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Schedules

Schedule B Special Conditions

1. Monitoring of Project Facility

The Committee shall undertake following activities related to the operations and maintenance of the Project Facility.

- (1) Collect information on a daily basis on the quantum of waste brought to the Project Facility from the Weighment Facility.
- (2) Conduct calibration test of the Weighment Facility at least once in a period of six months.
- (3) Conduct sampling, as detailed in Schedule, on the Waste at such intervals on a daily basis to ensure that only Inert Waste is brought to the Project Facility.
- (4) Ensure that the capacity of the Project Facility is sufficient to cater to the quantum of Waste supplied to the Contractor and undertake such construction/ development activities at the Project Site to cater to such future quantum of waste without any interruption in the operations of the Contractor.
- (5) Conduct such tests to ensure conformance of the operations of the Project Facilities with the standards prescribed in prevalent Law/ Rules/ Statutes.
- (6) Conduct such tests as laid down in Schedule for measurement of Performance Standards at an interval of not more than 15 days corresponding to the billing cycle and compile the results in the format prescribed to determine the penalty be recovered from the Contractor for non-performance.
- (7) Bring to the attention of the Committee of any potential Event of Default and / or any Force Majeure Event that is likely to have a material adverse impact on the Project Facility.
- (8) Carry out/ assist the Committee for such activities that the Committee may so direct from time to time
- (9) Review the O&M Plan submitted by the Contractor from time to time and bring to the attention of the Committee deviations, if any from the same.
- (10) In case of any dispute/ disagreement between the designated transporting agency and the Contractor related to the Waste, then the Committee shall immediately inform the Municipal Body of the same and take steps as deemed necessary to resolve the dispute amicably without affecting the Project Facilities. However, if the resolution involves any financial burden on the part of the Municipal Body then the same shall be approved by the Municipal Body.

2. Contractors Obligations

- (i) Acceptance of Municipal Waste

The Municipal Body shall endeavour to supply segregated Inert Waste to the Contractor in quantities as indicated in

Schedule herein. The Contractor shall be responsible at all times to accept the daily quantities of Waste.

In the event of inability of the Municipal Body to supply Waste, due to reasons attributable to the generators of Waste or due to reasons attributable to the transporting agency, the Municipal Body shall be obliged to supply Waste by collecting Waste from alternative sources or by engaging the services of any alternative transporter respectively. Failure of Municipal Body to supply Waste continuously for a period of three consecutive days shall entitle the Contractor to engage the services of any third party transporter to collect Waste from the generators of Waste and claim 120% of the cost involved in collection, transporting and segregation from the Municipal Body.

In the event the Contractor is unable to hire the services of any third party transporter due to reasons attributable to the transporting industry per se, then the Municipal Body shall be obliged to pay to the Contractor an amount that is equivalent to the manpower costs, operational costs other than interest payment and principal repayment for the period for which the Municipal Body has failed to supply the Waste (“Idling Charge”)

Idling Charge = Manpower Costs+ Operational Costs like lease payments for equipments, electricity charges, etc, except financing charges like interest payments and principal payments for the period of non-supply of Waste by the Municipal Body.

The Contractor shall be penalised for any non- acceptance of the Waste, other than for events in this Clause herein above or due to Planned Maintenance for a period not more than 2 consecutive days, calculated as follows:

$$P_{NA} = 0.6 * Q_{AVG} * R_T$$

Where: -

P_{NA} : Penalty for Non acceptance

R_T : Rate per Tonne quoted by the Contractor for the purpose of Disposal of the Waste

Q_{AVG} : Average Quantity of Waste supplied by the Municipal Body over the immediately preceding week

The Municipal Body shall have a liberty of recovering the penalty due from the Contractor’ subsequent billing or by invoking the Performance Guarantee to the extents of the amounts due. In the event that the Performance Guarantee is invoked, the Contractor shall within 15 days of such an event, replenish the Performance Guarantee to the stipulated amount. Failure on account of the Contractor to do so shall be construed as an Event of Default on the part of the Contractor.

(ii) Weighment of Waste supplied by Municipal Body

The Waste supplied to the Contractor shall be weighed at the entry gate to the Project Facility. The Contractor shall engage adequate labour to undertake this activity and ensure that the weighment of the Waste is done in a transparent mechanism.

The Committee/ Municipal Body shall have access to the Weigh Bridge at all times for inspection purposes and a register shall be maintained by the Contractor to record the observations of the Committee/ Municipal Body, if any.

