# **Bulk Waste Generator**

S.No. Ward Number  Yor Type 1: Type 2: Type 3: Fease add more types, if required  Number  Number  5 6 7 8 9	Name	Name of the ULB:		Bulk Waste Generator*	enerator*	
No. Type 1: Type 2: Type 3: required	V.	Ward	Please prov	ride Ward-wise information	n on Type and Number of BW	Gs in the table below
Number		ÖZ	Type 1:	Type 2:	Type 3:	-
	-		Number			
5 6 7 8	2		Number			
5 6 7 8	3					
8 8 8	4					
8 8 9	5					
8 8	9					
<ul><li>∞</li><li>σ</li></ul>	7					
5	90					
	ග					

\* Bulk Waste Generators means such establishments, which generates more than 100 KG/day of waste "or" from where segregated organic waste can be obtained in large amounts. For example: Dairy complexes/vegetable markets/schools/colleges/ hostels/ hotels/ commercial establishments/ places of worship/Ceremonial Houses, etc.

	Contact Number: Email: Sign:
	Sign:
Email:	

# Solid Waste Generation Data

2	Name of the ULB:											
10		House Hold residential waste (in TPD	aste (in T	PD)	Bulk V	Bulk Waste Generation (in TPD)	n (in TPD)		Commerci	Commercial / Industrial Waste (in TPD)	aste (in T	(Qd
No.	Bio- degradabl	Non- biodegradabl	lnerts*	Tota	Bio- degradabl e*	Non- biodegradabl	Inerts*	Tota	Bio- degradabl	Non-biodegradable inerts* Tota	Inerts*	Tota
								-				

<sup>\*</sup> Horticulture or Green waste will come under Bio-degradable component

# All waste data in tonnes per day

Officer in-charge (SWM)	Inmper:		
Officer is	Contact Number	Email:	Sign:

<sup>\*\*</sup>Inerts will include drain desilting and road sweeping also

# Ward-wise information on Source Segregation, Collection and Transportation

# Road Sweeping and Area Cleaning

	Any Other	Area in Frequency sqm.												
	Æ			-17										
		y No.												
	pu	Area in Frequency sqm.												
	Bus Stand	Area in sqm.												
		So.										(SWM		
		Area in Frequency sqm.										Officer in-charge (SWM):	Contact Number: Email:	
	Park	Area in sqm.										\$	Contac Email:	·
		S												
leaning	ain	Lenth in Frequency No.												
d Area C	Open Drain	Lenth in Km.												
ing an		No.												
Road Sweeping and Area Cleaning	rain	Lenth in Frequency No.												
Roa	Covered Drain	Lenth in Km.												
		No.												
	ad	Frequency												
	Minor Road	enth in Km.												
		Åo.		_										
	p	No. Lenth in Frequency No. Lenth in Frequency Km.												
	Major Road	Km, F												
		No.												
UEB:	Ward	2												
Name of the ULB:		0.N0.	1	2	3	4	5	9	7	00	6			

# Types of Vehicles/Equipment Used

Name of	the ULB:					- X			<u> </u>
A, Prima	ry Collection	n & Transporta	tion						
S.No.*	Type of	Machinery	Make and Model	Capacity	Capacity	No. of	No. of trips	Partitoned	Outsource
	Vehicle	Equipment	No.	(in cum.)	(in TPD)	Such units	(per day)	(Y/N)	(Y/N)
1				TOTAL PROPERTY AND ADDRESS OF THE AD	***************************************				***************************************
2									
3									
. Seco	ndary Collec	tion & Transpo	rtation						
.No.*	Type of	Machinery	Make and Model	Capacity (in cum.)	Capacity (in TPD)	No. of Such units	No. of trips (per day)	Partitoned (Y/N)	Outsources (Y/N)
	Vehicle	Equipment	NO.	(HI CUIL)	(111170)	Such units	(per day)	(1714)	(1/14)
1				Dice of the					- CONTRACTOR
2									
3									
		nber if required Road Sweeping	, Septage Carrying	etc.					
	Type of	Machinery	Make and Model	Capacity	Capacity	No. of	No. of trips	Partitoned	Outsource
.No.* -	Vehicle	Equipment	No.	(in cum.)	(in TPD)	Such units	(per day)	(Y/N)	(Y/N)
1									
2									
3			1-1-1		777511>				1
Add mo	re serial num	ber if required							
				(	Xfficer in-char	ge (SWM):			
				C	ontact Numbe	r:			
					mail:				
				S	ign:				

# Detailed Information on Sanitation Workers

No. of No. of Remunration Remunration Generation Scheme or Other	Ward No. of Remunration Remunration Scheme or Other West Bengal Hired through Social Security Whether Survey Registered (Y/N) Ragpickers registered (Y/N) Regis	On Monthly Remunration Generation Scheme or Other Sability Pension/Any Others  On Monthly Sability Pension/Any Others  Officer in-charge (SWM):  Employment Generation Scheme or Officer in-charge (SWM):  Contact Number:  Email:  On Monthly Ragpickers  Ragpickers  Ragpickers  Regpickers  Registered (Y/N)  Regpickers  R	Name of the ULB:								
Ward No. of No. of Under West Bengal Under West Bengal Urban Wage Employment Remunration Generation Scheme or Other	Ward No. of Remunration Generation Scheme or Other  Si/Housing/Healthcare/WPS/Disability Pension/Any Others	Ward No. of Permanent Staff On Monthly Remunration Generation Scheme or Other Others  Si/Housing/Healthcare/WPS/Disability Pension/Any Others  Under West Bengal Hired through Social Security Whether Survey Frivate Agency Scheme or Other Scheme or Other Scheme or Other Scheme or Other Employment Scheme or Other Scheme			No. of Casua	al Staff			No. of R.	agpickers	
			Vo. Ward N	No. of Permanent Staff	Under West Bengal Urban Wage Employment Generation Scheme or Other	Hired through Private Agency	Social Security Scheme*	Whether Survey Done (Y/N)	If Yes, No. of Ragpickers	Whether registered (Y/N)	Social Security Scheme*
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ES//Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ESI/Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ESI/Housing/Healthcare/WPS/Disability Pension/Any Others										
	F/ESI/Housing/Healthcare/WPS/Disability Pension/Any Others										
Officer in-charge (SWM):		CINAR					ďΰ	ontact Number:			
Officer in-charge (SWM): Contact Number:	Contact Number:	Control					1 8	man.			

# Details of Waste Processing Plant

ime of i	Name of the ULB;	
S.No	Details	Reply
-	Name of the Facility	0.000
2	Daily waste amount received (in TPD)	
m	Technology/Process Used (Please attach additional sheet for the technical details of the plant)	
4	Type of output product and amount (compost, RDF, etc.)	
2	Daily waste amount sent to dumpsite/SLF after processing (in TPD)	
9	Land area of facility	
7	Distance of the facility from City	
00	Distance of dumpsite/landfill Site from processing facility	
6	Whether the land is in posession of ULB or not	
10	Location of Facility	
	Distance from nearest habitation	
	Distance from nearest water body	
	Distance from nearest national/state highway	
	Distance from nearest airport	
11	Type of Land (Flood prone/Marshy/Low-lying/Abandoned mining/other, please specify)	
12	Whether infrastucre facilities are available (boundary wall, Lighting arrangement, Weighbridge, etc.). Please specify what facilities exists.	
13	Whether Testing laboratory is available	
14	Whether Leachate Staorage arrangement is available	
15	Whether Leachate Treatment Plant is available	
16	Pis attach the map of the site (if available)	
17	Contour sheet or geotechnical survey for the site, pls attach, if not available	
18	Whether Authorizaiton is obtained from WBPCB	
19	Whether NOC obtained from WBPCB (CTE/CTO)	
20	ElA done or not	
21	If ULB doesn't have its processing site, whether they have identified any land or approached to collector for allocation of required quantum	

# **Dumpsite Details**

	Dumpsite Details	
me of t	the ULB:	
S.No	Details	Reply
1	Existing Dumpsite (Open Dump/Sanitary)	
а	Area of existing dump site (In sq.m or acres)	
ь	Nature of Dumpsite (Permanent / Temporary)	
С	Whether the land is in posession of ULB or not	
d	Whether NOC obtained from WBPCB (CTE/CTO)	
6	Location of Dumpsite	
	Distance from nearest habitation	
	Distance from nearest water body	
	Distance from nearest national/state highway	
	Distance from nearest airport	
f	Type of Land (Flood prone/Marshy/Low-lying/Abandoned mining/other, please specify)	
d	Whether infrastucre facilities are available (boundary wall, Lighting arrangement,	
g	Weighbridge, etc.). Please specify what facilities exists.	
h	Height of dump site (in m)	
i	Depth of dumpsite (in m)	
j	Daily waste being dumped (in TPD)	
k	Waste Quantity dumped til date (in TPD)	
1	Area of the dumpsite covered under legacy waste (in sq.m or acres)	
m	Whether any Treatment options available at dumpsite area or not. if yes, provide details	
n	Pls attach the map of the site (if available)	
0	Contour sheet or geotechnical survey for the site, pls attach, if not available	
р	Distance of Existing dumpsite from the city	
q	EIA done or not	
r	If ULB doesn't have its own land, whether they have approached to collector for allocation of	
- 1	required quantum of land	
2	Old Dumpsites	
a	Area of old dumpsite (in sq.m.or acre)	
Ь	Height of dump site (in m)	
C	Depth of dumpsite (In m)	
d	Waste Quantity Dumped (Approx. in TPD)	
9	Pls attach the map of the site	
f	Contour sheet or Geotechnical survey for the site, pls attach, if not available	
g	Distance of dumpsite from the city	
h	Location of Dumpsite	
	Distance from nearest habitation	
	Distance from nearest water body  Distance from nearest national/state highway	
	Distance from nearest national/state highway  Distance from nearest airport	
-	Type of Land (Flood prone/Marshy/Low-lying/Abandoned mining/other, please specify)	
1	Type or cand (Flood profesival stry/cow-rying/Abandoned milling/other, please specify)	
4	Please mention, if you have a common dumping site with any other ULB	
5	Kindly mention, how the waste is being handled in dumpsite	
	Officer in-charge (SWM):	
	Contact Number:	
	Emait	
	Sign:	

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# **Expenditure and Cost recovery**

Remuneration of Waste Transportation/ Vehicle/Equipment Cleaning Material Waste Processing Waste Disposal Conservancy Staff Fuel Consumption Maintenance Procurement Plants Operations Site Operations Site Operations (+ve) (
(en-) (en-) (en+)

# Compliance & Monitoring System

# Complaince & Monitoring System

Name	Name of the ULB:
S. S.	No Details Reply
-	Whether ULB has drafted guidelines/policy and framed bye-laws for Solid Waste Management. If yes, please enclosed a copy.
N	
6	
4	
2	
9	
7	
80	
<b>රා</b>	
19	[Whether CCTV or ICT based monitoring in place for processing facilities or not.]  Whether all the contration staff has been provided with DDEs or not.
12	
13	Whether ULB has Faecal sludge collection sy provide details.
14	Whether payroll system of the ULB has linked with bio-metric attendance. (For department as well as outsourced staff)
15	Whether suitable grievance redressal system is in place or not.
16	
	CHAINER IN A CONTAIN
	Contact Number:
	Ston:

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# Annexure - III

## DISCUSSION ON FOUNDATION OF PRAMODNAGAR DUMPSITE.

From the sub-soil exploration, it is seen that the sub-soil is different deposit of silty clay with decomposed wood & vegetation. It was observed as per the exploration data that maximum thickness of filling material & Brownish gray silty clay is 3.00 m. So, it is suggested to excavate the entire layer & then fill it with a good quality 'medium sand' for a compacted thickness of 500 mm over which the foundation is to be placed (i.e. at a depth of 1.50 m below the existing ground level).

**Firstly**, considering **shallow** foundation, keeping the depth of foundation 1.50 m below the existing ground level & the soil parameters of Stratum No. II, then net ultimate bearing capacity as per IS: 6403-1981 is given by,

Ultimate bearing capacity Qnu = CNcScdcic + 6 (Nq -1) Sqdqiq + 0.5BγNγSγdγiγ. w1 Where the notations are of usual meanings.

# CASE A: For the case of 10.00 m long 1.20 m wide strip footing

Qnu = 3.1 x 5.14 x 1.0 x 1.25 x 1.0 t/m2

= 19.92 t/m<sup>2</sup>
Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Q_{nu} / 2.5 = 19.92 / 2.5$ 

 $\approx$  7.97 t/m<sup>2</sup>

# CASE B: For the case of 1.5 m long 1.5 m wide square footing

Qnu =  $3.1 \times 5.14 \times 1.3 \times 1.2 \times 1.0$  t/m2

 $= 24.85 t / m^2$ 

Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Qnu / 2.5 = 24.85 / 2.5 \approx 9.94 t/m2$ 

## CASE C: For the case of 2.0 m long 2.0 m wide square footing

Qnu =  $3.1 \times 5.14 \times 1.3 \times 1.15 \times 1.0$  t/m2

= 23.82 t/m2

Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Qnu / 2.5 = 23.82 / 2.5 \approx 9.53 t/m^2$ 

## CASE D: For the case of 2.5 m long 2.5 m wide square footing

Qnu =  $3.1 \times 5.14 \times 1.3 \times 1.12 \times 1.0$  t/m2

= 23.19 t/m2

Considering a factor of safety 2.5, safe bearing capacity

 $= gs = Qnu / 2.5 = 23.82 / 2.5 \approx 9.27 t/m^2$ 

# CASE E: For the case of 3.0 m long 3.0 m wide square footing

Qnu =  $3.1 \times 5.14 \times 1.3 \times 1.10 \times 1.0$  t/m2

= 22.78 t/m2

Considering a factor of safety 2.5, safe bearing capacity

 $= gs = Qnu / 2.5 = 23.82 / 2.5 \approx 9.11 \text{ t/m}^2$ 

# CASE F: For the case of 2.0 m long 2.5 m rectangular footing

Qnu =  $3.1 \times 5.14 \times 1.16 \times 1.15 \times 1.0$  t/m2

= 21.25 t/m2

Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Qnu / 2.5 = 21.25 / 2.5 \approx 8.50 t/m2$ 

Now, we have to check the settlement of the foundation whether they are within permissible limits. Consolidation or long term settlement of the foundations are calculated as below, as per the equation,  $\delta c = Cc / (1 + e o) \times H \times log 10 \{(Po + \Delta P) / Po\},$ 

CASE A: For the case of 10.0 m X 1.2 m wide strip footing

δc = 0.0833 X 1.80 X log 10 3.1761

≈ 75 mm

Applying pore water pressure correction,  $\delta c = 0.70 \times 75 = 53 \text{ mm}$ 

CASE B: For the case of 1.5 m x 1.5 m square footing

δc = 0.0833 X 2.25 X log 10 2.5456

≈ 76 mm

Applying pore water pressure correction,  $\delta c = 0.70 \times 76 = 53 \text{ mm}$ 

CASE C: For the case of 2.0 m x 2.0 m square footing

 $\delta c = 0.0833 \times 3.0 \times \log 10 2.2966$ 

≈ 90 mm

Applying pore water pressure correction,  $\delta c = 0.70 \text{ X } 90 = 63 \text{ mm}$ 

CASE D: For the case of 2.5 m x 2.5 m square footing

 $\delta c = 0.0833 \times 3.50 \times \log 10 2.2066$ 

≈ 100 mm

Applying pore water pressure correction,  $\delta c = 0.70 \text{ X } 100 = 70 \text{ mm}$ 

CASE E: For the case of 3.0 m x 3.0 m square footing

 $\delta c = 0.0833 \times 3.75 \times \log 10 \ 2.2021$ 

≈ 107 mm

Applying pore water pressure correction, δc = 0.70 X 107 = 73.5 mm

CASE F: For the case of 2.0 m x 2.5 m rectangular footing

δc = 0.0833 X 3.00 X log 10 2.2649

= 89 mm

Applying pore water pressure correction, δc = 0.70 X 89 = 62 mm

Immediate settlement of compacted sand layer is not considered as it will occur at the time of Construction & it's magnitude is negligible.

# TABLE FOR ALLOWABLE BEARING PRESSURE WITH SETTLEMENTS

Type of foundation	Depth of Foundation (m)	Size of Foundation (m)	Safe Bearing Capacity (T/m2)	Long Term Settle- ment (mm)	Allowable Bearing pressure (T/m2)
Strip	1.50	10.0 x 2.0	7.97	53	7.97
Square	1.50 1.50	1.5 x 1.5 2.0 x 2.0	9.94 9.53	53 63	9.94 9.53
	1.50 1.50	2.5 x 2.5 3.0 x 3.0	9.27 9.11	70 74	9.27 9.11
Rectangular	1.50	2.0 X 2.5	8.50	62	8.50

Note: Maximum permissible settlement considered i) for shallow foundation= 75 mm

# DISCUSSION ON FOUNDATION OF KAMARHATI DUMPSITE:

From the sub-soil exploration it is seen that the sub-soil is different deposit of silty clay to claye silt with decomposed wood & vegetation. It was observed as per the exploration data that maximum thickness of filling material & Brownish gray silty clay to clayey silt is 3.50 m to 4.00 m. So, it is suggested to excavate the entire layer & then fill it with a good quality 'medium sand' for a compacted thickness of 500 mm over which the foundation is to be placed (i.e. at a depth of 1.20 m below the existing ground level).

Firstly, considering shallow foundation, keeping the depth of foundation 1.50 m below the existing ground level & the soil parameters of Stratum No. II, then net ultimate bearing capacity as per IS: 6403-1981 is given by,

Ultimate bearing capacity Qnu = CNcScdcic + 6 (Nq -1) Sqdqiq + 0.5BγNγSγdγiγ. w1 Where the notations are of usual meanings.

# CASE A: For the case of 10.00 m long 1.20 m wide strip footing

 $Qnu = 3.0 \times 5.14 \times 1.0 \times 1.12 \times 1.0 \text{ t/m}2$ 

 $= 17.27 \text{ t/m}^2$ 

Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Q_{nu} / 2.5 = 17.27 / 2.5$ 

≈ 6.90 t/m<sup>2</sup>

## CASE B: For the case of 1.5 m long 1.5 m wide square footing

Qnu =  $3.0 \times 5.14 \times 1.3 \times 1.2 \times 1.0$  t/m2

 $= 22.45 \text{ t/m}^2$ 

Considering a factor of safety 2.5, safe bearing capacity

 $= qs = Qnu / 2.5 = 22.45 / 2.5 \approx 8.98 t/m^2$ 

### CASE C: For the case of 2.0 m long 2.0 m wide square footing

Qnu =  $3.0 \times 5.14 \times 1.3 \times 1.072 \times 1.0$  t/m2

= 21.97 t/m2

Considering a factor of safety 2.5, safe bearing capacity

=  $qs = Qnu / 2.5 = 21.97 / 2.5 \approx 8.79 t/m^2$ 

## CASE D: For the case of 2.5 m long 2.5 m wide square footing

Qnu =  $2.8 \times 5.14 \times 1.3 \times 1.12 \times 1.0$  t/m2

= 20.05 t/m2

Considering a factor of safety 2.5, safe bearing capacity

 $= gs = Qnu / 2.5 = 20.05 / 2.5 \approx 8.02 t/m^2$ 

## CASE E: For the case of 3.0 m long 3.0 m wide square footing

Qnu =  $3.0 \times 5.14 \times 1.3 \times 1.10 \times 1.0$  t/m2

= 19.51 t/m2

Considering a factor of safety 2.5, safe bearing capacity

= qs = Qnu / 2.5 = 19.51 / 2.5  $\approx$  7.80 t/m<sup>2</sup>

Now, we have to check the settlement of the foundation whether they are within permissible limits.

Settlement of the foundations are calculated as below,

## CASE A: For the case of 10.0 m X 1.2 m wide strip footing

δc = 0.0848 X 3.00 X log 10 2.5873

≈ 105 mm

Applying pore water pressure correction,  $\delta c = 0.75 \times 105 = 79 \text{ mm}$ 

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CASE B: For the case of 2.0 m x 2.0 m square footing

ôc = 0.0848 X 3.00 X log 10 2.3573

≈ 95 mm

Applying pore water pressure correction,  $\delta c = 0.75 \text{ X } 95 = 71 \text{ mm}$ 

CASE C: For the case of 2.5 m x 2.5 m square footing

 $\delta c = 0.0848 \times 3.75 \times \log 10 \ 2.1667$ 

≈ 107 mm

Applying pore water pressure correction,  $\delta c = 0.75 \times 107 = 63 \text{ mm}$ 

CASE D: For the case of 3.0 m x 3.0 m square footing

 $\delta c = 0.0884 \times 4.50 \times \log 10 1.9101$ 

≈ 112 mm

Applying pore water pressure correction,  $\delta c = 0.70 \text{ X } 112 = 78 \text{ mm}$ 

CASE F: For the case of 2.0 m x 3.0 m rectangular footing

δc = 0.0848 X 3.00 X log 10 2.3757

= 96 mm

Applying pore water pressure correction,  $\delta c = 0.75 \times 96 = 72 \text{ mm}$ 

Immediate settlement of compacted sand layer is not considered as it will occur at the time of Construction & it's magnitude is negligible.

# TABLE FOR ALLOWABLE BEARING PRESSURE WITH SETTLEMENTS

Type of foundation	Depth of Foundation (m)	Size of Foundation (m)	Safe Bearing Capacity (T/m2)	Long Term Settle- ment (mm)	Allowable Bearing pressure (T/m2)
Strip	1.20	10.0 x 2.0	6.90	79	6.90
Square	1.20 1.20	2.0 x 2.0 2.5 x 2.5	8.98 8.79	71 80	8.98 8.24
	1.20	3.0 x 3.0	8.02	78	7.33
Rectangular	1.20	2.0 X 3.0	7.80	72	7.80

Note: Maximum permissible settlement considered i) for shallow foundation= 75 m

# Annexure - IV

# Original Copies of Lab Reports



# R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

TAHER MANSION, 1ST FLOOR 9. BENTINCK STREET, KOLKATA - 700 001

Ph.: 2248-3661/2698/7803, 2262-4153/4154, Fax: 33 2248-0447 E-mail: rvloriggs.tolkafa@gmail.com, Website: www.rvbriggs.com CIN: U51109W81931PTC007007

# **TEST REPORT**

NO. G(D)/19-20/117B		Date: 11 June 2019	Page 1 of
Issued to	:	M/a. MARSS CONSULTANCY	
		Kolkata	
Your Ref. No.	7	E mail dtd. 13.05.2019	
Description of sample	:	Municipal Waste (Legacy)	
Collection Source		Legacy waste from Promodnagar Du	amp site
Sample Drawn by us on	1	30.05.2019	
Analysis completed on		10.06.2019	

# A. PHYSICAL PROPERTIES

SL No.	Test Parameters	Unit	Results
01.	Texture	4	Solid Dust
02.	Smell	101	Pungent Odour
03.	Solids Constituent:		
	a) Plastic	96	15
	b) Vegitable Waste	96	
	c) Soil	%	55
	d) Grass	%	-
	e) Leather	96	12
	f) Glass Bottle	96	10
	g) Other Waste	%	0.8
4.	Probe Moisture	%	15

# B.GENERAL PARAMETERS:

SL No.	Test Parameters	Unit	licults
01.	Moisture Content	%	6.87

(T. NANDE) Authorised Signatury

\* Results relate only to the parameters tested.

<sup>\*</sup> The test report shall not be reproduced, except in full, without written approval of the Company.



# R. V. BRIGGS & CO. PRIVATE LTD.

ANALYTICAL CONSULTING & TECHNICAL CHEMISTS

TAHER MANSION, 1ST FLOOR 9, BENTINCK STREET, KOLKATA - 700 001

Ph.: 2248-3661/2698/7803, 2262-4153/4154, Fax: 33 2248-0447 E-mail: rvbriggs.kolkata@gmail.com, Website: www.rvbriggs.com

CIN: U51109WB1931PTC007007

# **TEST REPORT**

NO. G(D)/19-20/117C		Date: 19 June 2019	Page 1 of
Issued to	;	M/s. MARSS CONSULTANCY Kolkata	
Your Ref. No.	3	E mail dtd. 13.05.2019	
Description of sample	2	Municipal Waste (Legacy)	
Collection Source		Legacy waste from Promodnagar Dur	mp site
Sample Drawn by us on		30.05.2019	
Analysis completed on	:	19.06.2019	

# TCLP REPORT:

SL No.	Test Parameters	Unit	Results
1.	Lead as Pb	mg/lt	< 0.1
2.	Cadmium as Cd	mg/lt	< 0.01
3.	Iron as Fe	mg/lt	3.750
4.	Zinc as Zn	mg/lt	0.928
5.	Nickel as Ni	mg/lt	0.160
6.	Copper as Cu	mg/lt	0.105
7.	Chromium as Cr	mg/lt	0.10
8.	Sulphide as S	mg/lt	< 0.1
9.	Cyanide as CN	mg/lt	< 0.1

Note: Minimum Detection Limit of Pb, S & CN .. 0.1 mg/lt., Cd .. 0.01 mg/lt.



\* Results relate only to the parameters tested.

<sup>\*</sup> The test report shall not be reproduced, except in full, without written approval of the Company.

Ernst & Young LLP

## EY | Assurance | Tax | Transactions | Advisory

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### ED None

This publication contains information in summary form and is therefore intended for general guidance only. It is not intended to be a substitute for detailed research or the exercise of professional judgment. Neither Ernst & Young LIP nor any other member of the global Ernst & Young LIP nor any other member of the global Ernst & Young organization can accept any responsibility for loss occasioned to any person acting or refraining from action as a result of any material in this publication. On any specific matter, reference should be made to the appropriate advisor.

# Minutes of the meeting on cluster project of Promodhnagar with KMDA & Transaction Advisor

Date: 16.07.2019

Time: 01.30 pm

Venue: 5th floor Conference Hall, Nagarayan

# Official Present:

- 1) Principal Secretary chaired the meeting
- 2) CEO, KMDA
- 3) Director, SUDA
- 4) Jt. Secretary (Establishment-UD)
- 5) Deputy Director, SUDA
- 6) Other officials from KMDA & SUDA

Principal Secretary initiated the discussions.

The Transaction Advisor-Ernst & Young made a powerpoint presentation on TFR they recently submitted with present situation at the Promodhnagar site and probable action plan regarding reclamation of land by the process of Bioremediation, disposal of inert waste 🗳 legacy waste through Bioremediation to the Panihati site.

- After detailed discussions following decisions were taken: (1) For better efficiency taking into consideration on practical decongestion of Promodhnagar Cluster is to be done where processing plant of Dum Dum, North Dum Dum, South Dum Dum and Baranagar Municipality will be set up at the present Promodhnagar site and Kamarhati and New Barrackpore will be clubbed together and the existing dumpsite at Kamarhati will be reclaimed and processing plant will be installed there.
- (2) Till new contract is awarded to the successful developer at Promodhnagar site the ongoing work of 50 TPD compost plant will be put to hold. Because of various constraints for l receipt of environmental clearance from the competent authority SLF will not be executed at Promodhnagar site and that piece of land will be utilized for installation of machineries to treat the legacy waste. KMDA would take appropriate measures for closing of the SLF development work.

(3) Composite RFP for legacy waste removal at Promodhnagar and Kamarhati sites as well as processing plant with a capacity of 569 TPD compost plus RDF and 50 TPD Biomethenation plant together with 155 TPD compost plus RDF at Kamarhati site is to be floated. The formal and became that at Parisboti should also be in the processing plant at Parisboti should also be in the explored by the Transaction Advisor before going for a pre bid conference with the probable reputed concessioner in this particular field.

(5) In the composite RFP, the possibility of concession period be extended from 15 to 20 years, may be expland. being extended

- (6) E&Y would submit draft RFP and Concession Agreement after getting it legally vetted at their end positively by 25<sup>th</sup> July 2019 so that the same can be sent to Finance Department by the end of July 2019.
- (7) On 1st August 2019, a meeting will be arranged in the presence of Hon'ble MIC, UD&MA

  Department where the Chairman of all the 6 Municipalities of Promodhnagar

  cluster/Buidyabati eluster together with the Chairman of Panihati Municipality will be

  requested to attend for detailed discussion of the for these clusters
- (8) A team comprising the officials of SUDA and KMDA will visit the proposed land parcel at Naihati as indicated by ADM(LR) North 24 Parganas where the possibility of setting up of SLF will be explored. On the basis of the report process towards procurement of land can be initiated.

The meeting ended with a vote of thanks to and from the Chair.

Dr. Subrata Gupta

(Principal Secretary)

# Minutes of the meeting on cluster project of Promodhnagar with KMDA & Transaction Advisor

Date: 16.07.2019 Time: 01.30 pm Venue: 5th floor Conference Hall, Nagarayan

# Official Present:

- 1) Principal Secretary chaired the meeting
- 2) CEO, KMDA
- 3) Director, SUDA
- 4) Jt. Secretary (Establishment-UD)
- 5) Deputy Director, SUDA
- 6) Other officials from KMDA & SUDA

Principal Secretary initiated the discussions.

The Transaction Advisor-Ernst & Young made a powerpoint presentation on TFR they recently submitted with present situation at the Promodhnagar site and probable action plan regarding reclamation of land by the process of Bioremediation, disposal of inert waste as residue of the Bioremediation of legacy waste at the Panihati site.

After detailed discussions following decisions were taken :-

- (1) For better efficiency taking into consideration the constraints of site, it is proposed that decongestion of Promodhnagar Cluster is to be done where processing plant of Dum Dum, North Dum Dum, South Dum Dum and Baranagar Municipality will be set up at the present Promodhnagar site and Kamarhati and New Barrackpore will be clubbed together and the existing dumpsite at Kamarhati will be reclaimed and processing plant will be installed there.
- (2) Till new contract is awarded to the successful developer at Promodhnagar site the ongoing work of 50 TPD compost plant will be put to hold. Because of various constraints in obtaining environmental clearance from the competent authority SLF will not be executed at Promodhnagar site and that piece of land will be utilized for installation of machineries to treat the legacy waste. KMDA would take appropriate measures for closing of the SLF development work.

- (3) Composite RFP for legacy waste removal at Promodhnagar and Kamarhati sites as well as processing plant with a capacity of 569 TPD compost plus RDF and 50 TPD Biomethenation plant together with 155 TPD compost plus RDF at Kamarhati site is to be floated. Provision of a processing plant at Panihati should also be included.
- (4) Price for both the parameters i.e. Dumpsite reclamation fee and tipping fee are to be explored by the Transaction Advisor before going for a pre bid conference with the interested agencies in the field.
- (5) In the composite RFP, the possibility of concession period being extended from 15 to 20 years may be explored.
- (6) E&Y would submit draft RFP and Concession Agreement after getting it legally vetted at their end positively by 25<sup>th</sup> July 2019 so that the same can be sent to Finance Department by the end of July 2019.
- (7) On 1<sup>st</sup> August 2019, a meeting will be arranged in the presence of Hon'ble MIC, UD&MA Department where the Chairman of all the 6 Municipalities of Promodhnagar cluster together with the Chairman of Panihati Municipality will be requested to attend for discussion of the plan for these clusters.
- (8) A team comprising the officials of SUDA and KMDA will visit the proposed land parcel at Naihati as indicated by ADM(LR) North 24 Parganas where the possibility of setting up of SLF will be explored. On the basis of the report process towards procurement of land can be initiated.

The meeting ended with a vote of thanks to and from the Chair.

Dr. Subrata Gupta

(Principal Secretary)



# রাজ্য নগর উন্নয়ন সংস্থা STATE URBAN DEVELOPMENT AGENCY



"ইলগাস ভবন", এইচ-সি ব্লক, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০ ১০৬, পশ্চিমবঙ্গ "ILGUS BHAVAN", H-C Block, Sector - III, Bidhannagar, Kolkata - 700 106, West Bengal

SUDA-3	68/201	19/2	123	5
^	_			

28.06.2019

তারিখ .....

From: Director, SUDA

To

: The Branch Manager,

Axis Bank Ltd.,

Salt Lake, Sectror-II Branch,

BJ-110, Sector-II

Salt Lake City, Kolkata - 700 091.

Sub: Electronic Transfer of Fund debiting this office Current Account No. 916010072244925.

Capacity Building & A & OE - Swachh Bharat Mission (SBM)

Sir,

You are requested to kindly arrange for electronic transfer of fund as per details given below debiting the amount from this office Current Account No.916010072244925 lying with your branch in respect of Swachh Bharat Mission SBM).

Sl. No.	Name of Payee	Amount in Rs.	Bank Details
01.	ERNST & YOUNG LLP	3,06,730.00	Standard Chartered Bank, NEW DELHI - NARAIN MANZIL BK ROAD Branch, A/C No. 52205023904 IFS Code. SCBL0036020

(Rupees Three Lakh Six Thousand Seven Hundred Thirty only)

Md. Asif Sardar Finance Officer, SUDA

Finance Officer

28/06/19

Petrus Anuranjan Soreng Finance Officer, SUDA

Finance Officer

Govt of West Bengel

Govt of West দুরভাষ : ২৩৫৮ ৬৪০৩ / ৫৭৬৭, ফ্যান্স : ২৩৫৮ ৫৮০০

Tel: 2358 6403/5767, Fax: 2358 5800, E-mail: wbsudadir@gmail.com

Account Section: 2358 6408



Ernst & Young LLP 3rd & 6th Floor, Worldmark-1, IGI Airport Hospitality District, Aerocity, New Delhi - 110037, India.

Phone: (+91-11) - 6671 8000 Fax: (+91-11) - 6671 9999

Original for recipient

To.

State Urban Development Agency

**ILGUS** Bhavan

H-C Block

Sector 3, Bidhannagar

Kolkata, WB 700106

Invoice Number

: IINL01DL008134

Date

Tax Invoice

: May 30, 2019

Place of Supply

: West Bengal

Client PAN: AAABS0934R

**Particulars** 

Amount(INR)

Submission and acceptance of Inception Report(For Cluster No.1: Dum

Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New

289,369.00

Barrackpore)

IGST @18%

52,086.42

Total

(in words): INR THREE HUNDRED FORTY-ONE THOUSAND FOUR HUNDRED

FIFTY-FIVE AND 42/100 Only

341,455,42

Our Banker's details for remitting funds:

Bank Name

STANDARD CHARTERED BANK

Narain Manzil 23 Barakhamba Road DL India 110001

Current A/c No.

522-0-502390-4

Beneficiary

**ERNST & YOUNG LLP** 

SWIFT CODE

SCBLINBBDEL 110036002

MICR IFSC Code

SCBL0036020

Please quote our Invoice Number when remitting funds. Our GSTIN: 07AAEFE1763C1ZU

HSN Code : 9983

HSN Description: Other professional, technical and business services

Please quote our following PAN No. on the TDS Certificate to be issued by you.

PAN No : AAEFE1763C

Passed for Payment Rs.

Finance Officer

Urban Development Agency

Govt of West Bengal

Signature Not Verified

Digitally signed by ANKIT

AGARWAL Date: 2019.05.30

16:38:19 05:30



May 30, 2019

Dr. Sujay Mitra
State Urban Development Agency
ILGUS Bhavan
H-C Block
Sector 3, Bidhannagar
Kolkata, WB 700106

Dear Dr. Sujay Mitra:

We are enclosing our invoice for professional services rendered by us. Our invoices are payable on presentation and we would greatly appreciate if payment could be made through RTGS/NEFT. Bank details for the same are mentioned on the invoice.

Ernst & Young LLP

Aerocity.

3rd & 6th Floor, Worldmark-1, IGI Airport Hospitality District,

New Delhi - 110037, India.

Phone: (+91-11) - 6671 8000 Fax: (+91-11) - 6671 9999

In case payment is being made by way of cheque or draft, you may send the same to the following address:

Bhawna Chopra
Building No. 8, 1st Floor,
Tower A, Sector 25 A,
DLF Cybercity Phase II
Gurgaon, Haryana -122002, India

Please mention our Invoice Number and the TDS deducted by you, (if any) along with the cheque or draft sent to us. The cheque or draft should be in favor of Ernst & Young LLP.

Yours sincerely

For Ernst & Young LLP

Encl: As above



# রাজ্য নগর উন্নয়ন সংস্থা STATE URBAN DEVELOPMENT AGENCY



"ইলগাস ভবন", এইচ-সি ব্লক, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০ ১০৬, পশ্চিমবঙ্গ "ILGUS BHAVAN", H-C Block, Sector - III, Bidhannagar, Kolkata - 700 106, West Bengal

क्षिक नर SUDA-366 /2019/9436

जातिच 24.4 2019

# Inception Report Approval

To,

Abhaya Krishna Agrawal, Partner, Ernst & Young LLP Email: Abhaya.Agarwal@nic.ey.com

Dear Mr. Agrawal,

With respect to the inception report submitted by your office on 19<sup>th</sup> April 2019 for Cluster-I, the department accords approval on the report. You are now requested to initiate the work for Feasibility Report at the earliest and ensure its submission as per timelines mentioned in contract.

Approved's Name: Debarati Datta Gupta

Designation : Director

Organisation : State Urban Development Agency

Approver's Sign :

Date : 24.04.2019



# **Government of India**



# Guidelines for

# **Swachh Bharat Mission (SBM)**



December 2014

- 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:

- 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 Gol 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).



Ernst & Young LLP IGI Airport Hospitality District Aerocity, New Delhi 110037, India

Tel: +91 11 6671 8000 3<sup>rd</sup>& 6<sup>th</sup> Floor, World Mark 1, Fax: +91 11 6671 9999 ey.com

May 30, 2019

To.

Director

State Urban Development Agency.

ILGUS Bhawan, HC Block,

Sector-III, Bidhannagar

Kolkata-700106

Subject: Invoice againstSubmission and acceptance of Inception Report(For Cluster No.1: DumDum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, NewBarrackpore)

Invoice Number: IINL01DL008134

Respected Madam,

We are enclosing our invoice for professional services rendered by us. Our invoices are payableon presentation and we would greatly appreciate if payment could be made through RTGS/NEFT. Bank details for the same are mentioned on the invoice.

In case payment is being made by way of cheque or draft, you may send the same tothe following address:

Bhawna Chopra Building No. 8, 1st Floor, Tower A, Sector 25 A, DLF Cybercity Phase II Gurgaon, Haryana -122002, India

Please mention our Invoice Number and the TDS deducted by you, (if any) along with the chequeor draft sent to us. The cheque or draft should be in favor of Ernst & Young LLP. Thanking you,

Yours faithfully,

Abhaya Krishna Agarwal

Partner - Infrastructure and PPP, Government & Transaction Advisory Services

Ernst and Young LLP, India,

Email: abhaya.agarwal@in.ey.com;

Mobile: 9871 693 342

# CONTRACT FOR CONSULTANT'S SERVICES

Project Name: "APPOINTMENT OF TRANSACTION ADVISOR for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators"

Project Ref.No. STATE URBAN DEVELOPMENT AGENCY-227/2018/1617 Dated: 31.12.2018

(For Cluster No.1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore)

Memorandum of Agreement for providing service for "Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators"

# Between

State Urban Development Agency (STATE URBAN DEVELOPMENT AGENCY), Department of Urban Development & Municipal Affairs, Government of West Bengal

ILGUS Bhawan, HC Block, Sector-III, Bidhannagar, Kolkata - 700 106

### and

# Ernst and Young L.L.P,

Registered office at 22, Camac Street, 3rd Floor Block C, Kolkata-700016 and office at Golf View Corporate Tower B, Sector – 42, Sector Road, Gurgaon – 122002

Dated: 09.04.2019



পশ্চিমবঙ্গ पश्चिम बंगाल WEST BENGAL

AA 289834

# MEMORANDUM OF AGREEMENT

This MEMORANDUM OF AGREEMENT is made on this 9th day of April, 2019

# **BETWEEN**

the State Urban Development Agency, Urban Development and Municipal Affairs Department, Government of West Bengal acting through the Director (hereinafter referred to as the "Authority") which expression shall where the context so admits, includes his successors in office and assigns on the One Part,

# AND

Ernst and Young LLP, a limited liability partnership with LLP Identity Number AAB-4343 within the meaning of the Limited Liability Partnership Act, 2008 (erstwhile Ernst & Young Private Limited, a company with registration no. U74120WB2008PTC121768) and having its registered office at 22, Camac Street, 3rd Floor Block C, Kolkata-700016 and office at Golf View Corporate Tower B, Sector – 42, Sector Road, Gurgaon – 122002 through Ernst & Young LLP's authorized signatory Abhaya Krishna Agarwal (hereinafter called the "Consultants") which expression shall where the context so admits, includes his successors in office and assigns on the Other Part.

