlers to unload Solid Waste from the Bins into the Machine Tailgate hopper with minimum physical effort and maximum safety. Hand lever arrangement for operation of Compaction Cycle shall be provided. The Tailgate loading height shall not be more than 1.2 Meters from the ground level.

The RCV Volume would be 14 M^3. The Tailgate hopper volume will be minimum 1.75 Cubic Meter. The Bin Lifter should be also able to unload garbage simultaneously from two bins of size upto 240 Liters.

REFUSE COLLECTION BODY

The refuse collection body shall be of 14 M^3 Volume and be in torsion-free steel construction. The bottom, the side walls and the top must be dome shaped without any vertical stiffeners / Ribs.

Roof panel thickness – Minimum 4 mm
Side Panel thickness – Minimum 4 mm
Floor thickness – Minimum 4 mm

The tailgate bearing and automatic tailgate locking shall be integrated into the rear frame of the body.

The Ejection Plate shall run on synthetic guide blocks within the lateral longitudinal guides of the boat-type bottom group of the refuse collection body and must be operated by a telescopic hydraulic ram. A hydraulic control unit will regulate the withdrawal of the ejection panel during the loading process, so that the compaction is optimised.

It must serve during loading as a resistance for the refuse compaction process.

TAILGATE

The tailgate shall unlock automatically and raise, to permit ejection of refuse from RCV hopper when hydraulic valve is actuated. There shall be automatic locking arrangement between tailgate and RCV hopper body. This locking system shall be completely liquid proof between tailgate and refuse collection body by using double rubber lip seal.

The Tailgate hopper shall have a Volume of minimum 1.75M^3.

Slide plate – The Slide Plate shall be actuated by 2 Hydraulic Cylinders and must run on suitable number of sliding blocks. Material of construction – IS 2062.
Packer Plate – The Packer Plate shall be actuated by 2 Hydraulic Cylinders.

TAILGATE HOPPER

Material of construction – DOMEX / HARDOX Steel

HYDRAULIC SYSTEM

The RCV shall be equipped with following hydraulic system:

Hydraulic Pump

Dual Hydraulic Pump

a) One pump supplying the pressurized hydraulic oil for Telescopic cylinder of Ejection panel, tail gate lifting & closing and bin lifting & tilting operations.

b) Another pump for operation of compaction cycle i.e. operation of sliding plate and packer plate.

All hydraulic functions are achieved by the below major components:

i. Hand operated mobile control valves supplying controlled hydraulic oil proportionally with its actuation along with integral load holding check valves to prevent reverse flow through valve when shifting.

ii. Remote pilot operated two way valve along with pressure relief valve for creating a hydraulic resistance during withdrawal of the ejection panel for the refuse compaction process.

iii. Over center valve creating a back pressure to prevent the load from free falling or over-run during lowering.

iv. 07 Hydraulic Cylinders shall be installed covering following operation

1 three-stage telescopic ram, double-acting for the ejection panel.
2 hydraulic rams, double-acting for the slide plate
Double acting Slide-cylinders (for compacting) shall be located outside of the sidewalls. The cylinders are mounted in pushing position.
2 hydraulic rams, double-acting for the packer plate
2 hydraulic rams, double-acting for the tailgate
(lifting/lowering and automatic locking)

All Cylinders shall be of reputed make:- WIPRO / DANTAL / CANARA.

Working light, Rotating Beacon light, Backing light, Stop light, Direction indicator and Number Plate light to be provided in the RCV.

GARBAGE LOADING SYSTEM/DEVICES

The equipment can be provided with following optional attachments for unloading the garbage into the tailgate hopper.

UNIVERSAL BIN LIFTER

The Universal Bin Lifter is capable of directly lifting and empting the garbage from a DIN Standard Bin of 1100 Ltrs. / 660 Ltrs. capacity into the tailgate hopper. The Bin Lifter is also capable of lifting and empting the garbage simultaneously from 2 Nos. DIN Standard Bins of upto 240 Ltrs. Capacity.

The Bin Lifter shall be provided with 4 hydraulic cylinders i.e. 2 cylinders for leveling and lifting the Bin and 2 cylinders for tipping operations.

TIP CART SYSTEM

The unit is also provided with detachable tip cart/bucket which is capable of receiving garbage directly from Auto Tippers, Rickshaws, handcarts/wheel barrows etc. and emptying the garbage into the tail gate hopper of Refuse Compactor.

The total number of hydraulic cylinders in the equipment fitted with Universal Bin Lifter System and tip cart system shall be 11 Nos.

SAFETY FEATURES

Hose burst valve shall be fitted to the system to prevent the tailgate descending in the event of the hydraulic failure. There shall be a body prop provided on the tailgate to hold the tailgate in the open position for safety of workshop personnel when entering the body for maintenance or repair.

PAINTING

The entire unit shall be painted with two coats of superior quality anti-corrosive primer with two coats of approved quality paint to ensure long lasting, resistance to rust, weathering and breakage. The color shade shall be purchaser's choice selected from the standard colors offered by the supplier.

TRUCK CHASSIS

The equipment is suitable for mounting on 16 T GVW Truck Chassis, Wheel Base Min. 4200 mm with Driver's Cabin and PTO.

ANNEXURE – II

PRICE PROPOSAL

SL.	DESCRIPTION	QTY	UNIT PRICE (Rs.)	AMOUNT (Rs.)
1.0	Truck Mounted Refuse Compactor Vehicle 14 CuM Container Capacity; Model TPS-RC-14-SA With compaction cycle as per Annexure-I suitable for mounting on 16 T GVW BS-III Truck Chassis with Drivers Cabin and side PTO to be provided by the customer at our plant in Bhiwadi-Rajasthan.	01 No.	14,60,000/-	**14,60,000/-**
	Cost of 16 T GVW BS-III Truck Chassis	01 No.	17,00,000/-	**17,00,000/-**
	TOTAL EX-WORKS BHIWADI			**31,60,000/-**
2.0	**TAXES & DUTIES**			
2.1	Excise duty @ 12.5%			EXEMPTED
2.2	Sales tax @ 14.5% against form c			4,58,200/-
2.3	Freight & Transit Insurance			85,000/-
2.4	Entry tax / Way bill			By Client
2.5	Vehicle registration and Comprehensive Insurance			By Client
3.0	**GRAND TOTAL**			**37,03,200/-**
			Round Off	**37,00,000/-**
(Rupees Thirty Seven Lakhs Only)				

Annexure-III

TERMS AND CONDITIONS

1.	Price basis	Ex-Works Ghaziabad - U.P. / Bhiwadi-Rajasthan
2.	Truck Chassis	The Equipment shall be mounted on 16 T GVW, BS-III Truck Chassis with drivers cabin & side PTO.
3.	Excise Duty	Being a "Special Purpose Motor Vehicle" As per present rules no Excise duty is payable on the truck mounted equipments provided full excise duty has been paid on cost of Truck Chassis and "NO CENVAT" has been claimed on the cost of truck chassis. However, being a government levy, the payment for Excise duty shall be governed by the rules as shall be applicable at the time of supply.
4.	Sales Tax	Extra as applicable at the time of delivery. As per present rules the Sales Tax is payable @ 2% against Form C otherwise 14.5%. However, being a government levy, the payment for Sales Tax shall be governed by the rules as shall be applicable at the time of supply.
5.	Entry Tax, Octroi and other government taxes and duties.	Our quoted prices do not include Entry Tax, Octroi or any other State and Central Government Taxes. Such taxes shall be paid by the client directly to the concern authority.
6.	Firmness of Price	The quoted Ex-work Prices is firm. However any variation Plus or Minus in taxes and duties shall be to the account of Client.
7.	Freight/ Transit Insurance	As quoted/By Client
8.	Vehicle Registration and Comprehensive Insurance	By Client.
9.	Delivery	120 days from the date of Advance Receipt (cost of Truck chassis cost and 30% Advance) or 180 days from the date of receipt of Work Order whichever is earlier.
10.	Payment Terms	a) 100% cost of Truck Chassis against Performa Invoice b) 30% of Basic Price as advance along with Order against Bank Guarantee c) 70% against Performa Invoice at the time of delivery.
11.	Validity	30 days from the date of this offer.
12.	Guarantee	The equipment shall be under warranty against manufacturing defect for a period of 12 months from the date of commissioning and 18 months from the date of dispatch, whichever is earlier.
13.	Commissioning	We shall depute one of our Commissioning Engineers for a period of 2 – 3 days for commissioning of the Machine and for Training 2 - 3 personnel of the Client in Operation and Maintenance of the Machine. The Client has to provide all the Consumables such as Diesel, Oil etc. for commissioning of the Machine.

INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT OF DURGAPUR CITY

DETAILED PROJECT REPORT

Submitted to:-

Durgapur Municipal Corporation

Submitted by:-

BENGAL SREI INFRASTRUCTURE DEVELOPMENT LIMITED
(A Joint Venture Company of WBIDC & SREI)

In association with

Environmental Engineering Services

October 2016

PREFACE

Bengal Srei Infrastructure Development Limited association with Environmental Engineering Services has undertaken the study for Municipal Solid Waste Management under the assignment "Detailed Project Report for Integrated Municipal Solid Waste Management of Durgapur" initiated by Durgapur Municipal Corporation. A detailed study was carried out for the Durgapur City (municipal limit) for assessment of waste generation, primary and secondary collection/transportation, waste processing etc. to observe the existing Solid Waste Management system in Durgapur. 10.2 acres of land has been identified for waste processing plant and landfill site for Durgapur city only.

The feasible plan has been formularized to improve the solid waste management system of Durgapur city, considering outcome of the study undertaken for situation analysis and gaps identification. The plan is formulated in accordance to the guidelines given in CPHEEOs Manual on Municipal Solid Waste Management and "Municipal Solid Waste Management Handling Rules 2016".

Detailed Project Report has been prepared considering result of the primary and secondary data analysis, stakeholder's consultation. The report is prepared to improve the SWM services includes collection of waste from house-to-house, waste segregation, waste transportation, waste processing facility for compositing and energy recovery options and engineered landfill site for proper waste disposal.

The Detailed Project Report includes project introduction, project background, situation analysis of planning area, status of the existing solid waste management system; gaps identification, feasibility assessment for proposed MSW management system i.e. primary collection, secondary storage and transportation, equipments & machinery, design of processing facility i.e. waste to compost plant and R.D.F., cost estimates (capital cost). It also covers aspects of public private participation (PPP) in the various components of MSW, proposed institutional framework and community participation through IEC.

ACKNOWLEDGEMENT

Bengal Srei Infrastructure Development Limited in association with Environmental Engineering Services, Kolkata conveys its sincere thanks to the Durgapur Municipal Corporation (DMC) having got the opportunity to prepare Detailed Project Report for Integrated Municipal Solid Waste Management for Durgapur City.

We would like to place on record our gratitude to Mrs. Kasturi Sengupta, Commissioner of Durgapur, Health Officer, Law Officer, IT Officer, Urban Planner, Education Officer, all other city officers and employee of the Durgapur Municipal Corporation & ward representatives for supplementing and whole heartedly supporting us to undertake action research and develop project report for Durgapur City.

We also thank Sanitary Inspectors of each Borough, Supervisors for their help in undertaking the Primary Survey of the city and unstinted support in accomplishing this assignment. This study would not have been possible without the facilitation and cooperation of Durgapur Municipal Corporation and respective parastatal agencies.

We express our sincere thanks to all the people who supported and assisted us to accomplish this study report as per the guidelines of **Municipal Solid Waste Management-2016** for the project "*Detailed Project Reports (DPRs) for Integrated Municipal Solid Waste Management of Durgapur City*"

We hereby submit Detailed Project Report on Integrated Municipal Solid Waste Management of Durgapur City.

Team Members,

Bengal Srei Infrastructure Development Limited

In association with

Environmental Engineering Services

Kolkata, West Bengal

EXECUTIVE SUMMARY

Project Background

Municipal Solid Waste Management (MSWM), one of the basic urban services, has been considered by DMC for intervention to address the inadequate infrastructure and sanitation issues. Looking to the existing SWM system, the Ministry of Environment & Forest has notified Municipal Solid Waste (Management & Handling) Rules 2016 under the Environment Protection Act 1986. The report is prepared to improve the SWM services includes collection of waste from house-to-house, waste segregation, waste collection and transportation, waste processing facility for compositing and energy recovery options and engineered landfill site for proper waste disposal.

Project Objectives

The broad objectives of the Detail Project Report (DPR) would be to determine a technically and economically viable solid waste management project for a phased implementation to meet the requirements of the year 2044. Following are the specific objectives:

- To analyze the existing solid waste management system;
- To devise a system of Storage of non - Biodegradable waste as well as recyclable waste separately at the source of generation of waste;
- To devise cost effective systems for Primary Collection of waste from the city in general and from the slums in particular;
- To devise an efficient system of day to day cleaning of streets and public places;
- To devise systems to eliminate the age old practice of throwing garbage on the streets or outside the dustbins causing nuisance to the people and posing a threat to the health of the community at large;
- To promote processing of waste for deriving Bio-organic fertilizer, reduce quantity of waste going to landfill site; derive income from the processing of waste and help agricultural production;
- To improve the system of transportation of waste;
- To ensure safe disposal of waste;
- Project scheduling & cost estimates;
- Project phasing & to prepare action plan;
- Organizational and financial studies;
- To set recommendation with respect to reforms & sustainability.

Scope of this Report

This Detailed Project Report (DPR) covers an introduction to project, background of planning area, status of existing SWM system, proposed MSW management system with cost estimates, equipment specifications, engineering drawings & design of various facilities, operational & maintenance aspect, PERT charts and strategy & action plan for IEC & capacity building.

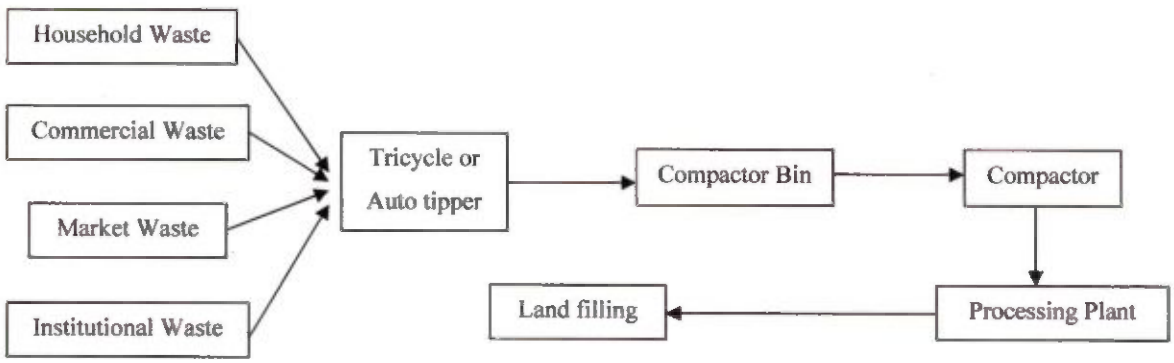
Existing Solid Waste Management

- People generally throw the waste in front of the house or shop or on the streets from there sanitary workers collect the waste into Tricycle or pushcart.
- Door to door Collection starts from 6:00 am and continue up to 12 noon.
- Nearly 1340 temporary and permanent sanitary workers are working in the city.
- There are 210 tricycle and pushcarts engaged for collection of municipal solid waste. Waste handlers make 4 trips and collect waste at average 200 nos. houses at daily basis. At present door to door, collection is done in only 25-30% area of total area of a ward at daily basis.
- DMC has engaged almost 1340 sanitary workers. Sweepers use brooms to sweep, collect and transport waste up to nearer container using tricycle. The total length of the drains in Durgapur is 1329.8 km.
- There are 116 secondary collection points (containers) and as many open dumps are located at irregular intervals in 43 wards of the city.
- The Secondary Collection vehicles such as auto tipper, dumper, compactor, tractor etc are involved in the solid waste transportation which performs on an average 3 to 4 trips per day.
- Presently, all the transportation vehicle of DMC disposes into TS&CP which covered 12 Acre area with coordinates 23.542611 and 87.360111 at Sankarpur, Durgapur.

Quantification and Characterization of Solid Waste

- The average daily waste generation from Durgapur is around 247 TPD in 2016.
- Per Capita Solid Waste generation in Durgapur 404 gm/day in 2016.
- The waste collected by rag pickers amounts to about 0.91 per cent of the total waste generated in the city.
- Based on the survey Biodegradable waste is 56.2% and Non Biodegradable waste is 43.8%.

Proposed MSW Management System



- Manpower requirement for primary collection, Road Sweeping and Drain cleaning

Sl No.	Equipments	Nos.	Waste cum Sweeper Collector	Drivers	Helpers
1	Tri- cycle Cart- 6 nos 50 lit bin	333	367		
2	Handcart with 4 nos of 60 lit bin (Street Sweeping)	324	357		0
3	Drain Cleaning - Wheel Barrow	296	326		
4	Auto tipper	27		27	54
5	Movable compactor	12		12	36
6	hook loader	3		3	3
7	Compactor station	6			12
Total			**1050**	**42**	**105**

- The proposed estimated of tools/equipment required for collection and transportation of waste is as given below

Sl. No	Description	Equipment Numbers
1	Household	265874
2	Tri- cycle Cart- 6 nos. 50 lit bin	333
3	Handcart with 4 nos. of 60 lit bin (Street Sweeping)	324
4	Auto tipper	27
5	Compactor Garbage Bins 1100 lit	813
6	Movable compactor	12
7	hook loader	3
8	Compactor station construction	6
9	Stationary compactor container -10 m3	12
10	Wheel barrow for Drain Cleaning	296

- It is proposed to use GIS and GPS tools to have a complete hold on the transportation network - GIS to calculate the optimum routing between two points and the GPS which can track the exact location of the trucks in real time.