The Contractor shall ensure that the Weigh Bridge is calibrated at frequencies not exceeding six months by an Independent Calibrator acceptable to the Committee

(iii) Landfill criteria for municipal solid waste

The Contractor shall provide for a screening/ segregation facility at the Project Facility. The screening/ segregation facility should be a mechanised facility with an ability to handle all types of Waste both dry as well as wet waste. The Contractor can deploy partial mechanised segregation of the waste upon a written approval from the Municipal Body. The Waste other than the Inert Waste so segregated shall have to be separately stored in a separately demarcated area and handed over to the Municipal Body. The Municipal Body undertakes to supply Waste in compliance of the Acceptability Criterion as detailed below:

Acceptability Criterion:

Random sampling shall be undertaken of the Waste that is being supplied by Municipal Body to ascertain the composition of the Waste supplied by Municipal Body. The sampling procedure, detailed herein *Schedule* is to be conducted for at least two Waste loads on a daily basis by a Committee/ Municipal Body representative and the observations of the same are to be recorded and produced before the Committee upon demand.

Acceptability Criterion= the ratio of Inert Waste to total waste shall not be less than 90%

If the Waste supplied by the Municipal Body to the Contractor is found to be in deviation of the Acceptability Criterion, then the Contractor shall deploy labour to segregate the same. The cost of deploying additional labour shall be separately recorded and initialled by the Committee representatives comprising the Contractor representative as well as the Municipal Body representative. The Contractor shall recover 120% of the amounts so spend by the Contractor in segregating the Waste and transporting the rejects to the agency designated by Municipal Body and submit a bill in this regard.

3. Payments to the Contractor

(A) Payment Terms

(i) The Municipal Body hereby undertakes to pay the Contractor an amount as calculated herein below in lieu of services rendered towards the operation and maintenance of the Project Facility for the acceptance of the Waste supplied by the Municipal Body;

$$A = R_T * Q_{Act} * (100 - P)$$

Where;

A: Amount payable as per the terms of the Agreement

R_T: Rate per Tonne of Waste (as agreed between the Contractor and the Municipal Body subsequent to the bidding process)

Q_{Act}: Quantity of waste accepted by the Contractor as per provisions of the Agreement

P: Performance Parameter as determined by the procedure laid down in Schedule

(ii) The Municipal Body shall make available the requisite funds to the credit of the Contractor as per the Payment Mechanism detailed in Clause 7.1

Schedule C Work Specifications- O&M Requirements

1. General

- (a) The contractor shall comply with the O&M Requirements set out in this schedule. In doing so, the contractor shall ensure that the landfill facilities are operated and maintained to the standards and specifications as set out in the Construction requirement and also meet the other requirements, If any, set out in the Agreement.
- (b) In the design and implementation of all works and functions associated with the operation and maintenance of the landfill facilities, the contractor shall take all such actions and do all such things (including without limitation, organising itself, adopting measures and standards, executing procedures including inspection procedures, and engaging contractors, if any, agents and employees) in such manner, as will:
- (i) Ensure the safety of the personnel deployed on and users of the landfill facilities or part thereof;
 - (ii) Keep the equipment and machinery employed at the landfill facilities from undue deterioration and wear;
 - (iii) Permit unimpaired performance of statutory duties and functions of ny party in relation to the project;
- (c) During the Concession Period, the Contractor shall, in respect of the Landfill Facilities ensure that:
- (i) Applicable and adequate safety measures are taken;
 - (ii) Adverse effects on the environment and to the owners and occupiers of property and/or In the vicinity of the landfill facilities, due to any of its adverse effects controlled/ minimised;
 - (iii) Any situation which has arisen or likely to arise on account of any accident or other emergency is responded to as quickly as possible and its adverse effects controlled/ minimised;
 - (iv) Disturbance or damage or destruction to property of third prty by operations of the Landfill Facilities is controlled/minimised;
 - (v) Data relating to the operation and maintenance of the Landfill facilities is collected
 - (vi) The personnel assigned by the contractor have the requisite qualifications and experience and are given the training necessary to enable the Contractor meet the O&M requirements

2. Sampling and Testing

- (a) Unless modified with mutual consent by the parties, the Residual Inert Matter shall be sampled and tested in the manner set out below:

The residual inert matter proposed to be taken to the Landfill Facility shall be placed in at least ten heaps of almost equivalent size. The Committee shall take ten random samples from each of these heaps. These random samples then should be then thoroughly mixed and a single random sample taken and tested and if it satisfies the requirements, It shall be certified as being “Fit for Land filling”

- (b) Any sample which fails to be certified as “Fit for Land filling” shall be rejected and the cause of rejection of all the heaps from which it was sourced and the contractor shall subsequently act in accordance with the direction of the Committee with regard to such rejected heaps

3. Weighment

- (a) The contractor shall provide for a weighbridge in accordance with Operations and Maintenance Requirements.
- (b) The contractor shall not take any Residual Inert Matter into the Landfill facility without having obtained the “Fit for land filling” certificate from the Committee. The contractor shall plan his operations in a manner such that the Landfill waste is taken into the Landfill facility only between 9:00 AM and 5:00 PM or as mutually agreed upon between the Owner, Transporter and the Contractor.
- (c) The contractor shall record the following minimum data with regard to the Landfill Waste:
 - (i) Date of operation
 - (ii) Total laden weight of the truck
 - (iii) Time of entry of the truck
 - (iv) Total unladen weight of the truck
 - (v) Time of exit of the Truck
- (d) In the event that the weigh bridge provided in accordance with the construction requirement is not in operation, the Contractor shall use the weighbridge provided at the entry gate of the waste processing facility (If it is near to the Waste Disposal Facility) for weighment of the residual inert matter. Such weighment and Transport of the Residual Inert Matter shall be done only under the direct supervision of the Committee
- (e) The procedure for weighment of the Landfill waste and certification by the Committee shall be as set out in the O&M plan.

4. Landfill Operation

- (a) Intermediate Liner system
 - (i) The contractor shall provide a liner layer (“Intermediate liner”) before the onset of monsoon leaving only a temporary unrestored sloping face
 - (ii) The Intermediate Liner shall be as per the Construction Requirements.
- (b) Daily Cell Cover

On each day during the Active operations Period, the Contractor shall compact the Landfill waste and cover the same (“Daily Cell Cover”) in the manner as specified in the Construction Requirements.
- (c) Special Operational Conditions

Except with specific approval from the Committee, the contractor shall ensure the following:

 - (i) Provide a benching (terrace) of 10m width for every 5m height of filling within the Engineered Sanitary Landfill
 - (ii) The slope of the Engineered Sanitary Landfill face shall not exceed 1:3.

5. Landfill Closure and Final Cover

- (a) the Contractor shall demonstrate the actual stability by considering the strength parameters of compacted inert material for every 5 m of benching
- (b) Upon reaching a height of the Engineered Sanitary landfill such that the area at the top of Engineered Sanitary landfill is 30% of the area of the base of the Engineered Sanitary landfill, or before starting the final cover, the Contractor shall promptly intimate the Committee and the Owner providing the following details
 - (i) The estimated quantity of Landfill waste that can be landfilled in future
 - (ii) The probable date till which Municipal Solid waste can be accepted by the waste Processing Facility
 - (iii) The plan for laying the final cover (“Final Cover”) for the Landfill Facility
- (c) The Contractor shall provide the Final Cover in accordance with the construction requirements

6. Vegetative Cover

- (i) The Contractor shall, in accordance with MSW Rules ensure the provision of a vegetative cover after laying of the final cover
- (ii) The selection of the varieties of plants and trees to be planted shall be decided in consultation with the Committee/Owner and shall form a part of the Post Closure Maintenance Plan

7. Leachate Collection and Removal system(“LCRS”)

- (a) The Contractor shall ensure that there is no overflow of leachate from the LCRS
- (b) The Contractor shall ensure that all leachate drains are free from clogging and allows unobstructed flow of leachate
- (c) The untreated leachate to be let out from the Site, unless it meets the standards as set out in the Table below:

S.No.	Parameter	Standard (Maximum)	Units
1	PH	5.5-9.0	
2	Suspended Solids	100	Ppm
3	Dissolved Solid- inorganic	2100	Ppm
4	Arsenic (as As)	0.2	Ppm
5	Ammonical Nitrogen (as N)	50	Ppm
6	Total Kjeldahl Nitrogen (as N)	100	Ppm
7	Cadmium (as Cd)	2	Ppm
8	Copper (as Cu)	3	Ppm
9	Total Chromium (as Cr)	2	Ppm
10	Lead (as Pb)	0.1	Ppm
11	Mercury (as Hg)	0.01	Ppm
12	Nickel (as Ni)	3	Ppm
13	Cyanide (as CN)	0.2	Ppm
14	Fluoride (as F)	2	Ppm
15	Zinc (as Zn)	5	Ppm
16	Chloride (as Cl)	1000	Ppm