Al

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Director.
State Urban Development Agency

### WHEREAS

- (A) STATE URBAN DEVELOPMENT AGENCY has invited tenders for empanelled transaction advisor firms, enlisted by the Finance Department (PPP cell), Government of West Bengal, vide no.3738 F(Y) dated 11-06-2018 for Appointment of Transaction Advisor for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers and Operators, through No. STATE URBAN DEVELOPMENT AGENCY-227/2018/1617, dated 31.12.2018 and subsequently revised through RFP No. STATE URBAN DEVELOPMENT AGENCY-227/2018/1760 dated 18.01.2019 and subsequent corrigendum No. STATE URBAN DEVELOPMENT AGENCY 227/2018/1796 dated 25.01.2019 (hereinafter called the "services"); followed by
- (B) Ernst and Young L.L.P, Registered office at 22, Camac Street, 3rd Floor Block C, Kolkata-700016 and office at Golf View Corporate Tower B, Sector 42, Sector Road, Gurgaon 122002 being the successful consultant for the Cluster No.1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore and have agreed to provide the services for a consideration of Rs. 28,93,684/- (Rs. Twenty Eight Lakh Ninety Three Thousand Six hundred and Eighty Four only) by entering into the contract;
- (C) the Authority, on acceptance of the aforesaid proposals of the Consultant, awarded the Consultancy to the Consultant vide its Letter of Award vide no. STATE URBAN DEVELOPMENT AGENCY-227/2018/1898 dated 12.02.2019 (the "LETTER OF ASSOCIATION"); and
- (D) in pursuance of the LETTER OF ASSOCIATION, the parties have agreed to enter into this Agreement.

NOW THEREFORE the parties hereto hereby agree as follows: -

The following documents attached here to (Schedule A and B) shall be deemed to form an integral part of this Agreement:

# Schedule-A:

- 1. Main RFP
- 2. Revised RFP (including the TORs)
- 3. RFP Corrigendum
- 4. LETTER OF ASSOCIATION.

# Schedule-B:

- 5. Appendix A: COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF AGREEMENT
- 6. Appendix B: Terms of Reference
- 7. Appendix C: Key personnel details
- 8. Appendix D: Time Schedule for Deliverables
- Appendix E: Working arrangement and items to be provided by STATE URBAN DEVELOPMENT AGENCY
- 10. Appendix F: Price
- 11. Appendix G: Payment schedule/arrangement
- 12. Appendix-H: OBLIGATIONS OF THE CONSULTANT AND AUTHORITY
- 13. Appendix-I: FAIRNESS AND GOOD FAITH

B /

Director.
State Urban Development Agency

The mutual rights and obligations of the Authority and the Consultants are set forth in this Agreement; in particular:

- (a) The Consultant shall carry out the Services in accordance with the provisions of the Agreement; and
- (b) The Authority shall make payments to the Consultant in accordance with the provisions of the Agreement.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be signed in their respective names as on the day and the year written above.

FOR AND ON BEHALF OF State Urban Development Agency, Urban Development and Municipal Affairs Department, Government of West Bengal

By Director.

(State Urban Pevelopment Agency

FOR AND ON BEHALF OF

ERNST AND YOUNG LLP

(Authorised Representative)

Witnesses

1) AMITAVA DAS V.

2)

# CONDITIONS OF AGREEMENT

# 1. GENERAL PROVISIONS

## 1.1 Definitions:

Unless the context otherwise requires, the following term whenever used in this Agreement have following meanings:

- a) "Applicable Law" means the laws and any other instruments having the force of law in the India and the State of West Bengal as they may be issued and in force from time to time;
- b) "Agreement" means the Agreement signed by the Parties, together with all documents/ Appendices attached hereto and includes all modifications made in term of the Provisions of Clause 2 hereof;
- c) "Affiliate(s)" means an individual or an entity that directly or indirectly controls, is controlled by, or is under common control with the Consultant.
- d) "Authority" means "State Urban Development Agency, Urban Development and Municipal Affairs Department, Government of West Bengal";
- e) "Consultant" means and includes sub-consultant and their Personnel, if any, engaged for carrying out of Services under this Agreement;
- f) "Currency" means the Indian Rupees;
- g) "Key personnel" means the personnel referred to in Clause 4.
- h) "Personnel" means persons hired by the Consultants or by any sub-consultant as employees and assigned to the performance of the Services or any part thereof;
- i) "Party" means the Authority or the Consultants, as the case may be, and Parties means both of them;
- i) "Services" shall have the meaning ascribed to it in the RFP and Term of Reference (TOR) as set forth in APPENDIX-B hereto;

# 1.2 Law Governing Agreement

This Agreement, its meaning and interpretation, and the relation between the Parties shall be governed by the Applicable Law.

## 1.3 Language

This Agreement has been executed in English, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Agreement.

# 1.4 Headings

The Headings shall not limit, alter or affect the meaning of this Agreement.

1.5 Notices

1.5.1 Any notice, request or consent required or permitted to be given or made

PD

State Urban Development Agency

pursuant to this Agreement shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, speed post, Telegram, facsimile or email to such Party at the addresses specified hereunder: -

Authority: State Urban Development Agency, Urban Development and Municipal Affairs Department, Government of West Bengal, ILGUS Bhawan, HC Block, Sector-III, Bidhannagar, Kolkata – 700106, West Bengal.

Attention: Debarati Dutta Gupta, SUDA Director

Phone: 033 2358 6403/5767 E-mail: sbm.wbsuda@gmail.com

Facsimile: 033 2358 6408

Consultants: Ernst & Young LLP, 3rd & 6th Floor, Worldmark-1, IGI Airport Hospitality District, Aerocity, New Delhi - 110037, India

Attention: Abhaya Krishna Agarwal, Partner, Infrastructure and PPP, Government and Transaction Advisory Services

E-mail: abhaya.agarwal@in.ey.com

Telex: +91 9871693342

Facsimile: +91 116 623 3060

# 1.5.2 Notice will be deemed to be effective as follows:

The notice shall be deemed to be effective in the manner and at time as specified as follows:

- (a) In the case of personal delivery, speed post or registered mail, on delivery;
- (b) In the case of telexes, telegrams and facsimiles 24 hours following confirmed transmission;

### 1.6 Location:

The Services shall be performed in consultation with State Urban Development Agency, West Bengal to the Urban Local Bodies falling under cluster in State of West Bengal. However, it is not be mandatory for the key personnel of the Consultants to be stationed at the Authority office though it is preferable that the Transaction Advisor should have office setup at Kolkata for ease of interaction and they should be readily available.

# 1.7 Authorised Representatives

Any action required or permitted to be taken, and any document required or permitted to be executed under this Agreement by the Authority or the Consultants may be taken or executed by the officials as under:

Director.

State Urban Development Agency

For the Authority: Debarati Dutta Gupta, SUDA Director,

ILGUS Bhawan, HC Block, Sector-III, Bidhannagar,

Kolkata - 700106, West Bengal.

Phone: 033 2358 6403/5767 E-mail: sbm.wbsuda@gmail.com

Facsimile: 033 2358 6408

For the Consultant: Abhaya Krishna Agarwal, Partner, Infrastructure and PPP, Government and Transaction Advisory Services.

3rd & 6th Floor, Worldmark-1, IGI Airport Hospitality

District, Aerocity, New Delhi - 110037, India

Phone: +91 9871693342

E-mail: abhaya.agarwal@in.ey.com

Facsimile: +91 116 623 3060

## 1.8 Taxes and Duties

The Consultants and the personnel shall pay the taxes, duties, fees, levies and other impositions levied under the existing, amended or enacted laws during life of this Agreement and the Authority shall perform such duties in regard to the deduction of such tax as may be lawfully imposed. Irrespective of the aforesaid, the payment to be made hereunder by the Authority shall be made net off applicable GST (at prevailing rates notified under Applicable Laws from time to time), which Authority shall pay over and above the fee payable hereunder.

1.9 The conditions shown in letter of invitation, term of reference, and RFP, and financial offers shall be deemed to be incorporated and form part of this Agreement by reference.

# Schedule-A

- 1. Main RFP (Annexure-1)
- 2. Revised RFP (including the TORs) (Annexure-2)
- 3. RFP Corrigendum(Annexure-3)
- 4. LETTER OF ASSOCIATION. (Annexure-4)

4

Director.
State Urban Development Agency

# Schedule-B

# Appendix-A

# 1. COMMENCEMENT, COMPLETION, MODIFICATION AND TERMINATION OF AGREEMENT

# 1.1 Effectiveness of Agreement

This Agreement shall come into force on the date of signing the Agreement.

## 1.2 Commencement of Services

The Consultants shall begin carrying out the Services within 15 days from the date of signing of the Agreement. If the Consultant fails to either acknowledge the LETTER OF ASSOCIATION or commence the assignment as specified herein, save and except for delays caused because of Force Majeure or Authority's breach, the LETTER OF ASSOCIATION shall stand automatically terminated, the earnest money of the bidder shall stand forfeited and in such a situation the authority shall be entitled to proceed with the matter as it deem fit.

# 1.3 Expiration of Agreement

Unless terminated earlier pursuant to Clause 1.9 hereof, the Agreement shall, subject to the conditions of Appendix-G of this Agreement and other terms hereof, expire upon completion of Services by the Consultant.

# 1.4 Liability of Parties

This Agreement contains all covenants, stipulations and provisions agreed by the parties. No agent or representative of either Party has authority to make, and the Parties shall not bound by or be liable for, any statement, representation, promise or Agreement not set forth herein.

# 1.5 Modification

Modifications of the terms and conditions of this Agreement, including any modification of the scope of the Services, may be made only by written Agreement between the parties upon mutual consent.

# 1.6 Force Majeure

# 1.6.1 Definition: -

(a) For the purposes of this Agreement, "Force Majeure" means an event which is beyond the reasonable control of a party, and which makes a party's performance of its obligations hereunder impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, war, riot. Civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockout or other industrial action are within the power of the party invoking force majeure to prevent, confiscation or any other action by Government agencies.

Director. State Urban Development Agency

# (b) Force Majeure shall not include

- (i) Any event which is caused by the negligence or intentional action of a party or such party's sub-consultant or agent or employees, nor
- (ii) Any event which a diligent party could reasonably have been expected to both (a) take into account at the time of the conclusion of this Agreement and (b) avoid or overcome in the carrying out of its obligations hereunder.
- (c) Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

# 1.6.2 No Breach of Agreement

The failure of a Party to fulfill any of its obligations hereunder shall not be considered to be a breach of or default under, this Agreement insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event has taken all reasonable precautions, due and reasonable alternative measures, all with the objective of carrying out the terms and conditions of this Agreement.

- a) A Party affected by an event of Force Majeure shall take all reasonable measures to remove such Party's inability to fulfill its obligations hereunder with a minimum of delay.
- b) A Party affected by an event of Force Majeure shall notify the other party of such event as soon as possible, and in any event not later than fourteen (14) days following the occurrence of such event, providing evidence of the nature and cause of such event, and shall similarly give notice of the restoration of normal conditions as soon as possible.
- c) The Parties shall take all reasonable measures to minimize the consequences of any event of Force Majeure.

# 1.6.3 Consultation

Not later than thirty (30) days after the Consultants, as the result of an event of Force Majeure, have become unable to perform a material portion of the Services, the Parties shall consult with each other with a view to agreeing on appropriate measures to be taken in the circumstances.

# 1.6.4 Extension of Time

Any period within which a Party shall, pursuant to this Agreement, complete any action or task, shall be extended for a period equal to the time during which such party was unable to perform such action as a result of Force Majeure.

# 1.6.5 Payments

During the period of their inability to perform the Services as a result of an event of Force Majeure, the Consultants shall be entitled to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of Services and in reactivating the Services after the end of such period.

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# 1.7 Suspension

The Authority by written notice of suspension to the Consultants, may suspend all payments to the Consultants hereunder, if the Consultants fail to perform any of their obligations under this Agreement, including the carrying out of the Services provided that such notice of suspension (i) shall specify the nature of the failure and (ii) shall request the Consultants to remedy such failure within a period not exceeding fifteen (15) days after receipt by the Consultants of such notice of suspension.

1.8 The Authority for any reasons beyond his reasonable control, may ask the Consultant to suspend whole or part of the Services for such time till the reasons are removed or settled. The extra time period of such duration may be granted as time extension on the original terms and conditions

# 1.9 Termination

# 1.9.1 By the Authority

The Authority, may by not less than fifteen (15) days written notice of termination to the Consultant, such notice to be given after the occurrence of any of the events specified in paragraphs (a) to (c) of this Clause, terminate this Agreement:

- a) If the Consultants fail to remedy the failure in the performance of their obligations hereunder, as specified in a notice within fifteen (15) days of receipt of such notice of suspension or within such further period as the Authority may have subsequently approved in writing;
- e) If as the result of Force Majeure, the Consultants are unable to perform a material portion of the Services for a period of not less than sixty (60) days;
- c) If the Consultants fails to provide Services as per Agreement.
- 1.9.2 The Consultant may terminate this Agreement, or any particular Services, immediately upon written notice to the Authority if the Consultant reasonably determines that it can no longer provide the Services in accordance with applicable laws or professional obligations. In that case the consultant shall give a notice 30 days before of such termination to the Authority.
- 1.9.3 Authority, in its sole discretion and for any reason whatsoever, may terminate this Agreement, after giving 15 days of notice to the Consultant..

# 1.9.4 Cessation of Rights and Obligations

Upon termination of this Agreement pursuant to *Clauses 1.2 or 1.9* hereof, or upon expiration of this Agreement pursuant to concerned provision of this Agreement hereof, all rights and obligations of the Parties hereunder shall cease, except:

- Such rights and obligations as may have accrued on the date of termination or expiration,
- (ii) The obligation of confidentiality set forth in concerned of this Agreement hereof,
   and
- (v) Any right, which a party may have under the Applicable Law.

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# 1.9.5 Cessation of Services

Upon termination of this Agreement by notice of either to the other pursuant to Clauses 1.9.1 or 1.9.2 of this Agreement hereof, the Consultants shall, immediately upon dispatch or receipt of such notice, take all necessary steps to bring the Services to a close in a prompt and orderly manner and shall make every reasonable effort to keep expenditures for this purpose to a minimum with respect to documents prepared by the Consultants and equipment and materials furnished by the Authority, the Consultants shall proceed as provided, respectively, by concerned provision of this Agreement hereof.

# 1.9.6 Payment upon Termination

Upon termination of this Agreement pursuant to Clauses 1.9.1 or 1.9.2 of this Agreement hereof, the Authority shall make the payment of Consultant Fee pursuant to Appendix-G of this Agreement hereof for Services performed prior to the effective date of termination to the Consultants (after offsetting against these payments any amount that may be due from the Consultants to the Authority).

# 1.9.7 Disputes about Events of Termination

If Consultant disputes whether an event specified in paragraphs (a) to (c) Clause 1.9.1 of this Agreement has occurred, he may within forty five (45) days after receipt of notice of termination from the employer, refer the matter to arbitration under this Agreement.

# Appendix-B

# Terms of Reference (TOR) for Transaction Adviser

# (1) Introduction

Government of West Bengal has taken several steps/initiatives for making all the cities Clean, Green and Beautiful with special emphasis on management of Solid Wastes in Municipal Towns of the State. One of the obligatory functions of the Municipal Bodies is to remove solid waste from the cities under Sections 63, 95B, 260, 273 of the West Bengal Municipal Act, 1993 and corresponding provisions of the statute governing Municipal Corporations in West Bengal. A number of initiatives have been taken by the Urban Development & Municipal Affairs Department to ensure that solid waste are collected by the Municipal Bodies and disposed of scientifically by them. Under Mission Nirmal Bangla, a lot of equipment e.g. garbage bins, compactors, hydraulic tippers and other vehicles, community bins to Municipal Bodies to assist them in systematic collection of garbage from individual holdings, their transportation and stacking before disposal. Land has also been provided through inter departmental transfer to municipal bodies to set up dumping ground cum solid waste processing plants. In some cases these bodies have been permitted to purchase private land for setting up these facilities. The municipal bodies are required to collect waste from individual holdings systematically and transport them regularly to the solid waste disposal facility and get them recycled/processed scientifically. Efforts has been taken by some municipalities to collect waste and process them to the best of their abilities. It is, however, a fact that most municipal bodies do not have the technical capability, financial capacity and managerial competence to handle disposal of solid waste in a scientific manner. As a result, in spite of best intentions and substantial investments, these efforts have not resulted in significant improvement of situation.

In the light of importance given to scientific collection and disposal of solid waste, a large number of legislations and guidelines have been issued by different authorities from time to time. Some of these are:

- 1) Solid Waste Management Rules 2016 framed by Government of India
- Policy and Strategy on Solid Waste Management for Urban Areas of West Bengal made in 2017
- 3) Plastics Waste Management Rules 2016 framed by Government of India
- Policy and Strategy on Plastics Waste Management for Urban Areas of West Bengal made in 2017
- 5) Amendment of the West Bengal Municipal Act 1993 incorporating the provisions for banning using plastic bags below 50 microns.
- 6) State Government Order to all the Urban Local Bodies to regularly remove Solid Wastes from all the Hospitals in their jurisdiction and accordingly make special arrangement for removal of solid waste generated at Hospital.
- Guideline of Ministry of Housing & Urban Affairs, Government of India on Implementation of Solid Waste Management by Bulk Solid Waste Generators.

The present state of solid waste disposal in urban areas involves awareness generation among the population, expectation of segregation of source, door to door collection by the municipal bodies, intermediate storage of such collected waste, segregation at intermediate storage points, ultimate transportation to the disposal ground and segregation, recycling, processing (Bio-gas, RDF, compost) and finally landfill with the residue. While the municipalities in many cases are able to carry out the first three functions reasonably and effectively given appropriate support, the final steps, *viz.* collection of solid waste from intermediate transit points to their final processing and landfill may not be effectively carried out by the municipal bodies at their current level of resources and competence.

The Urban Development & Municipal Affairs (UD&MA) Department through Kolkata Metropolitan Development Authority (KMDA) and Municipal Engineering Directorate (MED) are developing landfill sites and solid waste processing facilities (compost plants and Biogas energy plants) in different municipalities based on this model.

However, segregation of solid waste, their processing to either to produce compost or Refuse Derived Fuel(RDF) or Bio-gas, their marketing, recycling of waste processing of construction and demolition waste, a remediation of legacy waste, management of landfill site, all of these are technically and managerially complex functions. The experience across cities in India and abroad shows that these functions are best carried out by technically and financially competent agencies. Such agencies are seen to be running successful plants in many Indian cities e.g. Hyderabad, Bangalore, Panaji, Indore, Bhopal, Surat etc.

In this light, State Government has decided to appoint Transaction Advisor for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers and Operators

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# (2) Objectives

The objective of engaging a Transaction Advisor is for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers and Operators

# (3) Scope of Work/Description of Task

- 3.1. The broad responsibilities of the Transaction Adviser are summarized as follows:
  - (a) Carry out feasibility study of the project in all respect including techno economic viability of existing cluster /proposed cluster of municipal bodies.
  - (b) Preparation of Detailed Feasibility Report for Integrated Solid Waste Management for the municipal bodies involved in this project. The Feasibility Report must cover all ambits of municipal solid waste management from door to door collection, primary/secondary transportation (if required), requirement of transfer stations (if any), processing facility and disposal of inert. Costing of this will also be included in the report.
  - (c) Drafting of Request for Proposal (RFP) for selection of competent agency for carriage (as required) and processing of waste for the cluster.
  - (d) Assisting Solid Waste Management (SWM) Cell in managing the bid process including evaluation of bids and for selection of successful agency for the cluster.
  - (e) Drafting of Tripartite Agreement between Municipal Bodies in the Cluster, the SWM Cell of the Department and the Selected Agency.
- 3.2. The Transaction Advisor shall keep the following in view in the discharge of the above responsibilities:
  - (a) Consultation with Urban Development and Municipal Affairs Department, STATE URBAN DEVELOPMENT AGENCY, URBAN LOCAL BODIES, Development Authorities and other stakeholders to identify and conceptualize/develop projects for Solid Waste Management through cluster/standalone approach.
  - (b) Detailed Technical Feasibility Report should be developed from the primary collection stage up to the final processing and disposal of all types of solid waste. A comprehensive Technical Feasibility Report indicating each stages of waste management i.e. primary Door to Door collection of segregated waste, mode of transportation, setting up of transfer station wherever feasible and disposal of Solid Waste as per provision of SWM Rules, 2016 are to be followed.
  - (c) The Detailed Project Report for all ongoing projects should incorporate all capital investment already made and existing infrastructure should be considered optimally.
  - (d) The Detailed Technical Feasibility Report should be flexible with regard to technology for processing of waste and sanitary landfill. Transaction Advisors should provide the broad contours of the project indicating performance parameters considering land constraints and other limitations, if any, within which concessionaires are free and flexible to choose technology of choice.
  - (e) It is preferable that the Transaction Advisor should have office setup at Kolkata for ease of interaction and should be available as and when required by the Authority.
  - (f) Projects should be structured under appropriate Public Private Partnership mode to enable optimum utilization of the investments already made in Solid Waste Management projects. Innovative business and commercial practices such as commercial sale of products, levy of user charges/ fee etc., as appropriate under the applicable laws should be

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- incorporated in the Detailed Technical Feasibility Report.
- (g) Transaction Advisor is to undertake visits to acclaim projects in other states and study best practices. In the financial proposal Transaction Advisor may incorporate the travel expenses and related incidental charges for visit to other States to see the best practices considering visit at least in two such cities with two experts from the team.
- 3.3. The Transaction Advisor shall prepare bid documents (RFP, Concession Agreement etc.) and manage bid process upto signing of Concession Agreement; while doing so the following objectives shall have to be addressed.
  - (a) Optimum utilization of existing infrastructure of Solid Wastes in the URBAN LOCAL BODIES and in conformity with policy of Government of West Bengal.
  - (b) Optimum utilization of land for processing plant and sanitary landfill site clubbing URBAN LOCAL BODIES in clusters to make the project financially and technically feasible.
  - (c) While undertaking the feasibility study, the proposed cluster sites should re-visited for suitable modification, if necessary. For finalization of cluster, STATE URBAN DEVELOPMENT AGENCY should be consulted. The cluster-wise Detailed Feasibility Report, Request for Proposal (concession Request for Proposal for implementation) may be prepared accordingly.
  - (d) Collection, segregation and transportation of wastes shall be the primary responsibility of URBAN LOCAL BODIES. However the Transaction Advisor will give a comprehensive and holistic mechanism in consultation with the URBAN LOCAL BODIES regarding collection at door step to final disposal.
  - (e) Incentive on performance for all stakeholders.
  - (f) A flow chart for disposal of all types of wastes from source up to the processing plant/Landfill to be developed. A clear pictorial representation of the plan should be developed by the TA itself in their report.
  - (g) Necessary clearances to be obtained from the Department of Environment, West Bengal Pollution Control Board and other regulatory bodies, on behalf of operating agency as and when required as per extent of rules, statutory provisions etc. pertaining to the matter.
    - Necessary clearances need to be secured by the Concessionaire with assistance from STATE URBAN DEVELOPMENT AGENCY/ other relevant Government Agencies
    - Transaction Advisors are only required to list and specify the clearances required for executing the proposed projects in the given clusters
- (h) New technology (i.e. the technology to be adopted in adherence to SWM Rules, 2016) should be backed by necessary certificate/s (Necessary Certification means Pollution Clearance Certificate etc.) from the proper authority (Proper authority means Pollution Control Board and other regulatory authorities.).
- (i) Effective Operation & Management System is to be for at least 20 years.
- (j) Processing and disposal of Legacy waste and reclamation of land is to be incorporated.
- (k) Land for processing plant and sanitary landfill site is to be identified by URBAN LOCAL BODY.
- (1) Reclamation of existing Dumping Grounds, scientific development, beautification etc. of

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the Dumping Grounds.

- (m) Segregation and processing of recyclable waste as per Solid Waste Management Rules, 2016 is to be ensured effectively.
- (n) Scope of work should be customized on available field data and technology for each cluster/project.
- (o) Implementation of effective and viable model based on national and international best practices.
- (p) Proposal should be inclusive of institutional structures required for implementation of projects and operation & maintenance thereof with private sector financing.
- (q) Key performance indicators to be identified. These are to be linked with schedule of payment to operating agencies.
- (r) Principal objective: Achievement of 100 percent disposal and processing of incoming waste and waste as available in existing dumping site, and to maintain its sustainability.

# (4) Assignment for following Proposed Cluster:

Cluster No.	Proposed URBAN LOCAL BODIES
1	Dum Dum, North Dum Dum, South Dum Dum Baranagar, Kamarhati, New Barrackpore

# Appendix-C

# **Key Personnel Details:**

It is envisaged that the assignment will be undertaken by the team proposed by the Transaction Advisor at the time of submission their Bid documents as detailed below:

SI No.	Position	Name of the Expert
1	Team Leader	Abhaya Agarwal
2	Solid Waste Management Specialist	Puneet Babbar
3	PPP Specialist	Gyan Misra
4	Financial Analyst	Gurvinder Singh
5	Legal Consultant	Legal firm to be engaged case to case basis

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# Appendix-D

# (1) Deliverables

Stage	Activity	Time Allocated *
Stage 1	Submission of the Inception Report	10 days from the date of commencement.
Stage 2	Submission of Draft Feasibility Report	45 days from the Stage 1
Stage 3	Submission of Final Feasibility Report along with action plan	10 days from approval of Stage 2
Stage 4	Submission of the Draft RFP for selection of Agency	20 days from approval of Stage 3
Stage 5	Submission of the Final RFP for selection of Agency	10 days from approval of Stage 4
Stage 6	Evaluation of the Tender Documents and recommendation for the Selected Agency	10 days from tender closing date
Stage 7	Getting the Concession Agreement signed by the selected Agency	10 days from Stage 6

A Fortnightly meeting will be held where the progress of the assignment will be reviewed against the progress submitted by the Transaction Advisor.

# Appendix-E

# (1) Working arrangement:

The assignment will be contracted by Director, State Urban Development Agency, West Bengal. URBAN LOCAL BODY/s will nominate an officer to liaison with the Transaction Advisor Team.

# (2) Items to be provided by the STATE URBAN DEVELOPMENT AGENCY:

All the data will be provided by STATE URBAN DEVELOPMENT AGENCY and URBAN LOCAL BODY to the Transaction Advisor and for that Transaction Advisor should inform the requirement of requisite data to the office of STATE URBAN DEVELOPMENT AGENCY. However certain datas are to be collected by the Transaction Advisor during their Field Study if it is not readily available with STATE URBAN DEVELOPMENT AGENCY/ URBAN LOCAL BODY.

It is to say that with regards to topographical survey, geotechnical investigation, leachate quality analysis, ground & surface water quality analysis, waste characterization survey etc shall be under the scope of Transaction Advisor consultant where STATE URBAN DEVELOPMENT AGENCY/Kolkata Metropolitan Development Authority/Municipal Engineering Directorate will extend full support.

# (3) Items to be provided by the Transaction Advisor:

The Transaction Advisor shall organize and provide for:

- Transportation and travelling requirement of their personnel for visit to URBAN LOCAL BODIES, designated sites and any other place for completion of the assignment
- Expenses towards accommodation for various visits mentioned above will also be borne by the Transaction Advisor.
- Any other expenses as required for completion of assignment.

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# Appendix-F

The contract price of **Rs. 28,93,684**/- (Rupees Twenty Eight Lakh Ninety Three Thousand and Six hundred and Eighty Four only) shall remain fixed and firm during the period of contract excluding Goods and Service Tax. The Authority shall pay GST in the prevailing rate.

# Appendix-G

# Payment Schedule/Arrangement

Stage	Details of stages	Percentage
Stage 1A	Submission of the Inception Report	5%
Stage 1B	Acceptance of Inception Report by the Authority within 7 working days from the date of submission	5%
Stage 2A	Submission of Draft Feasibility Report by the TA	5%
Stage 2B	Acceptance of Draft Feasibility Report, by the Authority within 7 working days from the date of submission	5%
Stage 3	Submission of Final Feasibility Report along with action plan by the TA within 7 working days from the date of submission of corrected draft from the Authority	5%
Stage 4A	Submission of Draft RFP by the Agency	5%
Stage 4B	Acceptance of Draft RFP by the Authority within 30 working days of submission	10%
Stage 5A	Submission of the Final RFP for selection of Agency	10%
Stage 5B	Acceptance of the Final RFP by the Authority within 30 working days of submission	10%
Stage 6	Evaluation of the Tender Documents and recommendation for the Selected Agency	20%
Stage 7	Getting the Concession Agreement signed by the selected Agency	20%
	TOTAL	100%

STATE URBAN DEVELOPMENT AGENCY shall review and monitor the progress of the assignment. On acceptance of the report against each milestone by the Director, STATE URBAN DEVELOPMENT AGENCY, payment will be released subject to deduction of taxes, as applicable.

(a) If the Agreement duration gets reduced due to Termination or any other reason that is not attributable to the Consultant, Consultant shall be entitled to:

(i)

the payment of the Consultant Fee for Services performed prior to the effective date of such termination (after offsetting against these payments any amount

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that may be due from the Consultants to the Authority); and

- (ii) release of the performance security by the Authority to the Consultant.
- (b) Notwithstanding anything contrary contained in this Agreement, if project gets delayed beyond period of twelve (12) months from commencement date for any reason(s) not attributable to the Consultant, the Consultant shall be entitled to terminate the Agreement without any liability/cost thereof. Upon such exit, the Consultant shall be entitled to:
  - the payment of the Consultant Fee for Services performed prior to the effective date of such termination (after offsetting against these payments any amount that may be due from the Consultants to the Authority); and
  - (ii) release of the performance security by the Authority to the Consultant.
- (c) All payments made hereunder shall be net off and be paid by Authority along with applicable GST as per prevailing rates notified under Applicable Laws.

# **Currency of Payment**

Except as may be otherwise agreed between the Authority and the Consultants all payments under this Agreement shall be made in Indian Rupees only. The payments shall be made by Cheques / Demand Draft or electronic transfer to designated account of Consultant.

# Mode of Billing and Payment

The billing and payment in respect of Services shall be made as follows:

- (a) As soon as practicable and not later than the fifteen (15) days after the completion of each stage, during the period of Services, the Consultant shall submit to Authority in duplicate a bill for payment.
- (b) The Authority shall cause the payment to the Consultant periodically as given above within ten (10) days after the receipt by the Consultant's bills.
- (C) All running payments shall be treated as interim payments subject to adjustment on the finalization of Agreement.

### Recovery

Any sum falling due or any loss caused due to this Agreement shall be recoverable by the Authority from the Consultant's performance security and balance as if it were arrears of land revenue.

Performance Security means 10% of total Consultant Fee in the form of Bank Guarantee of any recognized bank in India in favour of the Authority to be submitted by the Consultant within 15 days from signing of the Agreement. Bank Guarantee should remain valid till the Agreement continues to be in force.

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# Appendix-H

# OBLIGATIONS OF THE CONSULTANTS

### 1.1 General

### 1.1.1 Standard of Performance

The Consultants shall perform the Services and carry out their obligations hereunder with all due diligence and efficiency, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe and effective equipment, machinery, materials and methods. The Consultants shall always act, in respect of any matter relating to this Agreement or to the Services, as faithful advisers to the Authority, and shall at all times support and safeguard the Authority's legitimate interests in any dealings with Sub-consultants or Third Parties.

# 1.1.2 Law Governing Services

The Consultants shall perform the Services in accordance with the Applicable Law and shall take all practicable steps to ensure that any Sub-consultants, as well as any personnel of the Consultant and/or sub-consultants and agents, comply with the Applicable Law time being in force. The Authority shall advise the Consultants in writing of relevant local customs and the Consultants shall, after such notice, respect such customs.

# 1.2 Conflict of Interests

# 1.2.1 Consultants not to benefit from Commissions, discounts etc.

The remuneration of the Consultants pursuant to Appendix-G of this Agreement hereof shall constitute the Consultant's sole remuneration in connection with this Agreement or the Services and subject to relevant provision of this Agreement hereof, the Consultants shall not accept for their own benefit any commission, discount or similar payment in connection with activities pursuant to this Agreement or to the Services or in the discharge of their obligations hereunder, and the Consultants shall use their best efforts to ensure that any of the Personnel and agents of either of them, similarly shall not receive any such additional remuneration.

# 1.2.2 Procurement Rules

If the Consultants, as part of the Services, have the responsibility of advising the Authority on the procurement of goods, works or services, the Consultants shall comply with any applicable procurement guidelines applicable in the State of West Bengal and shall at all times perform such responsibility in the best interest of the Authority. Any discounts or commissions obtained by the Consultants in the exercise of such procurement responsibility shall be for the account of the Authority.

# 1.2.3 Consultants and Affiliates not to engage in certain activities

The Consultants agree that, during the term of this Agreement and after its termination, the Consultants and any entity affiliated with the Consultants, as

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well as any sub-consultant and any entity affiliated with such sub-consultant, shall be disqualified from providing goods, works or Services (other than the Services and any continuation thereof) for any Project resulting to the Services.

# 1.2.4 Prohibition of Conflicting Activities

The Consultants shall not engage and shall cause their personnel as well as Sub-consultants and their Personnel not to engage, either directly or indirectly during the term of this Agreement, any business or professional activities in the State of West Bengal, which would conflict, with the activities assigned to them under this Agreement.

# 1.3 Confidentiality

The Consultants, their sub-consultants and the personnel of either of them shall not, either during the term or within 6 (six) months after the expiration of this Agreement, disclose any proprietary or confidential information relating to the project, the Services, this Agreement or the Authority's business or operations without the prior written consent of the Authority.

# 1.4 Liability of the Consultants

- 1.4.1 Subject to additional provisions, if any, set forth in this Agreement, Consultant's liability under this Agreement shall be as provided by the Applicable Law.
- 1.4.2 The Consultant shall, subject to the limitation specified provisions of this agreement, be liable to the Authority for any direct loss or damage accrued or likely to accrue due to deficiency in Services rendered by it.
- 1.4.3 The Parties hereto agree that in case of negligence or willful misconduct on the part of the Consultant or on the part of any person or firm acting on behalf of the Consultant in carrying out the Services, the Consultant, with respect to damage caused to the Authority, shall not be liable to the Authority:
  - (i) for any indirect or consequential loss or damage; and
  - (ii) for any direct loss or damage that exceeds the Consultant Fee actually paid for the Services.

# 1.5 Accounting, Inspection and Auditing

The Consultants (i) shall keep accurate and systematic accounts and records in respect of the Services, hereunder, in accordance with accepted accounting principles and in such form and detail as will clearly identify all relevant time charges and cost, and the bases thereof.

# 1.6 Consultant's Actions requiring Authority's prior Approval

The Consultants shall obtain the Authority's prior approval in writing before changing key personnel. The key personnel shall be available as per the requirement of fulfilment of Services. However, it shall not be mandatory for the key personnel of the Consultants to be stationed at the Authority location but will be available before the Authority as and when required.

# 1.7 Reporting Obligations

The Consultants shall submit to the Authority the reports and documents specified in the Terms of Reference as set forth in Appendix-B, and perform the Services as per terms set

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forth in the Terms of Reference.

Documents prepared by the Consultants to be the Property of the Authority. All plans, drawings, specifications, designs, reports, other documents and software prepared by the Consultants for the Authority under this Agreement shall become and remain the property of the Authority. The Consultants shall, not later than upon termination or expiration of this Agreement, deliver all such documents etc. to the Authority, together with a detailed inventory thereof. The Consultants may retain a copy of such documents and software.

The Authority shall constitute a Committee for periodic review of the documents/reports specified in the Terms of Reference as set forth in Appendix-B on a fortnightly basis.

# OBLIGATIONS OF THE AUTHORITY

# 2. Assistance and Exemptions

- 2.1. The Authority will assist to Consultant in grant of following from Government:
- 2.2. Provide the Consultants, the sub-consultants and Personnel with work permits and such other documents as shall be necessary to enable the Consultants, sub-Consultants and Personnel to perform the Services (if applicable);
- 2.3. Assist the Consultants, sub-Consultants and the Personnel employed by them for the Services from any requirement to register or obtain any permit to practice their profession or to establish themselves either individually or as a corporate entity according to the Applicable Law;
- 2.4. Grant to the Consultants, any sub-Consultants and the Personnel of either of them the privilege, pursuant to the Applicable Law, of bringing into State of West Bengal reasonable amount of currency for the purposes of the Services or use of the personnel and their dependent and of withdrawing any such amounts as may be earned therein by the Personnel in the execution of the Services;
- 2.5. The Authority shall nominate an officer to liaison with the Consultant.
- 2.6. The Authority shall provide all the data to the Consultant and for that Consultant should inform the requirement of requisite data to the office of the Consultant. However certain data are to be collected by the Consultant during their Field Study if it is not readily available with the Authority and the Authority will assist the Consultant in such endeavours. However, with regard to topographical survey, geotechnical investigation, leachate quality analysis, ground and surface water quality analysis, waste characterization survey etc shall be under the scope of Consultant to consult where the Authority will extend full support.

# Appendix-I

# 1. FAIRNESS AND GOOD FAITH

# 1.1. Good Faith

The Parties undertake to act in good faith with respect to each other's rights under this Agreement and to adopt all reasonable measures to ensure the realization of the objectives of this Agreement.

Operation of the Agreement

The parties recognize that it is impractical in this Agreement to provide for every contingency

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which may arise during the life of the Agreement, and the parties hereby agree that it is their intention that this Agreement shall operate fairly as between them, and without detriment to the interest of either of them and that if during the term of this Agreement either party believes that this Agreement is operating unfairly, the parties will use their best efforts to agree on such action as may be necessary to remove the cause or causes of such unfairness, but on failure to agree on any action pursuant to this clause shall give rise to a dispute subject to arbitration in accordance with terms hereof.

# 2. INTELLECTUAL PROPERTY RIGHTS

The Consultant may use data, software, designs, utilities, tools, models, systems and other methodologies and know-how ("Materials") that the Consultants own in performing the Services. Notwithstanding the delivery of any Reports, the Consultants retain all intellectual property rights in the materials (including any improvements or knowledge developed while performing the Services), and in any working papers that Consultants compile and retain in connection with the Services (but not Authority Information reflected in them). Upon payment for the Services, the Authority may use any materials included in the Reports, as well as the Reports themselves as permitted by this Agreement.

# 3. INDEMNITY

To the fullest extent permitted by applicable law and professional regulations, the Authority shall indemnify the Consultants, against all claims by third parties (including the Authority's affiliates) and resulting liabilities, losses, damages, costs and expenses (including reasonable external and internal legal costs) arising out of the third party's use of or reliance on any Report disclosed to it by or through the Authority or at the Authority's request. The Authority shall have no obligation hereunder to the extent that the Consultant have specifically authorized, in writing, the third party's reliance on the Services.

# 4. MISCELLANEOUS

- a. This Agreement constitutes the entire agreement as to the Services and the other matters it covers, and supersedes all prior agreements, understandings and representations with respect thereto, including any confidentiality agreements previously delivered.
- b. Both the Parties may execute this Agreement (including TOR and RFP), as well as any modifications to it by electronic means and each of us may sign a different copy of the same document. Both of us must agree in writing to modify this Agreement or any Statement of Work hereunder.
- The Consultant shall be liable for defects, discrepancies and disorders etc. in works executed under his supervision.
- d. Both the Authority and Consultant represents that the person signing this Agreement and any Statement of Work hereunder on its behalf is expressly authorized to execute them and to bind each of us to their terms.
- e. Neither of the Parties may assign any of their rights, obligations or claims under this Agreement;
- f. If any provision of this Agreement (in whole or part) is held to be illegal, invalid or otherwise unenforceable, the other provisions shall remain in full force and effect;
  - If there is any inconsistency between provisions in different parts of this Agreement, those parts shall have precedence as follows (unless expressly agreed otherwise): (a) the Cover

Director.

Letter, (b) the applicable Statement of Work and any annexes thereto, (c) these General Terms and Conditions, and (d) other annexes to this Agreement;

h. Neither of the Parties may use or reference the other's name, logos or trademarks without its prior written consent, provided that the Consultant may use the Authority's name publically to identify the Authority as a Authority in connection with specific Services or otherwise.

# 5. SETTLEMENT OF DISPUTES

# 5.1. Amicable Settlement

The parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Agreement or the interpretation thereof.