Sanitary Landfill Facility

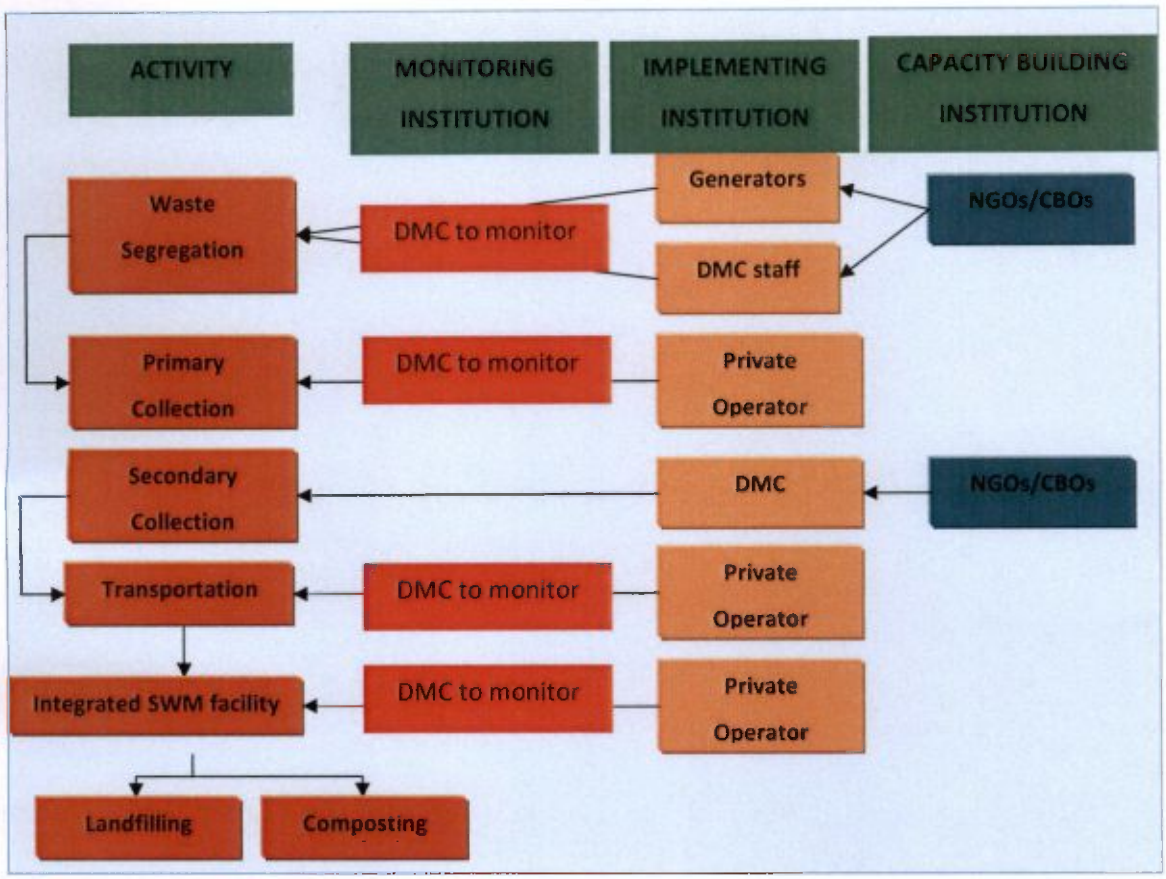
- The total land requirement has been worked out for landfill facility is 3.0 Acres.
- Vehicles requirement for Landfill Processing is as given below

Sl No.	Vehicle type	Number
1	Compactor	1
2	Excavator	1
3	Dozer	1
4	Loader cum backhoe	1
5	Dumper Truck	2
6	Water tanker with pump	1
7	Tractor Tipper	2

- Man power Details for Landfill Site is as given below

Sl. No.	Particulars	Nos
1.	Assistant manager – Landfill	1
2.	Supervisor	1
3.	Laborers	4
4.	Excavator driver	1
5.	Dozer Driver	1
6.	Loader Driver	1
7.	Compactor driver	1
8.	Truck driver / Tractor diver	2

Proposed Institutional Framework



IEC Material & Public Awareness

- Bringing of attitudinal and behavioural changes among the residence about the segregation of waste and sanitation improvement
- Public awareness through informing and educating the masses on various aspects of solid waste management and achieve the target of receiving segregated waste from each household.
- Integration and involvement of private sweepers and Rag Pickers in improving MSW management.
- Proposed Financial Budget for IEC materials which shows in below

Sl. No.	IEC materials and methods for one year budget	Quantity	Approximate Cost (Rs.)
2.	Sanitation Leaflet (One page)	4,00,000	500000
3.	Banner (4'-0"x2'-0") flex	500 nos.	600000
4.	Hoarding (20'-0"x10'-0"x6'-0") for one year	100 nos.	1400000

5.	Advertisements to Newspaper TV & Other Media	L.S	1000000
6.	Workshop, Seminars	100 nos.	650000
7.	Miking 10 sets (Weekly one year)	520 times	2400000
Total			**6550000**

Cost Estimation

Estimated Cost for SWM System	
A. Collection System	
Procurement of vehicles for Primary Collection & Secondary Transportation	203161000
Procurement PP Equipments for primary collection	4018720
	207179720
B. Processing Plant	
Construction of Compost Plant and RDF Plant	2346,21,247
Procurement of Machineries for the plant	557,75,000
Procurement of vehicles for Operation of the plants	117,30,000
	3021,26,247
C. Sanitary Landfill	
Construction of Sanitary Landfill	795,40,734
Procurement of Vehicles for Operation of the landfill	290,00,000
	1085,40,734
D. Social Awareness Program (Per Year)	6550000
Sub Total	6243,96,701
Contingency – 3%	187,31,901
Administrative Expenses – 1%	62,43,967
Total	**6493,72,569**

Escalation of O&M Cost per year after full utilization- 7.50%
Escalation Factor- 1.075

Expense over the Project Life

Expenses	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
O&M cost for the project	79936080.00	90477261.60	97504716.00	104817569.70	11267887.43	12112903.98	13021 4539.28	13998 0629.73	15047 9176.96	16176 5115.23
Total	**79936080.00**	**90477261.60**	**97504716.00**	**104817569.70**	**11267887.43**	**12112903.98**	**13021 4539.28**	**13998 0629.73**	**15047 9176.96**	**16176 5115.23**

Escalation of Revenue after every 3years after full allocation- 15%
Escalation factor- 1.15%

Revenue from various spaces

Year	1	2	3	4	5	6	7	8	9	10
TOTAL REVENUE	501,33,840.00	848,70,816.00	1080,28,800.00	1242,33,120.00	1242,33,120.00	1242,33,120.00	1428,68,088.00	1428,68,088.00	1428,68,088.00	1642,98,301.20
Total Revenue	**501,33,840.00**	**848,70,816.00**	**1080,28,800.00**	**1242,33,120.00**	**1242,33,120.00**	**1242,33,120.00**	**1428,68,088.00**	**1428,68,088.00**	**1428,68,088.00**	**1642,98,301.20**

Table of Contents

CHAPTER 1 BACKGROUND

1.1 SOLID WASTE MANAGEMENT (SWM) : DEFINATION

Solid Waste Management (SWM) is an organized process of storage, collection, transportation, processing and disposal of solid refuse residuals in an engineered sanitary landfill. It is an integrated process comprising several collection methods, varied transportation equipment, storage, recovery mechanisms for recyclable material, reduction of waste volume and quantity by methods such as composting; refuse derived fuel (RDF), waste-to-energy and disposal in a designated engineered sanitary landfill.

The selection of a suitable SWM process is driven by the source and quality of waste produced. Solid waste is generated from a number of sources which include households (kitchen and yards), commercial areas (shops, hotels and restaurants), industries (raw material and packaging), institutions (schools, hospitals and offices), construction and demolition sites, wild and domesticated animals (carcasses of dead animals, manure), parks (fallen branches, leaves from trees) and streets (sand, silt, clay, concrete, bricks, asphalt, residues from air deposition and dust).

1.2 CURRENT STATUS OF SWM IN INDIA

Management of Municipal Solid Wastes (MSW) continues to remain one of the most neglected major issues in Indian cities due to the rapid urbanization, urban population growth and industrialization. Most of local administrations are directly dumping MSW without any segregation and treatment to the open dumping site, this manner of inappropriate disposal of MSW is become a major threat to the environments and public health in developing countries like India.

Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census. The proportion of rural population declined from 72.19% to 68.84%. Per capita waste generation increasing by 1.3% per annum. With urban population is increasing between 3– 3.5% / annum. Annual increase in waste generation is around 5% annually. India produces 42.0 million tons of municipal solid waste annually at present. Per capita generation of waste varies from 200 gm to 600 gm per capita / day. Average of waste generation rate is 0.4 kg per capita per day in 0.1 million plus towns. Collection efficiency is between 50% to 90% of solid waste generated.

The Local Governing Bodies (LGBs), viz. municipalities and municipal corporations, are responsible for providing SWM services in the urban areas. In most of the urban areas, insufficient funds, use of obsolete/ inefficient technologies, lack of public awareness/training and improper infrastructure have resulted in a state of poor management of solid waste.

1.3 PROBLEMS DUE TO SOLID WASTE

Accumulation of solid waste in open areas is an eyesore, diminishing real estate and property value, a breeding ground for insects and other vectors (rats and mice, wild and domesticated animals). It also causes odour nuisance, reflects the unorganized nature of the community and creates a poor environment for growing children.

Improper and unorganized disposal of Municipal Solid Waste (MSW) in open areas and landfills have a negative impact on the living conditions of human beings as well as the overall environment. It results in spread of communicable and non-communicable diseases among human beings and animals, thus affecting the welfare, livelihood and economic productivity. In addition, it causes contamination of soil, rivers, surface water, ground water and generation of toxic & greenhouse gases.

In recent years, the river has become grossly polluted as most of the solid waste being generated in our society is ultimately disposed of into rivers. Also the pollutants generated in the catchment area of the river is transported regularly or occasionally by leaching, drainage and surface water run-off during the monsoon. The main pollutants are topsoil, plant residues, dumped garbage and dead bodies, agricultural residues etc.

1.4 INITIATIVES TO IMPROVE SWM

Some of the key initiatives and recommendations are briefly discussed below (refer annexure 1.1 to 1.5 for details):

1.4.1 Hon'ble Supreme Court Of India Recommendations

In recent years, the current SWM system in India has received considerable attention from the Central & State Governments and local municipalities. The first initiative was taken by the Hon'ble Supreme Court of India in 1998, which resulted in the formation of a committee to study the current status of SWM in Indian cities. This committee identified the deficiencies/gaps in the existing SWM system in the country and prepared the "***Interim Report on SWM Practices in Class I Cities***" (*Class I cities are cities with a population ranging between one lakh to ten lakhs {1, 00,000 –10, 00,000}*).

1.4.2 Municipal Solid Waste Management Rules

As a second initiative, the Ministry of Environment and Forests (MoEF), GoI, published "***Municipal Solid Waste (Management and Handling) Rules, 2000***" (*MSW Rules 2000*) and subsequently amended and renamed ***Municipal Solid Waste (Management and Handling) Rules, 2016*** (*MSW Rules 2016*). These rules were developed in conformance with sections 3, 6 and 25 of the Environment Protection Act, 1986 and aim at standardization and enforcement of SWM practices in the urban sector. They dictate that, "*Every municipal authority shall, within the territorial area of the*

municipality, be responsible for the implementation of the provisions of these rules and infrastructure development for collection, storage segregation, transportation, processing and disposal of municipal solid wastes". In addition, "CPCB shall coordinate with State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) in the matters of MSW disposal and its management and handling".

1.4.3 Jawaharlal Nehru National Urban Renewal Mission (JNNURM)

The Jawaharlal Nehru National Urban Renewal Mission is the third notable initiative undertaken by Government of India. JNNURM provides funding for urban infrastructure development in 63 cities and towns of the country. This mission was initiated in 2005 and is slated to continue until 2014.

1.4.4 Urban Infrastructure Development Scheme For Small And Medium Towns (UIDSSMT)

The primary objective of this scheme is to improve the urban infrastructure in towns and cities in planned manner and to promote public–private partnership (PPP) in infrastructure development. This scheme was introduced in the year 2005-06 and will continue for seven years. This scheme is applicable to all cities/towns as per 2001 census, except the cities/towns covered under the JNNURM. One of the components of this scheme is to renew the old sewerage and solid waste disposal systems in inner (old) town/ city areas.

1.4.5 Twelfth Finance Commission (TFC) Recommendations

The Twelfth Finance Commission under Department of Expenditure, GoI, has recommended measures to augment the Consolidated Funds of the States to supplement resources of the Rural Local Bodies (RLBs) (Panchayats) and Urban Local Bodies (ULBs) (Municipalities). These funds are allocated to the RLBs and ULBs, based on the recommendations made by the State Finance Commissions (SFCs). In addition, in accordance with the recommendations made by the TFC, sum of Rs.20, 000 crores and Rs.5, 000 crores has been allocated for RLBs and ULBs, respectively, for the period 2005-10.

The funds allocated to the RLBs are being utilized for providing water supply and sanitation in rural areas while the funds allocated to the ULBs are being utilized for enhancing the solid waste management services in urban areas under public-private partnership. In addition, municipalities with population of over 100,000 (as per 2001 census) are required to prepare a comprehensive scheme including composting and waste to energy systems to be undertaken in the private sector for appropriate allocation of funds.

1.5 PROJECT OBJECTIVE AND DATA SOURCES

1.5.1 Objectives

The broad objectives of the Detail Project Report (DPR) would be to determine a technically and economically viable solid waste management project for a phased implementation to meet the requirements of the year 2044. Following are the specific objectives:

- To analyze the existing solid waste management system;
- To devise a system of Storage of non - Biodegradable waste as well as recyclable waste separately at the source of generation of waste;
- To devise cost effective systems for Primary Collection of waste from the city in general and from the slums in particular;
- To devise an efficient system of day to day cleaning of streets and public places;
- To devise systems to eliminate the age old practice of throwing garbage on the streets or outside the dustbins causing nuisance to the people and posing a threat to the health of the community at large;
- To promote processing of waste for deriving Bio-organic fertilizer, reduce quantity of waste going to landfill site; derive income from the processing of waste and help agricultural production;
- To improve the system of transportation of waste;
- To ensure safe disposal of waste;
- Project scheduling & cost estimates;
- Project phasing &to prepare action plan;
- Organizational and financial studies;
- To set recommendation with respect to reforms & sustainability.

1.5.2 Scope of Study

The scope of work includes the following:

- Detailed survey of the prevailing conditions
    - Quantity Assessment (Collected, Transported and Disposed Off);
    - Sampling and Analysis of waste for Quality Assessment;
    - Equipments and Manpower Availability;
    - Gap analysis based on the *MSW Rules 2016*
- Design an MSW management system in accordance with MSW Rules, 2016

- Primary Collection – Door To Door Collection, Segregation of waste
- Secondary Storage and Collection Bins (Household bins, Community Bins)
- Primary Collection Vehicles (for Collection and Transfer to Processing Facility)
- Transfer Station – Feasibility Assessment if required
- Waste Transportation Facility – Vehicles for waste transportation from waste storage to processing facility and regional landfill site
- Waste Processing Facility – Waste Processing equipments/machinery
  - Methods of Composting;
  - Refused Derived Fuel (RDF);
  - Waste to Energy;
  - Land Requirement;
  - Design Specifications and Drawings;
- Disposal of Waste – Individual/Regional Landfill site Development Plan
  - Land Requirement
  - Equipments/ Machinery
  - Design Specification & Drawings
- Cost Estimates
  - Capital Cost (Equipments, Vehicles, Treatment plant, Landfill site etc)
  - Operation & Maintenance Cost
  - Recovery of Cost
- Environmental Compliances Requirements
  - Environment, Health and Safety (EHS)- EIA

1.5.3 Need of Solid Waste Management System

Looking to the existing SWM system, the Ministry of Environment & Forest has notified Municipal Solid Waste (Management & Handling) Rules 2016 under the Environment Protection Act 1986. According to these rules, all the municipal authorities were expected to improve solid waste management practices in terms of aforesaid rules by December, 2003. But, the situation did not improve as expected for want of adequate technical know-how and lack of human and financial resources.

Therefore, the study has been undertaken to assess the existing SWM system, gaps identification and proposed plan in accordance to the MSW Rule 2016. The report is prepared to improve the SWM services includes collection of waste from house-to-house, waste segregation, waste collection and transportation, waste processing facility for compositing and energy recovery options and engineered landfill site for proper waste disposal.