17	Phenolic compounds (as C ₆ H ₆ OH)	1	Ppm
18	BOD (3 days at 27° C)	30	Ppm
19	COD	250	Ppm

8. Gas Recovery and Greenhouse Gs Mitigation System (“GRGS”)

The Contractor shall

- (i) Ensure that the greenhouse gas emissions from the Landfill facility conforms to the permissible limits as per Applicable law;
- (ii) Collect information pertaining to the quantum of greenhouse gases produced from the Engineered landfill

9. Post-Closure Maintenance Plan

- (a) The Contractor shall maintain the Landfill facility during the Post Closure Period in accordance with the Post Closure Maintenance Plan.
- (b) At least three months prior to the completion of any Financial year during the post closure period, the Contractor shall prepare and submit for review and approval by the Committee/ Owner, the post closure maintenance plan for the subsequent financial year.
- (c) Post Closure maintenance shall be in accordance with Applicable Laws and shall involve periodical inspections, of at least once every three months, of the Landfill facility to monitor land surface care, Leachate collection, and methane control by way of flaring and to maintain flaring equipment.
- (d) Post Closure maintenance shall also involve investigations for detection of adverse environmental impacts, if any, and implementation of measures for mitigation of the same.

10. Mandatory Facilities

The Contractor shall, unless suitably modified in the O&M Plan and/or the O&M Manual, operate and maintain the mandatory facilities in accordance with the standards set out in the table below:

S. No.	Description of Mandatory Facility	Operation and maintenance Standard
1	Weigh Bridge	<ul style="list-style-type: none"> ▪ Calibration certification from manufacturer/Independent certification agency (approved by the Committee) to be renewed every year ▪ Maximum period of non-operation: 5 days ▪ Data recording and reporting format to be decided in consultation with the Committee and to form part of the O&M Plan and/or O&M manual
2	Storm water drainage System	<ul style="list-style-type: none"> ▪ All storm water drains are free from clogging and allows unobstructed flow of water ▪ Maintain shape & scope in the designed manner during the lifetime

		<ul style="list-style-type: none"> ▪ No stagnation of rain water on the Landfill facility
3	Leachate collection and drainage system	<ul style="list-style-type: none"> ▪ No overflow of leachate from the leachate collection tanks ▪ Cracks or leaks in the leachate collection and drainage system to be sealed immediately ▪ Should be free from clogging and allows unobstructed flow of leachate ▪ No untreated leachate shall be let out from the site unless it meets the standards as set out in the table given above
4	Water supply system	<ul style="list-style-type: none"> ▪ Water for drinking purposes to meet IS 10500 ▪ Water supply for gardening and flushing to meet Inland Surface standards as per central public health and environmental Engineering Organisation (CPHEEO)
5	Quality Control laboratory	<ul style="list-style-type: none"> ▪ Quality and calibration certification form manufacturer/ Independent certification agency (approved by the Committee) to be renewed every year ▪ Maximum period of non-operation: 5 days ▪ Data recording and reporting format to be decided
6	Internal Roads	<ul style="list-style-type: none"> ▪ The main road shall be pot-hole free and in good motorable condition
7	Lighting and other electrical works	<ul style="list-style-type: none"> ▪ Minimum lux level of 20 in the area of operation (in case of 2 shift operations)
8	Boundary Fencing	<ul style="list-style-type: none"> ▪ Any breach in the boundary fencing to be brought to the notice of the Committee immediately and to be sealed within 1 day ▪ Boundary fencing to be inspected at least once every week and rejects (paper, Plastics etc.), if any, found trapped in the fencing to be removed promptly
9	Green Belt	<ul style="list-style-type: none"> ▪ Maintained in accordance with O&M Plan and O&M Manual

11. Ambient Air Quality Monitoring

- (i) Installation of landfill gas control system including gas collection system shall be made at landfill site to minimize odour generation, prevent off-site migration of gases and to protect vegetation planted on the rehabilitated landfill surface.
- (ii) The concentration of methane gas generated at landfill site shall not exceed 25 per cent of the lower explosive limit (LEL).
- (iii) The landfill gas from the collection facility at a landfill site shall be utilized for either direct thermal applications or power generation, as per viability. Otherwise, landfill gas shall be burnt (flared) and shall not be allowed to directly escape to

the atmosphere or for illegal tapping. Passive venting shall be allowed if its utilization or flaring is not possible.