# 5.2 Dispute Redressal System

5.2.1 In the event of any Dispute between the Parties, either Party may call upon [Director, State Urban Development Agency, Government of West Bengal] and the Senior Management of the Consultant or a substitute thereof for amicable settlement, and upon such reference, the said persons shall meet not later than 10 (ten) days from the date of reference to discuss and attempt to amicably resolve the Dispute. If such meeting does not take place within the 10 (ten) day period or the Dispute is not amicably settled within 15 (fifteen) days of the meeting or the Dispute is not resolved as evidenced by the signing of written terms of settlement within 30 (thirty) days of the notice in writing or such longer period as may be mutually agreed by the Parties, either Party may refer the Dispute to arbitration in accordance with the provisions hereof.

### 5.2.2 Arbitration

Any Dispute which is not resolved amicably pursuant to resolution mechanism as provided in Clause above, shall be finally decided by reference to arbitration by an Arbitral Tribunal appointed in accordance with this clause, and shall be subject to the provisions of the Arbitration and Conciliation Act, 1996 (as amended from time to time). The place of such arbitration shall be at Kolkata and the language of arbitration proceedings shall be English.

The Arbitral Tribunal shall constitute of the sole arbitrator to be mutually appointed by parties.

This Agreement and the rights and obligations of the Parties shall remain in full force and effect, pending the Award in any arbitration proceedings hereunder.

### 5.3 Jurisdiction

The contract has been entered within the State of West Bengal and its validity, construction, interpretation and legal effect shall be to the exclusive jurisdiction of the appropriate court in State of West Bengal.

IN WITNESS THEREOF, the parties hereto have caused this Agreement to be signed in their respective names of the day and year first above written.

Director.

State Urban Development Agency

# FOR AND ON BEHALF OF THE AUTHORITY

A Bibarised Representative Agency

Witness: AMITAVA DAJ D

FOR AND ON BEHALF OF THE CONSULTANTS

BY

Authorised Representative

Witness:

# INCEPTION REPORT

Transaction Advisory services for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators

Cluster 1

# Submitted to

State Urban Development Agency (SUDA)
Urban Development & Municipal Affairs Department (UD&MA)
Government of West Bengal

19th April 2019



# DISCLAIMER

This Inception Report (the "Report) has been prepared by Ernst & Young LLP ("EY") for the State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal, ("Client" or "you") for the contract of 'Transaction Advisory services for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators for Cluster 1 municipalities: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore' ("Project" or "Assignment") vide agreement dated 09.04.2019.

In the preparation of this Report, we have relied upon primary and secondary research and information provided by the Client wherever applicable. We have taken due care to validate the authenticity and correctness of sources used to obtain the information. However, neither we nor any of our respective partners, officers, employees, consultants or agents, provide any representations or warranties, expressed or implied, as to the authenticity, accuracy or completeness of the information, data or opinions that third parties or secondary sources provided to us.

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# 1 Introduction

The purpose of this Inception report for the Project - Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore', is to set out a clear strategy and way forward for the implementation of this assignment and to specify various activities and actions, timings and outputs of the specific tasks for the project. This inception report delineates the purpose and objectives, approach and methodology, project team, key stakeholders and the detailed work plan for the project.

State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal had issued a tender, RFP no. SUDA - SUDA - 227/2018/1760 dated 18.01.2019 for 'APPOINTMENT OF TRANSACTION ADVISOR for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore'. Ernst and Young LLP ('EY') was selected to provide consultancy services to State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal.

The proposed project aims to improve the existing waste management system of cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati and New Barrackpore in particular by understanding the gaps in the infrastructure, technical capability, financial muscle and managerial competence of the cluster-1 as a whole and each ULB's. The proposed project will identify key intervention areas along the solid waste management value chain. The outcome of the project is to propose a sustainable solid waste management by leveraging the current system followed by municipal bodies involved. The objective of engaging Ernst and Young LLP ('EY') as a Transaction Advisor for assisting the state government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators will be discussed in approach and methodology.

To accomplish a sustainable and strong solid waste management, the Municipal Solid Waste Rule 2000 has provided valuable guidelines to Urban Local Bodies for collection, segregation, storage, transportation, processing and disposal of municipal solid waste. However, the dynamic nature of urban growth has also given rise to challenges which were not manifest earlier. This has prompted the announcement of the Solid Waste Management Ruled 2016, to cater to the enlarged scope of challenges, including catering to urban conglomerations and census towns, making source segregation of waste mandatory, specifying responsibilities of bulk waste generators, Central Ministries, State Government and Urban Local Bodies.

The service level benchmarks of solid waste management defined by Ministry of Urban development, Government of India for improving urban services are:

- Household level coverage of SWM services
- Efficiency of collection of municipal solid waste
- Extent of segregation of municipal solid waste
- · Extent of municipal solid waste recovered
- Extent of scientific disposal of municipal solid waste
- Extent of cost recovery in SWM services
- Efficiency in redressal of customer complaints
- Efficiency in collection of SWM-related user charges

# 2 Purpose of this document

The broad purpose of the 'Inception Report' is to set out EY's approach to the project that has been drafted for State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal in relation to the engagement 'Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore'. This Inception Report has been prepared by EY in consultation with State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and the respective urban local bodies of Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore, and in accordance with the engagement guidelines to establish a clear and mutual understanding between State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and EY related to:

- Project Background
- Scope of Work for EY
- Current Situation
- Approach, Methodology
- Work Plan
- Engagement Team
- Conclusion

This inception report will act as a blueprint of the program and will ensure a clear and common understanding between EY, State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and the respective urban local bodies of Dum Dum, North Dum, South Dum, Baranagar, Kamarhati, New Barrackpore.

# 3 Project Overview

# 3.1 Project Background

Government of West Bengal has taken several steps/ initiatives for making all the cities Clean, Green and Beautiful with special emphasis on management of Solid Wastes in Municipal Towns of the State. One of the obligatory functions of the Municipal Bodies is to remove solid waste from the cities under Sections 63, 95B, 260, 273 of the West Bengal Municipal Act, 1993 and corresponding provisions of the statute governing Municipal Corporations in West Bengal.

In the light of importance given to scientific collection and disposal of solid waste, a large number of legislations and guidelines have been issued by different authorities from time to time. Some of these are:

### Regulatory Roadmap of SWM:

### **GOVT. OF INDIA**

- Solid Waste Management Rules, 2016
- Hazardous Waste Management Rules, 2016
- Biomedical Waste Management Rules, 2016.
- Plastics Waste Management Rules 2016
- E- waste (Management and Handling ) Rules, 2016
- Plastic waste (Management and Handling ) Rules, 2016
- Construction & Demolition Waste Management Rules, 2016
- Guideline of Ministry of Housing & Urban Affairs, Gol on Implementation of SWM by Bulk Solid Waste Generators
- Swachh Bharat Mission, Gol

# GOVT. OF WEST BENGAL

- Policy and Strategy on Solid Waste Management for Urban Areas of West Bengal 2017
- Policy and Strategy on Plastics Waste Management for Urban Areas of West Bengal 2017
- Amendment of the West Bengal Municipal Act for banning using plastic bags below 50 microns.
- State Government Order to all the ULBs to regularly remove Solid Wastes from all the Hospitals in their jurisdiction and accordingly make special arrangement for Hospital Solid Waste removal
- State Government declaration of Green Zone from Airport to NABANNA area

# Mandates on Solid Waste Management suggested by Hon'ble NGT to Govt. of West Bengal on 10.04.2019

# 1) Door to Door Collection [Rule 15 (b) SWM Rule]

Door to door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other nonresidential premises. Transportation in covered vehicles to processing or disposal facilities

# 2) Source Segregation [Rule 15 (g) SWM Rule]

Segregation of waste by households into Biodegradable (green bins), non-biodegradable (blue bins) and domestic hazardous (black pouch of thickness more than 50 micron). As per directions of State level committee on SWM Rule 2016 vide no Z-16025/6/2018 dated 21.01.2019, all the reginal monitoring committee and State/UT/ULBs is to follow the two bin system for storage of waste and separate storage for domestic hazardous waste.

# 3) Provision for Litter Bins & Waste Storage Bins [Rule 15 (h) SWM Rule]

Installation of Twin-bin/ Segregated litter bins in commercial, public areas and strategic locations at every 50-100 meters

Avoid indiscriminate dumping in important location like river bank, roadside, near institutions, health care centers etc.

### 4) Transfer Stations

Installation of Transfer Stations instead of secondary storage bins in cities (mandatory for population above 5 lakhs)

# 5) Separate Transportation [Rule 15 (q and r) SWM Rule]

- Compartmentalization of Vehicles (for biodegradable and non-biodegradable) for the collection of different fractions of waste
- Use of GPS in collection and transportation vehicles to be made mandatory at least in cities with population above 5 lakhs along with the publication of route map.

# 6) Public Sweeping [Rule 15 (n) SWM Rule]

All public and commercial areas to have twice daily sweeping, including night sweeping and residential areas to have daily sweeping

# 7) Waste Processing (Wet Waste, Dry Waste, MRF Facility) [Rule 15 (h and v) SWM Rule]

- Separate space for segregation, storage, decentralized processing of solid waste to be demarcated
- Establishing systems for home/decentralized and centralized composting/ generation of bio gas
- Arrangements for Material Recovery Facilities (separation of recyclable material like PET bottle, soft drink can etc.)
- Establishment of Refuse-derived fuel (RDF) plants/ waste to energy plants

### 8) Scientific Landfill [Rule 15 (w) of SWM Rule]

Setting up common or regional sanitary landfills by all local bodies for the disposal of permitted waste under the rules

# 9) Systems for the treatment of legacy waste to be established. Bulk Waste Generators (BWGs) [Rule 4 (6 and 7) of SWM Rule]

Bulk waste generators (having an average waste generation rate exceeding 100kg per day) to set up decentralized waste processing facilities as per SWM Rules, 2016

### 10) Preventing Solid Waste from entering into Water Bodies [Rule 4 (2) of SWM Rule]

Installation of suitable mechanisms such as screen mesh, grill, nets, etc. in water bodies such as nallahs, drains, to arrest solid waste from entering into water bodies

### 11) User Fee [Rule 4 (3) of SWM Rule]

All Waste Generators shall pay user fee for solid waste management, as will be determined by the bye-laws of the local bodies

### 12) Penalty Provision [Rule 15 (zf) of SWM Rule]

Impose / levy of spot fine for persons who litters or fails to comply with the provisions of these rules/ relevant act

# 13) Notification of Bye Laws [Rule 15 (e) of SWM Rule]

Frame bye-laws incorporating the provisions of MSW Rules, 2016 and ensuring timely implementation

# 14) C&D Waste (Rule 6(4) & 6(5) of C&D WM Rules)

Ensure separate storage, collection and transportation of construction and demolition wastes

### 15) Plastic Waste (Rule 4(c) PWM Rules)

Implementation of ban on plastics below less than 50 microns thickness and single use plastic

# 16) Citizen Grievance Redressal

Establish an effective grievance redressal mechanism for this purpose

# 17) Monitoring Mechanism

ULBs to update month wise targets/action plans on the online format to the UD&MA dept.
The monthly progress report format to be communicated soon

The local body shall submit annual report on solid waste management in Form-IV as specified in Solid Waste Management Rule, 2016 to WBPCB and UD&MA department before 15 April each year

A number of initiatives has been taken by the Government of West Bengal through UD&MA Department to ensure the effective solid waste collection and disposal by municipal bodies. Under Mission Nirmal Bangla, the garbage bins, compactors, hydraulic tippers and other vehicles, community bins have been provided to Municipal Bodies to encourage and assist them in managing the municipal solid waste in systematic manner. The municipalities have also put in their best efforts to manage the municipal solid waste. However, in spite of the best intentions, the technical, managerial and financial capacity have to be analyzed for a significant improvement of the situation.

EY, through its unique capabilities and expertise in work performed with government all over India, particularly in solid waste management, will work as an advisor to State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal. We will develop a firm & sustainable waste management system in West Bengal by leveraging global expertise and sharing our experience from national waste management assignments. While developing, we will ensure the waste management system comply with the directions given by The National Green Tribunal, achieves the service level benchmarks.

# <u>Directions on non-compliance of Municipal Solid Waste Management Rules in the State of West</u> Bengal by The National Green Tribunal Principal Bench, New Delhi on 02.04.2019

- 1. To submit compliance report on sanitation and public health.
- 2. The State should enforce and implement the Solid Waste Management Rules, 2016 in all respects and without any further delay.
- 3. The authorities (The Chief Secretaries/Advisers of States/UTs by the Registry of the Tribunal) are directed to take immediate steps to comply with all the directions contained in this judgment and submit a report of compliance to the Tribunal.
- 4. Preparation of State Action Plan in terms of SWM Rule,2016 with timelines and budgetary support/provision
- The States should have Monitoring Committees headed by the Secretary, Urban Development Department with the Secretary of Environment Department as Members and CPCB and State Pollution Control Boards (SPCBs) assisting the Committees.
- 6. Regular interaction and reporting with State level Monitoring Committee (SLMC)
- 7. Preparation for Performance Audit by MoHUA, CPHEEO to be conducted for 500 ULBs with population of 1 lakh and above initially.
- 8. Best Practice Compliance:
  - a) Setting up of Control Room where citizen upload photos of garbage (Both at ULB and State level)
  - Installation of CCTV Camera at Compost center, Garbage clinic, Waste processing site/ Dump site
  - c) GPS enabled monitoring system in Garbage collection Van
  - d) Waste management information should be available on Public domain(Website) of ULBs
- 9. To prepare time bound action plans and execute the same so as to restore water and air quality
- 10. The Collectors were to have monthly meetings, as per Rule 12 and submit reports to State Urban Development Departments, with a copy to State Level Committees.
- 11. At least three major cities and as many major towns as possible in the State and at least three Panchayats in every District may be notified on the website within two weeks from today as model cities/towns/villages which will be made fully compliant within next six months.
- 12. The remaining cities, towns and Village Panchayats of the State may be made fully compliant in respect of environmental norms within one year.

# 3.2 Scope of Work for EY

# 3.2.1 Detailed survey and data collection

The initial survey/ testing broadly consists of the following components:

- 1) Detailed physical and chemical analysis of solid waste in the project area
- 2) Topographical and geo-technical surveys at the proposed site for processing facility
- In case of existing dumpsite, additional waste quality check of legacy waste and air/ ground water sampling.

The Base line data is used to assess the quality & composition of waste, area available for processing & dumping waste and dumpsites situation in the project area. This can help determine adequate collection, transportation, processing, and disposal option that could be adopted.

# 3.2.2 Preparation of TFR for Sustainable Solid Waste Management

Project feasibility study includes detailed feasibility analysis on existing/ proposed cluster by considering the technical, economical, operational, legal, organizational, environmental and social constraints to propose a viable design for a firm and sustainable solid waste management system in the existing cluster/proposed cluster.

The analysis identifies identifies feasible solution or method or technology for door to door collection, primary/secondary transportation, requirement of transfer stations (if any), processing facility and disposal of inert along with detailed cost breakups to assess the fund requirement.

The analysis details the procedure and findings of risk assessment. This allows us to formulate a suitable risk allocation framework which further formulates a practicable PPP structure.

The study evaluates the projects potential for success, determines whether the resources meet the capacity and capable of converting the ideas into working system. It unravels the positive economic benefits contributed by the project to society.

# 3.2.3 Drafting of Bid Documents

The formulated PPP structure requires a private developer to perform the necessary activities in association with the authority. The eligible private player is selected through competitive bidding. EY will interact with various prospective bidders and understand the market situation and expectation of the bidders to understand the expected quotation and market. EY will assist the authority in preparation of bid documents (RFP/RFQ/EOI), singing of concession agreement. The bid document (RFP/RFQ/EOI) will detail out the process of bid preparation including bid parameters, bid submission, evaluation methodology and terms of engagement.

# 3.2.4 Assisting SWM Cell in Bid Process Management

EY will assist the authority in selecting a PPP partner for each identified projects through following steps:

- Project Marketing
- Issuance of Advertisement & Bid Documents
- Pre-bid Conference
- Submission of Proposals
- Evaluation of Proposals
- Negotiation & Selection of private player

# 3.2.5 Drafting of Tripartite Agreement

EY will assist the authority in preparing the draft Tripartite agreement between Municipal Bodies in the Cluster and concession agreement with the lead ULB, SWM Cell of the Department and the Selected Agency. The agreement is prepared to govern authority's relationship with selected developer during the construction and operation phase. EY will incorporate safeguards against non-performance by the selected developer into the contractual arrangement for the project.

# 3.3 Current Situation

# 3.3.1 Description of the ULBs

Cluster - 1 consists of 6 ULBs - Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, and New Barrackpore.

The cluster has 2 Dumpsites: the first one is Pramodnagar dumpsite which is spread over an area of 21 acres and located in the jurisdiction of South Dum Dum; the second one is located in Kamarhati jurisdiction which is spread over 7 acres.

Name of the ULB	Area (Sq.Km)	No. of Wards	No. of Households	Population
Dum Dum	9.73	22	37691	114786
North Dum Dum	20	34	64471	249142
South Dum Dum	17.25	35	103000	403000
Baranagar	7.12	34	63387	245213
Kamarhati	10.9	35	80000	331163
New Barrackpore	8.69	20	16725	76879

Cluster-1 ULBs and Dumpsites under their jurisdiction



# 3.3.2 Status of SWM

Kamarhati Barrackpore	15.6 MT	No, 85% No, 85%	No Yes	06 %08	Tricycle, Tri Cycle Van Tractor, Iron Container	Tractor, Compactor , Battery operated covered toto etc.	Not given	Manual (Twice in a Manual, Weekly week)	No, but in the year 2011 the Municipality had engaged an agency for vermi composting project but the project was
Kan	10	N					Not	Manual	No, but 20. Munici engaged for compost but the p
Baranagar	145 TPD	Yes	Yes (partial)	95	Handcart-9CFT(150), Tri Cycle -Van (150)	Hydraulic Tipper-I TON (3), Hire Lorry-3 TON (8), TractorTailor-1.5 TON (10), Compactor- I4cmt(4), 8 cmt (3), Stationary Compactor-10	Yes	Yes, Daily	°Z
South Dum Dum	698 MT	Yes	No	N.A	Tricycle van/ E- Rickshaw/ Hand trolly	Tractor/Lorry/Du mper/ Hook lander	N	Manual (Daily)	°N N
North Dum Dum	150 TPD	Yes	Yes, Partially (20%)	100	Trycycle van/ Mototype tipper	Container, Compactor (Movable & Stationary)	Yes	Manual (Daily/Weekly)	No (Cluster project under construction)
Dum Dum	62.1 MT	Yes	No	100	Battery operated Tippers and Tricycle Vans	Mobile Compactors 14 CUM(2) & 8 CUM (1)	O.	Manual	No, but the project is being implemented by KMDA
Name of the ULB	Solid Waste generated (Approx. quantity)	100% Household level coverage	Household level Segregation	Collection Efficiency	Type of vehicles used for Primary collection	Type of vehicles used for Secondary collection	Whether collection vehicle are partitioned	Status of road sweeping	Processing Facility

# Private & Confidential

Name of the ULB	Dum Dum	North Dum Dum	South Dum Dum	Baranagar	Kamarhati	New Barrackpore
Land identifies for waste processing plant	Yes Pramodnagar	Yes Pramodnagar	Yes Pramodnagar	Yes Pramodnagar	Yes Pramodnagar	0 2
ULB has adequate man power	No	No (trained manpower is required)	Not given	No	No	Yes
Cost incurred by ULB on existing SWM system	2.3 crores	Not given	2 crores per month including salaries	1.35 lakh per Month	4.1 Crores	1.3 Crores
user charges has been notified	No	Collected only for commercial houses	No	No	No	o Z
Status of ODF	ODF by QCI	ODF	ODF	ODF	ODF	ODF
Waste bye-laws are in place	Yes, Plastic below 50 microns is abandoned	Yes, has strictly enforced ban on plastic poly bags below 50 MICRON	Yes	Yes, Fine is being imposed on use of plastic below 50 micron Rs. 20 on end user Rs. 100 for seller & Charges for transportation of C &D Waste Rs. 450/- per trip of tailor.	Not given	Yes
Any citizen grievance redressal	Common Grievance system SWM including in it	ON	Yes, WhatsApp number	Public grievences redressal app "Amar Sahor Parichhana Sahor at 8 ULBs but due to lac of publicity, hardly any feedback received.	S N	www.nbmonline.o

# 4 Approach and Methodology

# 4.1 Overall Approach and Methodology

This section details the approach and methodology that shall be adopted during the course of this assignment. The exhibit below outlines our overall approach towards transaction advisory to be implemented in the execution of this project. The following diagram gives an overview of the different modules. The information in the diagram is described in detail in the respective modules.

Contract Signing Stakeholder's Meet (ULB) Site Visits and visit to ULBs Basic Data Collection Characterization and Quantification of MSW Surveys MSW Service Delivery Regulatory Compliance Financial Situation of ULBs Current State Assessment with GAP analysis and Cluster Analysis Gap Analysis Identify ULBs with and without MSW treatment facilities For Existing facilities: New Land Identification: Land Sufficiency of existing systems Availability and Viability **Preliminary Cluster** Treatment Facility Coverage Information

# Interventions for Cluster based ISWM plan

# Cluster Formation/Revision

Identify areas for improvement and interventions across value chain

Feasibility analysis of interventions and Finalization the interventions

Identification of roles & responsibilities of each ULB in cluster

Facilitate discussions between ULBs within cluster

Develop implantation plan: resource acquisition, staffing, milestones, meetings

Financial Assessment Project Structuring and Bid Process Management

# PPP structuring and Financial Feasibility Analysis

### **Procurement Options**

Risk Identification and Allocation

Selection of Private Player

Preparation of Bid Documents

**Bid Process Management** 

# 4.2 Module I - Kick Off

EY conducted project kick off meeting as well as contract signing on 9<sup>th</sup> April 2019, which covered all operational issues of allocation of work space, deployment of team and developing a responsibility framework for each resource person for both Consultant and client side.

EY also had a stakeholder meeting with all the respective ULB officials. A brief explanation about the project, EY's approach towards it and reforms expected at the end of the execution of the project were discussed in the meeting. A primary questionnaire was presented and explained in the meeting which shall collect the basic information of all the ULBs. A detailed assessment of the data obtained is explained in the earlier section of the inception report. Timeline of the project was also discussed in the meeting. The stakeholder discussion shall facilitate building consensus among the various stakeholders regarding the objectives of the engagement and to arrive at common expectations as to the desired outcomes.

# 4.3 Module II - Site Surveys: Topographical and Geotechnical

In order to develop a cluster based Solid Waste Management plan for West Bengal, this Module will focus on the current waste management scenario in the state. Comparison of this scenario with standardized benchmarks is essential to identify the gaps in the existing practices and understand the risks and opportunities in this sector. To achieve this objective following aspects would be assessed in this module:

### 4.3.1 Characterization and Quantification of MSW

Characterization and quantification of MSW provides basic data on which the management system is planned, designed and operated. Knowledge of quantity of waste generated will help in making future projections of waste generation in West Bengal and selection of appropriate technology for waste treatment and disposal.

The key objective of this section is to quantify and develop a reliable state wide waste inventory. This would be achieved by understanding the quantity of the waste generated from ULBs. Based on the Solid Waste Management Rules 2016, the type of the waste considered –

- Wood or wood products (furniture, chairs, etc.)
- Pulp. paper and cardboard
- Food, food waste and beverages
- Textiles
- Garden, yard & park waste (leaves, tree branches, etc.)
- Construction & demolition debris (concrete, scrap, glass, etc.)
- Plastic
- E-waste
- Industrial waste (Non-hazardous)
- Bio-medical wastes
- Carcass wastes
- Others

With the help of the ULBs EY will collate basic information on -

- Population data and distribution for each ULB
- Area v/s. population summary for each ULB
- Domestic sector waste data (No. of households; Qty. of Waste generated per ULB; Overall Waste generated)

Industrial sector waste data (No. of industries in each ULB; Qty. of Waste generated per ULB; Overall Waste generated)

EY will conduct interviews and surveys to fill the gaps on best effort basis.

Also regarding the various laboratory tests and surveys, following steps shall be followed:

The initial survey/ testing broadly consists of the following components:

- 1) Detailed physical and chemical analysis of solid waste in the project area
- 2) Topographical and geo-technical surveys at the proposed site for processing facility
- In case of existing dumpsite, additional waste quality check of legacy waste and air/ ground water sampling.

# I Segregation

- For all wastes collected by the ULBs, EY will review information with ULB sanitary officer, if segregation is undertaken at household level or not. Based on segregation records, EY will confirm if biomedical and other hazardous wastes are segregated and sent to authorized recyclers or not.
- 2. For every waste stream that is processed, EY will tabulate following information on best effort basis
  - a. Primary composition, physical features and quantity of waste stream
  - b. Treatment methodology involved
  - c. Capital & operating expenditure for treatment
  - d. Output of processing (tonnage) and its fate
  - e. If the end-product is sold, identify and note its quality parameters, potential buyers, and sale price
- 3. Based on the data captured on tonnage of recovered material and collection efficiency EY would evaluate the profitability indicators for the treatment technology (IRR, NPV, and DSCR). Standard industrial assumptions will be applied as & where necessary.
- 4. EY will compare the tonnage of recovered materials to the likely waste composition, to estimate segregation efficiency (tonnage)

# II Treatment

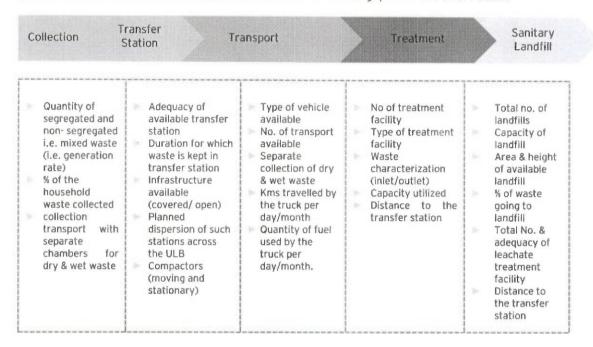
- 5. Wherever composting is undertaken, periodic reports of compost quality from NABL certified laboratory tests for pH, C/N ratio, Arsenic, Cadmium, total Chromium, Copper, Lead, Mercury, Nickel and Zinc need to be reviewed and their compliance with MSW Rules 2016 shall be confirmed. Also ambient air quality monitoring data in down-wind direction needs to be reviewed.
- 6. Further, for leachate generated, review NABL certified test certificates of disposed leachate for TSS, TDS, pH, ammonical nitrogen, total Kjeldah nitrogen, BOD, COD, Arsenic, Mercury, Lead, Cadmium, total Chromium, Copper, Zinc, Nickel, Cyanide, Chloride, Fluoride and phenolic compounds. Request information on mode of disposal (inland surface water/ public sewers/ land disposal) and verify compliance to MSW Rules 2016.
- 7. Wherever *incineration* is undertaken request & verify periodic reports from NABL certified laboratory tests for stack composition (%CO, %CO<sub>2</sub>, SPM, NOx, HCl), and VOC content in ash. Additionally, review necessary documentation to confirm stack height is at least 30 m.

### III Landfill

8. EY will assess the extent to which landfilling is undertaken for the waste generated and check the compliance of such landfills with MSW Rules 2016. EY will identify the reasons for opting for landfilling over other waste treatment methods. By doing so, identify barriers associated with the implementation of these other methods. We also shall look for management options for legacy waste Data on groundwater monitoring within 50 m of landfill site for three seasons (summer, monsoon and post-monsoon) needs to be reviewd. The parameters that would be verified for compliance with MSW Rules 2016 are Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Nitrates, pH, Hardness (CaCO<sub>3</sub>), Chlorides, TDS, phenolic compounds, Zinc, and Sulphates. Such analysis should have been conducted by an NABL certified laboratory.

# 4.3.2 MSW Service Delivery

To assess the gap in infrastructure (what type of infrastructure is planned/budgeted for/constructed/commissioned/operational) in each ULB, EY will do the analysis based on the framework given below. To gather infrastructure specific data EY will review data available from ULB officials and will conduct site visits to selected ULB to fill the gaps on best effort basis.



### 4.3.3 Regulatory Compliance

EY will assess the level of compliance with respect to Municipal Solid Waste Rules, 2016 and enforcement & impact of national and state level regulations and economic tools. EY shall also look at the guidelines issued by NGT (National Green Tribunal) with respect to solid waste management. This will include collection, transfer, treatment, disposal as per MSW rules 2016 & financial recovery in line with MoUD guidelines. F critical operational parameters with benchmarks mandated in MSW Rules, 2016.

# 4.4 Module III - Current State Assessment with GAP analysis and Cluster Analysis

### 4.4.1 Financial situation of ULBs

With a view of identifying how the finances of MSW operations are managed by ULBs, following data would be collected and reviewed for each of ULBs over the last five years:

- Capital expenditure in solid waste management
- Operational expenditure in solid waste management
- Sources and quantification of funds for capital expenditure

- Sources and quantification of revenue for meeting operational expenditure
- Extent of bill raised vis-à-vis solid waste management services rendered, bills raised and cost recovered, inter alia, operating ratio
- Extent of cross subsidization of solid waste management services by other services provided by the ULB

# 4.4.2 Gap Analysis

Based on the information collected in the preceding sections of this module (4.2.1 - 4.2.4), EY will realise the KPIs and evaluate the SWM practice against MoUD Service Level benchmark and MSW rules 2016- to identify gaps in practices & areas of opportunities. The indicative outcome is shown below:

Key Performance Indicator	Benchmark	ULB 1	ULB 2	ULB 3	ULB 4	ULB 5	ULB 	ULB 6
Household level coverage of SWM services through door-to-door collection of waste	100%							
Collection efficiency (%)	100%							
Extent of segregation (%)	100%			USTRA	TIVE	7		
Extent of recovery of waste collected (%)	80%		ILL	0				
Extent of scientific disposal of waste in landfill sites (%)	100%							
Extent of Cost recovery for the ULB in SWM services (%)	100%							
Efficiency in collection of SWM Charges (%)	90%							

EY will also tabulate the gaps for each ULB as below which will help in identifying sector involvement and areas requiring new intervention.

	Collection	Transportation	Treatment	Disposal	Management of Legacy Waste
ULB 1					-
ULB 2					
ULB 3					
ULB 4		J. C.	TRATIVE		
ULB 5		ILLUS			
ULB 6		787			
ULB 7					





Non-Compliant with MSW 2016 rules, needs intervention

# 4.5 Module IV: Interventions for Cluster based SWM plan

# 4.5.1 Cluster Revision:

The key objective of this Module is to detail the methodology proposed to be used to determine whether already identified clusters are suitable for efficient solid waste management or shall they be revised? The cluster-based ISWM plans will be specific to the needs of the cluster, and the individual ULBs. Following are the steps used to determine whether clustering shall be revised or not.

# Step 1: Identify gap in waste treatment capacity

In order to identify the gap in the existing waste treatment the following step-wise process will be followed for each ULB;

# Identify ULB specific current waste generated (A);

Information from Module 1 & 2 will be used to identify the current waste generation in the domestic, commercial and industrial sectors at each ULB.

# Identify ULB specific future waste generation ( $\Delta A$ );

The projections for waste generation for the next 30 years will be estimated using projection models for each sector.

Since the waste generated by the domestic and commercial sectors may be attributed to the same population, domestic and commercial solid waste generated will be clubbed together when estimating future MSW generation. Population growth will be the factor used to develop the future waste generation scenarios for both sectors. Either of the following population models may be used to determine future domestic and commercial waste generated:

- a. Arithmetic Increase Method:
- b. Geometrical Increase Method or Geometrical Progression Method
- c. Incremental Increase Method
- d. Logarithmic Curve Method

### Identify existing treatment capacity in ULB (B)

To identify existing treatment facilities, information from the Module 1 & 2 regarding existing plants will be used. All existing treatment plants (active, stalled, planned or under construction) will be considered to estimate the existing MSW treatment capacity in the State.

### Identify unutilized land around existing treatment capacity, and the waste treatment potential of the free land (C)

To identify the availability of unutilized land around the existing treatment plant, primary data will be obtained from the Client. The waste treatment potential of this unutilized land will be calculated using typical values for the quantity of waste (TPD) that can be treated per acre. These values will be based on information regarding standard MSW treatment plants.

### Calculating the gap

The gap in in waste treatment facilities (current and future) per ULB will then be calculated using the following formula;

MSW treatment gap = 
$$(A+\Delta A) - (B+C)$$

This value considers the existing and potential MSW treatment capacity and estimates the amount of remaining untreated waste. Negative values will indicate sufficient facilities for treatment of all current and potential MSW generation, this information will allow us to assess the existing scenario, identify clusters for the ISWM projects, and also identify the minimum land requirement for the development of treatment facilities.

### 4.5.2 Identify areas for improvement and interventions across value chain

Areas for improvement at the cluster level will be identified using the following method:

- 1. Group together the identified 'gaps' for each ULB within cluster. Information regarding the gaps will be taken from Module 1, 2 & 3 of the Inception report.
- Cluster level 'gaps' will be identified by choosing the gaps that are more commonly observed among the ULBs within a cluster. These 'gaps' will be identified based on the frequency with which they appear in the ULBs within the cluster, as illustrated in the following diagram;

JI B		1	Gap Identified	The Maria	fine the last
OLB.	Collection	Transfer	Transport	reatment	Disposal
1	X		JE		
2		X	USTRATIVE	X	Х
3	X		ISTR	X	
4	X	11	10		X
5			X	X	

3. The gaps identified will be sent to the Client to identify the focus areas for improvement in each cluster. Up to 2 gaps for a specific aspect of the value chain (collection, transportation, treatment and disposal) will be finalized.

### Client Responsibility:

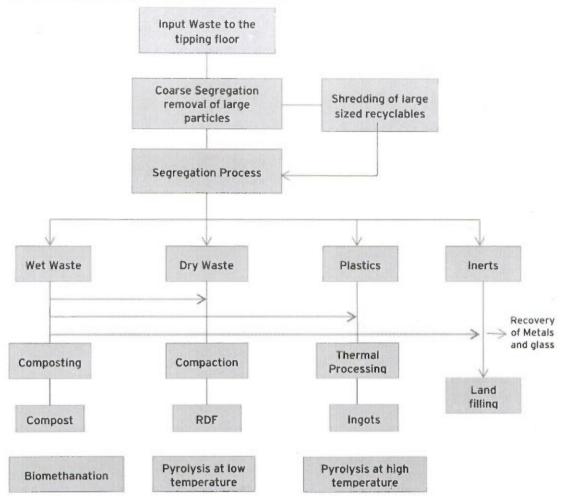
- a. Provide input in deciding the cluster-level 'gaps'
- b. Suggest any alternative or additional areas to focus on, or that must be improved upon (based on any targets the Client has separately set)

### Interventions for SWM Plan

Interventions addressing all areas of improvement identified will be collated through secondary research. The research will be used to identify interventions across the Collection, Transportation &

Private & Confidential 21

Transfer and to identify specific technologies across Treatment and Disposal. Typical process flow at an Solid Waste Management facility is as follows:



Suitable technologies for each cluster based ISWM facility will be identified on quantity of waste generated and needs assessment for each cluster.

### 4.5.3 Feasibility analysis of interventions and Finalization the interventions

The following step-wise approach will be adopted to identify the feasibility of each intervention, and the roles & responsibilities of each ULB for the finalization of the cluster-based Solid Waste Management Plans.

### Step 1: Feasibility Analysis

A feasibility analysis of any intervention may be undertaken using the following methodology;

- Human Resources: this includes man power required for the intervention. This may include
  the number of workers, the skill level of these workers and any training or capacity building
  for the workers. The salary, incentives and pay packages are also estimated under this human
  resources.
- 2. <u>Materials:</u> this covers the cost of implementing the intervention. This estimate could additionally include the costs associated with the human resources required for each intervention, and the tipping fee to be charged by the private service provider.

- 3. <u>Financial Assessment:</u> the assessment would include the identification of existing financial resources such as budgetary allocation & investment (private or government) and would identify alternate sources of investment or funding, if required.
- Feasibility of each intervention is evaluated by identifying the gap that may exist between available human resources, materials and financial scenarios and the needs of each intervention.

### Client Responsibility

 Individual ULBs to determine the extent of service (only Treatment & Disposal or across the whole value chain)

### Step 2: Determining ULB roles and responsibilities.

The roles and responsibilities of each ULB within a cluster will be based on the annualized long-term average daily waste to be generated by that particular ULB. To this effect, Memorandum of Understanding (MOU) between ULBs of a cluster will be drafted to outline the roles and responsibilities of each ULB. In addition, separate agreements between the ULBs and the private operator will be drafted.

### Client Responsibility:

a. Facilitate and ensure the signing of MOUs by each ULB.

### Step 3: Drafting cluster-based ISWM Plan

After the signing of the MOUs, the implementation plan will be compiled. The implementation plan for each cluster will include:

- a. Areas for improvement within a cluster
- b. Interventions to be implemented
- Targets and milestones based on the current scenario and expected outcomes of the interventions
- d. Staffing requirements and organizational structure
- e. Material resource requirements and costing
- f. Areas where CDM benefits may be obtained, and a framework on obtaining CDM benefits

### Client Responsibility:

b. Review Draft cluster-based ISWM Plans and provide inputs for the same.

### 4.6 Module V: Financial Assessment, Project Structuring and Bid Process Management

A preliminary selection of the projects to be undertaken for each of the cluster would be done during preparation of the master plan for the state and technology selection for each of the clusters for solid waste management in West Bengal. Within this phase, PPP structuring of the projects and transaction design will be detailed followed by preparation of bid documents and complete bid process management. The detailed scope of work for the phase 2 of the assignment is detailed hereafter.

### 4.6.1 PPP Structuring and Financial Feasibility Analysis

The PPP structure for all the components for the project is detailed in this stage. Detailed feasibility studies need to be conducted for the subsequent preparation of bid documents. This would involve intensive discussion and close consultation with the Client and other key stakeholders to ensure that successful bidding out of the project.

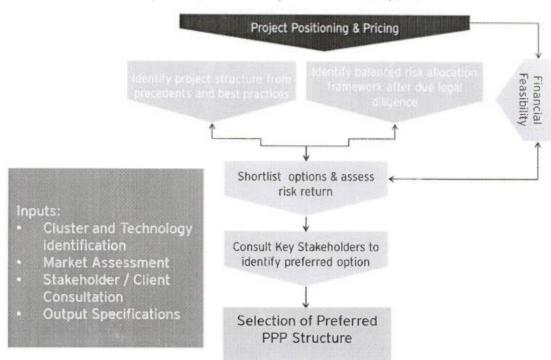


Figure: Project Structuring and Procurement Options

### Financial Feasibility Study

EY would prepare financial models considering the revenue forecasts and the capital cost to be incurred on the projects identified for the given cluster. Additionally, assessment of different forms of revenue generating potential of the Project, conducting financial projections, and subsequently recommending the most feasible solutions would be done.

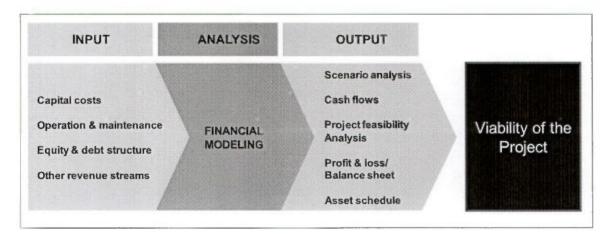


Figure: Financial Feasibility Methodology

Key inputs proposed to be used during Financial Viability analysis would be:

- Preparation of Fixed Assets Schedule, and calculation of Depreciation as per applicable rates;
- Preparation of Operating Cash Flows;
- Calculation of Salvage value/Residual value after the project life;
- Calculation of Financial Internal Rate of Return for the Project;
- Determination of the discount rate and calculation of Net Present Value (NPV) of the Project;

Determination of the optimum Capital Structure assuming prevailing financing costs; Calculation of Return to equity; Sensitivity Analysis.