1.5.4 Approach and Methodology

The study proposes an integrated SWM management and implementation plan for Durgapur town. In order to address each of the problems associated with the current SWM system in Durgapur Town, a series of steps were adopted, which are summarized in Figure 1.1

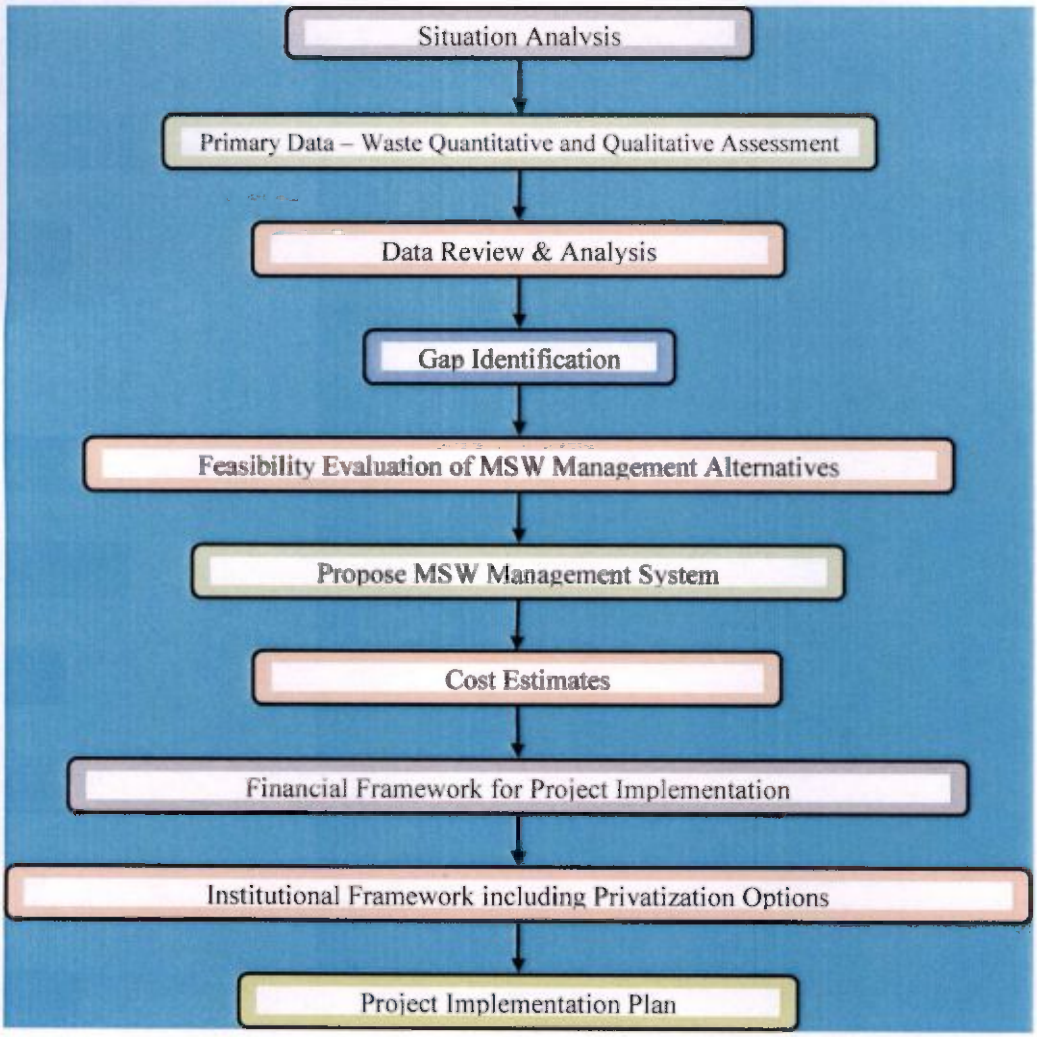


Figure 1.1: Approach and Methodology

1.5.5 Situation Analysis

To assess the situation and identify the gaps, project team interacted with officials of Durgapur Municipal Corporation (DMC). The objective of the meetings was to get acquainted with their views and first hand information on existing SWM management system to identify gap areas. Secondary data was collected after discussions with DMC officials to understand the present practice of waste management and disposal system in Durgapur.

Detailed questionnaires were prepared to collect information from relevant organizations in a streamlined and organized fashion at macro level. In this regard, following preliminary information was also collected to help in framing the methodology for primary data collection.

Figure 1.2: Stakeholder's Consultation

- City Map of Durgapur with Municipal Limits;
- Population Details;
- Organization structure;
- Total Number of Households;
- List of Markets (Commercial Markets, Mandies);
- List of Hospitals;
- List of Hotels;
- Number of persons involved in SWM;
- Existing Trenching Location;
- List of Vehicles, Waste transportation equipment;
- Ward-wise population distribution;

Project team undertaken primary data generation/site survey in accordance to the gaps identified with secondary data collected.

1.5.5.1 Primary Data – Quantitative and Qualitative Assessment

A comprehensive assessment was carried out for waste quantification and characterization. A study was conducted at various waste generation sources, secondary storage and waste disposal sites to ascertain the waste quantity.

Project team has provided sampling polythene bags to the household/commercial/institution owner/representative for collection of solid waste produce in a day in plastic bags and same was collected on next day. On site quantity assessment has been carried out by survey team through weighing machine. The composite samples were sent to the NABL accredited laboratory for physico-

chemical analysis (please refer laboratory analysis result as Annexure 4 Waste Analysis/ Laboratory and Report).

a) **House Holds** – composite sampling and analysis was carried out for 3 days consecutive from households (medium/high income group and Low/slum income group). Composite samples for three days from households were collected and analyzed in laboratory. On site weight measurement has been performed for of all samples;

b) **Commercial Place** – composite sampling and analysis was conducted from commercial places i.e. hotels, shops, vegetable/ fish markets etc.;

c) **Institutional Place** –composite sample from institutions/ offices was collected and analyzed in laboratory;

d) **Medical Institution** – Composite sample of domestic solid waste from hospitals/Nursing homes was collected and analyzed.

e) **Open Dump/Trenching ground** – Composite sample were collected and analyzed from open dump/ trenching grounds.

Sampling and analysis from the open dump/ trenching grounds was conducted to ensure representative sampling for various sources.

During the primary survey, the project team interacted with nearby residents, took photographs of the site and conducted waste quantification and characterization.

1.5.5.2 Data Review and Analysis

The waste quantity and characterization details gathered during primary survey were reviewed and analyzed. Measured waste quantity was also verified on recommended waste quantity in accordance to the CPHEEO manual. The data was duly complied and details are provided in chapter 3 (please refer Annexure 3 waste generation) of this report.

In preparation of this document, the following sources have been consulted:

Documents Consulted and References: City Development Plan (CDP), Topographical Map, Census Data – 2011, Ground Water Information Booklet (CGWB) – Durgapur and Documents from ULB;

1.5.5.3 Gap Identification

Gaps identification was undertaken with reference to the MSW Rules 2016 and the existing MSWM scenario as per the results of the primary survey. During the survey awareness level of general public in regard to segregation of waste and other environmental friendly waste management practices was accessed. Following are the highlights of this exercise

- Comparison of default per capita waste generation factors with per capita waste generation figure as derived from the survey;
- Adjudging the availability and requirement of waste management equipments, the analysis was used for conceptualization of the proposed plan;
- The existing waste management is not organized & scheduled and hence, requires up gradation;
- The awareness level regarding the SWM rules and the acceptability is very low.
- The residents & the shop keepers dump waste at the nearest open dump site and/ or on the streets or in vacant plots;
- Many of the Eating joints/ Hotels/ Restaurants/ Dhabas /Guest Houses/ Banquet Halls of the City are unauthorized. Hence the DMC is not able to formulate a detailed plan for waste collection from these places.

1.5.5.4 Feasibility Evaluation of MSW Management Alternatives & Proposal, Detailed Engineering, BOQ and Cost Estimates of the MSW Management Plan

Feasibility assessment was undertaken considering result of the Primary and Secondary data analysis, stakeholder's consultation, and expert judgment of consultant. The feasible options are considered and proposed a most suitable MSW management model for implementation.

Further, detailed engineering, cost and estimates for this plan will develop and consider for producing a finance model.

CHAPTER 2 EVOLUTION OF SOILD WASTE MANAGEMENT

2.1 SOLID WASTE... A CONSEQUENCE OF LIFE

From the days of primitive society, human and animals have used the resources of the earth to support life and to dispose-off wastes. During the early times, the disposal of human and other wastes did not pose a significant problem, for the population was small and amount of land available for the assimilation of wastes was large. Although emphasis is currently being placed on recycling the energy and fertilizer value of solid wastes, indications of recycling may still be seen in the primitive, yet sensible agricultural practices in many of the developing nations where farmer recycle solid wastes for fuel or fertilizer values.

Problems with disposal of wastes can be traced from the times when humans first began to congregate in tribes, villages & communities and accumulation of wastes became a consequence of life. Littering of food and other solid wastes in medieval towns – the practice of throwing wastes on unpaved streets, roads, streets and vacant land, led to breeding of rodents with their attendant fleas. It was not until 19th century that public health control measures became vital and food wastes were collected and disposed off in a manner to control rodents and flies, the vectors of disease.

Ecological phenomena such as water and air pollution have also been attributed to improper management of solid wastes. For example, liquid (leachate) from dumps and un-engineered landfills have contaminated ground water. Although, nature has the capacity to dilute, disperse, degrade, absorb or otherwise reduce the impact of unwanted residues in the atmosphere; ecological imbalances have occurred where the natural assimilative capacity has been exceeded

2.2 WASTE GENERATION IN TECHNOLOGICAL SOCIETY

The development of technological society can be traced to the beginnings of the Industrial Revolution (renaissance era), unfortunately, so can major increases in solid waste disposal problems. Thus, along with the benefits of technology, have also come the problems associated with the disposal of resultant wastes.