EY would also assist the Client for various financing options for the Project. A financial viability analysis will be undertaken by developing a financial model and running the scenario analysis. This module has an aim to develop a financially feasible structure for private sector participation for the project. Following aspects would be covered-

- **Key Assumptions:** The assumptions are the primary requirement for developing a financial model. The assumptions are based on the secondary research, surveys & investigation, project layout and proposed technology, market conditions, etc.
- **Project cost** or capital expenditure would be estimated in order to achieve (i) an understanding of the principal operating cost components during appraisal and (ii) useful information for cost control purposes during implementation. The expenditure of the projects shall consider the cost of chemical, man power requirement, and electricity cost etc.
- **Revenue:** Ernst & Young would identify and assess the potential of each of these revenues in context of solid waste management system.
- Operational expenses: Ernst & Young would estimate the operational expenses likely to be incurred by the PPP partner. In operating the Waste Treatment Plant, major expenses pertain to electricity costs, employee cost and maintenance costs apart from other sundry costs.
- **Debt & Equity structure:** It is envisaged that the project shall be funded by PPP partner through Equity and Debt in appropriate proportion. The Debt: Equity ratio shall be as per the prevailing market conditions and appropriate debt equity ratio will be considered considering the similar projects as benchmark. The weighted Average Cost of Capital (WACC) shall be calculated, which will then be used for the financial model.
- Preparation of P&L and Cash Flow Statement: The financial model in spread sheet format shall indicate the key financial statements of the investor over the explicit period including depreciation schedule, loan repayment schedule, tax statements.
- PPP attractiveness (FIRR / ROI / NPV etc.): The financial viability of a project to an entity is indicated by its Financial Internal Rate of Return (FIRR) on total investment and on equity investment or Net present Value (NPV). This however has to be seen in light of other financial ratios such as debt-service coverage ratio (DSCR), Profit margins, cash reserve ratio, breakeven analysis to realistically assess the bankability of the project for investors.
- Sensitivity Analysis: The IRR, WACC, and key financial and operating ratios would be factored in the sensitivity analysis. The actual scenarios shall be tested based on key project risks. Common scenarios include (a) project cost overrun, (b) implementation delays, (c) revenue performance lower than projected, (d) expenditures higher than projected, and (e) other project-specific sensitivities. Combinations of likely impacts (for example, an implementation delay automatically increases project costs) would also be considered where relevant.

Using the Cost and Revenue data duly factored in for various risks and uncertainties as well as the market appetite and expectations of return thereon, Ernst & Young will prepare a financial model and suggest PPP model. Once the techno economic - feasibility is accomplished, a detailed study for suitably structuring the project shall be undertaken

### 4.6.2 Procurement Options

There is a choice for the Government agency to execute the project on EPC or PPP mode. However underlying fact for a PPP mode project is that the project is suitably structured in order to be financially feasible thereby attracting private investment.

### Public Private Partnership mode

The advantages of doing the project on PPP mode are discussed as below;

- Access to private sector finance, the government would be able to create the infrastructure without using its own funds.
- There would be efficiency advantages from using private sector skills as this project is highly experience based and service oriented.
- Transferring of risk to the private sector
- Potentially increased transparency
- Enlargement of focus from only creating an asset to delivery of a service, including maintenance of the infrastructure asset during its operating lifetime. This broadened focus would create incentive to reduce the full life-cycle costs (i.e. construction costs and operating costs)
- Competition would be introduced during the bidding stage, thereby bringing the benefits of market procurement
- However there are certain disadvantages as well in the PPP mode such as complex procurement process along with high transaction costs, contract uncertainty due to large contract period, cumbersome enforcement and monitoring of the contract. Despite all these disadvantages the benefits of PPP mode for this project outweigh the disadvantages. Therefore the project is being justifiably executed on PPP mode.

FEATURES	ownership during contract	duration duration	Capital investment focus & responsibility	Private partner revenue risk and compensation terms	Private partner roles	examples
Management Contracts	Contractual arrangement for the investment is typically not the pr		management of a part or whole of mary focus in such arrangements.	or whole of a public f angements.	acility or service	management of a part or whole of a public facility or service by the private sector. Capital imary focus in such arrangements.
Vote: service co	Note: service contracts and management contracts		of less than 3 years duration are not included in the definition of PPP in India.	ation are not included	in the definition	of PPP in India.
Management	Public	Short - medium (e.g. 3-5yrs)	Not the focus Public	Low (Predetermined fee, possibly with performance incentives)	Management of all aspects of operation and maintenance.	This involves contracting to the private sector most or all of the operations and maintenance of a public facility or service. Although the ultimate obligation of service provision remains with the public authority, the day-to-day management control is vested with the private sector. Usually the private sector is not required to make capital investments.
Management Contract (with rehabilitation/ expansion )	Public	Medium - long	Limited Focus Brownfield (Rehabilitation / expansion) Private	Medium (Tariff / Revenue share)	Minimum Capex, Management, Maintenance	This is similar to management contracts but include limited investments for rehabilitation or expansion of the facility.  This mode has been adopted in the power distribution and water supply sectors e.g. Bhiwandi Distribution Franchise, Latur Water Supply Project.

### 4.6.3 Risk Identification and Allocation

The parties involved in a project can affect the amount of risk by:

The level of influence they have over events, and The level of information they have about the present and the future.

Influence relates to the power parties have to create action and determine outcomes. Influence can come from delegated authority, for example where a public authority has certain powers granted to it under law, from good management and organisation, and from specific knowledge.

Information is directly related to risk. It is precisely because we usually don't have all the information that we can't predict future outcomes for certain. When we have better information we are better able to foresee and reduce risk.

The public and private sectors are different in the types of influence and information that they have. This means they can control risks in different ways from each other and they are better at controlling some risks and not as good at controlling others. The risks which are usually applicable to a project are detailed below:

Major Risk Types

Risk type	Description	
Pre-operative task i	risks	
Delays in land acquisition	Refers to the risk that the project site will be unavailable or unable to be used within the required time, or in the manner or the cost anticipated or the site will generate unanticipated liabilities due to existing encumbrances and native claims being made on the site.	
External linkages	Refers to the risk that adequate and timely connectivity to the project site is not available, which may impact the commencement of construction and overall pace of development of the project.	
Financing risks	Refers to the risk that sufficient finance will not be available for the project at reasonable cost (eg, because of changes in market conditions or credit availability) resulting in delays in the financial closure for a project.	
Planning risks	Refers to the risk that the pre-development studies (technical, legal, financial and others) conducted are inadequate or not robust enough resulting in possible deviations from the planned or expected outcomes in the PPP project development.	
Approvals risk	Refers to the risk that necessary permits, authorisations and approvals required prior to the start of construction are not obtained in a timely fashion, resulting in delays to construction and the project as a whole.	
Construction phase	risks	
Design risk	Refers to the risk that the technology used will be unexpectedly superseded during the term of the project and will not be able to satisfy the requirements in the output specifications. It would result in increased costs of a replacement technology.	
Construction risk	Refers to the risk that the construction of the assets required for the project will not be completed on time, budget or to specification. It may lead to additional raw materials and labour costs, increase in the cost of maintaining existing infrastructure or providing a temporary alternative solution due to a delay in the provision of the service.	

Approvals risk	Refers to the risk that delays in approvals to be obtained during the construction phase will result in a delay in the construction of the assets as per the construction schedule. Such delays in obtaining approvals may lead to cost overruns.
Operation phase risks	
Operations and maintenance risk	Refers to the risks associated with the need for increased maintenance of the assets over the term of the project to meet performance requirements.
Volume risk	Refers to the risk that demand for a service will vary from that initially projected, such that the total revenue derived from the project over the project term will vary from initial expectations. There is no risk in annuity contracts.
Payment risk	Refers to the risk that tolls are not collected in full or are not set at a level that allows recovery of costs. This is a risk for the public sector under shadow tolls and for the private sector under user tolls. There is no risk in annuity contracts.
Financial risk	Refers to the risk that the private sector over stresses a project by inappropriate financial structuring. It can result in additional funding costs for increased margins or unexpected refinancing costs.
Handover risks	
Handover risk	Refers to the risk that the concessionaire will default in the handover of the asset at the end of the project term or will deviate from the minimum quality / value of the asset that needs to be handed back to the public entity.
Terminal value risk	Refers to the risk relating to differences from the expected realisable value of the underlying assets at the end of the project.
Other risks	
Change in law	Refers to the risk that the current legal / regulatory regime will change, having a material adverse impact on the project.
Force Majeure	Refers to the risk that events beyond the control of either entity may occur, resulting in a material adverse impact on either party's ability to perform its obligations under the PPP contract.
Sponsor risk	Refers to the risk that sponsors will prove to be inappropriate or unsuitable for delivery of the project, for example due to failure of their company.
Concessionaire event of default	Refers to the risk that the private entity will not fulfil its contractual obligations and that the government will be unable to either enforce those obligations against the sponsors, or recover some form of compensation or remedy from the sponsors for any loss sustained by it as a result of the breach or the sponsors will prove to be inappropriate or unsuitable for delivery of the project.
Government event of default	Refers to the risk that the government will not fulfil its contractual obligations and that the private entity will be unable to either enforce those obligations against the government, or recover some form of compensation or remedy from the government for any loss sustained by it as a result of the breach.
***************************************	

Source: www.pppindia.com

A well designed PPP structure allocates the risk to the party displaying the maximum ability to manage the risk. Based on the Risk Assessment a suitable risk allocation framework shall be developed, which shall allocate risk suitably between the public and private sector. Allocating risk to achieve added efficiency is what makes PPP a potentially powerful way of reducing project-related

costs and achieving improved value for money for the public sector. The level of risk can be changed by allocating responsibility for individual risks to those who are best able to manage them.

Recommendation on the following key areas shall be made as a part of the PPP structuring for each of the cluster:

- Defining the role of each of the players in the project for different project components within each cluster.
- Identifying the risks and responsibilities each player will bear in the project
- Corresponding rights and benefits that they can expect from the project
- Developing a consensus on these issues among the various players, and subsequently binding players to their roles and responsibility through contracts and performance agreements
- Tariff Structure which will be applicable to the promoters
  - Sharing of Investment and usage related risks
  - Mode of operation of the facilities
- Revenue streams which will be available

### 4.6.4 Selection of Private Player

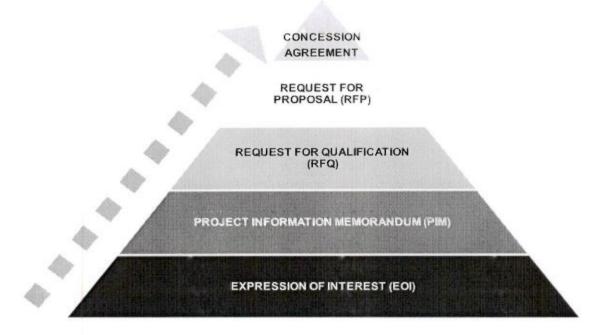
After complete financial assessment and finalisation of the project structure, the private developers for each of the project shall be selected through competitive bidding. Ernst & Young shall provide assistance to the Authority through Bid Process Management and shall undertake activities such as preparation of bid documents (RFQ/RFP/Concession Agreement etc.), assistance in interaction with private players, bid evaluation, signing of commercial agreement, project monitoring etc. for each of the clusters identified.

### 4.6.5 Preparation of Bid Documents

Ernst & Young shall prepare the Bid Documents in cooperation with the Authority. Documentation to be prepared by the Consultant will include, but not be limited to, the following:

- Preparation of Expression of Interest (EoI): We would assist in preparation of an advertisement inviting EOI from interested developers. This would help us and the client in assessing the market feedback based on the response to the EOI.
- Project Information Memorandum (PIM): We would prepare the PIM to provide bidders the details of the project. The PIM would include the technical schedules, project structure and revenue model for the projects.
- Request for Qualification (RFQ): We would assist in the preparation of the RFQ documentation. This would help us short list the suitable bidders based on their technical and financial capabilities.
- Request for Proposal (RFP): We would assist in the preparation of the RFP documentation required for selection of preferred Developer/s. This document will detail out the process of bid preparation including bid parameter, bid submission, evaluation methodology and terms of engagement.
- Concession Agreement: We would assist in preparing the draft Concession Agreements and various presentations bringing out project features & structures. These documents will be prepared to govern Client's relationship with selected developer during construction and operation phase. We will also incorporate appropriate safeguards against non-performance by the selected developer into the contractual arrangements for the project, including Client's rights to revoke such arrangements and substitute the developer in the event of non-performance, which will be defined in the legal documentation for implementation of the project.

Figure: Sequence for preparation of bid documents

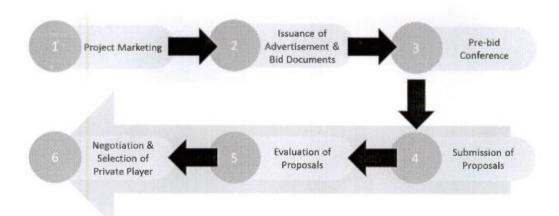


Ernst & Young shall prepare all other bid documentation that may be necessary for the bidding process and submit all such documents to the client for the required approval. Ernst A& Young shall also assist in revising and amending bid documents, as necessary.

### 4.6.6 Bid Process Management

In this stage EY shall assist SUDA in Bid Process Management leading to selection of PPP partner for each project. The various stages of bid process management have been elaborated below:

Figure: Stages of Bid Process Management



EY would interact with various prospective bidders and understand the market situation and expectations of the bidders. This would also assist in understanding the expected quotation / likely bid from the market. Once the project structure and bidding documents are finalised and approved,

an advertisement shall be issued calling for proposals. At this stage we would have to evaluate among the options of conducting a single stage or multiple stage bidding process.

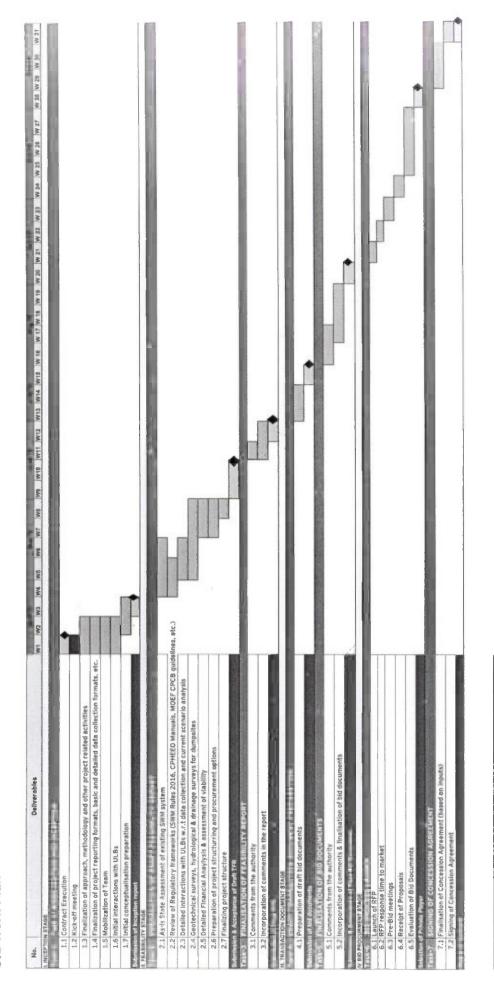


Figure: Single Stage / Multiple Stage Bidding Process

EY shall assist the client in organization of the pre-bid conference, evaluation of proposals, selection of preferred private partner and negotiation with the selected private player.

# 5 Work Plan and Deliverables

### 5.1 Work Plan



Activity Flow	Seliverables	Key Activity	Tasks Enivsaged	Project Stage

### 5.2 Timelines

Stage	Activity	Deadline	Reference	
	Kick off Meeting and signing of contract	9 <sup>th</sup> April 2019		
Stage 1	Submission of the Inception Report	19 <sup>th</sup> April, 2019	As per the meeting held	
Stage 2	Submission of Draft Feasibility Report	3 <sup>rd</sup> June, 2019	with Principal	
	Acceptance of Draft Feasibility Report by SUDA	6 <sup>th</sup> June, 2019	Secretary, UD&MA	
Stage 3	Submission of Final Feasibility Report along with action plan	16 <sup>th</sup> June, 2019	Department, Government	
	Acceptance of Final Feasibility Report by SUDA	19 <sup>th</sup> June, 2019	of West Bengal on	
Stage 4	Submission of the Draft RFP for selection of Agency	9 <sup>th</sup> July, 2019	02.04.2019	
Stage 5	Submission of the Final RFP for selection of Agency	10 days from approval of Stage 4	As per	
Stage 6	Evaluation of the Tender Documents and recommendation for the Selected Agency	10 days from tender closing date	Contract	
Stage 7	Getting the Concession Agreement signed by the selected Agency	10 days from Stage 6		

### 6 Project Team

### 6.1 Organization Structure

Roles and Responsibilities of the Core Project Team

Name of Staff	Role for this Assignment	Assigned Tasks or Deliverables	
Abhaya Agarwal	Team Leader	Shall be responsible for providing strategic technical leadership, programme management and financial direction and quality assurance to the project. He will oversee project oversight and governance, key decisions on project development and final deliverable review and approval	
Puneet Babbar	Solid Waste Management Specialist	Shall be responsible for the execution of all the deliverable outputs ensuring project compliances for internal team to ensure the completion of all outputs in the desired manner in accordance with the work plan and budget.	
Gyan Misra	PPP Specialist	Shall be responsible for providing expert inputs and key insights on the principles on Public Private Partnership mode of project. Shall be responsible for assessment of the risks involved with respect to the project and a better overall solution for the same.	
Gurvinder Singh	Finance Specialist	Shall be responsible for handling the analysis of the investment involved in the PPP. Shall be responsible for carrying out the financial feasibility of the various options suggested for the project and advising client on selecting the best.	
Chaitali Mondal	Project Coordinator	Shall be responsible for day to day communication with client. Shall be responsible for interacting with SUDA, KMDA, ULB's while obtaining data, meetings and local support.	
Extended Exp	pert Panel		
Himanshu Chaturvedi Karthik Surathkal		Shall be responsible for providing expert inputs and key insights on the solid waste management and bid process management. Shall be helpful for structuring of the project with respect to the	
lkshit Jain		practical difficulties faced in the previous similar assignments. Shall be resourceful during consultations/ meetings/ interviews etc. with the key stakeholders including SUDA, ULB, and private players coming in for the project.	
Support Team	n		
Saurabh Awai	tade	Droject Support	
Akhila Nunna		Project Support	

## 6.2 Key Contacts

Key Contacts for KMDA, SUDA and WBPCB

SI.No	Name of the Participant	Organisation	Designation	Mobile	Email Address
1	Utpal Mandal	KMDA	SE	9831194125	seplankmda@yahoo.com
2	S. K. Baidy	KMDA	CE	9831194125	sdkmda@gmail.com
6	Tapabrata	KMDA	Executive Engineer	8617738549	tbkmda@gmail.com
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ru L	Utpal Mandal	KMDA	SE	9831194125	seplankmda@yahoo.com
9	Amitava Das	SUDA	Deputy Director	7001040645	amitavadas209@gmail.com
7	Dr. Sujay Mitra	SUDA	Chief Engineer - Planning & Monitoring	9433369666	Sujay.mitra@gmail.com
00	Bijay Krishna Pal	SUDA	Executive Engineer	9432378545	Bkpal.suda@gmail.com
6	Dr. T. K. Gupta	WBPCB	CE	9830024276	tkg@wbpcb.gov.in

### Key Contacts for EY

SI.No	SI.No Name of the Participant	Organisation	Designation	Mobile	Email Address
1	Abhaya Agarwal	ΕY	Team Leader	+91 9871 693342	abhaya.agarwal@in.ey.com
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m	Gyan Misra	ΕΥ	PPP Specialist	+91 9871846107	Gyan.Misra@in.ey.com
4	Gurvinder Singh	ΕV	Finance Specialist	+91 9958508652	Gurvinder.Singh@in.ey.com
L)	Chaitali Mondal	EY	Coordinator	+91 9378351386	chaitalibiswas3@gmail.com
9	Himanshu Chaturvedi	ΕY	Extended Expert	+91 9891363334	Himanshu.Chaturvedi@in.ey.com
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6	Saurabh Awatade	Ε	Support Staff	+91 9043808645	Saurabh. Awatade@in.ey.com
10	Akhila Nunna	ĒÝ	Support Staff	+91 9962878269	Akhila.nunna@in.ey.com

### Key Contacts for ULBs

SI.No	Name of the Participant	Organisation	Designation	Mobile	Email Address
1.	Pranab K R Das	Dum Dum	Assistant Sanitary Inspector	9903022652	chairmanddm@yahoo.com
2.	Subrana K R Dutta	Dum Dum	Assistant Engineer	9038724595	chairmanddm@yahoo.com
'n	Ratan Gopal Das	South Dum Dum	Sanitary Inspector	9830706588	sddm10@gmail.com
4	Debashis Dutta	South Dum Dum	Sanitary Inspector	9836552891	sddm10@gmail.com
Ŋ.	Prasun K R Sarkar	South Dum Dum	Secretary	9836880164	sddm10@gmail.com
9	Jayanta Sankar Chakraborty	Bangaon	Sub Assistant Engineer	9932550975	chairmanban@gmail.com
7.	Prashanta Das	North Dum Dum	SWM in Charge	8777787736	Prashantadas201@gmail.com
œ	Sakto pada Sankar	North Dum Dum	Executive Officer	8420731399	northdumdum@gmail.com
6	Partha Sarathi Bhattacharyya	Kamarhati	Sanitary Inspector	9231507954	parthasar321@gmail.com
10	Arnab Dutta	Baranagar	Sanitary Inspector	9903006960	arnabdutta12b@gmail.com

### 7 Conclusion

### 7.1 Current status and Challenges

All the ULBs in Cluster-1 are carrying out door-to-door collection, primary and secondary transportation and finally disposal (open dumping) at Pramod Nagar Dumpsite. Though 100% household are covered for solid waste collection, but source segregation at household level is major issue. It was observed, a few ULBs like North Dum Dum and New Barrackpore are trying their level best to disseminate mass awareness for effectively implementing source segregation at each household. But in other ULBs, this very basic and most critical function is lacking. Further problem is compounded by collection and transportation mechanism. For example, the collection vehicles are not partitioned at most of the places. Due to densely populated areas in this cluster, cycle van or hand carts are being used for primary collection. Waste from these primary vehicles is being offloaded to secondary vehicles at intermediate points. The no. of these intermediate points varies from ULB to ULB, depending on their size. However, due to limited availability of land most of the ULBs are having majorly mobile compacter stations and very few stationary compacter stations. From these compactor stations, waste is being transported to Pramod Nagar dumpsite for disposal.

The site at Pramod Nagar is located adjacent to Belghoria expressway, which is a four-laned, 8 kilometres (5.0 mi) long access controlled tolled expressway in the northern suburbs of Kolkata, West Bengal. It is a key arterial road, linking the terminal junction points of NH 19 and NH 16 near Dankuni to Dakshineswar, across Nivedita Setu, and NH 12 (Jessore Road), near Dum Dum Airport. The site measures a total area of approximately 20 acres and heavily loaded with the legacy waste being dumped for last 30 years. The height of waste dump now has reached to 15-16 meters at some places causing a serious concerns for Air, Land and Water ecosystems. The site is present on the marshy land and just adjacent to a significantly large water body. There are also residential settlements adjacent to the dumping site. Considering these conditions, the remediation activities at this site needs to be taken on very priority basis.

KMDA has initially started, a few activities on Pramod Nagar dumpsite with an aim to manage solid waste in scientific manner. A 50 TPD (Tons per Day) Compost plant is under construction at Pramod Nagar dumpsite. Though it will not suffice the requirement of 500 to 600 TPD MSW that is being received at this site on daily basis. Further to this, the department is also constructing a SLF in compliance to SWM Rules 2016. However, layout of new compost plant and SLF will be a huge challenge for the new developer to integrate it with new plant for capacity enhancement. These things needs to be addressed properly in the feasibility report.

### 7.2 Way Forward

During project conceptualization, the challenges mentioned in above section would be carefully dealt and adequate project design and structure shall be developed to provide scientific and technically correct approach. The panning and delivery shall also include following:

- Achievement of 100% Household coverage for door-to-door collection
- Adequate infrastructure to maximize collection efficiency
- Segregation of waste into wet/dry/domestic hazardous fraction
- MSW recycling/recovery efficiency of 80% with maximum 20% rejects
- Scientific processing and disposal of MSW with appropriate technologies
- 90% collection efficiency for user charges for financial sustainability
- Efficient complaint redressal
- 100% compliance to SWM Rules 2016, PWM Rules 2016, C&D Rules 2016 and necessary guidelines/directions from Ministry/NGT/State, etc.

### 8 Inception Report Approval

To,

Abhaya Krishna Agrawal, Partner, Ernst & Young LLP Email: Abhaya.Agarwal@in.ey.com

Dear Mr. Agrawal,

With respect to the Inception report submitted by your office on 19<sup>th</sup> April, 2019 cluster 1, the department accords approval on the report. You are now requested to initiate the work for Feasibility Report at the earliest and ensure its submission as per timelines mentioned in Contract.

Approver's Name:		
Designation:		
Organization:	-	
Approver's Sign:		
Date:		

(Please provide a copy back to us after approval for internal records)

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Ernst & Young LLP

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### রাজ্য নগর উন্নয়ন সংস্থা



### STATE URBAN DEVELOPMENT AGENCY

''ইলগাস ভবন'', এইচ-সি ব্লক, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০ ১০৬, পশ্চিমবঙ্গ "ILGUS BHAVAN", H-C Block, Sector - III, Bidhannagar, Kolkata - 700 106, West Bengal

_ SUDA-	366/2019/3675
क्विश्व मर	

29.05.2019

To

1. The Chief Executive Officer, KMDA

2. The Secretary, MED

Sub: Assessment report submitted by Ernst & Young on the feasibility of the clusters in connection with planning of solid waste management projects

Sir,

In enclosing the assessment report submitted by Ernst & Young, the Transaction Advisor engaged by SUDA for planning of integrated solid waste management projects in three identified clusters covering 16 ULBs, of the State, I am requesting you to kindly look into the recommendations given by Transaction Advisor alongwith the interventions suggested for the respective projects and take necessary actions accordingly.

Enclo. As stated above

Yours faithfully

DDf 29/5/19.

SUDA- 366/2019/

/1(1)

Date, 29.05.2019

Copy forwarded for kind information to:

PS to the Principal Secretary, UD&MA Department, GoWB

(Director)

1st Floor, Salt Lake, Kol-S

দূরভাষ ঃ ২৩৫৮ ৬৪০৩ / ৫৭৬৭, ফ্যাক্স ঃ ২৩৫৮ ৫৮০০

2358 6403/5767, Fax: 2358 5800, E-mail: wbsudadir@gmail.com

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### রাজ্য নগর উন্নয়ন সংস্থা STATE URBAN DEVELOPMENT AGENCY



"ইলগাস ভবন", এইচ-সি ব্লক, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০ ১০৬, পশ্চিমবঙ্গ "ILGUS BHAVAN", H-C Block, Sector - III, Bidhannagar, Kolkata - 700 106, West Bengal

SU	DA-	366/	2019/	3675	
ক্রমিক নং					

29.05.2019

তারিখ .....

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SUDA- 366/2019/

Enclo. As stated above

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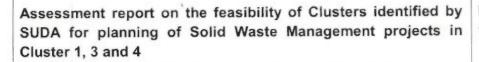
Date, 29.05,2019

Copy forwarded for kind information to:

PS to the Principal Secretary, UD&MA Department, GoWB

Director)

Account Section: 2358 6408



Date 15 May 2019

Reference: 1, LoA No. SUDA-227/2018/1898 dt. 12.02.2019

2. Contracts Signed on 9.04.2019 for Cluster 1,3&4

This has reference to the contract signing done on 9 April 2019 between SUDA and EY for providing Transaction Advisory services for development of SWM projects on cluster based approach. In this context, please refer to the Clause 3 "Scope of Work"; Sub Clause 3.3 (c) mentioned at Page No. 14 of the contract, which reads as:

"While undertaking the feasibility study, the proposed cluster sites should re-visited for suitable modification, if necessary. For finalization of cluster, STATE URBAN DEVELOPMENT AGENCY should be consulted. The cluster-wise Detailed Feasibility Report, Request for Proposal (concession Request for Proposal for implementation) may be prepared accordingly"

In view of above, all the sites have been revisited by the team of Transaction Advisor and a visit report (copy attached at Annexure-I for reference) with initial findings was shared with SUDA via mail, dated 6 May 2019. The findings of the site visit report were also discussed with SUDA and KMDA officials in the meetings held on 8<sup>th</sup> and 9<sup>th</sup> May 2019 to plan for the modifications in the existing scheme. The outcomes of the same are placed below for future reference and further necessary action.

### 1. For Cluster-1:

### Earlier scheme as per RFP/Contract

Total 6 ULBs were identified in Cluster-1. These are Dum Dum Municipality, North Dum Dum Municipality, South Dum Dum Municipality, Baranagar Municipality, Kamarhati Municipality, New Barrackpore Municipality. The total waste generation from these municipalities is around 600 -700 TPD. As per scope, Pramod Nagar site (adjacent to Belgharia Expressway) was identified for setting up the processing plant and a Sanitary Landfill Site (SLF) for these 6 municipalities.

### Issues in the present scheme:

i. During site visits, it was observed that Pramod Nagar site was already filled with legacy waste with average height of around 15-16 meters. The site measures approximately 20 acres and as per the KMDA's estimation, approx. 10 lakh metric tonnes solid waste is lying at Pramod Nagar site. There is hardly any space for the movement of construction equipment. Therefore, it is very difficult to start any new construction activity until unless the waste from Pramod Nagar site is suitably disposed by carrying out landfill reclamation activities.

- ii. Further it is estimated that around 60 70% fraction out of 10 lakh metric tonnes of waste will be rejects or inerts. This needs to be disposed preferably in Low lying areas or landscaping activities a per "NGT guidelines on Legacy Waste". Therefore, liability on the bidder for disposal of around 6-7 lakh tonnes rejects can be a major bottleneck in the success of the project owing to cost of disposal and non-availability of disposal land.
- iii. The site is also not suitable for setting up an SLF because it does not fulfils the land selection criteria as mentioned in the Schedule-I of SWM Rules 2016. This aspect primarily includes vicinity to residential settlement, highway and water bodies and its location into the buffer zone area of Dum Dum Airport. Due to this, permission of getting EC (Environmental Clearance) may become a major issue in future, which will affect the project sustainability. The issue was also discussed with the WBPCB officials during initial visits and they were also having same view regarding EC.
- iv. Suppose, ignoring point no. (iii) mentioned above, if permission for setting up SLF is granted by the EC authorities by relaxing the condition, the land area at Pramod Nagar site is itself not enough to setup both the Processing Plant and SLF for a design period of 20-25 years as required in the SWM Rules 2016. For instance, consider a case of setting up a plant with at least 500 TPD capacity and assuming 20% rejects (say 100 TPD). It would require at least 30 acres of land area for SLF only with a design period of 20-25 years. Therefore setting up processing plant at Pramod Nagar site say for 600 TPD + 300 TPD capacity (300 TPD for future years assessment) would hardly left any space for setting up the SLF at the same place for disposal of rejects. Or we need to design processing plant and SLF with lesser design life.

### Suggested modifications:

- i. During the field visits, it was observed that Kamarhati municipality has its own dumpsite which is now closed. The site measures an area of approx. 8 acres and it is full of legacy waste. It is suggested that the processing plant for Kamarhati municipality should be proposed on the existing closed dumpsite at Kamarhati. The land reclamation for the site needs to be carried out, in parallel to the processing plant construction. KMDA has already started carrying out initial surveys viz. demarcation of boundary and Topographical survey of this site.
- ii. If possible, New Barrackpore Municipality may also be integrated with Kamarhati Municipality for waste disposal at Kamarhati site only. Shifting processing plant for Kamarhati and New Barrack pore municipalities to Kamarhati site will reduce the stress on Pramod Nagar site by decreasing waste amount by 100-120 TPD.
- iii. Pramod Nagar Site should cater waste from Dum Dum, North Dum Dum, South Dum Dum and Baranagar only. Accordingly a plant of at least 500 600 TPD capacity should be planned at Pramod Nagar site with provision of future waste generation assessment and expansion. Again the land reclamation activities needs to be carry out in parallel to the plant construction.
- iv. Legacy Waste Processing rejects from both the sites (Pramod Nagar & Kamarhati) needs to be disposed in appropriate manner. Following options can be explored for the same:
  - a. KMDA has identified a low lying area near Panihati for disposal of legacy waste rejects. They are also carrying out basic surveys at this site to assess its suitability in terms of volume for legacy waste disposal.

- b. Agencies like WBIDC (West Bengal Industrial Development Corporation), WBSIDC (West Bengal Small Industries Development Corporation) and HIDCO (West Bengal Housing and Infrastructure Development Corporation) can be approached, if anyone of them can channelize this fraction into their city development projects as landscaping component.
- c. Alternatively a part of legacy waste rejects from Cluster-1 sites can be taken to Cluster-4 RWMC site for disposal, in addition to the above two options.
- v. The common SLF for fresh waste processing rejects from both the sites (Pramod Nagar & Kamarhati) should be planned at some different site. This aspect will be helpful in following aspects:
  - a. It will help in setting up the processing plant of adequate capacity (say initially 700-800 TPD capacity) and also results in land availability for future expansion.
  - b. It will also provide flexibility to the developer to plan or try additional components, like Biogas plant or Plastic to fuel, etc., in addition to the Compost + MRF facility.
  - c. Shifting of SLF from Pramod Nagar, would also facilitate the developer during initial operations at site. Because it will provide enough availability of land for the mobilizing civil machinery and other equipment to carry out multiple activities viz; remediating legacy waste, handling fresh waste and carry out new plant construction at the same time.
- vi. Options for setting up new SLF elsewhere than Pramod Nagar are:
  - a. It was informed during the meetings that KMDA is looking for new land area possibly in Titagarh or Domjur area. In fact, a 70 acre land parcel in Titagarh is under evaluation by KMDA for this purpose. This land can be used for designing and constructing a regional landfill for Cluster 1 projects.
  - b. Existing SLF of RWMC for Cluster-4, can be used for disposing fresh waste processing rejects or inerts from Cluster-1 also. Although it will affect the design life of SLF at RWMC and it may be reduced to 10-12 years from 20 years as expected, but department can have a readymade solution. Later on the department will need to identify another site for SLF after 10-12 years for the rejects from Cluster 1 & 4.
- vii. Till new contract is awarded to successful developer for Pramod Nagar site, the existing work of 50 TPD compost plant and SLF Cell should be put on hold because of following reasons:
  - a. The existing assets for the 50 TPD compost plant and SLF will need to be transferred to the new developer after successful bidding. For compost plant, the civil construction is almost complete, but electro-mechanical equipment still needs to be ordered. Whereas for SLF, only embankments have been designed as of now and no liner material has put in place. When any new developer will come into picture, he may have its own design of processing line or different specification of liner material. This aspect may hinder the smooth handing over and taking over process at later stage. Therefore, it is suggested that any further progress should

be avoided and the present assets should be handed over to new developer on as it is basis.

- a. Considering the site layout, nearby geographical features and space constraint, it is strictly recommended that SLF should not be designed as an integral part of the processing plant at Pramod Nagar. This may have future Environmental constraint.
- b. The waste dumping profile at Pramod Nagar site is such that it goes at least 2-3 meter below the G.L, as informed by KMDA officials. However, present SLF is being constructed by KMDA through compacting the waste approx. 1 meter above GL. This is technically incorrect and does not reflect scientific approach.
- c. Lastly, construction of 50 TPD Compost plant and SLF cell has disturbed the entire layout of the site. There is hardly any space left for setting up new machinery or for movement of construction equipment. This may be understand in reference to the following layout:



Fig.1: Bird's eye view of the Pramod Nagar dumpsite

As can be seen from the figure above, the dumpsite area can be broadly divided into:

Platform area - It is located at the entrance point of Dum Dum and South Dum Dum municipalities and is a major area for waste unloading

Waste Mount A, B & C – These waste mounts divides the contours of waste dumped in 3 major sections. However, apart from these 3 mounts, the waste is also spread across entire site up to a height of 5 mts. or so.

50 TPD compost plant – KMDA has initiated the work for setting up a 50 TPD compost plant

SLF Cell - KMDA has also initiated the work for constructing a SLF Cell

Temporary Septage plant – A temporary septage t/t plant is being operated at the site till the construction of upcoming septage t/t plant gets complete

As discussed earlier, for initiating any new construction activity, the land should first be reclaimed by processing the legacy waste. The disposal of legacy waste and new construction should be done in parallel to achieve synergies in project. Usually process of removal of legacy waste is called landfill reclamation. In this, the waste is subjected to mining and segregation conveyors activities using trommels. A typical layout of such plant working in Noida (U.P) is given at Fig. 2. Usually these are mobile equipment, which are removed from the site after



Fig.2: Typical layout of Bio-remediation plant

completion of landfill reclamation activities. A brief regarding details of such projects in context to Pramod Nagar was already shared via mail on 9 May 2019 (Copy attached at Annexure-II for reference).

Going by the current layout of 50 TPD compost plant and SLF cell as shown in Fig.1, there is no space on the site to setup any temporary or mobile unit for processing of legacy waste. To examine this aspect, a visit was again made by the team of Transaction Advisor on 10 May 2019. It was observed during the visit that existing base of SLF being constructed at Pramod Nagar can be used to setup this kind of infrastructure to process legacy waste and reclaim the land. The possible scheme can be first to remove Mount A and Mount C to get an extra space for the expansion of current 50 TPD compost plant. It is assumed that this activity will take around 2 year of time. Till that fresh waste can be dumped at Mount B side, where Baranagar municipality is dumping their waste. After installation of the new plant, processing of fresh waste can be initiated. Therefore, removal of waste from Mount B and other remaining waste scattered at the site can be done. Free space at Mount B may be used for future expansion of processing plant. The SLF space, after the entire land reclamation process, can also be used for setting up some innovative solution like Bio-methanation plant, etc.

The above mention scheme is only indicative and it is suggested that SUDA should hold a one day stakeholder meet with the technology providers in the field of Bio-remediation and waste management. A joint committee of SUDA, KMDA, EY and Proposed Stakeholders can visit the Pramod Nagar site to assess the feasibility of work. The possible structure of bidding of Cluster-1, can also be discussed with them. However, in view of all these discussions, it is highly suggested that the progress of 50 TPD compost plant and SLF Cell should be put on hold, at the earliest.

### 2. For Cluster-3:

### Earlier scheme as per RFP/Contract

Total 2 ULBs were identified in Cluster-3. These are Ashoknagar-Kalyangarh Municipality and Habra Municipality. The total waste generated from these municipalities is around 125 TPD. A site adjacent to the roadside near Ward No.-15 at NH34-NH35 link road was identified for setting up the processing plant and a Sanitary Landfill Site (SLF) for these 2 municipalities. The site measures a total area of approximately 18- 20 acres.

### Issues in the present scheme:

No issue. The site is suitably fine for setting up processing plant and SLF for this much waste quantity.

### Suggested modifications:

No modifications.

### 3. For Cluster-4:

### Earlier scheme as per RFP/Contract

Total 8 ULBs were identified in Cluster-4. These are Bhadreswar, Baidyabati, Champdani, Seerampore, Rishra, Konnagar, Uttarpara-Kotung and Dankuni. The total waste generated from these municipalities is around 400-450 TPD. There are 6 compost plants in each municipality of this Cluster (except Bhadreswar and Dankuni), which were constructed by KMDA under JICA funding. There is also a Regional Waste Management Complex (RWMC) developed under JICA project, which incorporates a Sanitary Landfill Facility (SLF) for rejects from these 6 compost plants, a Leachate Treatment Facility and a Faecal Sludge Management Facility.

### Issues in the present scheme:

- i. No land parcels are identified for Bhadreswar and Dankuni municipalities.
- Major augmentation in the process and operations of 6 composting plants and RWMC site is required. Presently 70-80% of daily collected waste is being sent to RWMC site, which is meant for disposal of rejects only.

### Suggested modifications:

- i. It was observed during field visits that Bhadreswar municipality has a 6 acres dumpsite, which can be used for setting up the processing plant after carrying out landfill reclamation activities. Rejects from legacy waste processing before plant construction and rejects from fresh waste processing after plant construction can be sent to RWMC.
- ii. It was also informed by Dankuni municipality officials that they have procured a 3 acre land piece area in the Narna GP, which is quite far from RWMC. This site can be used for setting up the processing plant for Dankuni, however, due to large distance from RWMC, it is suggested that inerts from Dankuni municipality can be sent to RWMC on weekly basis.

iii. The issues regarding process and operational improvement in existing plants of this Cluster can be discussed in detail in TFR. However, an immediate instructions to the municipalities can be given to effectively implement the source segregation and limit the amount of rejects to RWMC by maximum 20%.

### REPORT ON THE FIELD VISITS AND STAKEHOLDER MEETINGS CARRIED OUT BY THE TRANSACTION ADVISOR FOR PLANNING OF SWM PROJECTS IN CLUSTER 1, 3 & 4

Reference: 1. LoA No. SUDA-227/2018/1898 dt. 12.02.2019

2. Contracts Signed on 9.04.2019 for Cluster 1,3&4

This has reference to the contract signing done on 9 April 2019 between SUDA and EY for providing Transaction Advisory services for development of SWM projects on cluster based approach. In this context and as per the directions from Principal Secretary, UD&MA, GoWB regarding the timelines for delivery, Transaction Advisor Team of EY LLP has already submitted first deliverable, i.e. Inception Reports for all the Clusters on 19 April 2019. The broad purpose of these 'Inception Reports' was to set out EY's approach to the project which has been drafted for State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal in relation to the engagement.