2.2.1 Materials flow & Waste Generation

An indication of how and where the solid wastes are generated in our technological society is shown in simplified materials flow diagram in fig. 2.1. Both technological & consumptive processes result in formation of solid waste. Solid Waste is generated in the beginning with the usage of raw materials and thereafter at every step in the technological process as the raw material is converted to product for

consumption. The process of consumption of products also results in generation of solid waste. It is apparent from figure that society receives raw material as inputs from environment and gives solid waste as output to environment and the best way to reduce the amount of solid wastes that must be disposed off, is to limit the consumption of raw materials and increase the rate of recovery and reuse of waste materials

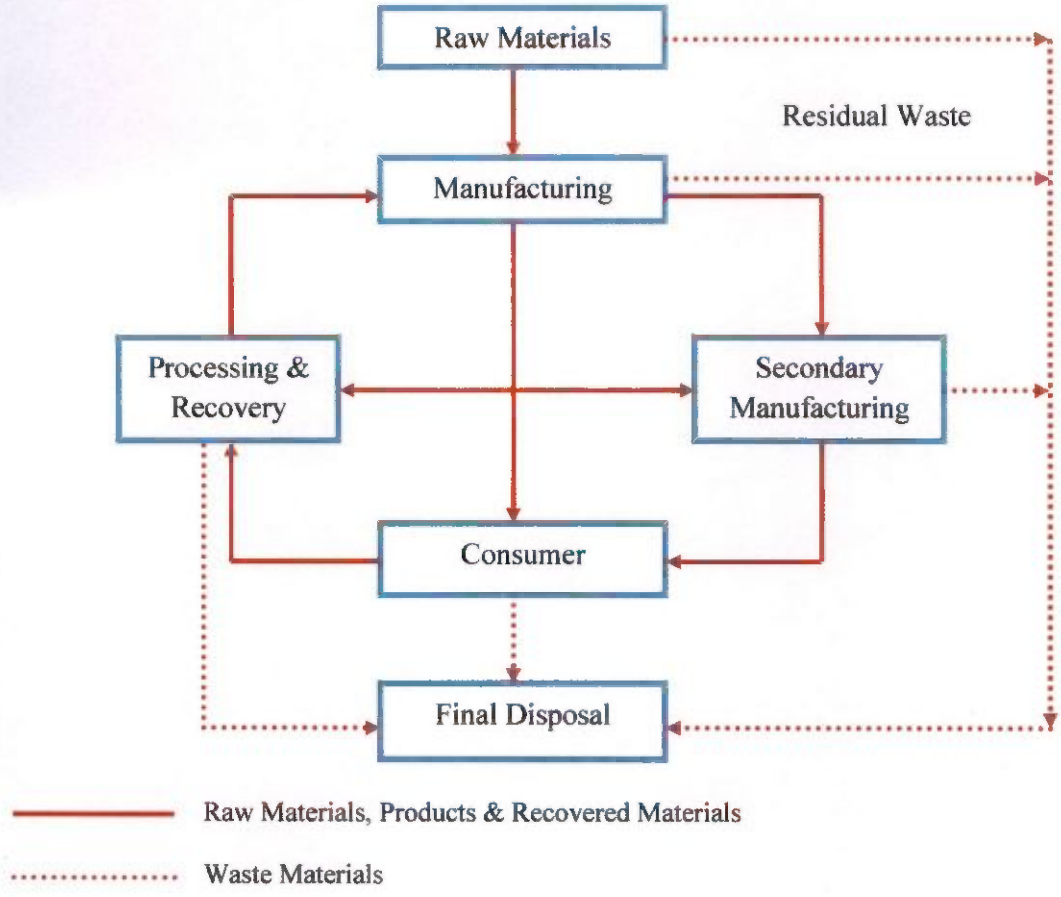


Fig 2.1: Materials Flow & Generation of Solid Waste in a Technological Society

2.2.2 The Effects of Technological Advances

Modern technological advances in the production and packaging of goods create a constantly changing set of parameters for designing solid waste facilities. For example, the latest trend of use of frozen food and packaged meals reduce the quantities of food wastes in the homes but increase the quantities at agricultural processing plants. These continuing changes present problems in designing engineering structures for processing solid wastes as they involve large capital expenditures and must be designed to be functional for at least 25 years.

Therefore, every possible prediction technique must be used in this ever changing technological society so that flexibility and utility can be designed into facilities. In short, a facility should be functional and efficient over its useful life.

2.3 THE DEVELOPMENT OF SOLID WASTE MANAGEMENT

Solid Waste Management may be defined as discipline associated with the control of generation, storage, collection, transfer & transport, processing and disposal of solid wastes in a manner, that is in accord with the best principles of public health, engineering, conservation, aesthetics and other environmental considerations and also, responsive to public attitudes.

2.3.1 Historical Development

The most commonly recognized methods for the final disposal of solid wastes at the turn of the century were dumping on land, dumping in water, plowing into the soil, feeding to hogs, reduction and incineration. However, not all these methods were applicable to all type of wastes. Plowing into the soil was used for food wastes and street sweepings whereas feeding to hogs and reduction were used specifically for food wastes. Enlightened solid waste management, with the emphasis on controlled tipping (popularly known as sanitary land filling), began in the early 1930s in the developed countries and much later in the developing countries. However, absence of efficient and proper methods of disposal resulted in scenic blights, created serious hazards to public health including water and air pollution, increased vectors of disease and adversely affected land values.

2.3.2 Functional Elements of Solid Waste Management System

The activities associated with the management of solid wastes from the point of generation to final disposal are divided into following functional elements:

i. Waste Generation

ii. Waste Handling & Separation at Source

iii. Collection

iv. Separation, Processing & Transformation

v. Transfer & Transport

vi. Disposal

The inter-relationship between these functional elements is identifying in fig. 2.2.

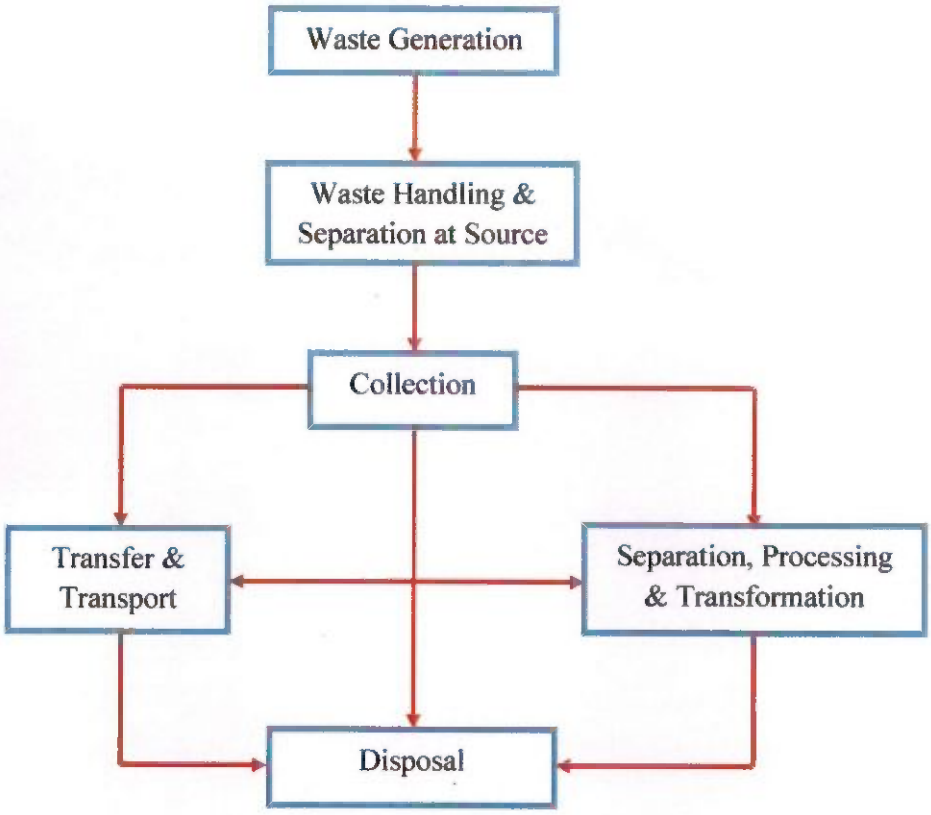


Fig. 2.2: Inter-relationship between functional elements in SWM System

i. Waste Generation

Waste generation encompasses activities in which materials are identified as no longer being of value and are either thrown away or gathered together for disposal. It is important to note that in waste generation, there is identification step and that this step varies with each individual waste.

Waste generation is, at present an activity that is not very controllable. Source reduction, though not controllable, is now included in system evaluation as a method of limiting the quantity of waste generated.

ii. Waste Handling & Separation at Source

Waste handling and separation involves the activities associated with the management of wastes until they are placed in storage containers for collection. Handling also encompasses a movement of loaded containers to the point of collection. Separation of waste components is an important step in the handling and storage of solid waste at source. From standpoint of material specifications and revenue from sale of recovered materials, the best place to separate the recovered materials for reuse and recycling, is the source of generation.

On-site storage is of primary importance because of public health concerns and aesthetic considerations. Open ground storage and unsightly makeshift containers, both of which are undesirable, are often seen at many residential and commercial sites.

iii. Collection

The functional element of collection includes not only the gathering of wastes but also the transport of these materials, after collection, to an intermediate location, where the collection vehicle is emptied. This intermediate location can be materials processing facility (waste storage depot, WSD) or a transfer station. In small cities, where final disposal sites are nearby, the hauling of wastes is not a serious problem. But in large cities, where the haul distance to the point of final disposal is often greater, the haul may have significant economic implications. Where long distances are involved, transfer and transport facility is normally used.

iv. Separation, Processing & Transformation

The recovery of separated materials, separation & processing of solid waste components and transformation of solid wastes that occur primarily in locations away from source of waste generation are encompassed by this functional element. Processing often includes separation of bulky items, separation of ferrous metals, manual separation of waste components and volume reduction by compaction.

Transformation processes are used to reduce volume and weight of waste requiring disposal and to recover conversion products. The most commonly used chemical transformation process is combustion, which is used in conjunction with recovery of energy in the form of heat. The most commonly used biological transformation process is composting. The selection of given set of processes depends on the waste management objectives to be achieved.

v. Transfer and Transport

This element involves two steps, viz. transfer of waste from smaller collection vehicles to larger transport equipment and second, subsequent transport of wastes to final disposal site.

vi. Disposal

Disposal is the final functional element in the solid waste management system. Today, disposal of waste by land filling is the ultimate fate of all solid wastes. A modern sanitary landfill is not a dump, rather it is an integrated, engineered facility used for disposing solid waste on land without creating nuisance or hazards to public health and safety.

In most cities, planning for waste disposal involves dealing with municipality, development authority and other agencies. Thus, land-use planning becomes a primary determinant in the site selection, design and operation of processing facilities and landfills. Environment Impact Assessment (EIA) is required for any new landfill site to ensure compliance with public health, aesthetics and future use of land.

CHAPTER 3 DURGAPUR AT A GLANCE

The Durgapur Notified Area Authority started its maiden journey in the year 1962 with a population of 41,696 only. Today with 154.20 sq. km area, the Municipal Corporation now comprises 43 wards with a population 5, 63,557 (as per 2011 Census).

Durgapur, the dream child of the great visionary Dr. Bidhan Chandra Roy, an important industrial center achieved the status of multifunctional character having its inception as unifunctional center for industrial activity. Other dominating activity is institutional activity. The various Institutes like Engineering Colleges especially The National Institute of Technology, Management Colleges, Computer Education Centers, Govt. College and a huge number of Secondary and Higher Secondary Schools have made Durgapur an educational hub. Durgapur is now considered as a Health City too. Super specialist Hospitals like Mission, Vivekananda & I.Q. N.H. Hospital and Medical College. The city also performs multitude of functions like commerce, transportation that are responsible for rapid development of the town. The very good connectivity through railways and roadways has given the town the status of regional sub center of Bardhamann district. The city also take care for amusement and mental development of the children and to create a beautiful spot of Tourism and other amenities like Zoo, Swimming Pool, Children Park etc. at a pollution free zone at Durgapur so that the children of this city will be encouraged on seeing the proposed Zoo & Swimming Pool etc.

3.1 GEOGRAPHY

Durgapur is located at 23.48°N & 87.32°E. It has an average elevation of 65 meters. Durgapur is situated on the bank of river Damodar, just before it enters the alluvial plains of Bengal. The topography is undulating. The coal-bearing area of the Ranigunj coalfields lies just beyond Durgapur, although some parts intrude in to the area. The area was deeply forested till recent times, and some forests are still there, standing witness to its wild past.

Durgapur subdivision is surrounded by Asansol subdivision on the west, Bardhaman Sadar North subdivision on the east, Bankura district across the Damodar in the south, and Birbhum district across the Ajay River to the north. Two mighty rivers border it on the north and south. The Ajay River flows past unhindered in the north but the Damodar River on the south has two obstacles in its path –at Rondia and a more recent barrage at Durgapur. Two rivulets, Singaran and Tamla, flow through the area and join the Damodar. Two other rivulets in the area, Kunur and Tumuni, join the Ajay.

3.1.1 Climate

Durgapur experiences a transitional climate between the tropical wet and dry climate of Kolkata and the more humid subtropical climate further north. Summers are extremely hot, lasting from March to

the middle of June, with average daily temperatures near 32 °C. They are followed by the monsoon season with heavy precipitation and somewhat lower temperatures. Durgapur receives most of its annual rainfall of around 52 inches during this season. The monsoon is followed by a mild, dry winter from November to January. Temperatures are quite moderate, with average daily temperatures near 20 °C. There is a short autumn at the end of October and a short spring in February, both of which have relatively moderate temperatures of around 25 °C.

3.1.2 Demographic Scenario

As of 2011 India census, Durgapur had a population of 5, 63,557. Males constitute 52% of the population and females 48%. Durgapur has an average literacy rate of 75%, higher than the national average of 59.5%: male literacy is 81% and, female literacy is 69%. In Durgapur, 10% of the population is under 6 years of age.

Table 3.1: Demographic Scenario of Durgapur

Total Area of Durgapur Municipal Corporation	154.20 Sq. Km.
Population (as per 2011 SECC)	5,63,557
Male (as per 2011 SECC)	2,93,731
Female (as per 2011 SECC)	2,69,826
Density of Population (as per 2011 SECC)	3654.71 per sq.km
Number of Municipal Wards	43
Number of Councilors	43