As a part of next step, the Transaction Advisor Team of EY LLP has carried out field visits and initials meetings with the stakeholders viz. Municipalities, KMDA, WBPCB and SUDA. The findings of these field visits are scripted below:

### Objective

The prime objective of these field visits and meetings was to analyse the current situation of solid waste management and to ensure in-person interaction with municipalities and other stakeholders for gathering of important information.

### **Field Visits**

The visits were carried out as per following schedule:

S.No.	Date	Cluster	Sites Visited	Team Members	Purpose
1.	11 – 12 April 2019	1	All the ULBs in Cluster 1, Pramod Nagar dumpsite and Kamarhati dumpsite	Puneet Babbar Chaitali Mondal Saurabh Awatade Akhila Nunna	To assess the current situation and primary data collection
2.	17 April 2019	3	All the ULBs in Cluster 3, Dumping location in Ashok Nagar and Temporary dumpsite for Habra municipality	Chaitali Mondal	
3.	23 – 25 4 April 2019		All the ULBs in Cluster 4 and SLF site of RWMC located at Baidyabati	Puneet Babbar Chaitali Mondal	

### Stakeholder Meetings

The initial meeting with stakeholders was done as per following schedule:

S.No.	Date	Department	Attendees	Purpose
1	24 April 2019	SUDA	Smt. Debarati Dutta Gupta, Director Sh. Amitava Das, Deputy Director Dr. Sujay Mitra, Chief Engineer Sh. B.K Pal, Executive Engineer Officials from all municipalities	Brief discussion with municipality officials and sharing of detailed questionnaire formats required for TFR preparation
2	26 April 2019	KMDA	Sh. S.K Baidya, Chief Engineer Sh. Utpal Mandal, Supt. Engineer Sh. T. Bhowmik, Ex. Engineer Sh. T. N Banerjee, Ex. Engineer	Discussion regarding Pramod Nagar dumpsite challenges and gathering technical & design details of existing facilities
3	26 April 2019	WBPCB	Dr. T.K Gupta, Chief Engineer Sh. Shishir Mondal, Env. Engineer	Deliberation on expected Environmental and compliance issues in the project and its remediation strategies

### Observations from Field visits and meetings:

A team comprises of Sh. Puneet Babbar (SWM Expert, EY) and Smt. Chaitali Mondal (Project Consultant, EY) visited the clusters and carried out initial stakeholder meetings. The observation or findings of these visits are discussed below cluster wise:

- A.) Cluster-1 (Dum Dum, South Dum Dum, North Dum Dum, Baranagar, Kamarhati, New Barrackpore)
  - i. All the municipalities in Cluster-1 are carrying out door-to-door collection, primary & secondary transportation and finally disposal through open dumping at Parmod Nagar dumpsite.
  - ii. Though 100% households are covered for solid waste collection in the municipalities, but source segregation at household level is a major issue. Further problem is compounded by collection and transportation mechanism. For example, the collection vehicles are not partitioned at most of the places.
  - iii. Due to limited availability of land most of the ULBs are having majorly mobile compacter stations and very few stationary compacter stations. Thus possibility of setting up new transfer stations are very difficult.
  - iv. Pramod Nagar site comes under jurisdiction of South Dum Dum municipality, having a land area of approx. 20 acres. The site is already exhausted and needs urgent interventions for scientific disposal of municipal solid waste.
  - v. The site is surrounded by a few residential settlements, water body and Belghoria Expressway. It also comes under the Buffer zone of Dum Dum Airport. The height of

- waste dump now has reached to 15-16 meters at some places causing a serious concerns for Air, Land and Water ecosystems.
- vi. Another dumpsite of around 8 acres land area is located within the jurisdiction of Kamarhati Municipality, which was earlier used for dumping. Now there is no more land area available for dumping of solid waste here, so all the waste has been diverted to Pramod Nagar site. This Kamarhati dumpsite is also surrounded by residential areas.
- vii. KMDA is constructing a 50 TPD (Tons Per Day) Compost plant along with a sanitary landfill cell. However, it will not suffice the requirement of total waste generation of Cluster-1, which is estimated to be at least 500 to 600 TPD.
- viii. Further for setting up a plant with at least 500 TPD capacity (approx.) and considering 20% rejects, (say100 TPD), it is required to have availability of at least 30 acres of land area tentativley. So if at all processing plant needs to be setup at Pramod Nagar site, there will be hardly any space available for setting up the SLF at the same place for disposal of rejects.
- ix. Another challenge is the legacy waste dumped at the Pramod Nagar site. Any Developer will have to clear this waste by scientific processing before starting any new construction. As per initial estimation of KMDA, approx. 10 lakh tons of garbage is dumped at Pramod Nagar site and it is estimated that 70% fraction out of that will be rejects or inerts. This needs to be disposed preferably in Low lying areas. Therefore, liability on the bidder for disposal of around 7 lakh tonnes rejects can be a major bottleneck in the success of the project owing to cost of disposal and non-availability of land.

### B. Cluster - 3 (Ashoknagar-Kalyangarh and Habra)

- i. There are only two ULBs in Cluster-3 namely Ashoknagar-Kalyangarh and Habra. Both ULBs are carrying out door-to-door collection, primary and secondary transportation and finally disposal (open dumping) at dumping ground located in Ashok Nagar area.
- ii. 100% household are covered for solid waste collection, but source segregation at household level is being practiced in Ashok Nagar-Kalyangarh only. Habra is not doing much efforts for getting source segregation in place.
- iii. Collection and transportation in non-partitioned vehicles again pose problems in solid waste value-chain. Limited availability of land in both ULBs are having necessitated the need mobile compacter stations.
- iv. There is no processing facility available for waste in these municipalities and entire waste is being dumped at Ashok Nagar dumpsite. Habra municipality is also using a temporary site for dumping which is under the jurisdiction of Social Welfare Department. The site is surrounded by residential localities and experience agitation form local people on daily basis. So it is difficult for them to continue dumping waste at this site. Therefore, Habra Municipality in consensus with Ashok Nagar- Kalyangarh municipality, have decided to jointly put up processing plant at Ashokenagar Kalyangarh dumping site.
- v. The dumping site at Ashok Nagar is located adjacent to the roadside Ward No.-15, NH34-NH35 link road site. The site measures a total area of approximately 20 acres and by and large looked alright for setting up processing and disposal facilities. An

- overhead transmission line passing through the site will result in reduction of available land area.
- vi. There are no residential settlements nearby to the dumping site. Considering these conditions and amount of waste from these municipalities, the site is fairly suitable for setting up a compost and MRF facility. The feasibility and other details of the same will be worked out in the feasibility report.
- B.) Cluster-4 (Baidyabati, Uttarpara-Kotrung, Rishra, Serampore, Champdani and Konnagar, Dankuni, Bhadreswar)
  - i. All the municipalities in this cluster are having 100% household level coverage except Champdani. Most of them have also successfully implemented household segregation. Places like Rishra, Serampore, Uttarpara-Kotrung, Baidyapati and Bhadreswar have nearly 100% of collection efficiency, which clearly gives an insight of presence of efficient collection system.
  - ii. The infrastructure facilities for waste collection are fairly good and unless municipalities of Cluster 1 and 3, the collection vehicles are found to be partitioned at many places in order to segregate the waste at collection points.
  - iii. There are six compost plants in each municipality of this Cluster (except Bhadreswar and Dankuni) which was constructed by KMDA under JICA funding. However, it was observed during field visits that presently no one is operational or operating under capacity. These plants require major augmentation of equipment and Process. Lack of manpower is commonly faced issue in this cluster.
  - iv. There is a Regional Waste Management Complex (RWMC) developed under JICA funding, which incorporates a Sanitary Landfill Facility (SLF), a Leachate Treatment Facility and a Faecal Sludge Management Facility. However, due to the non-operational compost plants in this cluster, all the waste are being majorly dumped at RWMC, though it is only meant for rejects. The operations of Leachate Treatment Plant and Faecal Sludge Management Plant also needs process improvements.
  - v. The compost plants and RWMC site constructed under JICA funding provides a good Waste Management infrastructure for processing and disposal of municipal solid waste, which needs mostly process improvements activities. But municipalities like Bhadreswar and Dankuni, needs to setup new plants to integrate in this cluster.
  - vi. As observed during field visits, Bhadreswar Municipality has a landfill of around 6 acres, which is being used for waste dumping. It can be used well for setting up a new facility of Compost + MRF after land reclamation activities. After installation of a processing plant, the rejects can be channelized to RWMC. This municipality is also operating a 2-4 TPD vermin-composting plant based out of source segregated waste.
  - vii. However, Dankuni municipality is really struggling for land availability with in their jurisdiction. There is hardly any space, as informed by officials, to set up any processing plant. Presently they have procured a land near Narna Gram Panchayat, 10-12 km away in opposite direction to RWMC location. If Dankuni will proceed for setting up processing plant near Narna GP, the disposal of rejects to RWMC complex will be financially unfeasible due to transportation cost.

### Recommendations/Suggestions

- Implementation of Source Segregation of municipal solid waste into wet and dry fractions should be carried out with most priority in all the municipalities.
- ii. Since all the municipalities are having robust mechanism for collection & transportation of waste, the projects may be structured for selecting of developer/operator for processing and disposal only. Planning for Integrated Solid Waste Management (ISWM) approach would not be feasible in this case due to densely populated cities and lack of land area for setting up transfer stations. This aspect will be cover in detail in project feasibility reports (TFR).
- iii. Presently Kamarhati is included in Cluster 1 and dumping its waste at Pramod Nagar site. As per the initial data gathered, 100 TPD waste generation is estimated from Kamarhati municipality. It is suggested that present dumpsite within Kamarhati municipality jurisdiction can be used for setting up the plant of 100 TPD capacity after suitable processing of legacy waste. This will reduce stress on Pramod Nagar dumpsite. Review of cluster formation will be required in that case.
- iv. The layout of new compost plant and SLF, being set up by KMDA at Pramod Nagar, will pose a huge challenge for the new developer to integrate it with new plant for capacity enhancement. Therefore, it is suggested that till new contract, all the works of Compost plant and SLF should be put on hold.
- v. Usually, it is beneficial, if processing plant is integrated with SLF design at the same site. However, in case of Pramod Nagar site, setting up SLF will attract challenge of getting Environmental Clearance (EC) for the project. As per Schedule –I, Criteria for Site selection of SWM Rules 2016, the Pramod Nagar dumpsite fails in the selection criteria for setting up SLF. Especially due to its location with Airport buffer zone.
- vi. The sustainability of Pramod Nagar site for planning and implementation of SWM project was also discussed during the meeting held with WBPCB's officials, who are in the same view that getting EC for this site will be very difficult if SLF becomes the integral part of the project. Further as discussed in point no. (viii) in the observations of Cluster-1 visits, the land area is not enough for setting up both the processing plant and SLF.
- vii. In view of point (v) and (vi) above, it is suggested that another land parcel may be identified at the earliest for setting up the regional landfill site for processing plant of Cluster-1 municipalities. This site will also accommodate the rejects from Kamarhati processing plant. This way the issue of EC can be resolved because as per MoEF's Letter No. 22-19/2017-IA-III, dated 3 July 2017 (Copy attached), any waste processing facility without SLF component will not require prior EC clearance.
- viii. A suitable land parcel (low lying area) may be explored for disposing the rejects from the processing of legacy waste at Pramod Nagar and Kamarhati sites. As informed by KMDA officials, 7 acres of such land is available near Panihati area around 10 km away from Pramod Nagar. Alternatively ULBs of Cluster 1, may be asked to identify low-lying areas within their jurisdiction to dispose legacy waste processing rejects.
- ix. Agencies like WBIDC (West Bengal Industrial Development Corporation), WBSIDC (West Bengal Small Industries Development Corporation) and HIDCO (West Bengal Housing and Infrastructure Development Corporation) can be contacted, if they can channelize this fraction into their development projects. Alternatively entire rejects for

Cluster-1 can also be channelize to Cluster-4 RWMC site, till identification of any low lying land area in Cluster-1 for disposing legacy waste processing rejects.

### Urgent Interventions requested by SUDA

- i. To hold the work of compost plant and SLF at Pramod Nagar dumpsite.
- ii. To look for availability of disposal options for the legacy waste processing rejects at the
- iii. To look for the alternative land for setting up common SLF for Cluster -1 municipalities instead of setting up the same at Pramod Nagar site.
- iv. To consider the dumpsite in Kamarhati in the current plan for setting up processing plant for Kamarhati municipality and if possible, New Barrackpore also.
- v. Review Cluster 4 with respect to placing of Dankuni municipality in some other Cluster, if possible.

# अजय नारायण झा AJAY NARAYAN JHA, IAS



सचिव भारत सरकार पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय Secretary Government of India Ministry of Environment, Forest and Climate Change

D.O.No. 22-19/2017-IA-III

3<sup>rd</sup> July, 2017

Dear Shr. Mishra

Please refer to the D.O. letter No. Q-15014/2/2017-CPHEEO dated 14.02.2017 requesting to revisit the process of prior environmental clearance for Solid Waste Management Treatment and Processing Facilities.

- 2. The matter has been examined by the Expert Group constituted in the Ministry in its meeting held on 14.06.2017. The Expert Group has submitted its recommendations. The recommendations of the Expert Group have been examined in the Ministry.
- 3. The Environment Impact Assessment Notification, 2006 in the Schedule at item 7(i) mentions Common Municipal Solid Waste Management Facility (CMSWMF) as Category B project for which State Environment Impact Assessment Authority (SEIAA) is empowered to appraise the project for grant of prior environmental clearance.
- 4. The municipal solid waste management involves various steps like door to door collection, segregation, composting, refuse derived fuel (RDF) making, waste to energy generation through waste to energy plants and disposal in scientific landfills. The above activities, except landfill site, if proposed as standalone activities are not covered under item 7(i) of EIA Notification, 2006, hence do not require prior environmental clearance. In case the activities of composting, RDF making and waste to energy plant (up to capacity of 15 MW) are proposed at an existing landfill site, they do not attract the provisions of the EIA Notification, 2006.
- 5. If the activities of incineration, RDF making and waste to energy plant are proposed along with the new site of solid waste disposal/ landfill, it is advisable to obtain an integrated prior environmental clearance for these projects.

contd...2/-



- 6. It has been seen that locating a landfill site or municipal solid waste disposal site is a contentious issue and there is a tendency to locate them far from the habitation but near forest, rivers, ponds, wetlands and low lying areas etc. which are ecologically sensitive sites and require proper environmental management. Since, the forests, rivers, ponds, wetland and low lying areas are critical from environmental point of view, it may not be appropriate to exempt this activity of municipal solid waste disposal site or landfill site from the requirement of prior environmental clearance.
- 7. I believe this will expedite the achievement of the objectives of the Swachh Bharat Mission.

With regards,

Yours sincerely,

(A.N. Jha)

Shri Durga Shankar Mishra Secretary, Ministry of Urban Development, Nirman Bhawan, New Delhi-110011.

### **Puneet Babbar**

From:

Puneet Babbar

Sent:

09 May 2019 00:33

To:

'amitavadas209@gmail.com'

Cc:

'sdkmda@gmail.com'; Chaitali Mondal

Subject:

FW: Planning of cluster based SWM projects in West Bengal\_EY

Sir,

As desired, please refer to the following points discussed with the officials of KMDA in the meeting held on 8 April 2019:

#### 1. For Cluster-1:

- a. The processing plant of Kamarhati municipality should be proposed on the existing closed dumpsite at Kamarhati. The land reclamation for the site needs to be carried out, in parallel to the processing plant construction. KMDA is already carrying out initial surveys viz. demarcation of boundary and Topographical survey, which will be shared soon. Rest surveys will be carried out by TA. If possible, New Barrackpore Municipality will also be integrate with Kamarhati Municipality for waste disposal. This will reduce the further stress on Pramod Nagar.
- b. Pramod Nagar Site will cater waste from Dum Dum, North Dum Dum, South Dum Dum and Baranagar. A plant of at least 500 TPD capacity needs to be planned at Pramod Nagar site. Again the land reclamation activities needs to be carry out in parallel to the plant construction.
- c. Legacy Waste Processing rejects from both the sites needs to be disposed in appropriate manner. For this, KMDA has identified a low lying area near Panihati and they are also carrying out basic surveys at this site to assess its suitability.

#### issues:

- a. Till new contract, the existing work of 50 TPD compost plant and SLF Cell should be put on hold.
- Feasibility of setting up a SLF at Pramod Nagar site should be prior checked with WBPCB and Airport Authorities.
- c. If at all, Permission for setting up SLF is given, the land area at Pramod nagar is not enough to setup Processing Plant and SLF for a design period of 20-25 years.
- d. The above issue can be addressed, if SUDA & KMDA will plan to construct SLF elsewhere than Pramod Nagar Site. This will also help in setting up the processing plant of adequate capacity (say initially 700-800 TPD capacity) and also results in land availability for future expansion. This will also provide flexibility to the developer to plan/try for additional components, like Biogas plant/other innovative solution, in addition to the Compost + MRF facility.
- e. Shifting of SLF from Pramod Nagar, would also facilitate the developer during initial operations, with enough availability of land for multiple activities viz; remediating legacy waste, processing fresh waste and carry out new construction at a same time.
- f. Options for setting up SLF elsewhere than Pramod Nagar are:
  - A separate land can be identified in Domjur area as suggested by KMDA. The inerts from Pramod Nagar site and Kamarhati site will lead to this SLF. Later it will be used for disposal of inerts from fresh waste from these two sites; or
  - ii. Existing SLF of RWMC for Cluster-4, can be used for disposing inerts from Cluster-1 also. Although, it will affect the design life of SLF at RWMC and it may be reduced to 10-12 years from 20 years as expected. But in this way we will be able to channelize multiple issues of land constraint, compliance issue, future expansions, etc. in to one single constraint of SLF design period. We need to identify another site for SLF after 10-12 years for the rejects from Cluster 1 & 4.

### 2. For Cluster-3:

a. The site is suitably fine for setting up processing plant and SLF.

### 3. For Cluster-4:

- a. In cluster-4, already there is a waste management system designed under JICA scheme for 6 municipalities namely, Baidyabati, Seerampore, Konnagar, Rishra, Champdani, Uttarpara-Kotrung. All this 6 municipalities has a well-constructed composting plant within their jurisdiction and a common SLF at RWMC for disposal of inerts.
- b. The remaining 2 municipalities; Bhadreswar & Dankuni, needs to be integrated with the present scheme
- c. The Bhadreswar municipality has a 6 acres dumpsite, which can be used for setting up the processing plant after suitable Bio-remediation of legacy waste. Rejects from legacy waste processing will be sent to RWMC.
- d. Dankuni municipal has also procured a 3 acre land piece area in the Narna GP, which is quite far from RWMC. This site can be used for setting up the processing plant, however, due to large distance from RWMC, it is suggested that inerts from Dankuni can be sent to RWMC on weekly basis.

#### Issues:

a. The major issues in this Cluster is related to Plant operations. At almost all the places, process and equipment up-gradation is required, which can be dealt at the time of bidding.

### Warm regards,



Puneet Babbar | Associate Vice President | Transaction Advisory Services | Government & Public Sector

Ernst & Young LLP

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Thank you for considering the environmental impact of printing this email.

From: Puneet Babbar

Sent: Monday, May 06, 2019 2:31 PM

To: 'amitavadas209@gmail.com' <amitavadas209@gmail.com>

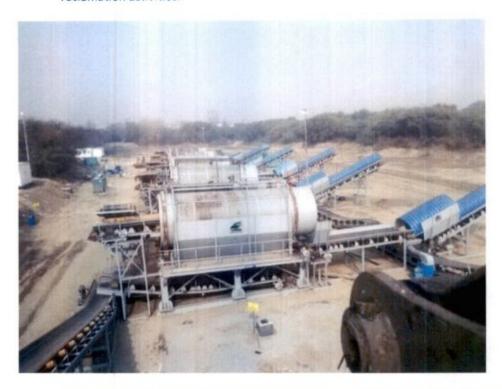
Subject: FW: Planning of cluster based SWM projects in West Bengal\_EY

Sir,

In continuation of the trailing mail and as discussed with you, please refer to the below points for your kind consideration:

- 1. A mail was sent by Ms. Chaitali on 30 April 2019 to all the ULBs forwarding formats of detailed questionnaires to be filled by them. As experienced last time during inception stage, ULBs took too much time in sending the details of basic questionnaire. We understand that due to ongoing elections, the officials must be engaged in various activities, however, this detailed information would be very much critical in preparation of feasibility reports. Therefore, we recommend that we may organize a 1 day meeting with every ULB (preferably from 8 April 2019 to 10 April 2019). We can give 1 hour slot to each cluster. In this meeting, team from EY can address any issues being faced by ULBs in filling up these formats and also a timeline can be fixed for the submission.
- Regarding your question for legacy waste disposal at Pramod Nagar dumpsite, I would like to mention that it
  will have to be integrated in the same contract while selection of developer of new facility at Pramod Nagar.
  The disposal of legacy waste and new construction should be done in parallel to achieve synergies in project.

Usually process of removal of legacy waste is called landfill reclamation. Nowadays, companies are also using bio-cultures to stabilized the waste before initiating landfill reclamation activities, which results in reduction of overall volume by 30-35 %. After that this waste is subjected to mining and segregation activities using conveyors and trommels. A typical layout of such plant working in Noida (U.P) is given below. Usually these are mobile equipment, which are removed from the site after completion of landfill reclamation activities.



The processing capacity of these equipment varies from 500 TPD to 1000 TPD and cost of processing comes around Rs. 800-1000 TPD. In most of the projects carried out or working for landfill reclamation, it has observed that 65-70 % matter is inerts/soil/ash, etc, which needs to be disposed preferably in low-lying areas after getting confirmation by TCLP test. Remaining 15-20 % will be RDF that can be channelize to recyclers/industries. And remaining rejects needs to be disposed in SLF.

Now considering KMDA's assumption of around 10 lakh tonne waste which is dumped at Pramod Nagar site, it is required approximately 1000 days (approx. 3 years) to remove the entire waste, if developer will install the 1000 TPD capacity line for processing. And cost of the disposal would be around Rs. 100 crores. It can be minimized up to some extent by using bio-remediation before initiating reclamation activities. But it will add into further time for bio-remediation activities.

However, it is pertinent to mention here that process/ technology adopted for landfill reclamation would not be a such big challenge then to find suitable disposal option/low lying area for the inerts/soil (i.e. around 70 % fraction). Channelizing this fraction in compliance with the norms, needs to be addressed in priority.

Last I would like to put some light over development of new SLF at Pramod Nagar site. As suggested in my
earlier note, prior consent from WBPCB and Airport Authority should be taken as a proactive measure, if we
are planning to build SLF as an integral part of the processing plant at Pramod Nagar.

Submitted for your kind perusal please.

Warm regards,



# Puneet Babbar | Associate Vice President | Transaction Advisory Services | Government & Public Sector

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Thank you for considering the environmental impact of printing this email.

From: Puneet Babbar

Sent: Monday, May 06, 2019 3:32 AM

To: 'sbm.wbsuda@gmail.com' <sbm.wbsuda@gmail.com>

Cc: 'amitavadas209@gmail.com' <a href="mailto:com">cm">amitavadas209@gmail.com</a>; 'sujay.mitra@gmail.com' <a href="mailto:sujay.mitra@gmail.com">sujay.mitra@gmail.com</a>;

'bkpal.suda@gmail.com' <br/>bkpal.suda@gmail.com>; 'Chaitali Mondal' <<a href="mailto:chaitalibiswas3@gmail.com">chaitalibiswas3@gmail.com</a>

Subject: Planning of cluster based SWM projects in West Bengal\_EY

Respected Madam,

Please find attached the initial field visit reports of Cluster 1,3 & 4, for your kind perusal please. A few recommendations were made in the attached report based on the observations of field visits.

Warm regards.



Puneet Babbar | Associate Vice President | Transaction Advisory Services | Government & Public Sector

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24th May 2019

Compan FD

To,
Director
State Urban Development Agency.
ILGUS Bhawan, HC Block,
Sector-III, Bidhannagar

Subject: Bank Guarantee submission for Transaction Advisor for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators

Respected Madam,

Kolkata-700106

This has reference to the RFP no. SUDA - 227/2018/1760 dated 18.01.2019 and subsequent signing of contract with EY on 09.04.2019 for Cluster – 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, and New Barrackpore. As per the clause no. 2.8.3 mentioned in the RFP, a security deposit of 10% of total bid amount in the form of bank guarantee need to be submitted by successful bidder after signing of contract. Please find attached herewith Bank Guarantee PBGI01001900289 dated 17 May 2019. The Bank Guarantee is valid till 9 April 2020.

Thanking you, Yours faithfully,

Abhaya Krishna Agarwal

Partner - Infrastructure and PPP, Government & Transaction Advisory Services

Ernst and Young LLP, India,

Email: abhaya.agarwal@in.ey.com;

Mobile: 9871 693 342



### Bank Guarantee Covering Letter

Date: May 17, 2019

To, Director State Urban Development Agency. ILGUS Bhawan, HC Block, Sector-III, Bidhannagar Kolkata-700106

Bank Guarantee issued by us

Bank Guarantee Number	PBGI01001900289	BG Issue date	May 17, 2019	
Amount (In Figures)	Rs.2,89,368/-	1		
Amount (in Words)	Rupees Two Lakhs Eigh Eight Only	nty Nine Thousand	Three Hundred and Sixty	
Valid Till Date	April 09,2020			
Claim Valid Till Date (Final Validity Date)	April 09,2020			
Applicant Name	olicant Name ERNST & YOUNG LLP			

Please find enclosed herewith the original of the above stated bank guarantee issued by us.

We advise you to obtain, in your own interest, confirmation of genuineness of the above stated guarantee from us by contacting us on the address below:

RBL Bank Limited Global Trade Services One Indiabulls Centre, Tower 2B, 20th Floor, 841, Senapati Bapat Marg, Lower Parel, Mumbai – 400013.

Tel: 022-48809303

E-mail: tfu@rblbank.com & tfsolutions@rblbank.com

For RBL Bank Limited

Designation

Enclosure: As above.

3833

www.rblbank.com



# Indian-Non Judicial Stamp Haryana Government



Date:01/05/2019

Certificate No. G0A2019E1489

GRN No.

47384890



Penalty:₹0

Stamp Duty Paid : ₹ 101

(Rs Zero Only)

Deponent

Name: Rbl Bank Ltd

H.No/Floor: Na

City/Village : Gurugram

Phone: 1244414450

Sector/Ward : Na

District : Gurugram

Landmark: Abw tower iffco chowk

State: Haryana





Purpose: AGREEMENT to be submitted at Others

Bank Guarantee No

: PBGI01001900289

BG Amount

: Rs.2,89,368/- (Rupees Two Lakhs Eighty Nine Thousand

. Three Hundred and Sixty Eight Only). BG Issuance Date

: May 17, 2019 BG Expiry Date : April 09,2020

BG Claim Expiry Date : April 09,2020

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Page 1 of 6



## PERFORMANCE BANK GUARANTEE

To,
Director
State Urban Development Agency.
ILGUS Bhawan, HC Block,
Sector-III, Bidhannagar
Kolkata-700106
E-mail ID: wbsudadir@gmail.com

# Respected Sir/Madam,

THIS DEED OF GUARANTEE ("Bank Guarantee") is executed on this 17th day of May 2019 at Gurgaon by RBL Bank Ltd., a Company incorporated and registered under the Indian companies act, 1913 and deemed to exist within the companies Act 1956, and governed by the Banking Regulation Act, 1949 and having its registered office at 1st Lane, Shahupuri, Kolhapur – 416 001, Maharashtra, and its corporate office at One India Bulls Centre, Tower-2, 6th Floor, 841, Senapati Bapat Marg, Lower Parel (W), Mumbai - 400 013, India and having one of its Branch Office at Unit Number 14 and 15,DLF Capitol Point, Baba Kharak Singh Marg, New Delhi 110 001 (hereinafter referred to as "the Bank").

### IN FAVOUR OF:

State Urban Development Agency, Urban Development and Municipal Affairs Department, Government of West Bengal (hereinafter referred to as the "Authority" which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and permitted assigns).

### WHEREAS.

A. We understand that the Authority have entered into a contract dated April 9, 2019 ("Contract") with ERNST AND YOUNG LLP, a limited liability partnership with LLP Identity Number AAB-4343 within the meaning of the Limited Liability Partnership Act, 2008 (erstwhile Ernst & Young Private Limited, a company with registration no. U74120WB2008PTC121768) and having its registered office at 22, Camac Street, 3rd Floor Block C, Kolkata-700016 and office at Golf View Corporate Tower B, Sector – 42, Sector Road, Gurgaon – 122002 through Ernst & Young LLP's authorized signatory Abhaya Krishna Agarwal (hereinafter referred to as the "Consultant"), pursuant to the project involving selection of "Transaction Advisors for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators for the Cluster No.1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore" ("Project").

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Page 2 of 6



B.We understand that the Contract requires the Consultant to furnish a Performance Bank Guarantee to the Authority in a sum of Rs.2,89,368/- (Rupees Two Lakhs Eighty Nine Thousand Three Hundred and Sixty Eight Only) ("Guarantee Amount"), which is equivalent to 10% of the contract value, to secure its obligation for providing the consultancy services for a period of twelve (12) months from the date of signing of the aforementioned Contract and amendments received thereafter.

C. We, RBL Bank Ltd., , through our Branch at Unit Number 14 and 15,DLF Capitol Point, Baba Kharak Singh Marg, New Delhi 110 001 (the "Bank") have agreed to furnish this Bank Guarantee by way of Performance Bank Guarantee.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

- 1. The Bank hereby expressly, irrevocably and unreservedly undertake and guarantee the due and faithful performance of the Consultant's obligations during the Contract period, under and in accordance with the Contract, i.e. upto April 9, 2020, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, contest or protest, and without any reference to the Consultant, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.
- 2. A letter from the Authority, under the hand of an officer not below the rank of Director has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Contract shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Consultant is in default of due and faithful performance of its obligations during the Contract period and its decision that the Consultant is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Consultant, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Consultant for any reason whatsoever.
- 3. Notwithstanding any right, the Consultant may have directly against the Authority or any disputes raised by the Consultant or any suit or proceedings pending in any competent Indian court or before arbitration tribunal, a written demand by the Authority shall be conclusive evidence to the Bank that such payment is payable under the terms of the Contract and shall be binding in all respects in terms hereof.

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Page 3 of 6



Satradup Bandyepody

4. In order to give effect to this Bank Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Consultant and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Bank Guarantee. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Consultant before presenting to the Bank its demand under this Bank Guarantee.

- 5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Bank Guarantee, to vary at any time, the terms and conditions of the Contract or to extend the time or period for the compliance with, fulfillment and/or performance of all or any of the obligations of the Consultant contained in the Contract or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Consultant, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Contract, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Consultant or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Bank Guarantee and the Bank hereby waives all of its rights under any such law.
- 6. This Bank Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Contract or for the fulfillment, compliance and/or performance of all or any of the obligations of the Consultant under the Contract.
- 7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Bank Guarantee is restricted to the Guarantee Amount and this Bank Guarantee will remain in force for the period specified in Paragraph 8 below, and unless a demand or claim in writing is made within such time period specified in Paragraph 8, all rights of the Authority under this Bank Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.
- 8. This Bank Guarantee shall cease to be in full force and effect till the subsistence of the Contract or till April 9, 2020, whichever is earlier. We, the Bank, agree and undertake not to revoke this Bank Guarantee before the same is discharged in writing by the Authority or till the expiry of this Bank Guarantee i.e. up to April 9, 2020, whichever is earlier.

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Page 4 of 6



Satradiep Bandygordy

- 9. The Bank undertakes not to revoke this Bank Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares that it has the power to issue this Bank Guarantee and the undersigned has full powers to do so on behalf of the Bank.
- 10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred Branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive, provided such demand is received by us on or before April 09, 2020.
- 11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for 12 months from the date of signing of the Contract i.e. April 9, 2020, or until it is released earlier by the Authority pursuant to the provisions of the Contract.
- 12. Payment by the Bank to you, the Authority, will be made within seven (7) working days from receipt of your written request received by us on or before April 9, 2020, making reference to this Bank Guarantee and on demand.
- 13. This guarantee is non-assignable and non-transferable.

# NOTWITHSTANDING ANYTHING CONTAINED HEREIN ABOVE:

- I. The Bank's liability under this bank guarantee shall not exceed Rs. 2,89,368/- (Rupees Two Lakhs Eighty Nine Thousand Three Hundred and Sixty Eight Only).
- II. This Bank Guarantee shall be valid up to April 9, 2020.
- III. The Bank is liable to pay the Guarantee Amount or any part thereof under this Bank Guarantee only if you, the Authority serve upon us a written claim or demand (and which should be received by us), on or before April 9, 2020 on or before 14:00 HOURS (INDIAN STANDARD TIME) where after it ceases to be in effect in all respects whether or not the original bank guarantee is returned to the Bank.

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Page 5 of 6



Janadus Bardyngodyg

In Witness Whereof The Bank, Through Its Authorized Officer, Has Set Its Hand And Stamp On This 17<sup>TH</sup> Day Of May 2019 at Gurgaon

For RBL Bank Ltd

Authorized Signatories

EMP No.\_

For RBL Bank Ltd

Bank Guarantee No. PBGI01001900289 BG issuance Date: May 17, 2019

Attendance Sheet

		ıre	1	The state of the s				1		14		WW (2)
lent	•	Signature	6	B	Jan	Mr	E	To .	Pusal			+
n Solid Waste Managen	12.30 PM	email Address	7871693342 in. cy. fom	puneet babban (1)	\ \	(hairmanddmalaychoo, rom	98307 & 2588 Selden 100 grand, Com	Soldm 10 algumin con	sddm10e gnaircour	Modernander @	Ecolombo Des. 2017 a growing. Com	Executive Office 8420731399 Morthdundunggmail.Com
ies of Cluster-I o	at 11.00 AM to	Mobile	7871693342	9810275111	9903022652	4038724595	3830787053P	9836552891	4910889886	9932556975	8777787136	PRISTOCAS
and Urban Local Bod	Date: 09.04.2019	Designation	Portru	AND	ASST. S. J.	A.E.	T.	T, S	SECRETARY	A	S.W.M. IN-chang 8777787736	Executive office
th Transaction Advisor		Organisation	43	7 7	DUM DUM MUNICIPALITY	DUM DUM MUNICIPALITY	Sawl Dem Dem	South Dum Dum	- do -	Bongaon Mesnicht	Hereth Dum Dum	. ( )
Introductory meeting with Transaction Advisor and Urban Local Bodies of Cluster-I on Solid Waste Management	Venu: SUDA Conference Hall	Name of the Participant (in BLOCK Letter)	ABHAYA KRISHNA AGARWAL	PUNEET BABBAR	TRANDAS KR DOS	SUBARNA KR DUTTA	RATEN GETAL DAS	DEBASHIS DUTTA	PRASUN KR SARBAR	JAYARTA SAMMAR	Goshernka Ders	South Pada Samar
	Ve	SI. No.	1	હ્યુ	0.	7	is	(0.	4	6	Ø	ė

### Form - IV

## [see rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body

CALENDAR YEAR:	DATE OF SUBMISSION OF REPORT:	
2018	03.04.2019	

1	Name of the City/Town and State	DUM DUM & West Benga
2	Population	114786 (Census 2011)
3	Area in sq. kilometers	9.73
4	Name & Address of local body Telephone No. Fax No. E-mail:	Dum Dum Municipality 033-25513017 033-25495217 chairmanddm@yahoo.com
5	Name of officer in-charge dealing with solid waste management (SOLID WASTE M) Phone No: Fax No: E-mail:	Sri Pranab Das 9903022652 033-25495217 chairmanddm@yahoo.com
5	Number of households in the city/town  Number of non-residential premises in the city  Number of election/ administrative wards in the city/town	37,691 244 22
,	Quantity of Solid waste (solid waste)	62.1MT
	Estimated Quantity of solid waste generated in the local body area per day in metric tones	62.1/tpd
	Quantity of solid waste collected per day	62.1/tpd
	Per capita waste collected per day	460/gm/day
	Quantity of solid waste processed	NA*
	Quantity of solid waste disposed at dumpsite/ landfill	62.1/tpd

<sup>\*</sup> Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum Dum & Baranagar Municipality – Phase-I is in implementation stage by KMDA

8	Status of Solid Waste Management service		***************************************				
	Segregation and storage of waste at source Whether SOLID WASTE is stored at source in do	mestic/comme	rcial/ instit	utional		Yes	
	bins, If yes, Percentage of households practice storage of wast	e at source in d	omestic bi	ns		90%	
	Percentage of non-residential premises practice streamercial /institutional bins	orage of waste	at source is	n		90%	
	Percentage of households dispose or throw solid v	vaste on the str	eets			10%	
	Percentage of non-residential premises dispose of throw solid waste on the streets				11.0	10%	
	Whether solid waste is stored at source in a segreg	gated form, If y	es,			No	
	Percentage of premises segregating the waste at so	ource				50%	
	Door to Door Collection of solid waste					3070	
	Whether door to door collection (D2D) of solid w	aste is being do	one in the c	ity/town		Yes	
	if yes						
	Number of wards covered in D2D collection of wa	Number of wards covered in D2D collection of waste				22	
	No. of households covered				37691		
	No. of non-residential premises including commer restaurants educational institutions/ offices etc cov		ents ,hotel:	5,	244		
_	Percentage of residential and non-residential premises covered in door to door collection through:						
	Motorized vehicle						
	Containerized tricycle/handcart					82%	
	Other device (Battery Operated TOTO)					18%	
	If not, method of primary collection adopted						
	Sweeping of streets				_		
	Length of roads, streets, lanes, bye-lanes in the city that need to be cleaned					112km	
	Frequency of street sweepings and percentage of	frequency	Daily	Alternate		Occasionally	
	population covered			days	Twice a week		
		% of population			1		

	Tools used	
	Manual sweeping	Long handle brooms, cycle vans, belcha, Battery operated Dumper
	Mechanical sweeping	0%
	Whether long handle broom used by sanitation workers	
	Whether each sanitation worker is given handcart/tricycle for collection of waste	Yes
	Whether handcart / tricycle is containerized	No
	Whether the collection tool synchronizes with collection/ waste storage containers utilized	Yes
	Secondary Waste Storage facilities	
	No. and type of waste storage depots in the city/town	No. Capacity in m3
	Open waste storage sites	
	Masonry bins	34 133
	Cement concrete cylinder bins  Dhalao/covered rooms/space Covered	5 66
	metal/plastic containers Upto 1.1 m3	20 7
	bins 2 to 5 m3 bins Above 5m3	
	containers Bin-less city	
	Bin/ population ratio	0.004
	Vard wise details of waste storage depots (attach) : Ward No: Area: Population: No. of bins placed Total volume of bins placed	
Т	otal storage capacity of waste storage facilities in	206
	one meters	
To	otal waste actually stored at the waste storage pots daily	62.1 MT
l lac	ve frequency of collection of waste from the poots  mber of bins cleared	Frequency No. of bins
	Į.	Daily
		Alternate day
	Т	wice a week
-		

	Once	a week	
	Occas	ionally	
Whether storage depots have facility for storage segregated waste in green, blue and black bins	of No	-	
begregated waste in green, blue and black oins	(if yes	, add details)	
	No. of	green bins:	
	No. o	f blue bins:	
	No. o	f black bins:	
Whether lifting of solid waste from storage depo- is manual or mechanical. Give percentage	s		
(%) of Manual Lifting of solid waste			90%
(%) of Mechanical lifting			10%
If mechanical - specify the method used	front-e	nd loaders	
Whether solid waste is lifted from door to door	No		
and transported to treatment plant directly in a segregated form	(if yes,	specify)	
Waste transportation per day	No.	Trips made	wasteTransported
Type and Number of vehicles used			
Animal cart	+		(in MT)
Tractors	3	9	2
Non tipping Truck	5	4	28.1
Tipping Truck	5	4	
Dumper Placers		7	12
Refuse collectors			
Compactors	,	7	
Others .	,	7	20
JCB/loader			
Frequency of transportation of waste	1 Frequer	100/B	Volumete to
The state of the s	Daily	Yes	b) of waste transported
	Alternat		
	Twice a		
	Once a		
	Occasio		
Quantity of waste transported each day			62.1/tpd
			02.1/tpd
Percentage of total waste transported daily			100%
Waste Treatment Technologies used			NA
Whether solid waste is processed			No*

<sup>\*</sup>Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum Dum & Baranagar Municipality – Phase-I is in implementation stage by KMDA

	If yes, Quantity of waste processed daily	NA
	Whether treatment is done by local body or through an agency	NA
	Land(s) available with the local body for waste processing (in Hectares)	NA
	Land currently utilized for waste processing	NA
	Solid waste processing facilities in operation	NA
	Solid waste processing facilities under construction	Yes
	Distance of processing facilities from city/town boundary	Processing facilities under construction is about 4 Kms from the town
	Details of technologies adopted	NA
	Composting,	Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum Dum & Baranagar Municipality – Phase-I is in implementation stage by KMDA
	Vermi composting	NA
	Bio-methanation	Trans Municipal project on Municipal Solid Waste management of Durn Durn, North Durn Durn, South Durn Durn & Baranagar Municipality – Phase-I is in implementation stage by KMDA
	Refuse Derived Fuel	NA
5	Waste to Energy technology such as incineration, gasification, pyrolysis or any other technology ( give detail)	Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum Dum & Baranagar Municipality – Phase-I is in implementation stage by KMDA
(	Co-processing	Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum
C	Combustible waste supplied to cement plant	Dum & Baranagar Municipality - Phase-I is in NA
C	Combustible waste supplied to solid waste based ower plants	NA
P	Combustible waste supplied to solid waste based ower plants Others	NA NA

No. of dumpsites sites available with the local body	1
No. of sanitary landfill sites available with the local body	2500-1
Area of each such sites available for waste disposal	1
Area of land currently used for waste disposal	
Distance of dumpsite/landfill facility from city/town	4kms
Distance from the nearest habitation	0.5 kms
Distance from water body	0.2 kms
Distance from state/national highway	0.5 kms
Distance from Airport	5 kms
Distance from important religious places or historical monument	5 kms
Whether it falls in flood prone area	No
Whether it falls in earthquake fault line area	No
Quantity of waste landfilled each day	62.1 tpd
Whether landfill site is fenced	Yes
Whether Lighting facility is available on site	Yes
Whether Weigh bridge facility available	No
Vehicles and equipments used at landfill (specify	Bulldozer, Compacters etc. available
Manpower deployed at landfill site	Yes, 2 number of heads
Whether covering is done on daily basis	No
If not, Frequency of covering the waste deposited at the landfill	
Cover material used	NA
Whether adequate covering material is available	No
Provisions for gas venting provided	No
Provision for leachate collection	No

9	Whether an Action Plan has been prepared for improving solid waste management practices in the city	YES, Trans Municipal project on Municipal Solid Waste management of Dum Dum, North Dum Dum, South Dum Dum & Baranagar Municipality – Phase-I is in implementation stage by KMDA (if Yes attach Action Plan details)
10	What separate provisions are made for:	Attach details on Proposals, Steps taken
	Dairy related activities:	Yes, as in trans-municipal project
25.	Slaughter houses waste :	Yes, as in trans-municipal project
	C&D waste (construction debris):	Yes, as in trans-municipal project
11	Details of Post Closure Plan	As in trans-municipal project
12	How many slums are identified and whether these	Yes
	are provided with Solid Waste Management facilities:	(if Yes, attach details)
13	Give details of:  Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	Temporary Part-time - 49
14	Give details of: Contractor/ concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	
15	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules	Sensitization in regards to segregation of waste at source
16	waste, which could be replicated by other local bodies	Housewife, old aged / retired people may be encouraged to generate compost at home by mini plant – i.e. a concept of work from home. Encouragement to sell recyclable material to appropriate persons.  Thus huge solid waste may be reduced.