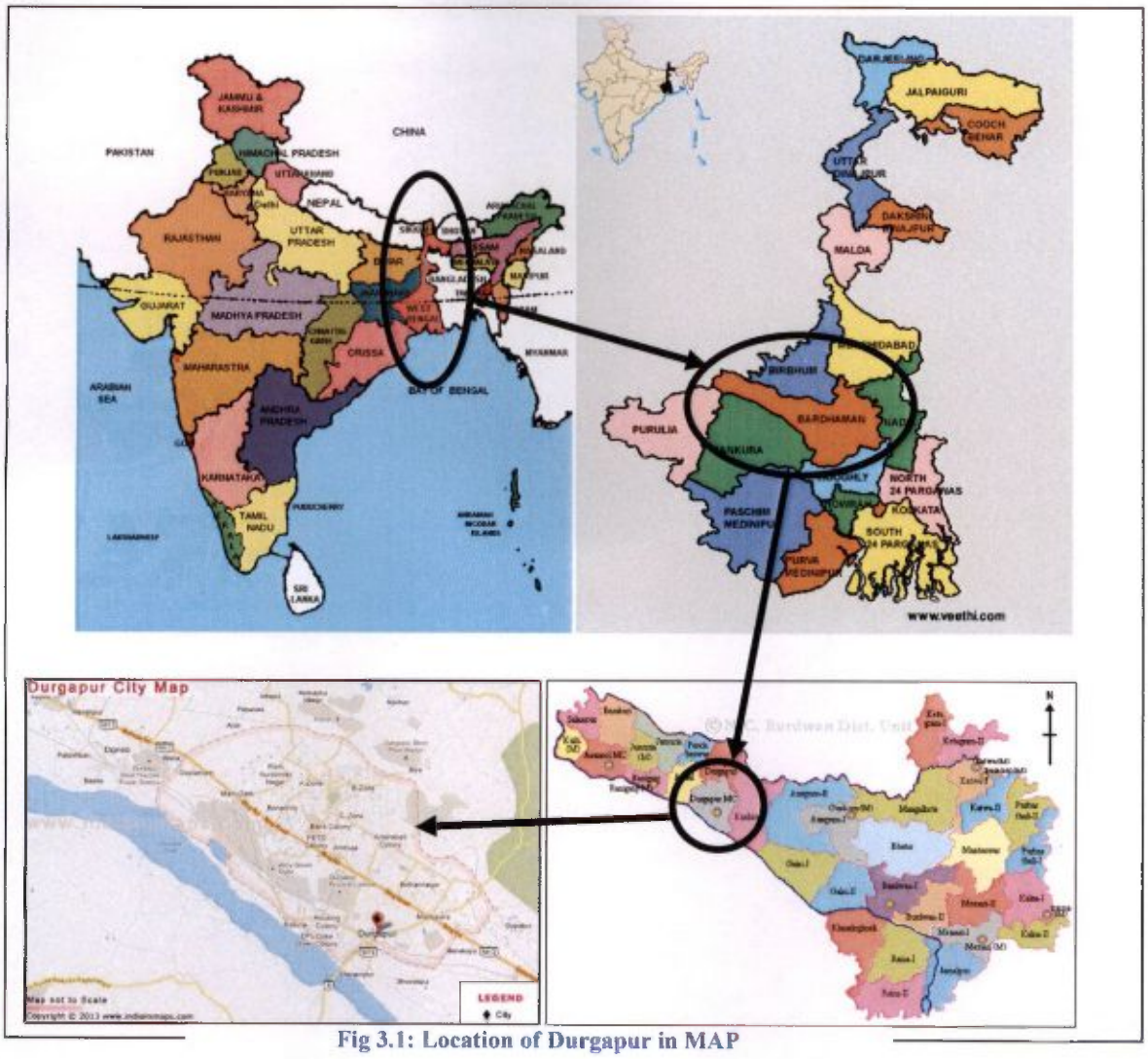


Fig 3.1: Location of Durgapur in MAP

3.2 HISTORY

The name Durgapur has come from the name of JALEO the Zamindar of Gopinathpur area of Durgapur and the erstwhile scion of the family of Chatterjees of Sagarbhanga area. Much of modern Durgapur is situated on the lands formerly owned by Zamindars like the Chatterjees of Sagarbhanga, the Mukherjees of Nadiha, Sri Radhanath Chattopadhyay of Gopalpur and the Zamindars of Bhiringi (presently a part of the area known as Benachity). The Mukherjees originally had been orthodox Smarta ritualists who prospered and established conjugal ties with the Chatterjees of Sagarbhanga.Mighty emperors reigned in this region over the centuries but it is difficult to pinpoint as to who exactly held sway over the area at different points of time. Historians talk of this region being a part of the Maurya and Gupta empires, the empire of Harsha Vardhan and the Mughals. Being a geographical border region, it could have been on either side of the virtually unmarked and flexible borders of the mighty empires.

In the mid-nineteenth century, the railway track traversed the Durgapur area but even fairly recent pre-independence travellers describe Durgapur as a small station, with dim kerosene lanterns burning at night, where only a few passenger trains stopped. It was local chieftains such as Bhabani Pathak and Ichhai Ghosh, who were the heroes of the jungle-territory, and probably held many a great emperor at bay. Many of them must have passed through the area on the lookout for wealth in the famed granaries of Bengal further east but probably never found the place attractive enough to show their prowess.

It is unlikely that Bhabani Pathak of Durgapur was the same person linked with Devi Choudhurani, made famous by Bankim Chandra Chatterjee. Their area of activity was around Rangpur, now in Bangladesh. Although barges used to carry coal down the Damodar in those days and the river was more navigable than now, the area was never a watery haven as some areas of east or north Bengal were. However, legends have more impact on people than the hard realities of history.

The area was part of the Bardhaman Raj, who ruled on the basis of a fireman from the Mughal emperor. Mir Kassem, then Nawab of Sube Bangala, ceded Bardhaman along with Medinipur and Chittagong to the East India Company in 1760 (three years after the Battle of Plassey), and the Bardhaman Raj continued to function under British tutelage.

However, there are some interesting historical points. Archaeological excavations at Birbhanpur, on the bank of the Damodar, have revealed a number of stone implements. These are dated to be around 5,000 BC. Many of these are hunting implements used by pre-historic hunters. Earlier, some of the excavations at Pandu Rajar Dhibi, on the banks of the Ajay, just beyond Durgapur but in Bardhaman district, revealed traces of a civilization possibly linked with the Indus Valley Civilization. These are important historical finds and are yet to be fully explored. Durgapur is by far, the most industrialized city in the entire eastern India. It all started with the dreamer first Prime Minister of independent India, Jawaharlal Nehru. His dream of transforming the backward agricultural country into an industrially advanced nation was picked up in West Bengal by Dr. B.C. Roy. At the earlier stages for the selection of a proper site for a new industrial township, Jnananjan Niyogi, a great business organizer and planner, was involved. Modernist American architect [Joseph Allen Stein], invited to head the newly formed Department of Architecture and Planning at the Bengal Engineering College in Calcutta, plunged into a major project as soon as he reached India in 1952—the designing of Durgapur city along with Benjamin Polk, Queen Elizabeth at Durgapur

3.3 YEAR OF ESTABLISHMENT

Durgapur is a new industrial city. The administrative setup for the city came up in. Once the British settled down to ruling the country in the nineteenth century, they started effecting administrative changes. In 1837, when Bankura district was formed, Durgapur area was part of it. In 1847, Ranigunj subdivision was formed with three police stations – Ranigunj, Kanksa and Neamatpur - and it was

made a part of Bardhaman district. In 1906, the sub divisional headquarters was shifted to Asansol and the subdivision renamed accordingly. In 1910, the police stations in Asansol subdivision were Asansol, Ranigunj, Kanksa, Faridpur and Barakar. On 14 April 1968, Durgapur subdivision was carved out of Asansol subdivision.

Durgapur being an industrial city, the civic amenities of different company/ plant townships are taken care by the respective company/ plant authorities. However, there are civil localities such as the area around the railway station (what was the original Durgapur), the City Centre, Bidhannagar, Benachitty, Muchipara and so on, which need civic facilities. In 1962, Durgapur Notified Area Authority was formed for the purpose. It was upgraded to a municipal corporation on 7 October 1996.

3.4 RELIGION

According to Census of India 2011, Hinduism is the predominant religion in this city, followed by Islam, Christianity, Sikhism, Buddhism, Jainism and others. Out of 5, 66,517 people living in Durgapur (Municipal Corporation); 5, 19,122 are Hindus (91.63%), 35,923 are Muslims (6.34%), 1889 are Christians (0.36%), 2346 are Sikhs (0.44%), 513 are Buddhists, 382 are Jains, 906 are other religions and 5436 (1.04%) did not state their religion.

3.5 LINKAGES OF RAIL, ROAD, PORT AND AIR

The Grand Trunk Road (NH2) virtually bifurcates the area. It has now been widened as part of the Golden Quadrilateral project. Another wide road takes off from Darjeeling Morh near Panagarh for North Bengal. It also links Santiniketan to the Grand Trunk Road. The Durgapur Expressway, linking Dankuni with Memari on Grand Trunk Road, now allows fast communication between Kolkata and Durgapur. A road over the Durgapur barrage links Durgapur with Bankura and beyond in South Bengal.

The Kolkata-Delhi railway track passes through Durgapur. Andal has a link with Sainthia on the Sahibgunj loop line.

There are airstrips at Panagarh and Durgapur, the former with the Indian Air Force and latter with SAIL. A fully fledged domestic airport has been constructed at Andal near Durgapur. The airport has started operating from May, 2015.

3.6 THE DECLINE AND REVIVAL

As the British industrialists left India after independence many of the industrial empires they left behind were taken over by the Indian business community, who were mainly traders. With technological obsolescence the industries fell on bad times, labour unrest started and finally engulfed the state of West Bengal in the late sixties. Even the new industries in Durgapur were affected by the militancy and in no time, most of the industries in Durgapur were in shambles.

That continued for some years but the result was that many of the sick industries were on the verge of closure. It was evident that some of the industries were technically unsound; as for example, Durgapur Steel Plant was technologically obsolete and needed huge investment for modernization. The political chaos submerged all such concerns and no investor considered the region safe for any major investment. When unemployment started pinching, the left was settled comfortably in power. There was rethinking about revival of industries in West Bengal.

The late eighties witnessed a turnaround in the fortunes of SAIL, with Durgapur Steel Plant being one of the plants to be modernized at a cost of Rs. 5,000 crore. However, the plant continued to make huge operating losses and by mid-nineties even rumors of a slow death of the plant along with the city was making the rounds.

Fig 3.2: Durgapur Steel Plant

Fortunately, DSP management with public support of the trade unions was able to turn around the dire situation with thousands of job cuts through voluntary retirement schemes and modernizing efforts. Now Durgapur Steel Plant is operating at above its rated capacity and earning profits after deduction of substantial amount of interest and depreciation resulting from the massive investment in modernization. The plant is undergoing further expansion and is all set for a momentous future. A number of other industries, as for example Alstom Power Boilers (erstwhile ACC-Babcock Ltd), Philips Carbon Black Ltd. and Graphite India Ltd., had been doing well. Alloy Steels Plant has also turned the corner. Therefore, Durgapur presents a dual picture of growth and hope on one side and collapse on the other. The darker side covers such units as MAMC, Bharat Ophthalmic and Hindustan Fertilizer Corporation.

3.7 RECENT CHANGES IN DURGAPUR

Year 2002 onwards, Durgapur has been witnessing radical changes, with rapid development in different segments. The changes are with respect to infrastructure as well as industrial growth for steel (direct reduced iron), metal, cement industries & knowledge based industries.