Date:

Place:

Signature of CEO/Municipal Commissioner /

Executive Officer/chief Officer
Executive Officer
Dum Dum Municipality







### [see rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body

CALENDAR YEAR:	DATE OF SUBMISSION OF REPORT:	
2018-19	04/04/19	

1	Name of the City/Town and State	North Dum Dum, West Bengal
2	Population	2,49,142
3	Area in sq. kilometers	20sq.km.
4	Name & Address of local body	NDDM,163,M.B.
	Telephone No. Fax No. E-mail:	Road,Birati, Kolkata -51 033-25142101
		northdumdum@gmail.com
5	Name of officer in-charge dealing with solid waste management (SOLID WASTE M)	Sri Prasanta Das
	Phone No:	8777787736
	Fax No: E-mail:	northdumdum@gmail.com
6	Number of households in the city/town	64471
	Number of non-residential premises in the city	85
	Number of election/ administrative wards in the city/town	34
7	Quantity of Solid waste (solid waste)	
	Estimated Quantity of solid waste generated in the local body area per day in metric tones	150/tpd
	Quantity of solid waste collected per day	<i>4036</i> 135/tpd √
	Per capita waste collected per day	602/gm/day
	Quantity of solid waste processed	00/tpd
		(SWM cluster project under construction)
	Quantity of solid waste disposed at dumpsite/landfill	150/tpd
8	Status of Solid Waste Management service	

Segregation and storage of waste at source Whether SOLID WASTE is stored at source in d bins, If yes,	lomestic/comm	ercial/ insti	tutional	RANG	Yes
Percentage of households practice storage of was					100%
Percentage of non-residential premises practice s commercial /institutional bins	storage of waste	e at source	in		50%
Percentage of households dispose or throw solid	waste on the si	reets			00%
Percentage of non-residential premises dispose o	f throw solid w	aste on the	streets		00%
Whether solid waste is stored at source in a segre		yes,			Partially
 Percentage of premises segregating the waste at s	source				10%
Door to Door Collection of solid waste					
Whether door to door collection (D2D) of solid v	vaste is being d	one in the	city/town		Yes
if yes					
Number of wards covered in D2D collection of w	/aste				.34
No. of households covered					64,386
No. of non-residential premises including comme restaurants educational institutions/ offices etc co	rcial establishn vered	nents ,hotel	S,		85
Percentage of residential and non-residential pren collection through:	nises covered in	door to do	or		
Motorized vehicle					30%
Containerized tricycle/handcart					70%
Other device					00%
If not, method of primary collection adopted		-			NA
 Sweeping of streets		2.74			136km
Length of roads, streets, lanes, bye-lanes in the cit	y that need to b	e cleaned			513km
Frequency of street sweepings and percentage of population covered	frequency	Daily	Alternate	Twice a	Occasionally
	60% of population covered	1			

SEAT (A)

 Tools used		
Manual sweeping		100%
Mechanical sweeping		Nil
Whether long handle broom used by sanitation workers		Yes
Whether each sanitation worker is given handcart/tricycle for collection of waste		Yes
Whether handcart / tricycle is containerized		
Whether the collection tool synchronizes with collection/ waste storage containers utilized		Yes
		Yes
Secondary Waste Storage facilities		
No. and type of waste storage depots in the city/town		No.22 24.47 m <sup>3</sup>
Open waste storage sites		Nil
Masonry bins		Nil
Cement concrete cylinder bins		Nil
Dhalao/covered rooms/space Covered		127.44m3
metal/plastic containers Upto 1.1 m3		Nil
bins 2 to 5 m3 bins Above 5m3		22
		22 NA
Bin/ population ratio		IVA
ons population ratio		
Ward wise details of waste storage depots (attach)	Details	given in the annexed hard copy
: Ward No:		
Area:		
Population:		
No. of bins placed		
Total volume of bins placed		
Total storage capacity of waste storage facilities in cubic meters		24.47m3
Total waste actually stored at the waste storage depots daily		21.53m3
Give frequency of collection of waste from the	Frequency	No. of bins
depots		
Number of bins cleared		
	Daily	22
	Alternate day	
	Twice a week	

. .

		Once a week	
		Occasionally	
	Whether storage depots have facility for storage segregated waste in green, blue and black bins	No (if yes, add details)	
		No. of green bins:  No. of blue bins:	
		No. of black bins:	
	Whether lifting of solid waste from storage deposis manual or mechanical. Give percentage	ots	_
	(%) of Manual Lifting of solid waste	00%	
	(%) of Mechanical lifting		
_		100%	
	If mechanical - specify the method used	Top loaders	
	Whether solid waste is lifted from door to door	No	
	and transported to treatment plant directly in a segregated form	(if yes, specify)	
	Waste transportation per day	No. Trips made Waste transported	
	Type and Number of vehicles used		
	Animal cart		
	Tractors	13 4	
	Non tipping Truck	02 4	
	Tipping Truck	07 4	
	Dumper Placers	03	
	Refuse collectors		
	Compactors	03 1	
	Others.		
	JCB/loader	2 1	
	Frequency of transportation of waste	Frequency (%) of waste transported	
		Daily 100%	
		Alternate day	
		Twice a week	
		Once a week	
		Occasionally	
	Quantity of waste transported each day	135/tpd	
	Percentage of total waste transported daily	85%	
	Waste Treatment Technologies used		
_	Whather colid west-		
	Whether solid waste is processed	No	

	If yes, Quantity of waste processed daily	00/tpd
	Whether treatment is done by local body or through an agency	SWM cluster project under construction
_	Land(s) available with the local body for waste processing (in Hectares)	Nil
	Land currently utilized for waste processing	Nil
	Solid waste processing facilities in operation	Nil
	Solid waste processing facilities under construction	5353sq.m.
	Distance of processing facilities from city/town boundary	1km
	Details of technologies adopted	To be handled by state level agency/KMDA
	Composting,	Qty. raw material processed
		Qty. final product produced
		Qty. sold
		Quantity of residual waste landfilled
	Vermi composting	Qty. raw material processed
		Qty. final product produced
		Qty. sold
		Quantity of residual waste landfilled
	Bio-methanation	Qty. raw material processed
		Qty. final product produced
		Qty. sold
		Quantity of residual waste landfilled
	Refuse Derived Fuel	Qty. raw material processed
		Qty. final product produced
		Qty. sold
		Quantity of residual waste landfilled
	Waste to Energy technology	Qty. raw material processed
	such as incineration, gasification, pyrolysis or any	Qty. final product produced
	other technology ( give detail)	Qty. sold Quantity of residual waste landfilled
	Co-processing	Qty. raw material processed
		1 (1899 4227 0) (1846 ) (1848 0) (1846 )
	Combustible waste supplied to cement plant	NA
	Combustible waste supplied to solid waste based power plants	NA
(	Others	Qty.
-	Solid waste disposal facilities	

	No. of dumpsites sites available with the local body	Nil
	No. of sanitary landfill sites available with the local body	Nil
	Area of each such sites available for waste disposal	Nil
	Area of land currently used for waste disposal	Nil
-	Distance of dumpsite/landfill facility from city/town	1kms
_	Distance from the nearest habitation	1kms
	Distance from water body	0.2kms
	Distance from state/national highway	0.1kms
	Distance from Airport	3kms
	Distance from important religious places or historical monument	NA
	Whether it falls in flood prone area	No
	Whether it falls in earthquake fault line area	No
	Quantity of waste landfilled each day	NA
	Whether landfill site is fenced	Yes
	Whether Lighting facility is available on site	Included in the SWM cluster project
_	Whether Weigh bridge facility available	Included in the SWM cluster project
-	Vehicles and equipments used at landfill (specify)	Bulldozer, Compacters etc. available
	Manpower deployed at landfill site	NA
	Whether covering is done on daily basis	NA
	If not, Frequency of covering the waste deposited at the landfill	NA
	Cover material used	NA
	Whether adequate covering material is available	NA
	Provisions for gas venting provided	NA
	Provision for leachate collection	NA
	Whether an Action Plan has been prepared for improving solid waste management practices in	Cluster Project

10	What separate provisions are made for:	Cluster Project
	Dairy related activities:	
	Slaughter houses waste:	,
	C&D waste (construction debris):	
11	Details of Post Closure Plan	Cluster Project
12	How many slums are identified and whether these are provided with Solid Waste Management	145
	facilities :	
13	Give details of:  Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal or waste	1
14	Give details of:  Contractor/ concessionaire's manpower deployed for collection including street sweeping secondary storage, transportation, processing and disposal of waste	
15	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules	The basic problem lies with lack of technical knowhow and overall knowledge of handling the problem of waste management.
16	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies	None

Date:			
Comr	nis	sion	er/

Signature of CEO/Municipal

Place:

Executive Officer/chief Officer

South Dun Dun

# <u>Form - IV</u> [see rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body

CALENDAR YEAR:	DATE OF SUBMISSION OF REPORT:		
2018-19	26.04.2019		

1	Name of the City/Town and State	Kolkata, West Bengal
2	Population	403316 (Census-2011)
3	Area in sq. kilometers	17.25Sq.Km. (approx)
4	Name & Address of local body Telephone No. Fax No. E-mail:	South Dum Dum Municipality Dum Dum Road,Nager Bazar,Kol-74 033-25602357 sddm10@gmail.com
5	Name of officer in-charge dealing with solid waste management (SOLID WASTE M)  Phone No: Fax No: E-mail:	Ratan Gopal Das 9830706588 Debashis Dutta 9836552891
5	Number of households in the city/town Number of non-residential premises in the city Number of election/ administrative wards in the city/town	103741 35
7	Quantity of Solid waste (solid waste)	578 M.T
	Estimated Quantity of solid waste generated in the local body area per day in metric tones	578/tpd
	Quantity of solid waste collected per day	520/tpd
	Per capita waste collected per day	775/gm/day
	Quantity of solid waste processed	Under Construction
	Quantity of solid waste disposed at dumpsite/ landfill	520/tpd
В	Status of Solid Waste Management service	Under Construction

£13.	What separate provisions are made for a	Attach details on Proposals, Steps taken,
	Dairy related activities	Yes
	Slaughter nouses waste	YeeNo
	C&D waste (construction debris):	YeyNo
11	Details of Post Closure Plan	Attach Plan by KMDA
12	How many slums are identified and whether these are provided with Solid Waste Management facilities.	No (if Yes, attach details)
13	Cive details of: Local body's own manpower deployed for collection including street sweeping secondary storage, transportation, processing and disposal of waste	
1-1	Cive details of: Contractor concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	103
15	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules  (reneration of awareness regarding segregation of waste common people is very hard.	
16	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies	

Date:

Signature of CFO/Municipal Commissioner

Place.

Executive Officer/chief Officer

Schmilleri Petrolin Zolla Goda Executive Officer, South Dum Dum Municipality

Debashis Dutta Sanitary Inspector South Dum Dum Municipality





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[See rules 15(za),24(2)]

Format for annual report on Solid waste management to be submitted by ULB

CALENDAR	DATE OF SUBMMISSION REPORT: 26/03/2019
YEAR: 2018-2019	

1	Name of City/Town and State -	New Barrackpore, West Bengal
2	Population -	76,879
3	Area in sq. kilometers -	8.69 sq. k.m.
4	Name & Address of local body : -	New Barrackpore Municipality 112, Asutosh Mukherjee Road, Kol - 70013
	Telephone No. : -	033-2537-5408
	Fax No.:-	033-2537-1006
	E- mail : -	chnbrk@yahoo.com
5	Name of office-in-charge dealing with solid waste management (SOLID WASTEM) Phone No.:	Mr. Dhiraj Nandy (S.I.)
6	Number of house hold in the city:  Number of non-residential in the city:	16,725
	Number of election/ administrative wards in the city/town:	20
7	Quantity of solid waste	
	Estimated Quantity of solid waste generate in the local body area per day in metric tones :	29.06 m.t./day
	Quantity of solid waste collected per day	27.08 m.t./day

130	
13 E-11 1985	
恨人	
304	

		1
	Per capita waste collected per day	304
	Quantity of solid waste processed	Na
	Quantity of solid waste disposed at dumpsite/landfill	25.3 M.t./day
8	Status of Solid waste Management service	
	Segregation and storage of waste at source	
	Whether solid west is stored at source in domestic/commercial/institutional bins, if yes,	Yes
	Percentage of households practice storage of west at source in domestic bins	76%
	Percentage of non-residential premises practice storage of waste at source in commercial/institutional bins	81%
	Percentage of households disposed or throw solid waste on the streets	24%
		19%
	Percentage of non- residential premises disposed of throw solid waste on the street	Yes
	Whether solid waste in stored at source in a segregated form, if yes	%
	Percentage of premises segregating the waste at source	
	Door to door collection of solid waste	
	Whether door to door collection (D2D) of solid waste is being done in the city/town	Yes
	If yes	
	Number of wards covered in D2D collection of waste	20 Nos.
	No. of households covered	12900
	No. of non-residential premises including commercial establishments, Hotels, restaurants, educational institution / offices etc covered	2430
	Percentage of residential and non-residential premises covered in door to door collection through:	Hand trally
	Motorized vehicles	
e and a	Containerized tricycle/ handcart Other device	
9	If not, method of primary collection adopted	
	Sweeping of streets	yes
	Length of roads, streets, lanes, bye-lanes in the city that need to be cleaned	

Fs:1-198-

				-	1	11.6/5
The state of the s	Frequency of sweeping and percentage of population covered	frequency	dally	Alternate day	week	Occasionally
		% of				
	Por second	population				
		covered		Yes		
	Tools used					
	Manual sweeping	100%				
	Manual Sweeping	100%				
	Mechanical sweeping	NII				
	Whether long handle broom used by sanction	Yes				
	workers					
	Whether each sanitation worker is given					
	handcart/tricycle for collection of waste	Yes				
	Whether handcart/tricycle is containerized					
	Whether the collection tool synchronizes with	Yes				
	collection/ waste storage containers utilized					
	Secondary Waste storage facilities					
	No. of type of waste storage depots in the city/town	No. Com	-1	3		Д.
		No. Cap	acity in	m,		
	Open waste storage sites	Nil				
Auditorpromotives	Masonry bins					
	Compart community and the August I	Nil				
	Cement concrete cylinder bins	NU				
	Dhalao/covered rooms/space					
	Covered metal/plastic containers	200 Nos.	0.200M.L			
		19,660,637				
	Upto 1.1 m3 bins	11 Nos.	01 M.L			
	2 to 5 m3 bins	13 Nos.	04.5 M.L			
	Above 5m3 containers					
	ABOVE SHIP COHCAINELS	A commence of the commence of				
	Bin -less city					
	Bin/population ratio					
	Ward wise details of waste storage depots(attach):					
	Ward No.					
	ward No.	20				The state of the s
	Area:	Page no- 09				
	Population:	Page no- 10				
		1 age 00- 10				
	No. of bins placed	Ward No03,0	5,06,07,0	8,09,12,13,14,1	15,17,19	
	Total volume of bins placed	Page no- 11				



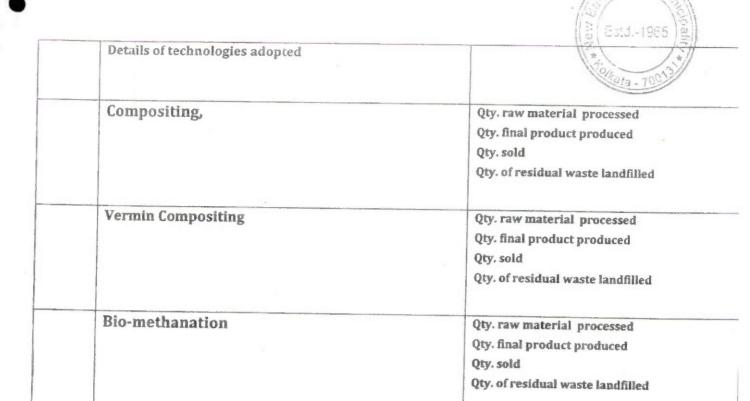
Total storage capacity of waste storage facilities in cubic meters		100 - 100
Total waste actually stored at the waste storage depots daily	27.8 M.t.	

	Give frequency of collection of waste from the Depots Number of bins cleared	Frequency	No. of bins
		Daily	09
		Alternet day	04
		Twice a week	
		Once a week	
		Occasionally	
	Whether storage depots have facility for storage of segregated waste in green, blue	Yes/No	
	and black bins	(if yes, add details)	
		No. of green bins	
		No. of blue bins:	
		No. of black bins :	
	Whether lifting of solid waste from storage depots is manual or mechanical, Give percentage		
	(%) of Manual Lifting of solid waste	60%	
	(%) of Mechanical lifting	40%	
	If Mechanical - specify the method used	Front - end loaders/ T	op loaders Hydraulic
	Whether solid waste is lifted from door to		
	door and transported to treatment plant directly in a segregation form	No	



			12/2//
Waste transportation per day Type and Number of vehicles used	No.	Trips made	Waste transporte
Animal Cart	NO		
Tractors	11 Nos.	02 trips	
Non tipping Truck	No		
Tipping Truck			
Dumper Placers	No		
Refuse collectors (Container with Hydraulic system)	No 4 Nos.	02 trips	
Compactor	01	01 trips	
Others			
JCB/loader	NIL		

	Frequency of transportation of waste	Frequency	(%) of waste transported
		Daily (Yes)	
		Alternet Day	
		Twice a week	
		Once a week	
		Occasionally	
	Quantity of waste transported each day	25.3/tpd	
	Percentage of total waste transported daily	93.47 %	
	Waste Treatment Technologies used	Na	
	Whether solid waste is processed	No	
	If yrs, Quantity of waste processed daily	/tpd	
	Whether Treatment in done by local body or through an agency		
	Land(s) available with the local body for waste processing (in Hectares)		
	Land currently utilized for waste processing		
7	Solid waste processing facilities in operation		
	Solid waste facilities under construction		
	Distance of processing facilities from city/town Boundary		



Refuse Derived Fuel	Qty. raw materials processed
	Qty. final product produced
	Qty. sold Quantity of residual waste landfilled
Waste to Energy technology	Qty. raw materials processed
Such as incineration, gasification, pyrolysis or any other	Qty. final product produced
technology (give detail)	Qty. sold Quantity of residual waste landfilled
 Co- processing	Qty. raw materials processed
 Combustible waste supplied to cement plant	
Combustible waste supplied to solid waste based power plants	
 Others	Qty.
Solid waste disposal facilities	
No. of dumpsites sites available with the local body	2
 No. of sanitary landfill sites available with the local body	2

	421
Area of each such sites available for waste disposal	100 to 100 1
Area of each such sites available for waste disposal	2
Distance of dump site/landfill facility from city/tow	n 27 kms.
Distance from nearest habitation	½ kms.
Distance from water body	½ kms.
Distance from state/national highway	Just beside
Distance from Airport	5 kms.
Distance from important religious places or historic monuments	al ½ kms.
Whether it falls in flood prone area	No
Whether it falls in earthquake fault line area	No
Quantity of waste landfilled each day	tpd
Whether landfill site is fenced	Yes
Whether lighting facility is available on site	Yes

Whether weigh bridge facility available	No
Vehicles and equipments used at landfill (specify)	Bulldozer, Compactor etc. available
Whether deployed at landfill site	No. 13 No. of deli rated labour
Whether covering is done on daily basis	Yes
If not, Frequency of covering the waste deposited at the landfill	No
Cover materials used	No
Whether adequate covering material is available	No
Provisions for gas venting provided	No
Provision for leachate collection	No
Whether an action plan has been prepared for improving solid waste management practices in the city	Yes/No

10	What separate provisions are made for:	Attach details on Proposals Steps taken
	Dairy related activities :	Yes
	Slaughter houses waste :	No
	C&D waste (construction)	No
l1	Details of Post Closure Plan	Attach Plan
12	How Many Slums are indentified and whether these are provided with Solid Waste Management facilities:	Page No 12
13	Give Details of:  Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of Waste	Yes, all labours are deployed by Municipal casual, Dali rated & Permanent.
14	Give Details of:  Contractor/ concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of Waste	No
15	Mention briefly, the difficulties being experienced by the local body in complying with provision of these rules	Nil
16	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies.	As per guidelines of SUDA

Date: 26/03/2019

Place: New Barrackpore

Signature of CEO/Municipal Commissioner

/ Executive Officer/Chief Officer

Executive Officer, New Barrackpore Municipality



# Ward wise area

Ward No.	Area (in Sq. K.m.)
01	0.233 Sq. Km.
02	0.237 Sq. Km.
03	0.194 Sq. Km.
04	0.271 Sq. Km.
05	0.258 Sq. Km.
05	0.381 Sq. Km.
07	0.537 Sq. Km.
08	0.348 Sq. Km.
09	0.342 Sq. Km.
10	0.339 Sq. Km.
11	0.320 Sq. Km.
12	0.224 Sq. Km.
13	0.211 Sq. Km.
14	0.248 Sq. Km.
15	0.481 Sq. Km.
16	0.367 Sq. Km.
17	0.244 Sq. Km.
18	0.479 Sq. Km.
19	0.404 Sq. Km.
20	0.772 Sq. Km.
Total:	8.690 Sq. Km.

# Current population of each ward & Current Number of House Holds - Ward wise

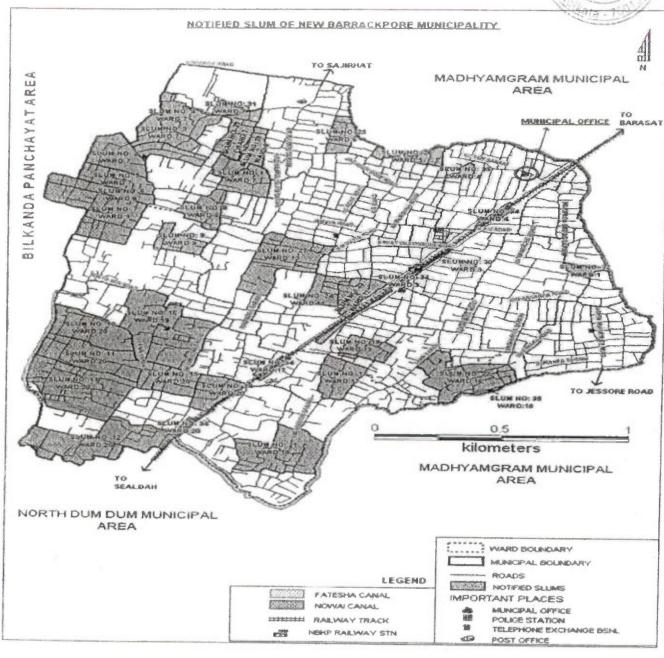
Ward	No of House hold a	s Population as census
No.	census 2011	2011
01	647	2597
02	631	2428
03	829	3538
04	643	2407
05	921	3609
06	945	3608
07	2124	8453
08	1217	4561
09	1354	5530
10	872	3539
11	888	3446
12	354	1309
13	518	2202
14	520	1993
15	820	3168
16	1078	4333
17	873	3671
18	1182	4550
19	1073	4360
20	1802	7577
Total-		76,879



# Total garbage out put (ward wise) present status

Ward No.	Garbage out put present status
01	1.01 MT.
02	0.17 MT.
03	1.02MT.
04	0.9MT.
05	1.18MT.
05	1.6MT.
07	1.4MT.
08	1.2MT.
09	2.1MT.
10	1.6MT.
11	2.03 MT.
12	3.1 MT.
13	2.9 MT.
14	0.18 MT.
15	1.2 MT.
16	1.14 MT.
17	1.01 MT.
18	1.3 MT.
19	1.83 MT.
20	2.19 MT.
Total:	29.06 MT.





74)200/19

Date:

Place: New Barrackpore

Signature of CEO/Municipal Commissioner/ Executive Officer/Chief Officer

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# Office of the Municipal Councillors Kamarhati

[Address:-1, M. M. Feeder Road, Rathtala, Belgharia, North 24 Parganas, Kolkata-700056] Ph:-033-2564-9580, 033-2564-8646, Fax:-(033) 2564-1361.

Email: kamarhati municipality@rediffmail.com

Ref. No:

Date: 02.04.2019

To
The Chairman
West Bengal Pollution Control Board
Paribesh Bhawan
Kolkata- 700098

Sub:- Annual report of Kamarhati Municipality for the year 2018-2019 (April- 2018-March-2019) under Municipal Solid waste (Management & Handling) Rules, 2016.

Sir,

As per rule we are sending the annual report format filled up for Kamarhati Municipality. Please find attached document.

Thanking You,

Executive Officer

Kamarhati Municipality

Executive Officer

Kamarhati Municipality

### Form-IV [See rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body

CALENDAR YEAR	DATE OF SUBMISSION OF REPORT	
2018-2019	02.04.2019	

1	Name of the City Co.	
1	Name of the City/Town and State	Kolkata, West Bengal
2	Population	3,31,163
3	Area in sq. kilometers	10.90 sq. km.
4	Name & Address of the local body Telephone No. Fax No. E-mail:	Kamarhati Municipality 2564-9580/8646 (033) 2564-1361   2544-3900 kamarhati_municipality@rediffmail.com
	E-man:	kamanan_munupanty@reuinnan.com
5	Name of officer in-charge dealing with solid waste management(SOLID WASTEM) Phone No.: Fax No.: E-mail:	Partha Sarathi Bhattacharyya 033-25648646 (033) 2564-1361 t 2544-3900 kamarhati_municipality@rediffmail.com
	Number of households in the city/town  Number of non-residential premises in the city  Number of election/administrative wards in the city/town	80,000 (approx) 35
	Quantity of solid waste (solid waste)	
	Estimated quantity of solid waste generated in the local body area per day in metric tones	/tpd 150-160/tpd
	Quantity of solid waste collected per day	/tpd 135-144/tpd
	Per capita waste collected per year	/gm/day 407/gm/day
	Quantity of solid waste processed	/tpd 0
	Quantity of solid waste disposed at dumpsite/landfill	/tpd 108- 115/tpd
	Status of Solid Waste Management service	
	Segregation and storage of waste at source Whether SOLID WASTE is stored at source in	No

domestic/commercial/institutional bins, if yes,					
Percentage of households practice storage of waste at source in domestic bins	Yes/No		No		
Percentage3 of non-residential premises practice storage	&		0%		
of waste at source in commercial/institutional bins Percentage of household dispose or throw solid waste	9/0		0%		
on the streets	%		809	1/0	
Percentage3 of non-residential premises dispose or throw	%		20%	6	
solid waste on the streets Whether SOLID WASTE is stored at source in	Yes/No		No		
segregated form. If yes, Percentage of premises se4gregating the waste at	%		0%		
Door to Door collection of solid waste					
Whether door to door collection (D2D) is being done in the city/town	Yes/No	V	'es		
If Yes		3	65		
Number of wards covered in D2D collection of waste			28		
No. of households covered		54	.000		
No. of non-residential premises including commercial establishments, hotels, restaurants, educational institutions/off ices etc. covered			500		
Percentage of residential and non-residential premises covered in door to door collection through:	%		0%		
Motorized vehicle Containerized tricycle/handcart	%		00%		
Other device If not, method of primary collection adopted	76		0%		
a not, method of primary collection adopted					
Sweeping of streets			Yes		
Length of roads, streets, lanes, bye-lens in the city that need to be cleaned	Km	-	15 Km		
Frequency of street sweepings and percentage of population covered	Frequency	Daily	Alternate Days	Twice a week	Occasionally
	% of 80% population covered				3/Week

Tools used Manual sweeping		
Mechanical sweeping	%	100%
Whether long handle broom used by sanitation workers	%	0%
Whether each sanitation worker is given handcart/tricycle for collection of waste	Yes/No	Yes
Whether handcart/tricycle is containerized	Yes/No	Yes
Whether the collection tool synchronizes with	Yes/No	Yes
collection/waste storage containers utilized	Yes/No	Yes
Secondary Waste Storage facilities		
No. and type of waste storage depots in the city/town  Open waste storage sites  Masonary bins  Cement concrete cylinder bins  Dhalao/covered rooms/space  Covered metals/plastic containers  Upto 1.1 m3 bins  2 to 5 m3 bins  Above 5 m3 containers  Bin-less city	No. Capacity 140 30.58 m 0 10 127 .4 m	3 each
Bin/population ratio	0.00021137	7627
Ward wise details of waste storage depots (attach)  Ward No.:  Area:  Population:  Number of bins placed:  Total volume of bins placed:	Attached	
Total storage capacity of waste storage facilities in cubic Meters	5555.2 mcub	е
Total waste actually stored at the waste storage depots Daily	5555.2 mcube	
Give frequency of collection of waste from the depots Number of bins cleared	Frequency	No. of bins
	Daily	140
	Alternate Day	
	Twice a week	

	Once a week
	Occasionally
Whether storage depots have facility for storage of segregated waste in green, blue and black bins	Yes/No No (if yes, add details) No. of green bids: No. of blue bids: No. of black bids:
Whether lifting of solid waste from storage depots in manual of mechanical. Give percentage (%) of Manual Lifting of solid waste (%) of Mechanical lifting	(%) 80% (%) 20%
If mechanical- specify the method used	Front-end loaders/Top loaders
Whether lifted from door to door and transported to treatment plant directly in a segregated from	Yes/No {if yes, specify) No
Waste transportation per day Type and Number of vehicles used	No. trips made waste Transported
Animal Cart Tractors Non tipping Truck Tipping Truck Dumper Placers Compactors Refuse collectors others (Lorry) JCB/Loader	16 3-4 trips/day 80-9070 of total waste transported 2 (Movable) 1 (Stationary) 17
Frequency of transportation of waste	Frequency (%) of waste transported Daily 80-85% Alternate day Twice a week Once a week Occasionally
Quantity of waste transported each day	/tpd 108 tpd
Percentage of total waste transported daily	% 80%
Waste Treatment Technologies used	No

Whether solid waste processed daily	Yes/No
If yes, Quantity of waste processed daily	/tpd
Whether treatment is done by local body or through an agency	No
Land(s) available with the local body for waste processing (in Hectares	Not Available
Land currently utilized for waste processing	Nil
Solid waste processing facilities in operation	Nil
Solid waste processing facilities under construction	Nil
Distance of processing facilities from city/town boundary	
Details of technologies adopted	NA
Composting,	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste land filled
Vermi composting	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste land filled
Bio-methanation	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste land filled
Refuse Derived Fuel	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste land filled
Waste to Energy technology Such as incineration, gasification, pyrolysis or any other technology (give detail)	Qty. raw material processed Qty. final product produced Qty. sold Quantity of residual waste land filled
Co-processing	Qty. raw material processed
Combustible waste supplied to cement plant	No
Combustible waste supplied to solid waste based power plants	No

Other	Qty	
Solid waste disposal facilities		
No. of dumpsites available with the local body	1	
No. of sanitary landfill sites available with the local body	0	
Area of the as such site available for waste disposal sites	7Acre	
Distance of dumpsite/landfill facility from city/town	Kms	1 km
Distance from the nearest habitation	Kms	0 km
Distance from water body	Kms	0 km
Distance from state/national highway	Kms	1.5km
Distance from airport	Kms	6km
Distance from important religious place or historical monuments	Kms	3km
Whether it falls in flood prone area	Yes/No	No
Whether it falls in earthquake fault line area	Yes/No	No
Quantity of waste landfill each day	Tpd	116
Whether landfill site is fenced	Yes/No	Yes
Whether landfill facility is available on site	Yes/No	Yes
Whether Weigh bridge facility available	Yes/No	Yes
Vehicles and equipments used at landfill (specify)	Bulldozers, con	npacters available yes
Man power deployed at landfill site	Yes/No	J-1-11 3 AE
Whether covering is done on daily basis	If Yes, (attach of Yes/No	details) No No
If not, frequency of covering the waste deposited at		No
Cover material used		No
Whether adequate covering material is available	Yes/No	
Provisions for gas venting provided	Yes/No	No
Provisions for leachate collection	Yes/No	echnical data sheet) No
Whether an action plan has been prepared for mproving solid waste management practices in the city	Yes/No Action pla	echnical data sheet) No in to be prepared by MED echnical data sheet)
What separate provisions are made for:	Attach details o	n proposal, steps taken

10	Dairy related activities Slaughter houses waste C&D waste (construction debris):	Yes/No No Yes/No No Yes/No No
11	Details of Post closure Plan	Attach plan
12	How many stums are landfill and whether these are provided with solid waste management facilities:	Yes/No 139 yes (If yes, attach details)
13	Give details of: Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing & disposal waste	165 - Collection 140 - street Sweeping 70 ~ Storage 74 - Transportation, Processing & Disposal
14	Give details of  Contractor/concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing & disposal of waste	115 deployed by contractor
15	Mention briefly, the difficulties being experienced by the local body in compliance with provisions of these rules	
16	Mention briefly, if any innovative idea is implemented to tackle a problem to solid waste, which could be replicated by other local bodies	

Signature of CEO/Municipal Commissioner/
Executive Officer/Chief Officer
Executive Officer
Kamarhati Municipality

Date:

Place: Kamarhati

m

### [see rules 15(za), 24(2)]

Format for annual report on solid waste management to be submitted by the local body



CAĻENDAR YEAR:	DATE OF SUBMISSION OF REPORT:
2018-19	29.03.2019

	2010 17			
1	Name of the C	Tity/Town and State	Baranagar	
)	Population		202617	
	. 0)/3/4/10/1		2,92,637	
	Area in sq. kil	ometers	7.12 Sq.KM	
	Name & Addr l'elephone No. Fax No. E-mail:	ess of local body	Baranagar Municipality 033-2577-6595/0012 2577-1071 Purosabha_baranagar@yahoo.co	
	Name of office Phone No: Fax No: E-mail:	er in-charge dealing with solid waste management (SOLID WASTE M)	Arnab Dutta 9903006960 arnabdutta12b@gmail.com	
	Number of non	residential premises in the city tion/ administrative wards in the city/town	8462 54 34	
	Quantity of Sol	id waste (solid waste)	145 MT/Day	
	Estimated Quar	ntity of solid waste generated in the local body area per day in metric tones	145	
	Quantity of soli	d waste collected per day	130/tpd	
	Per capita waste	collected per day	.500/gm/day	
	Quantity of soli	d waste processed	0/tpd	
	Quantity of soli	d waste disposed at dumpsite/ landfill	130/tpd	
-	Status of Solid	Waste Management service	Regular	
	Whether SOLID yes,	storage of waste at source  WASTE is stored at source in domestic/commercial/ institutional bins, If	Yes	
	Percentage of ho	buseholds practice storage of waste at source in domestic bins	38%	
	Percentage of no /institutional bin	on-residential premises practice storage of waste at source in commercial s	15%	
	Percentage of he	buseholds dispose or throw solid waste on the streets	2%	
	Percentage of no	on-residential premises dispose of throw solid waste on the streets	3%	
	Whether solid w	aste is stored at source in a segregated form, If yes,	Yes	
	Percentage of pro	emises segregating the waste at source	30%	
	Door to Door Co	llection of solid waste	100%	

RNAB DUTTA Sanitary Inspector anagar Municipality

KARTYCK KR. JANA Sanitary Inspector Baranagar Municipality

	Whether door to door galles on (D2D) of solid of	masic is being to	one in the c	rity sown		Yes	_
	if yes						
	Number of wards covered in D21) collection of v	vaste				34	
	No. of households covered					63347	
	No. of the state o					77.077	
	No. of non-residential premises including comme educational institutions/ offices etc covered	rcial establishn	nents ,hotel	s, restauran	its	54	
	Percentage of residential and non-residential prenthrough:	nises covered in	door to do	or collection	n		
	Motorized vehicle					5%	
-	Containerized tricycle/handcart					95%	
	Other device						
	If not, method of primary collection adopted					0%	
						Ü	
	Sweeping of streets					Daily	-
	Length of roads, streets, lanes, bye-lanes in the cit	y that need to b	e cleaned			677 km	
	Frequency of street sweepings and percentage of population covered	frequency	Daily	Alternate	Twice a	Occasionally	
				days	week		
		% of population covered	80%	5%	0%	15%	
	Tools used			ļ			
	Manual sweeping				85%		
	Mechanical sweeping				15%		
	Whether long handle broom used by sanitation workers				Yes		
	Whether each sanitation worker is given handcart/tricycle for collection of waste				Yes		
	Whether handcart / tricycle is containerized				Yes		
	Whether the collection tool synchronizes with collection/ waste storage containers utilized				No		
	Secondary Waste Storage facilities	E			Yes		
	No. and type of waste storage depots in the city/town			No.	Capacity in	m³	
	Open waste storage sites				42		
	Masonry bins				30		
	Cement concrete cylinder bins				NO		
	Dhalao/covered rooms/space Covered				3		
	metal/plastic containers Upto 1.1 m3				NIL		
	bins 2 to 5 m3 bins Above 5m3						
_	containers Bin-less city						

RNAB DUTTA Sanitary Inspector ransgar Municipality KARTIEK KR. JANA
Sanitary Inspector
Baranager Municipality

Bins population ratio		10
Ward wise details of waste storage depots (attack): Ward No:	uh)	List Enclosed
Area:		List Enclosed
Population:		
No. of bins placed		
Total volume of bins placed		
Fotal storage capacity of waste storage facilities cubic meters	s in	List Enclosed
Total waste actually stored at the waste storage depots daily		130 tpd
Give frequency of collection of waste from the depots  Number of bins cleared	Frequency	No. of bins
	Daily	500
	Alternate day	0
	Twice a week	0
	Once a week	0
	Occasionally	0
Whether storage depots have facility for storage segregated waste in green, blue and black bins	of	(if yes, add details)
		No. of green bins:250
		No. of blue bins:250
		No. of black bins:
		NO. OF DIRCK BINS;
Whether lifting of solid waste from storage depois manual or mechanical. Give percentage	ots	
(%) of Manual Lifting of solid waste		30%
(%) of Mechanical lifting		70%
If mechanical - specify the method used		Compactor, Pay Loader, Tipper
Whether solid waste is lifted from door to door and transported to treatment plant directly in a segregated form		No (if yes, specify)
Waste transportation per day		130 tpd waste
Type and Number of vehicles used	Transported: Compa	actor -7, Hire Lorry-8 Tractor-10

RNAB DUTTA
Sanitary Inspector
aranag. ....cipality

Mono

Anin	ial cart	O		
Tract	ors	10 20		
Non	tipping Truck			
Tippi	ng Truck			
Dum	per Placers	.1		
Refus	se collectors			
Comp	pactors	7 7		
Other	S .			
JCB/I	oader	1		
Frequency of tr	ansportation of waste	Frequency	(%) of waste transported	
		Daily	95%	
		Alternate day	5%	
		Twice a week		
		Once a week		
		Occasionally		
Quantity of was	te transported each day		130/tpd	
			130/100	
Percentage of to	tal waste transported daily		90%	
Waste Treatmen	t Technologies used		Composting and	Bio-gas
Whether solid wa	aste is processed		Plant under cons	truction
If yes, Quantity of	of waste processed daily		0/tpd	
Whether treatment is done by local body or			KMDA	
through an agenc	У			
Land(s) available	with the local body for waste		21 Acres	
processing (in He	ectares)	Under Construction  NO  Yes		
Land currently ut	ilized for waste processing			
Solid waste proce	essing facilities in operation			
0.111				
Solid waste proce	ssing facilities under			
Distance of proces	ssing facilities from city/town		3KM	
boundary	S		3 K.M	
Details of technological	ogies adopted		With KMD/	Δ
			** 3 kil 4 6 (** £ 2) 3	
Composting,		Qty. raw material p	rocessed	
		Qty. final product p	roduced	Under Construction
		Qty. sold		Coaci Construction
		Quantity of residual	waste landfilled	
Vermi composting		Qty. raw material pr	rocessed	
1		Qty. final product p	roduced	NIL
			4	
	1.6	Qty. sold		IAIT

NAB DUTTA initary inspector inagar Municipality KARTICK KR. JANA
Sanitary Inspector
Baranagar Municipality

Bio-methacetica	Qts. rust material processed	
	Qty. final product produced	
	Qty. sold	Under Construction
	Quantity of residual waste landfilled	
Refuse Derived Fuel	Qty. raw material processed	
	Qty. final product produced	Hadaa Caasaa ah
	Qty. sold	Under Construction
	Quantity of residual waste landfilled	
Waste to Energy technology	Qty. raw material processed	
such as incineration, gasification, pyrolysis or any	Qty. final product produced	NA
other technology ( give detail)	Qty. sold Quantity of residual waste landfilled	
Co-processing	Qty, raw material processed	NA
Combustible waste supplied to cement plant		NA
Combustible waste supplied to solid waste based power plants		NA
	Qty.	NA
Solid waste disposal facilities	YES	
No. of dumpsites sites available with the local body	1	
No. of sanitary landfill sites available with the local body	I (Under Construction	n)
Area of each such sites available for waste disposal	0	
Area of land currently used for waste disposal	21 Acres	
Distance of dumpsite/landfill facility from city/town	3 kms	
Distance from the nearest habitation	0.5 kms	
Distance from water body	0.5 kms	
Distance from state/national highway	.500 mtr	
Distance from Airport	4 kms	
Distance from important religious places or historical monument	3kms	
Whether it falls in flood prone area	No -	
Whether it falls in earthquake fault line area	No	
Quantity of waste landfilled each day	0 tpd (Under Construction	on)
Whether landfill site is fenced	Yes	

RNAB DUTTA ianitary inspector anagar Municipality

	Whether Weigh bridge theility available	No.
	Vehicles and equipments used at landfill (specify	Bulldozer, Compacters etc. available Yes
	Enpower deployed at landfill site	Yes
		(if yes, attach details) 6
	Whether covering is done on daily basis	Yes
	If not. Frequency of covering the waste deposited at the landfill	0
	Cover material used	Tarpaulin
	Whether adequate covering material is available	Yes
	Provisions for gas venting provided	Under Construction KMDA
		(if yes, attach technical data sheet)
	Provision for leachate collection	No
		(if yes, attach technical data sheet)
,	Whether an Action Plan has been prepared for improving solid waste management practices in the city	No (if Yes attach Action Plan details)
()	What separate provisions are made for :	Attach details on Proposals, Steps taken.
	Dairy related activities:	No
	Slaughter houses waste :	No
	C&D waste (construction debris):	40
ī	Details of Post Closure Plan	NO
2	How many slums are identified and whether these	No. 3
	are provided with Solid Waste Management	(if Yes, attach details) 1. Raja Bagan Basti, 2. P & T Basti & 3. Chini Kuthi Lir
	facilities:	Basti
3	Give details of:	1100
	Local body's own manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	YES
\$	Give details of: Contractor/ concessionaire's manpower deployed for collection including street sweeping, secondary storage, transportation, processing and disposal of waste	
š	Mention briefly, the difficulties being experienced by the local body in complying with provisions of these rules	Shortage of Man Power
,	Mention briefly, if any innovative idea is implemented to tackle a problem related to solid waste, which could be replicated by other local bodies	

KARTICK KR. JANA Sanitary Inspector Baranagar Menicipality

ate: 29.03.2019

ARNAB DUTTA
Sanitary Inspector
Municipality

ace: Baranagar Municipality Baranagar Municipality

Signature Executive Officer

Executive Offices
Baranagar Municipality

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ARNAB DUTTA Sanitary Inspector

KARTICK KR. JANA Sanitary inspector Sanitary inspector

### POPULATION & HOUSEHOLD DATA 2016-2017 BARANAGAR MUNICIPALITY

Ward	EB	Level	Name	TRU	No HH	TOT P
0000	000000	TOWN	Baranagar	Urban	64750	2.92.637
0001	000000	WARD	Daranagar	Urban	3814	15907
0002	000000	WARD	Baranagar	Urban	1078	6365
0003	000000	WARD	Baranagar	Urban	2679	11860
0004	000000	WARD	Baranagar	Urban	1755	8079
0005	000000	WARD	Baranagar	Urban	1607	7537
0006	000000	WARD	Baranagar	Urban	1723	9520
0007	000000	WARD	Baranagar	Urban	1455	7539
0008	000000	WARD	Baranagar	Urban	1731	8180
0009	000000	WARD	Baranagar	Urban	2305	10425
0010	000000	WARD	Baranagar	Urban	1408	6800
0011	000000	WARD	Baranagar	Urban	1297	5778
0012	000000	WARD	Baranagar	Urban	1340	6273
0013	000000	WARD	Baranagar	Urban	2252	9389
0014	000000	WARD	Baranagar	Urban	1896	8272
0015	000000	WARD	Baranagar	Urban	1148	5712
0016	000000	WARD	Baranagar	Urban	2915	11043
0017	000000	WARD	Baranagar	Urban	2603	10956
0018	000000	WARD	Baranagar	Urban	2311	10521
0019	000000	WARD	Baranagar	Urban	2853	12423
0020	000000	WARD	Baranagar	Urban	2831	11876
0021	000000	WARD	Baranagar	Urban	2703	11741
0022	000000	WARD	Baranagar	Urban	1782	9339
0023	000000	WARD	Baranagar	Urban	1914	9216
0024	000000	WARD	Baranagar	Urban	1299	5863
0025	000000	WARD	Baranagar	Urban	1541	7208
0026	000000	WARD	Baranagar	Urban	2030	8800
0027	000000	WARD	Baranagar	Urban	1624	7117
0028	000000	WARD	Baranagar	Urban	1879	8129
0029	000000	WARD	Baranagar	Urban	1451	6528
0030	000000	WARD	Вагападаг	Urban	1311	6238
0031	000000	WARD	Baranagar	Urban	1617	7227
0032	000000	WARD	Вагападаг	Urban	2068	8896
0033	000000	WARD	Baranagar	Urban	1487	6781
0034	000000	WARD	Baranagar	Urban	1043	5099

ARIVAB DUTTO.
Ashibity Inspector
Accordage Municipality

Jugara

KARTICK KR. JANA Senitery tespector Beranagar discharge by

# Minutes of the Meeting held with ULBs which have been selected to implement SWM through Cluster Approach

under Mission Nirmal Bangla (Urban)/Swachh Bharat Mission (Urban)

Date: 24th April 2019

Time: 12:00 noon

Venue: Conference Hall of the

**ILGUS** 

List of the Members and other Participants Present: Annexed

The meeting focused on Solid Waste Management activities to be undertaken immediately at ULB level taking inti consideration the primary initiative suggested by Transaction Advisor in its Inception Report. ULB wise assessment of vehicle/ equipment and fund requirement alongwith other pertinent issues was also discussed. Following are the decisions taken in the meeting.

- ULBs have been requested to form Task Forces who will be mainly accountable for implementation of SWM, if not yet been done and to share this information with SUDA
- Since Ernst & Young, Transaction Advisor has been entrusted with assisting the ULBs for planning of scientific disposal of solid waste and Bid Process Management for selection of Developers and Operators, so all necessary assistance may kindly be provided including field survey and sharing of data
- Since as per SWM Rule [ Clause 15(b) of SWM Rule2016] door to door collection of
  solid wastes from all household including slums and other informal settlements,
  commercial, institutions and other non residential premises is to be collected as a
  mandatory part, so ULBs like Kamarhati, New Barrackpore and Champdani has to
  ensure 100% door to door waste collection
- Since as per SWM Rule [ Clause 15(q) of SWM Rule2016] segregation of waste by households into Biodegradable (green bins), non bio degradable (blue bins) and domestic hazardous (black pouch of thickness more than 50 microns is mandatory, so all those ULBs not complying with mandates are to comply with.
- Some ULBs viz Habra has devised their IEC Plan, that needs to be shared with SUDA.
   Others too should devise the same and share with SUDA so that a model action plan on IEC can be developed. Fund will be allocated to the ULBs based on their IEC action plan.
- Best practices on collection of segregated wastes as is being operational in some ULBs viz Baidyabati & Uttarpara Kotrang, North Dum Dum be shared with SUDA through proper documentation so that it can be replicated in other ULBs as well
- Assessment of vehicles and other equipments taking into consideration of the present availability are to be done and requirement, if any, that needs to be procured should be placed to SUDA specifying the number and type.

- Vehicles need to be customized to the extent that the segregated wastes can be transported in segregated manner. The model as devised by the North Dum Dum Municipality may be followed by other ULBs, if found suitable
- Database of Rag Pickers are to be devised with particulars viz name, address, age, identity documents, whether been covered by any Central or State schemes etc. ULBs will submit this report to SUDA within 15<sup>th</sup> May 2019.
- Database of Bulk Waste Generators are to be prepared, if not yet been done as
  following Clause 4 (6 & 7) of SWM Rule 2016 it is obligatory on the part of Bulk
  Generators to dispose off scientifically of wastes produced by them in situ. ULBs will
  submit this report to SUDA within 10<sup>th</sup> May 2019.
- Database of Registered Clubs or NGOs who may play a significant role in IEC activities in SWM are to be prepared for taking their support in further. ULBs will submit this report to SUDA within 15<sup>th</sup> May 2019.
- ULB wise plan to be chalked out by the Task Force to ensure community participation in the programme involving local Educational Institutions, NGOs, SHGs, Health worker, Industries Associations, Co-operatives etc.
- Some good photographs depicting best practices are to be shared with SUDA by the ULBs within 10<sup>th</sup> May 2019.
- ULB wise Plan of Action on above indicators is required to be submitted to SUDA positively by 10.05.2019.

State Urban Development Agency

Attendance Sheet for:

Meeting with EY on SWM and Action Plan of the ULBs

Date: 24.04.2019

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Attendance Sheet for:

Meeting with EY on SWM and Action Plan of the ULBs

Date: 24.04.2019

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# রাজ্য নগর উন্নয়ন সংস্থা STATE URBAN DEVELOPMENT AGENCY



'হেলগাস ভবন'', এইচ-সি ব্লক, সেক্টর-৩, বিধাননগর, কলকাতা-৭০০ ১০৬, পশ্চিমবঙ্গ "ILGUS BHAVAN", H-C Block, Sector - III, Bidhannagar, Kolkata - 700 106, West Bengal

ক্রমিক নং SUDA - 366 /2019/3436

जातिच 24 4 2019

# **Inception Report Approval**

To,

Abhaya Krishna Agrawal,
Partner, Ernst & Young LLP
Email: Abhaya.Agarwal@nic.ey.com

Dear Mr. Agrawal,

With respect to the inception report submitted by your office on 19<sup>th</sup> April 2019 for **Cluster-I**, the department accords approval on the report. You are now requested to initiate the work for Feasibility Report at the earliest and ensure its submission as per timelines mentioned in contract.

Approved's Name: Debarati Datta Gupta

Designation : Director

Organisation : State Urban Development Agency

Approver's Sign :

Date : 24.04.2019

Tel: 2358 6403/5767, Fax: 2358 5800, E-mail: wbsudadir@gmail.com

Account Section: 2358 6408

Attendance Sheet for:

# Meeting with EY on SWM and Action Plan of the ULBs

Date: 24.04.2019

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Meeting with EY on SWM and Action Plan of the ULBs

Date: 24.04.2019

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Meeting with EY on SWM and Action Plan of the ULBs

Date: 24.04.2019

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Director SUDA <sbm,wbsuda@gmail.com>

### Submission of Inception report for Clusters 1, 3 and 4

1 message

Puneet Babbar <Puneet.Babbar@in.ey.com>

Fri, Apr 19, 2019 at 4:33 PM

To: "sbm.wbsuda@gmail.com" <sbm.wbsuda@gmail.com>

Cc: "debaratidattagupta@gmail.com" <debaratidattagupta@gmail.com>, "amitavadas209@gmail.com" <amitavadas209@gmail.com>, "santanu.mkj@gmail.com" <santanu.mkj@gmail.com>, "sujay.mitra@gmail.com" <chaitalibiswas3@gmail.com>

Ref:

- 1. LoA No. SUDA-227/2018/1898 dt. 12.02.2019
- 2. Contract Signed on dt. 9.04.2019 for Cluster 1,3&4

Respected Madam.

This has reference to the contract signing done on 9 April 2019 between SUDA and EY for providing Transaction Advisory services for Cluster 1,3 & 4. In this context and as per the directions from Principal Secretary, UD&MA, GoWB regarding the timelines for delivery, we are hereby forwarding our first deliverable, i.e. Inception Reports for all the clusters assigned to us.

The broad purpose of these 'Inception Reports' is to set out EY's approach to the project that has been drafted for State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal in relation to the engagement 'Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process for Cluster 1, 3 and 4. This Inception Report has been prepared by EY in consultation in accordance with the engagement guidelines to establish a clear and mutual understanding between State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and EY related to:

- Project Background
- Scope of Work for EY
- Current Situation and SWM Status
- Our Approach & Methodology
- Work Plan and Deliverables
- **Engagement Team**
- Conclusion

This inception report will act as a blueprint of the program and will ensure a clear and common understanding between EY, State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and the respective urban local bodies.

Warm regards,



### Puneet Babbar | Associate Vice President | Transaction Advisory Services | Government & Public Sector

Ernst & Young LLP

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### 3 attachments









# **INCEPTION REPORT**

Transaction Advisory services for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators

Cluster 1

### Submitted to

State Urban Development Agency (SUDA)
Urban Development & Municipal Affairs Department (UD&MA)
Government of West Bengal

19th April 2019





This Inception Report (the "Report) has been prepared by Ernst & Young LLP ("EY") for the State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal, ("Client" or "you") for the contract of 'Transaction Advisory services for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators for Cluster 1 municipalities: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore' ("Project" or "Assignment") vide agreement dated 09.04.2019.

In the preparation of this Report, we have relied upon primary and secondary research and information provided by the Client wherever applicable. We have taken due care to validate the authenticity and correctness of sources used to obtain the information. However, neither we nor any of our respective partners, officers, employees, consultants or agents, provide any representations or warranties, expressed or implied, as to the authenticity, accuracy or completeness of the information, data or opinions that third parties or secondary sources provided to us.

The information and images (if any) provided or analyzed in the Report have been collated from various industry sources, including web resources, public-domain information sources and our internal databases. We have ensured reasonable care to validate the data presented in the Report. It is also to be noted that the images presented (if any) are only pictorial representations of the overall concept and are in no way intended to represent any concrete imagery.

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References to us in the Report relate to our advice, recommendations and analysis and do not indicate that we take any responsibility for the information concerned or are assembling or associating ourselves with any financial information, including prospective financial information.

This Report has been prepared for your internal use, on your specific instructions, solely for the purpose of the project and must not be used or relied upon for any other purpose. This Report is strictly confidential, and no part thereof may be reproduced or used by any other party other than you, except as otherwise agreed between you and us. If you are permitted to disclose a report (or a portion thereof), you shall not alter, edit or modify it from the form we provided.

This Report is intended solely for the information and use of the State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and is not intended to be and should not be used by anyone other than the specified parties. Ernst & Young LLP therefore assumes no responsibility to any user of the report other than State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal. Any other persons who choose to rely on our report do so entirely at their own risk.

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#### 1 Introduction

The purpose of this Inception report for the Project - Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore', is to set out a clear strategy and way forward for the implementation of this assignment and to specify various activities and actions, timings and outputs of the specific tasks for the project. This inception report delineates the purpose and objectives, approach and methodology, project team, key stakeholders and the detailed work plan for the project.

State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal had issued a tender, RFP no. SUDA - SUDA - 227/2018/1760 dated 18.01.2019 for 'APPOINTMENT OF TRANSACTION ADVISOR for Assisting the State Government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore'. Ernst and Young LLP ('EY') was selected to provide consultancy services to State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal.

The proposed project aims to improve the existing waste management system of cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati and New Barrackpore in particular by understanding the gaps in the infrastructure, technical capability, financial muscle and managerial competence of the cluster-1 as a whole and each ULB's. The proposed project will identify key intervention areas along the solid waste management value chain. The outcome of the project is to propose a sustainable solid waste management by leveraging the current system followed by municipal bodies involved. The objective of engaging Ernst and Young LLP ('EY') as a Transaction Advisor for assisting the state government for Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process Management for selection of Developers & Operators will be discussed in approach and methodology.

To accomplish a sustainable and strong solid waste management, the Municipal Solid Waste Rule 2000 has provided valuable guidelines to Urban Local Bodies for collection, segregation, storage, transportation, processing and disposal of municipal solid waste. However, the dynamic nature of urban growth has also given rise to challenges which were not manifest earlier. This has prompted the announcement of the Solid Waste Management Ruled 2016, to cater to the enlarged scope of challenges, including catering to urban conglomerations and census towns, making source segregation of waste mandatory, specifying responsibilities of bulk waste generators, Central Ministries, State Government and Urban Local Bodies.

The service level benchmarks of solid waste management defined by Ministry of Urban development, Government of India for improving urban services are:

- Household level coverage of SWM services
- Efficiency of collection of municipal solid waste
- Extent of segregation of municipal solid waste
- Extent of municipal solid waste recovered
- Extent of scientific disposal of municipal solid waste
- Extent of cost recovery in SWM services
- Efficiency in redressal of customer complaints
- Efficiency in collection of SWM-related user charges

#### 2 Purpose of this document

The broad purpose of the 'Inception Report' is to set out EY's approach to the project that has been drafted for State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal in relation to the engagement 'Planning of Scientific Solid Waste Management through Cluster Approach and Bid Process for Cluster 1: Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore'. This Inception Report has been prepared by EY in consultation with State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and the respective urban local bodies of Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore, and in accordance with the engagement guidelines to establish a clear and mutual understanding between State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and EY related to:

- Project Background
- Scope of Work for EY
- Current Situation
- Approach, Methodology
- Work Plan
- Engagement Team
- Conclusion

This inception report will act as a blueprint of the program and will ensure a clear and common understanding between EY, State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal and the respective urban local bodies of Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, New Barrackpore.

#### 3 Project Overview

#### 3.1 Project Background

Government of West Bengal has taken several steps/ initiatives for making all the cities Clean, Green and Beautiful with special emphasis on management of Solid Wastes in Municipal Towns of the State. One of the obligatory functions of the Municipal Bodies is to remove solid waste from the cities under Sections 63, 95B, 260, 273 of the West Bengal Municipal Act, 1993 and corresponding provisions of the statute governing Municipal Corporations in West Bengal.

In the light of importance given to scientific collection and disposal of solid waste, a large number of legislations and guidelines have been issued by different authorities from time to time. Some of these are:

#### Regulatory Roadmap of SWM:

#### GOVT, OF INDIA

- Solid Waste Management Rules, 2016
- Hazardous Waste Management Rules, 2016
- Biomedical Waste Management Rules, 2016.
- Plastics Waste Management Rules 2016
- E- waste (Management and Handling) Rules, 2016
- Plastic waste (Management and Handling) Rules, 2016
- Construction & Demolition Waste Management Rules, 2016
- Guideline of Ministry of Housing & Urban Affairs, Gol on Implementation of SWM by Bulk Solid Waste Generators
- Swachh Bharat Mission, Gol

#### GOVT. OF WEST BENGAL

- Policy and Strategy on Solid Waste Management for Urban Areas of West Bengal 2017
- Policy and Strategy on Plastics Waste Management for Urban Areas of West Bengal 2017
- Amendment of the West Bengal Municipal Act for banning using plastic bags below 50 microns.
- State Government Order to all the ULBs to regularly remove Solid Wastes from all the Hospitals in their jurisdiction and accordingly make special arrangement for Hospital Solid Waste removal.
- State Government declaration of Green Zone from Airport to NABANNA area

#### Mandates on Solid Waste Management suggested by Hon'ble NGT to Govt. of West Bengal on 10.04.2019

#### 1) Door to Door Collection [Rule 15 (b) SWM Rule]

Door to door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other nonresidential premises. Transportation in covered vehicles to processing or disposal facilities

#### 2) Source Segregation [Rule 15 (g) SWM Rule]

Segregation of waste by households into Biodegradable (green bins), non-biodegradable (blue bins) and domestic hazardous (black pouch of thickness more than 50 micron). As per directions of State level committee on SWM Rule 2016 vide no Z-16025/6/2018 dated 21.01.2019, all the reginal monitoring committee and State/UT/ULBs is to follow the two bin system for storage of waste and separate storage for domestic hazardous waste.

#### 3) Provision for Litter Bins & Waste Storage Bins [Rule 15 (h) SWM Rule]

Installation of Twin-bin/ Segregated litter bins in commercial, public areas and strategic locations at every 50-100 meters

Avoid indiscriminate dumping in important location like river bank, roadside, near institutions, health care centers etc.

#### 4) Transfer Stations

Installation of Transfer Stations instead of secondary storage bins in cities (mandatory for population above 5 lakhs)

#### 5) Separate Transportation [Rule 15 (q and r) SWM Rule]

- Compartmentalization of Vehicles (for biodegradable and non-biodegradable) for the collection of different fractions of waste
- Use of GPS in collection and transportation vehicles to be made mandatory at least in cities with population above 5 lakhs along with the publication of route map.

#### 6) Public Sweeping [Rule 15 (n) SWM Rule]

All public and commercial areas to have twice daily sweeping, including night sweeping and residential areas to have daily sweeping

#### 7) Waste Processing (Wet Waste, Dry Waste, MRF Facility) [Rule 15 (h and v) SWM Rule]

- Separate space for segregation, storage, decentralized processing of solid waste to be demarcated
- Establishing systems for home/decentralized and centralized composting/ generation of bio gas
- Arrangements for Material Recovery Facilities (separation of recyclable material like PET bottle, soft drink can etc.)
- Establishment of Refuse-derived fuel (RDF) plants/ waste to energy plants

#### 8) Scientific Landfill [Rule 15 (w) of SWM Rule]

Setting up common or regional sanitary landfills by all local bodies for the disposal of permitted waste under the rules

#### 9) Systems for the treatment of legacy waste to be established. Bulk Waste Generators (BWGs) [Rule 4 (6 and 7) of SWM Rule]

Bulk waste generators (having an average waste generation rate exceeding 100kg per day) to set up decentralized waste processing facilities as per SWM Rules, 2016

#### 10) Preventing Solid Waste from entering into Water Bodies [Rule 4 (2) of SWM Rule]

Installation of suitable mechanisms such as screen mesh, grill, nets, etc. in water bodies such as nallahs, drains, to arrest solid waste from entering into water bodies

#### 11) User Fee [Rule 4 (3) of SWM Rule]

All Waste Generators shall pay user fee for solid waste management, as will be determined by the bye-laws of the local bodies

#### 12) Penalty Provision [Rule 15 (zf) of SWM Rule]

Impose / levy of spot fine for persons who litters or fails to comply with the provisions of these rules/ relevant act

#### 13) Notification of Bye Laws [Rule 15 (e) of SWM Rule]

Frame bye-laws incorporating the provisions of MSW Rules, 2016 and ensuring timely implementation

#### 14) C&D Waste (Rule 6(4) & 6(5) of C&D WM Rules)

Ensure separate storage, collection and transportation of construction and demolition wastes

#### 15) Plastic Waste (Rule 4(c) PWM Rules)

Implementation of ban on plastics below less than 50 microns thickness and single use plastic

#### 16) Citizen Grievance Redressal

Establish an effective grievance redressal mechanism for this purpose

#### 17) Monitoring Mechanism

ULBs to update month wise targets/action plans on the online format to the UD&MA dept.

The monthly progress report format to be communicated soon

The local body shall submit annual report on solid waste management in Form-IV as specified in Solid Waste Management Rule, 2016 to WBPCB and UD&MA department before 15 April each year

A number of initiatives has been taken by the Government of West Bengal through UD&MA Department to ensure the effective solid waste collection and disposal by municipal bodies. Under Mission Nirmal Bangla, the garbage bins, compactors, hydraulic tippers and other vehicles, community bins have been provided to Municipal Bodies to encourage and assist them in managing the municipal solid waste in systematic manner. The municipalities have also put in their best efforts to manage the municipal solid waste. However, in spite of the best intentions, the technical, managerial and financial capacity have to be analyzed for a significant improvement of the situation.

EY, through its unique capabilities and expertise in work performed with government all over India, particularly in solid waste management, will work as an advisor to State Urban Development Authority (SUDA), Urban Development and Municipal Affairs, Government of West Bengal. We will develop a firm & sustainable waste management system in West Bengal by leveraging global expertise and sharing our experience from national waste management assignments. While developing, we will ensure the waste management system comply with the directions given by The National Green Tribunal, achieves the service level benchmarks.

#### <u>Directions on non-compliance of Municipal Solid Waste Management Rules in the State of West</u> Bengal by The National <u>Green Tribunal Principal Bench, New Delhi on 02.04.2019</u>

- 1. To submit compliance report on sanitation and public health.
- 2. The State should enforce and implement the Solid Waste Management Rules, 2016 in all respects and without any further delay.
- 3. The authorities (The Chief Secretaries/Advisers of States/UTs by the Registry of the Tribunal) are directed to take immediate steps to comply with all the directions contained in this judgment and submit a report of compliance to the Tribunal.
- 4. Preparation of State Action Plan in terms of SWM Rule,2016 with timelines and budgetary support/ provision
- 5. The States should have Monitoring Committees headed by the Secretary, Urban Dévelopment Department with the Secretary of Environment Department as Members and CPCB and State Pollution Control Boards (SPCBs) assisting the Committees.
- 6. Regular interaction and reporting with State level Monitoring Committee (SLMC)
- 7. Preparation for Performance Audit by MoHUA, CPHEEO to be conducted for 500 ULBs with population of 1 lakh and above initially.
- 8. Best Practice Compliance:
  - Setting up of Control Room where citizen upload photos of garbage (Both at ULB and State level)
  - b) Installation of CCTV Camera at Compost center, Garbage clinic, Waste processing site/ Dump site
  - c) GPS enabled monitoring system in Garbage collection Van
  - d) Waste management information should be available on Public domain(Website) of ULBs
- 9. To prepare time bound action plans and execute the same so as to restore water and air quality
- 10. The Collectors were to have monthly meetings, as per Rule 12 and submit reports to State Urban Development Departments, with a copy to State Level Committees.
- 11. At least three major cities and as many major towns as possible in the State and at least three Panchayats in every District may be notified on the website within two weeks from today as model cities/towns/villages which will be made fully compliant within next six months.
- 12. The remaining cities, towns and Village Panchayats of the State may be made fully compliant in respect of environmental norms within one year.

#### 3.2 Scope of Work for EY

#### 3.2.1 Detailed survey and data collection

The initial survey/ testing broadly consists of the following components:

- 1) Detailed physical and chemical analysis of solid waste in the project area
- 2) Topographical and geo-technical surveys at the proposed site for processing facility
- In case of existing dumpsite, additional waste quality check of legacy waste and air/ ground water sampling.

The Base line data is used to assess the quality & composition of waste, area available for processing & dumping waste and dumpsites situation in the project area. This can help determine adequate collection, transportation, processing, and disposal option that could be adopted.

#### 3.2.2 Preparation of TFR for Sustainable Solid Waste Management

Project feasibility study includes detailed feasibility analysis on existing/ proposed cluster by considering the technical, economical, operational, legal, organizational, environmental and social constraints to propose a viable design for a firm and sustainable solid waste management system in the existing cluster/proposed cluster.

The analysis identifies identifies feasible solution or method or technology for door to door collection, primary/secondary transportation, requirement of transfer stations (if any), processing facility and disposal of inert along with detailed cost breakups to assess the fund requirement.

The analysis details the procedure and findings of risk assessment. This allows us to formulate a suitable risk allocation framework which further formulates a practicable PPP structure.

The study evaluates the projects potential for success, determines whether the resources meet the capacity and capable of converting the ideas into working system. It unravels the positive economic benefits contributed by the project to society.

#### 3.2.3 Drafting of Bid Documents

The formulated PPP structure requires a private developer to perform the necessary activities in association with the authority. The eligible private player is selected through competitive bidding. EY will interact with various prospective bidders and understand the market situation and expectation of the bidders to understand the expected quotation and market. EY will assist the authority in preparation of bid documents (RFP/RFQ/EOI), singing of concession agreement. The bid document (RFP/RFQ/EOI) will detail out the process of bid preparation including bid parameters, bid submission, evaluation methodology and terms of engagement.

#### 3.2.4 Assisting SWM Cell in Bid Process Management

EY will assist the authority in selecting a PPP partner for each identified projects through following steps:

- Project Marketing
- Issuance of Advertisement & Bid Documents
- Pre-bid Conference
- Submission of Proposals
- Evaluation of Proposals
- Negotiation & Selection of private player

#### 3.2.5 Drafting of Tripartite Agreement

EY will assist the authority in preparing the draft Tripartite agreement between Municipal Bodies in the Cluster and concession agreement with the lead ULB, SWM Cell of the Department and the Selected Agency. The agreement is prepared to govern authority's relationship with selected developer during the construction and operation phase. EY will incorporate safeguards against non-performance by the selected developer into the contractual arrangement for the project.

#### 3.3 Current Situation

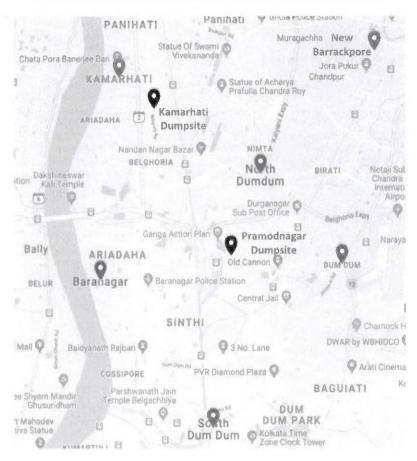
#### 3.3.1 Description of the ULBs

Cluster - 1 consists of 6 ULBs - Dum Dum, North Dum Dum, South Dum Dum, Baranagar, Kamarhati, and New Barrackpore.

The cluster has 2 Dumpsites: the first one is Pramodnagar dumpsite which is spread over an area of 21 acres and located in the jurisdiction of South Dum Dum; the second one is located in Kamarhati jurisdiction which is spread over 7 acres.

Name of the ULB	Area (Sq.Km)	No. of Wards	No. of Households	Population
Dum Dum	9.73	22	37691	114786
North Dum Dum	20	34	64471	249142
South Dum Dum	17.25	35	103000	403000
Baranagar	7.12	34	63387	245213
Kamarhati	10.9	35	80000	331163
New Barrackpore	8.69	20	16725	76879

Cluster-1 ULBs and Dumpsites under their jurisdiction



## 3.3.2 Status of SWM

New Barrackpore	15.6 MT	No, 85%	Yes	06	Tricycle, Tractor, Iron Container	Compactor	No	Manual, Weekly	Ö
Kamarhati	100 MT	No, 85%	No	80%	Tri Cycle Van	Trailer, Tractor, Compactor , Battery operated covered toto etc.	Not given	Manual (Twice in a week)	No, but in the year 2011 the Municipality had engaged an agency for vermi composting project but the project was not viable
Baranagar	145 TPD	Yes	Yes (partial)	95	Handcart-9CFT(150), Tri Cycle -Van (150)	Hydraulic Tipper-I TON (3), Hire Lorry-3 TON (8), TractorTailor-1.5 TON (10), Compactor- I4cmt(4), 8 cmt (3), Stationary Compactor-10 cmt	Yes	Yes, Daily	°Z
South Dum Dum	698 MT	Yes	No	A.Z	Tricycle van/ E- Rickshaw/ Hand trolly	Tractor/Lorry/Du mper/ Hook lander	o <sub>N</sub>	Manual (Daily)	O <sub>N</sub>
North Dum Dum	150 TPD	Yes	Yes, Partially (20%)	100	Trycycle van/ Mototype tipper	Container, Compactor (Movable & Stationary)	Yes	Manual (Daily/Weekly)	No (Cluster project under construction)
Dum Dum	62.1 MT	Yes	No	100	Battery operated Tippers and Tricycle Vans	Mobile Compactors 14 CUM(2) & 8 CUM (1)	°N	Manual	No, but the project is being implemented by KMDA
Name of the ULB	Solid Waste generated (Approx. quantity)	100% Household level coverage	Household level Segregation	Collection Efficiency	Type of vehicles used for Primary collection	Type of vehicles used for Secondary collection	Whether collection vehicle are partitioned	Status of road sweeping	Processing Facility

# Private & Confidential

New Barrackpore	ON.	Yes	1.3 Crores	No	ODF	Yes	www.nbmonline.o
Kamarhati	Yes Pramodnagar	No.	4.1 Crores	No	ODF	Not given	NO
Baranagar	Yes Pramodnagar	ON.	1.35 lakh per Month	O Z	ODF	Yes, Fine is being imposed on use of plastic below 50 micron Rs. 20 on end user Rs. 100 for seller & Charges for transportation of C &D Waste Rs. 450/- per trip of tailor.	Public grievences redressal app "Amar Sahor Parichhana Sahor at 8 ULBs but due to lac of publicity, hardly any feedback received.
South Dum Dum	Yes Pramodnagar	Not given	2 crores per month including salaries	O.	ODF	Yes	Yes, WhatsApp number
North Dum Dum	Yes Pramodnagar	No (trained manpower is required)	Not given	Collected only for commercial houses	ODF	Yes, has strictly enforced ban on plastic poly bags below 50 MICRON	O N
Dum Dum	Yes Pramodnagar	O.Z.	2.3 crores	N <sub>O</sub>	ODF by QCI	Yes, Plastic below 50 microns is abandoned	Common Grievance system SWM including in it
Name of the ULB	Land identifies for waste processing plant	ULB has adequate man power	Cost incurred by ULB on existing SWM system	user charges has been notified	Status of ODF	Waste bye-laws are in place	Any citizen grievance redressal

#### 4 Approach and Methodology

#### 4.1 Overall Approach and Methodology

This section details the approach and methodology that shall be adopted during the course of this assignment. The exhibit below outlines our overall approach towards transaction advisory to be implemented in the execution of this project. The following diagram gives an overview of the different modules. The information in the diagram is described in detail in the respective modules.

Contract Signing Stakeholder's Meet (ULB) Site Visits and visit to ULBs Basic Data Collection Characterization and Quantification of MSW MSW Service Delivery Regulatory Compliance Financial Situation of ULBs Current State Assessment with GAP analysis and Cluster Analysis Gap Analysis Identify ULBs with and without MSW treatment facilities For Existing facilities: New Land Identification: Land Sufficiency of existing systems Availability and Viability Preliminary Cluster Treatment Facility Coverage Information

### Interventions for Cluster based ISWM plan

#### Cluster Formation/Revision

Identify areas for improvement and interventions across value chain

Feasibility analysis of interventions and Finalization the interventions

Identification of roles & responsibilities of each ULB in cluster

Facilitate discussions between ULBs within cluster

Develop implantation plan: resource acquisition, staffing, milestones, meetings

Financial Assessment Project Structuring and Bid Process Management

#### PPP structuring and Financial Feasibility Analysis

#### **Procurement Options**

Risk Identification and Allocation

Selection of Private Player

Preparation of Bid Documents

**Bid Process Management** 

#### 4.2 Module I - Kick Off

EY conducted project kick off meeting as well as contract signing on 9<sup>th</sup> April 2019, which covered all operational issues of allocation of work space, deployment of team and developing a responsibility framework for each resource person for both Consultant and client side.

EY also had a stakeholder meeting with all the respective ULB officials. A brief explanation about the project, EY's approach towards it and reforms expected at the end of the execution of the project were discussed in the meeting. A primary questionnaire was presented and explained in the meeting which shall collect the basic information of all the ULBs. A detailed assessment of the data obtained is explained in the earlier section of the inception report. Timeline of the project was also discussed in the meeting. The stakeholder discussion shall facilitate building consensus among the various stakeholders regarding the objectives of the engagement and to arrive at common expectations as to the desired outcomes.

### 4.3 Module II - Site Surveys: Topographical and Geotechnical

In order to develop a cluster based Solid Waste Management plan for West Bengal, this Module will focus on the current waste management scenario in the state. Comparison of this scenario with standardized benchmarks is essential to identify the gaps in the existing practices and understand the risks and opportunities in this sector. To achieve this objective following aspects would be assessed in this module:

#### 4.3.1 Characterization and Quantification of MSW

Characterization and quantification of MSW provides basic data on which the management system is planned, designed and operated. Knowledge of quantity of waste generated will help in making future projections of waste generation in West Bengal and selection of appropriate technology for waste treatment and disposal.

The key objective of this section is to quantify and develop a reliable state wide waste inventory. This would be achieved by understanding the quantity of the waste generated from ULBs. Based on the Solid Waste Management Rules 2016, the type of the waste considered -

- Wood or wood products (furniture, chairs, etc.)
- Pulp, paper and cardboard
- Food, food waste and beverages
- Textiles
- Garden, yard & park waste (leaves, tree branches, etc.)
- Construction & demolition debris (concrete, scrap, glass, etc.)
- Plastic
- E-waste
- Industrial waste (Non-hazardous)
- Bio-medical wastes
- Carcass wastes
- Others

With the help of the ULBs EY will collate basic information on -

- Population data and distribution for each ULB
- Area v/s. population summary for each ULB
- Domestic sector waste data (No. of households; Qty. of Waste generated per ULB; Overall Waste generated)

Industrial sector waste data (No. of industries in each ULB; Qty. of Waste generated per ULB; Overall Waste generated)

EY will conduct interviews and surveys to fill the gaps on best effort basis.

Also regarding the various laboratory tests and surveys, following steps shall be followed:

The initial survey/ testing broadly consists of the following components:

- 1) Detailed physical and chemical analysis of solid waste in the project area
- 2) Topographical and geo-technical surveys at the proposed site for processing facility
- 3) In case of existing dumpsite, additional waste quality check of legacy waste and air/ ground water sampling.

#### 1 Segregation

- For all wastes collected by the ULBs, EY will review information with ULB sanitary officer, if segregation is undertaken at household level or not. Based on segregation records, EY will confirm if biomedical and other hazardous wastes are segregated and sent to authorized recyclers or not.
- 2. For every waste stream that is processed, EY will tabulate following information on best effort basis
  - a. Primary composition, physical features and quantity of waste stream
  - b. Treatment methodology involved
  - c. Capital & operating expenditure for treatment
  - d. Output of processing (tonnage) and its fate
  - e. If the end-product is sold, identify and note its quality parameters, potential buyers, and sale price
- Based on the data captured on tonnage of recovered material and collection efficiency EY
  would evaluate the profitability indicators for the treatment technology (IRR, NPV, and
  DSCR). Standard industrial assumptions will be applied as & where necessary.
- 4. EY will compare the tonnage of recovered materials to the likely waste composition, to estimate segregation efficiency (tonnage)

#### II Treatment

- Wherever composting is undertaken, periodic reports of compost quality from NABL certified laboratory tests for pH, C/N ratio, Arsenic, Cadmium, total Chromium, Copper, Lead, Mercury, Nickel and Zinc need to be reviewed and their compliance with MSW Rules 2016 shall be confirmed. Also ambient air quality monitoring data in down-wind direction needs to be reviewed.
- 6. Further, for leachate generated, review NABL certified test certificates of disposed leachate for TSS, TDS, pH, ammonical nitrogen, total Kjeldah nitrogen, BOD, COD, Arsenic, Mercury, Lead, Cadmium, total Chromium, Copper, Zinc, Nickel, Cyanide, Chloride, Fluoride and phenolic compounds. Request information on mode of disposal (inland surface water/ public sewers/ land disposal) and verify compliance to MSW Rules 2016.
- 7. Wherever *incineration* is undertaken request & verify periodic reports from NABL certified laboratory tests for stack composition (%CO, %CO<sub>2</sub>, SPM, NOx, HCl), and VOC content in ash. Additionally, review necessary documentation to confirm stack height is at least 30 m.

#### III Landfill

8. EY will assess the extent to which landfilling is undertaken for the waste generated and check the compliance of such landfills with MSW Rules 2016. EY will identify the reasons for opting for landfilling over other waste treatment methods. By doing so, identify barriers associated with the implementation of these other methods. We also shall look for management options for legacy waste Data on groundwater monitoring within 50 m of landfill site for three seasons (summer, monsoon and post-monsoon) needs to be reviewd. The parameters that would be verified for compliance with MSW Rules 2016 are Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Nitrates, pH, Hardness (CaCO<sub>3</sub>), Chlorides, TDS, phenolic compounds, Zinc, and Sulphates. Such analysis should have been conducted by an NABL certified laboratory.

#### 4.3.2 MSW Service Delivery

To assess the gap in infrastructure (what type of infrastructure is planned/budgeted for/constructed/commissioned/operational) in each ULB, EY will do the analysis based on the framework given below. To gather infrastructure specific data EY will review data available from ULB officials and will conduct site visits to selected ULB to fill the gaps on best effort basis.

Callaction	ransfer Station Tr	ansport	Treatment	Sanitary Landfill
Quantity of segregated and non-segregated i.e. mixed waste (i.e. generation rate) % of the household waste collected collection transport with separate chambers for dry & wet waste	Adequacy of available transfer station Duration for which waste is kept in transfer station Infrastructure available (covered/ open) Planned dispersion of such stations across the ULB Compactors (moving and stationary)	Type of vehicle available No. of transport available Separate collection of dry & wet waste Kms travelled by the truck per day/month Quantity of fuel used by the truck per day/month.	<ul> <li>No of treatment facility</li> <li>Type of treatment facility</li> <li>Waste characterization (inlet/outlet)</li> <li>Capacity utilized</li> <li>Distance to the transfer station</li> </ul>	Total no. of landfills Capacity of landfill Area & height of available landfill % of waste going to landfill Total No. & adequacy of leachate treatment facility Distance to the transfer station

#### 4.3.3 Regulatory Compliance

EY will assess the level of compliance with respect to Municipal Solid Waste Rules, 2016 and enforcement & impact of national and state level regulations and economic tools. EY shall also look at the guidelines issued by NGT (National Green Tribunal) with respect to solid waste management. This will include collection, transfer, treatment, disposal as per MSW rules 2016 & financial recovery in line with MoUD guidelines. F critical operational parameters with benchmarks mandated in MSW Rules, 2016.

### 4.4 Module III - Current State Assessment with GAP analysis and Cluster Analysis

#### 4.4.1 Financial situation of ULBs

With a view of identifying how the finances of MSW operations are managed by ULBs, following data would be collected and reviewed for each of ULBs over the last five years:

- Capital expenditure in solid waste management
- Operational expenditure in solid waste management
- Sources and quantification of funds for capital expenditure

- Sources and quantification of revenue for meeting operational expenditure
- Extent of bill raised vis-à-vis solid waste management services rendered, bills raised and cost recovered, inter alia, operating ratio
- Extent of cross subsidization of solid waste management services by other services provided by the ULB

#### 4.4.2 Gap Analysis

Based on the information collected in the preceding sections of this module (4.2.1 -4.2.4), EY will realise the KPIs and evaluate the SWM practice against MoUD Service Level benchmark and MSW rules 2016- to identify gaps in practices & areas of opportunities. The indicative outcome is shown below:

Key Performance Indicator	Benchmark	ULB 1	ULB 2	ULB 3	ULB 4	ULB 5	ULB 	ULB 6
Household level coverage of SWM services through door-to-door collection of waste	100%							
Collection efficiency (%)	100%							
Extent of segregation (%)	100%			USTRA	TIVE	7		
Extent of recovery of waste collected (%)	80%		ILL					
Extent of scientific disposal of waste in landfill sites (%)	100%							
Extent of Cost recovery for the ULB in SWM services (%)	100%							
Efficiency in collection of SWM Charges (%)	90%							

EY will also tabulate the gaps for each ULB as below which will help in identifying sector involvement and areas requiring new intervention.

	Collection	Transportation	Treatment	Disposal	Management of Legacy Waste
ULB 1					
ULB 2					
ULB 3					
ULB 4		,c	TRATIVE		
ULB 5		ILLUS			
ULB 6					
:					
ULB 7					





#### 4.5 Module IV: Interventions for Cluster based SWM plan

#### 4.5.1 Cluster Revision:

The key objective of this Module is to detail the methodology proposed to be used to determine whether already identified clusters are suitable for efficient solid waste management or shall they be revised? The cluster-based ISWM plans will be specific to the needs of the cluster, and the individual ULBs. Following are the steps used to determine whether clustering shall be revised or not.

#### Step 1: Identify gap in waste treatment capacity

In order to identify the gap in the existing waste treatment the following step-wise process will be followed for each ULB;

#### Identify ULB specific current waste generated (A);

Information from Module 1 & 2 will be used to identify the current waste generation in the domestic, commercial and industrial sectors at each ULB.

#### Identify ULB specific future waste generation ( $\Delta A$ );

The projections for waste generation for the next 30 years will be estimated using projection models for each sector.

Since the waste generated by the domestic and commercial sectors may be attributed to the same population, domestic and commercial solid waste generated will be clubbed together when estimating future MSW generation. Population growth will be the factor used to develop the future waste generation scenarios for both sectors. Either of the following population models may be used to determine future domestic and commercial waste generated:

- a. Arithmetic Increase Method:
- b. Geometrical Increase Method or Geometrical Progression Method
- c. Incremental Increase Method
- d. Logarithmic Curve Method

#### Identify existing treatment capacity in ULB (B)

To identify existing treatment facilities, information from the Module 1 & 2 regarding existing plants will be used. All existing treatment plants (active, stalled, planned or under construction) will be considered to estimate the existing MSW treatment capacity in the State.

#### Identify unutilized land around existing treatment capacity, and the waste treatment potential of the free land (C)

To identify the availability of unutilized land around the existing treatment plant, primary data will be obtained from the Client. The waste treatment potential of this unutilized land will be calculated using typical values for the quantity of waste (TPD) that can be treated per acre. These values will be based on information regarding standard MSW treatment plants.

#### Calculating the gap

The gap in in waste treatment facilities (current and future) per ULB will then be calculated using the following formula;

MSW treatment gap = 
$$(A + \Delta A) - (B + C)$$

This value considers the existing and potential MSW treatment capacity and estimates the amount of remaining untreated waste. Negative values will indicate sufficient facilities for treatment of all current and potential MSW generation, this information will allow us to assess the existing scenario, identify clusters for the ISWM projects, and also identify the minimum land requirement for the development of treatment facilities.

#### 4.5.2 Identify areas for improvement and interventions across value chain

Areas for improvement at the cluster level will be identified using the following method;

- 1. Group together the identified 'gaps' for each ULB within cluster. Information regarding the gaps will be taken from Module 1, 2 & 3 of the Inception report.
- 2. Cluster level 'gaps' will be identified by choosing the gaps that are more commonly observed among the ULBs within a cluster. These 'gaps' will be identified based on the frequency with which they appear in the ULBs within the cluster, as illustrated in the following diagram;

			Gap Identifie	ol .	
ULB	Collection	Transfer	Transport	Treatment	Disposa
1	X		WE	/ 13	
2		Х	LUSTRATIVE	X	Χ
3	X		ISTA	X	
4	X		10		Х
5	1/		Х	X	

The gaps identified will be sent to the Client to identify the focus areas for improvement in each cluster. Up to 2 gaps for a specific aspect of the value chain (collection, transportation, treatment and disposal) will be finalized.

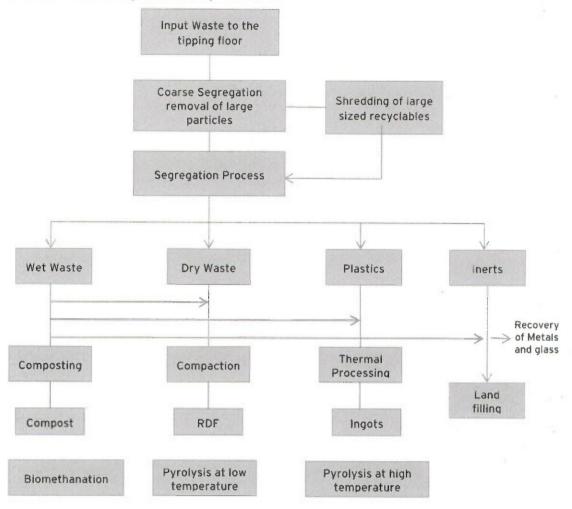
#### Client Responsibility:

- a. Provide input in deciding the cluster-level 'gaps'
- b. Suggest any alternative or additional areas to focus on, or that must be improved upon (based on any targets the Client has separately set)

#### Interventions for SWM Plan

Interventions addressing all areas of improvement identified will be collated through secondary research. The research will be used to identify interventions across the Collection, Transportation &

Transfer and to identify specific technologies across Treatment and Disposal. Typical process flow at an Solid Waste Management facility is as follows:



Suitable technologies for each cluster based ISWM facility will be identified on quantity of waste generated and needs assessment for each cluster.

#### 4.5.3 Feasibility analysis of interventions and Finalization the interventions

The following step-wise approach will be adopted to identify the feasibility of each intervention, and the roles & responsibilities of each ULB for the finalization of the cluster-based Solid Waste Management Plans.

#### Step 1: Feasibility Analysis

A feasibility analysis of any intervention may be undertaken using the following methodology;

- Human Resources: this includes man power required for the intervention. This may include
  the number of workers, the skill level of these workers and any training or capacity building
  for the workers. The salary, incentives and pay packages are also estimated under this human
  resources.
- Materials: this covers the cost of implementing the intervention. This estimate could
  additionally include the costs associated with the human resources required for each
  intervention, and the tipping fee to be charged by the private service provider.

- 3. <u>Financial Assessment</u>: the assessment would include the identification of existing financial resources such as budgetary allocation & investment (private or government) and would identify alternate sources of investment or funding, if required.
- Feasibility of each intervention is evaluated by identifying the gap that may exist between available human resources, materials and financial scenarios and the needs of each intervention.

#### Client Responsibility

a. Individual ULBs to determine the extent of service (only Treatment & Disposal or across the whole value chain)

#### Step 2: Determining ULB roles and responsibilities.

The roles and responsibilities of each ULB within a cluster will be based on the annualized long-term average daily waste to be generated by that particular ULB. To this effect, Memorandum of Understanding (MOU) between ULBs of a cluster will be drafted to outline the roles and responsibilities of each ULB. In addition, separate agreements between the ULBs and the private operator will be drafted.

#### Client Responsibility:

a. Facilitate and ensure the signing of MOUs by each ULB.

#### Step 3: Drafting cluster-based ISWM Plan

After the signing of the MOUs, the implementation plan will be compiled. The implementation plan for each cluster will include;

- a. Areas for improvement within a cluster
- b. Interventions to be implemented
- c. Targets and milestones based on the current scenario and expected outcomes of the interventions
- d. Staffing requirements and organizational structure
- e. Material resource requirements and costing
- f. Areas where CDM benefits may be obtained, and a framework on obtaining CDM benefits

#### Client Responsibility:

b. Review Draft cluster-based ISWM Plans and provide inputs for the same.

### 4.6 Module V: Financial Assessment, Project Structuring and Bid Process Management

A preliminary selection of the projects to be undertaken for each of the cluster would be done during preparation of the master plan for the state and technology selection for each of the clusters for solid waste management in West Bengal. Within this phase, PPP structuring of the projects and transaction design will be detailed followed by preparation of bid documents and complete bid process management. The detailed scope of work for the phase 2 of the assignment is detailed hereafter.

#### 4.6.1 PPP Structuring and Financial Feasibility Analysis

The PPP structure for all the components for the project is detailed in this stage. Detailed feasibility studies need to be conducted for the subsequent preparation of bid documents. This would involve intensive discussion and close consultation with the Client and other key stakeholders to ensure that successful bidding out of the project.

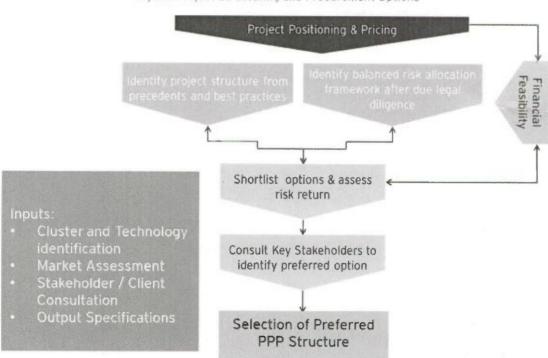


Figure: Project Structuring and Procurement Options

#### Financial Feasibility Study

EY would prepare financial models considering the revenue forecasts and the capital cost to be incurred on the projects identified for the given cluster. Additionally, assessment of different forms of revenue generating potential of the Project, conducting financial projections, and subsequently recommending the most feasible solutions would be done.

INPUT **ANALYSIS** OUTPUT Scenario analysis Capital costs Cash flows Operation & maintenance Project feasibility Viability of the **FINANCIAL Analysis** MODELING **Project** Equity & debt structure Profit & loss/ Other revenue streams **Balance** sheet Asset schedule

Figure: Financial Feasibility Methodology

Key inputs proposed to be used during Financial Viability analysis would be:

- Preparation of Fixed Assets Schedule, and calculation of Depreciation as per applicable rates;
- Preparation of Operating Cash Flows;
- Calculation of Salvage value/Residual value after the project life;
- Calculation of Financial Internal Rate of Return for the Project;
- Determination of the discount rate and calculation of Net Present Value (NPV) of the Project;

- Determination of the optimum Capital Structure assuming prevailing financing costs;
- Calculation of Return to equity;
- Sensitivity Analysis.

EY would also assist the Client for various financing options for the Project. A financial viability analysis will be undertaken by developing a financial model and running the scenario analysis. This module has an aim to develop a financially feasible structure for private sector participation for the project. Following aspects would be covered-

- Key Assumptions: The assumptions are the primary requirement for developing a financial model. The assumptions are based on the secondary research, surveys & investigation, project layout and proposed technology, market conditions, etc.
- Project cost or capital expenditure would be estimated in order to achieve (i) an understanding of the principal operating cost components during appraisal and (ii) useful information for cost control purposes during implementation. The expenditure of the projects shall consider the cost of chemical, man power requirement, and electricity cost etc.
- Revenue: Ernst & Young would identify and assess the potential of each of these revenues in context of solid waste management system.
- Operational expenses: Ernst & Young would estimate the operational expenses likely to be incurred by the PPP partner. In operating the Waste Treatment Plant, major expenses pertain to electricity costs, employee cost and maintenance costs apart from other sundry costs.
- Debt & Equity structure: It is envisaged that the project shall be funded by PPP partner through Equity and Debt in appropriate proportion. The Debt: Equity ratio shall be as per the prevailing market conditions and appropriate debt equity ratio will be considered considering the similar projects as benchmark. The weighted Average Cost of Capital (WACC) shall be calculated, which will then be used for the financial model.
- Preparation of P&L and Cash Flow Statement: The financial model in spread sheet format shall indicate the key financial statements of the investor over the explicit period including depreciation schedule, loan repayment schedule, tax statements.
- PPP attractiveness (FIRR / ROI / NPV etc.): The financial viability of a project to an entity is indicated by its Financial Internal Rate of Return (FIRR) on total investment and on equity investment or Net present Value (NPV). This however has to be seen in light of other financial ratios such as debt-service coverage ratio (DSCR), Profit margins, cash reserve ratio, breakeven analysis to realistically assess the bankability of the project for investors.
- Sensitivity Analysis: The IRR, WACC, and key financial and operating ratios would be factored in the sensitivity analysis. The actual scenarios shall be tested based on key project risks. Common scenarios include (a) project cost overrun, (b) implementation delays, (c) revenue performance lower than projected, (d) expenditures higher than projected, and (e) other project-specific sensitivities. Combinations of likely impacts (for example, an implementation delay automatically increases project costs) would also be considered where relevant.

Using the Cost and Revenue data duly factored in for various risks and uncertainties as well as the market appetite and expectations of return thereon, Ernst & Young will prepare a financial model and suggest PPP model. Once the techno economic - feasibility is accomplished, a detailed study for suitably structuring the project shall be undertaken

#### 4.6.2 Procurement Options

There is a choice for the Government agency to execute the project on EPC or PPP mode. However underlying fact for a PPP mode project is that the project is suitably structured in order to be financially feasible thereby attracting private investment.

#### Public Private Partnership mode

The advantages of doing the project on PPP mode are discussed as below:

- Access to private sector finance, the government would be able to create the infrastructure without using its own funds.
- There would be efficiency advantages from using private sector skills as this project is highly experience based and service oriented.
- Transferring of risk to the private sector
- Potentially increased transparency
- Enlargement of focus from only creating an asset to delivery of a service, including maintenance of the infrastructure asset during its operating lifetime. This broadened focus would create incentive to reduce the full life-cycle costs (i.e. construction costs and operating costs)
- Competition would be introduced during the bidding stage, thereby bringing the benefits of market procurement
- However there are certain disadvantages as well in the PPP mode such as complex procurement process along with high transaction costs, contract uncertainty due to large contract period, cumbersome enforcement and monitoring of the contract. Despite all these disadvantages the benefits of PPP mode for this project outweigh the disadvantages. Therefore the project is being justifiably executed on PPP mode.

FEATURES	Asset ownership during contract	PPP duration	Capital investment focus & responsibility	Private partner revenue risk and compensation terms	Private partner roles	Features, relevance in India & examples
Management Contracts	Contractual arrangement for the investment is typically not the pri		management of a part or whole of mary focus in such arrangements.	or whole of a public fangements.	acility or service	management of a part or whole of a public facility or service by the private sector. Capital mary focus in such arrangements.
lote: service co	intracts and manag	ement contracts o	Note: service contracts and management contracts of less than 3 years duration are not included in the definition of PPP in India.	ation are not included	I in the definition	of PPP in India.
Management	Public	Short - medium (e.g. 3-5yrs)	Not the focus Public	Low (Predetermined fee, possibly with performance incentives)	Management of all aspects of operation and maintenance.	This involves contracting to the private sector most or all of the operations and maintenance of a public facility or service. Although the ultimate obligation of service provision remains with the public authority, the day-to-day management control is vested with the private sector. Usually the private sector is not required to make capital investments.
Management Contract (with rehabilitation/ expansion )	Public	Medium - Iong	Limited Focus Brownfield (Rehabilitation / expansion) Private	Medium (Tariff / Revenue share)	Minimum Capex, Management, Maintenance	This is similar to management contracts but include limited investments for rehabilitation or expansion of the facility.  This mode has been adopted in the power distribution and water supply sectors e.g. Bhiwandi Distribution Franchise, Latur Water Supply Project.

#### 4.6.3 Risk Identification and Allocation

The parties involved in a project can affect the amount of risk by:

- The level of influence they have over events, and
- The level of information they have about the present and the future.

Influence relates to the power parties have to create action and determine outcomes. Influence can come from delegated authority, for example where a public authority has certain powers granted to it under law, from good management and organisation, and from specific knowledge.

Information is directly related to risk. It is precisely because we usually don't have all the information that we can't predict future outcomes for certain. When we have better information we are better able to foresee and reduce risk.

The public and private sectors are different in the types of influence and information that they have. This means they can control risks in different ways from each other and they are better at controlling some risks and not as good at controlling others. The risks which are usually applicable to a project are detailed below:

Major Risk Types

Risk type	Description
Pre-operative task	risks
Delays in land acquisition	Refers to the risk that the project site will be unavailable or unable to be used within the required time, or in the manner or the cost anticipated or the site will generate unanticipated liabilities due to existing encumbrances and native claims being made on the site.
External linkages	Refers to the risk that adequate and timely connectivity to the project site is not available, which may impact the commencement of construction and overall pace of development of the project.
Financing risks	Refers to the risk that sufficient finance will not be available for the project at reasonable cost (eg, because of changes in market conditions or credit availability) resulting in delays in the financial closure for a project.
Planning risks	Refers to the risk that the pre-development studies (technical, legal, financial and others) conducted are inadequate or not robust enough resulting in possible deviations from the planned or expected outcomes in the PPP project development.
Approvals risk	Refers to the risk that necessary permits, authorisations and approvals required prior to the start of construction are not obtained in a timely fashion, resulting in delays to construction and the project as a whole.
Construction phase	risks
Design risk	Refers to the risk that the technology used will be unexpectedly superseded during the term of the project and will not be able to satisfy the requirements in the output specifications. It would result in increased costs of a replacement technology.
Construction risk	Refers to the risk that the construction of the assets required for the project will not be completed on time, budget or to specification. It may lead to additional raw materials and labour costs, increase in the cost of maintaining existing infrastructure or providing a temporary alternative solution due to a delay in the provision of the service.

Approvals risk	Refers to the risk that delays in approvals to be obtained during the construction phase will result in a delay in the construction of the assets as per the construction schedule. Such delays in obtaining approvals may lead to cost overruns.
Operation phase risks	
Operations and maintenance risk	Refers to the risks associated with the need for increased maintenance of the assets over the term of the project to meet performance requirements.
Volume risk	Refers to the risk that demand for a service will vary from that initially projected, such that the total revenue derived from the project over the project term will vary from initial expectations. There is no risk in annuity contracts.
Payment risk	Refers to the risk that tolls are not collected in full or are not set at a level that allows recovery of costs. This is a risk for the public sector under shadow tolls and for the private sector under user tolls. There is no risk in annuity contracts.
Financial risk	Refers to the risk that the private sector over stresses a project by inappropriate financial structuring. It can result in additional funding costs for increased margins or unexpected refinancing costs.
Handover risks	
Handover risk	Refers to the risk that the concessionaire will default in the handover of the asset at the end of the project term or will deviate from the minimum quality / value of the asset that needs to be handed back to the public entity.
Terminal value risk	Refers to the risk relating to differences from the expected realisable value of the underlying assets at the end of the project.
Other risks	
Change in law	Refers to the risk that the current legal / regulatory regime will change, having a material adverse impact on the project.
Force Majeure	Refers to the risk that events beyond the control of either entity may occur, resulting in a material adverse impact on either party's ability to perform its obligations under the PPP contract.
Sponsor risk	Refers to the risk that sponsors will prove to be inappropriate or unsuitable for delivery of the project, for example due to failure of their company.
Concessionaire event of default	Refers to the risk that the private entity will not fulfil its contractual obligations and that the government will be unable to either enforce those obligations against the sponsors, or recover some form of compensation or remedy from the sponsors for any loss sustained by it as a result of the breach or the sponsors will prove to be inappropriate or unsuitable for delivery of the project.
Government event of default	Refers to the risk that the government will not fulfil its contractual obligations and that the private entity will be unable to either enforce those obligations against the government, or recover some form of compensation or remedy from the government for any loss sustained by it as a result of the breach.
***************************************	

Source: www.pppindia.com

A well designed PPP structure allocates the risk to the party displaying the maximum ability to manage the risk. Based on the Risk Assessment a suitable risk allocation framework shall be developed, which shall allocate risk suitably between the public and private sector. Allocating risk to achieve added efficiency is what makes PPP a potentially powerful way of reducing project-related

costs and achieving improved value for money for the public sector. The level of risk can be changed by allocating responsibility for individual risks to those who are best able to manage them.

Recommendation on the following key areas shall be made as a part of the PPP structuring for each of the cluster:

- Defining the role of each of the players in the project for different project components within each cluster.
- Identifying the risks and responsibilities each player will bear in the project
- Corresponding rights and benefits that they can expect from the project
- Developing a consensus on these issues among the various players, and subsequently binding players to their roles and responsibility through contracts and performance agreements
- Tariff Structure which will be applicable to the promoters
- Sharing of Investment and usage related risks
- Mode of operation of the facilities
- Revenue streams which will be available

#### 4.6.4 Selection of Private Player

After complete financial assessment and finalisation of the project structure, the private developers for each of the project shall be selected through competitive bidding. Ernst & Young shall provide assistance to the Authority through Bid Process Management and shall undertake activities such as preparation of bid documents (RFQ/RFP/Concession Agreement etc.), assistance in interaction with private players, bid evaluation, signing of commercial agreement, project monitoring etc. for each of the clusters identified.

#### 4.6.5 Preparation of Bid Documents

Ernst & Young shall prepare the Bid Documents in cooperation with the Authority. Documentation to be prepared by the Consultant will include, but not be limited to, the following:

- Preparation of Expression of Interest (EoI): We would assist in preparation of an advertisement inviting EOI from interested developers. This would help us and the client in assessing the market feedback based on the response to the EOI.
- **Project Information Memorandum (PIM):** We would prepare the PIM to provide bidders the details of the project. The PIM would include the technical schedules, project structure and revenue model for the projects.
- Request for Qualification (RFQ): We would assist in the preparation of the RFQ documentation. This would help us short list the suitable bidders based on their technical and financial capabilities.
- Request for Proposal (RFP): We would assist in the preparation of the RFP documentation required for selection of preferred Developer/s. This document will detail out the process of bid preparation including bid parameter, bid submission, evaluation methodology and terms of engagement.
- Concession Agreement: We would assist in preparing the draft Concession Agreements and various presentations bringing out project features & structures. These documents will be prepared to govern Client's relationship with selected developer during construction and operation phase. We will also incorporate appropriate safeguards against non-performance by the selected developer into the contractual arrangements for the project, including Client's rights to revoke such arrangements and substitute the developer in the event of non-performance, which will be defined in the legal documentation for implementation of the project.

CONCESSION
AGREEMENT

REQUEST FOR PROPOSAL (RFP)

REQUEST FOR QUALIFICATION (RFQ)

PROJECT INFORMATION MEMORANDUM (PIM)

EXPRESSION OF INTEREST (EOI)

Figure: Sequence for preparation of bid documents

Ernst & Young shall prepare all other bid documentation that may be necessary for the bidding process and submit all such documents to the client for the required approval. Ernst A& Young shall also assist in revising and amending bid documents, as necessary.

#### 4.6.6 Bid Process Management

In this stage EY shall assist SUDA in Bid Process Management leading to selection of PPP partner for each project. The various stages of bid process management have been elaborated below:

Project Marketing

2 Advertisement & Bid Documents

3 Pre-bid Conference

Negotiation & Selection of Proposals

5 Evaluation of Proposals

4 Submission of Proposals

Figure : Stages of Bid Process Management

EY would interact with various prospective bidders and understand the market situation and expectations of the bidders. This would also assist in understanding the expected quotation / likely bid from the market. Once the project structure and bidding documents are finalised and approved,

an advertisement shall be issued calling for proposals. At this stage we would have to evaluate among the options of conducting a single stage or multiple stage bidding process.

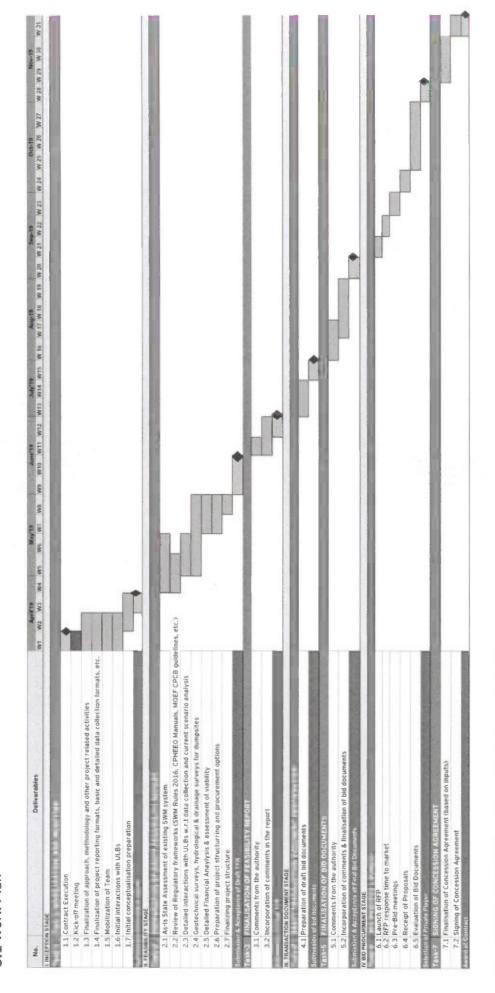


Figure: Single Stage / Multiple Stage Bidding Process

EY shall assist the client in organization of the pre-bid conference, evaluation of proposals, selection of preferred private partner and negotiation with the selected private player.

# 5 Work Plan and Deliverables

### 5.1 Work Plan





#### 5.2 Timelines

Stage	Activity	Deadline	Reference
	Kick off Meeting and signing of contract	9 <sup>th</sup> April 2019	
Stage 1	Submission of the Inception Report	19 <sup>th</sup> April, 2019	As per the meeting held
Stage 2	Submission of Draft Feasibility Report	3 <sup>rd</sup> June, 2019	with Principal
	Acceptance of Draft Feasibility Report by SUDA	6 <sup>th</sup> June, 2019	Secretary, UD&MA
Stage 3	Submission of Final Feasibility Report along with action plan	16 <sup>th</sup> June, 2019	Department, Government
	Acceptance of Final Feasibility Report by SUDA	19 <sup>th</sup> June, 2019	of West Bengal on
Stage 4	Submission of the Draft RFP for selection of Agency	9 <sup>th</sup> July, 2019	02.04.2019
Stage 5	Submission of the Final RFP for selection of Agency	10 days from approval of Stage 4	As per
Stage 6	Evaluation of the Tender Documents and recommendation for the Selected Agency	10 days from tender closing date	Contract
Stage 7	Getting the Concession Agreement signed by the selected Agency	10 days from Stage 6	

#### 6 Project Team

#### 6.1 Organization Structure

Roles and Responsibilities of the Core Project Team

Name of Staff	Role for this Assignment	Assigned Tasks or Deliverables				
Abhaya Agarwal	Team Leader	Shall be responsible for providing strategic technica leadership, programme management and financial direction and quality assurance to the project. He will oversee project oversight and governance, key decisions on project development and final deliverable review and approval				
Puneet Babbar	Solid Waste Management Specialist	Shall be responsible for the execution of all the deliverable outputs ensuring project compliances for internal team to ensure the completion of all outputs in the desired manner in accordance with the work plan and budget.				
Gyan Misra	PPP Specialist	Shall be responsible for providing expert inputs and key insights on the principles on Public Private Partnership mode of project. Shall be responsible for assessment of the risks involved with respect to the project and a better overall solution for the same				
Gurvinder Singh	Finance Specialist	Shall be responsible for handling the analysis of the investment involved in the PPP. Shall be responsible for carrying out the financial feasibility of the various options suggested for the project and advising client on selecting the best.				
Chaitali Mondal	Project Coordinator	Shall be responsible for day to day communication with client Shall be responsible for interacting with SUDA, KMDA, ULB's while obtaining data, meetings and local support.				
Extended Exp	pert Panel					
Himanshu Cha	aturvedi	Shall be responsible for providing expert inputs and key insights on the solid waste management and bid process management. Shall be helpful for structuring of the project with respect to the practical difficulties faced in the previous similar assignments.				
Karthik Surat	hkal					
Ikshit Jain		Shall be resourceful during consultations/ meetings/ interviews etc. with the key stakeholders including SUDA, ULB, and private players coming in for the project.				
Support Tean	n					
Saurabh Awai	tade	Project Support				
Akhila Nunna		Project Support				

# 6.2 Key Contacts

# Key Contacts for KMDA, SUDA and WBPCB

SI.No	Name of the Participant	Organisation	Designation	Mobile	Email Address
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00	Bijay Krishna Pal	SUDA	Executive Engineer	9432378545	Bkpal.suda@gmail.com
0	Dr. T. K. Gupta	WBPCB	CE	9830024276	tkg@wbpcb.gov.in

## Key Contacts for EY

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10	Akhila Nunna	ΕV	Support Staff	+91 9962878269	Akhila.nunna@in.ey.com

# Key Contacts for ULBs

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4	Debashis Dutta	South Dum Dum	Sanitary Inspector	9836552891	sddm10@gmail.com
5.	Prasun K R Sarkar	South Dum Dum	Secretary	9836880164	sddm10@gmail.com
9	Jayanta Sankar Chakraborty	Bangaon	Sub Assistant Engineer	9932550975	chairmanban@gmail.com
7.	Prashanta Das	North Dum Dum	SWM in Charge	8777787736	Prashantadas201@gmail.com
ώ	Sakto pada Sankar	North Dum Dum	Executive Officer	8420731399	northdumdum@gmail.com
6	Partha Sarathi Bhattacharyya	Kamarhati	Sanitary Inspector	9231507954	parthasar321@gmail.com
10	Arnab Dutta	Baranagar	Sanitary Inspector	9903006960	arnabdutta12b@gmail.com

#### 7 Conclusion

#### 7.1 Current status and Challenges

All the ULBs in Cluster-1 are carrying out door-to-door collection, primary and secondary transportation and finally disposal (open dumping) at Pramod Nagar Dumpsite. Though 100% household are covered for solid waste collection, but source segregation at household level is major issue. It was observed, a few ULBs like North Dum Dum and New Barrackpore are trying their level best to disseminate mass awareness for effectively implementing source segregation at each household. But in other ULBs, this very basic and most critical function is lacking. Further problem is compounded by collection and transportation mechanism. For example, the collection vehicles are not partitioned at most of the places. Due to densely populated areas in this cluster, cycle van or hand carts are being used for primary collection. Waste from these primary vehicles is being offloaded to secondary vehicles at intermediate points. The no. of these intermediate points varies from ULB to ULB, depending on their size. However, due to limited availability of land most of the ULBs are having majorly mobile compacter stations and very few stationary compacter stations. From these compactor stations, waste is being transported to Pramod Nagar dumpsite for disposal.

The site at Pramod Nagar is located adjacent to Belghoria expressway, which is a four-laned, 8 kilometres (5.0 mi) long access controlled tolled expressway in the northern suburbs of Kolkata, West Bengal. It is a key arterial road, linking the terminal junction points of NH 19 and NH 16 near Dankuni to Dakshineswar, across Nivedita Setu, and NH 12 (Jessore Road), near Dum Dum Airport. The site measures a total area of approximately 20 acres and heavily loaded with the legacy waste being dumped for last 30 years. The height of waste dump now has reached to 15-16 meters at some places causing a serious concerns for Air, Land and Water ecosystems. The site is present on the marshy land and just adjacent to a significantly large water body. There are also residential settlements adjacent to the dumping site. Considering these conditions, the remediation activities at this site needs to be taken on very priority basis.

KMDA has initially started, a few activities on Pramod Nagar dumpsite with an aim to manage solid waste in scientific manner. A 50 TPD (Tons per Day) Compost plant is under construction at Pramod Nagar dumpsite. Though it will not suffice the requirement of 500 to 600 TPD MSW that is being received at this site on daily basis. Further to this, the department is also constructing a SLF in compliance to SWM Rules 2016. However, layout of new compost plant and SLF will be a huge challenge for the new developer to integrate it with new plant for capacity enhancement. These things needs to be addressed properly in the feasibility report.

#### 7.2 Way Forward

During project conceptualization, the challenges mentioned in above section would be carefully dealt and adequate project design and structure shall be developed to provide scientific and technically correct approach. The panning and delivery shall also include following:

- Achievement of 100% Household coverage for door-to-door collection
- Adequate infrastructure to maximize collection efficiency
- Segregation of waste into wet/dry/domestic hazardous fraction
- MSW recycling/recovery efficiency of 80% with maximum 20% rejects
- Scientific processing and disposal of MSW with appropriate technologies
- 90% collection efficiency for user charges for financial sustainability
- Efficient complaint redressal
- 100% compliance to SWM Rules 2016, PWM Rules 2016, C&D Rules 2016 and necessary guidelines/directions from Ministry/NGT/State, etc.

#### 8 Inception Report Approval

To,

Abhaya Krishna Agrawal, Partner, Ernst & Young LLP Email: Abhaya.Agarwal@in.ey.com

Dear Mr. Agrawal,

With respect to the Inception report submitted by your office on 19<sup>th</sup> April, 2019 cluster 1, the department accords approval on the report. You are now requested to initiate the work for Feasibility Report at the earliest and ensure its submission as per timelines mentioned in Contract.

Approver's Name:			
Designation:			
Organization:			
Approver's Sign:			
Date:			

(Please provide a copy back to us after approval for internal records)

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Ernst & Young LLP

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Introductory meeting with Transaction Advisor and Urban Local Bodies of Cluster-I on Solid Waste Management	Venu: SUDA Conference Hall	Name of the Participant (in BLOCK Letter)	ABHAYA KRISHNA AGARWAL	PUNEET BABBAR	TRANGE KR DOS	SUBARNA KR DUTTA	RATEN GETAL DIE	DEBASHIS DUTTA	PRASUN KR SARKAR	JAYANTA SANKAR	Scothernte Des	South Pada Samar
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12.30 PM	email Address	Ethropograph.	atrosphateles a general.	chon but Oyenho	months (a general las	septen knob Oyahu	solxmola@gmeil.com	98300 24276 tugo w6pc6.881.in	9043808645 Sawabh awadade Q	e houtelib iswes 30	akhila.nunnaain.g.com Aldet
at 11.00 AM to	Mobile	8617438199	09690000060	4143038114	9831041235	Jamsma	9830533418	98300 WITH	5498088406	93513886	141818196
SUDA Conference Hall Date: <b>09.04.2019</b> at 11.00 AM to 12.30 PM	Designation	Free And Com	Sanitary	Sant Gupecles 9143038174	Vice Chairman	SE	CE (M)	CE	Assobiate	consentent	Exeudive
	Organisation	LANDA.	Baranagar	Newbource/your	, 20.	KMBA	Medage	where	Associate,	EY	FY
Venu: SUDA Conference Hall	Name of the Participant (in BLOCK Letter)	TAPABRATA BIROWINGCH	ARNAB	DHERBS MANDY	MIHIR KR. DEY	Utpal Mandal	S. K. Baidyo.	Dr.T.K. Gupta	SAURABH AWATADE	chaitale Mondal	Aklela Numba
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Attendance Sheet

Introductory meeting with Transaction Advisor and Urban Local Bodies of Cluster-I on Solid Waste Management

	Signature	3	Sag.				
12.30 PM	email Address	9231507954 parthesar 321@gmul.cm	bipal. suda @gmail.				
at 11.00 AM to 12.30 PM	Mobile	9231551957	94323 78545				
Date : 09.04.2019	Designation	51	Executive Engineen				
	Organisation	KAMBRHATI	\$0.DA				
Venu: SUDA Conference Hall	Name of the Participant (in BLOCK Letter)	PRRTHA SARATHI BHATTACHARYYA	BIJAY ARISHNA PAL				
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