- (iv) Ambient air quality at the landfill site and at the vicinity shall be monitored to meet the following specified standards, namely :-

S.No.	Parameters	Acceptable levels
(i)	Sulphur dioxide	120 $\mu\text{g}/\text{m}^3$ (24 hours)
(ii)	Suspended Particulate Matter	500 $\mu\text{g}/\text{m}^3$ (24 hours)
(iii)	Methane	Not to exceed 25 per cent of the lower explosive limit (equivalent to 650 mg/m^3)
(iv)	Ammonia daily average	
	(Sample duration 24 hrs)	0.4 mg/m^3 (400 $\mu\text{g}/\text{m}^3$)
(v)	Carbon monoxide	1 hour average : 2 mg/m^3 8 hour average : 1 mg/m^3

The ambient air quality monitoring shall be carried out by the concerned authority as per the following schedule, namely: -

- (a) Six times in a year for cities having population of more than fifty lakhs;
- (b) Four times in a year for cities having population between ten and fifty lakhs;
- (c) Two times in a year for town or cities having population between one and Ten Lakhs

Schedule D Correspondences that may form part of the Agreement

Schedule E Details of Project Site and Project Facility

To be filled in by the respective ULB with the details of the Project Site and the Project Facilities.

Schedule F Indicative Waste Quantities

The Municipal Body shall endeavour to supply the following quantities of waste on an annual basis through out the tenure of the Contract Period:

Year	Waste Quantity (in tonnes)
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Year 1 denotes the period beginning from COD until the corresponding end of the Financial Year i.e. 31st March

Year 2,3,4... denotes the Financial Year beginning 1st April and ending at 31st March unless for Year 10 which denotes the Financial Year beginning 1st April and ending at the Termination Date.

In case of early determination of this Agreement, the interpretation of this clause shall according be modified to read the last year as the year in which the Termination Date falls.

Schedule G Performance Evaluation Framework

Performance Measurement of MSW Treatment for the City of ***		
Time of Inspection		Date
From	To	
Performance Measured By	Designation	Signature
Name		
1		
2		

Section A: Daily Evaluation

Treatment of Bio-degradable MSW through bio-methanation

Performance Factors	Yes/No
1.	
2.	
3.	
Payment dedn. If any of the above criteria are not met	2.50%

Section B: Random checks with regards to Air Pollution

Ambient air quality measurement (at the boundary of the site on the down wind direction)

S.No.	Parameters	Acceptable levels	Satisfactory: Yes/No
(i)	Sulphur dioxide	120 $\mu\text{g}/\text{m}^3$ (24 hours)	
(ii)	Suspended Particulate Matter	500 $\mu\text{g}/\text{m}^3$ (24 hours)	
(iii)	Methane	Not to exceed 25 per cent of the lower explosive limit (equivalent to 650 $\mu\text{g}/\text{m}^3$)	

(iv)	Ammonia daily average (Sample duration 24 hrs)	0.4 mg/m ³ (400 µ g/m ³)	
(v)	Carbon monoxide	1 hour average: 2 mg/m ³ 8 hour average: 1 mg/m ³	
Payment deduction if Ambient air quality is not met: 2.50%			

Section C: Monthly

Compost quality measurement (only if intended to be used for food crops)

Parameters	Concentration not to exceed * (mg/kg dry basis, except pH value and C/N ratio)	Concentration measured	Satisfactory: Yes/No
Arsenic	10.00		
Cadmium	5.00		
Chromium	50.00		
Copper	300.00		
Lead	100.00		
Mercury	0.15		
Nickel	50.00		
Zinc	1000		
C/N ratio	10:1 – 15:1		
PH	7.5-8		

Process Checks (mandatory)

Parameters	Not to exceed/ Desired result	Measured level/ Observation	Satisfactory: Yes/No
pH of feed slurry	7 - 8		
pH of pre-digested slurry	4.5 – 6		
Colour of pre-digested slurry	Yellow		
pH of digested slurry	7 – 8		
Colour of digested slurry	Black		

Payment deduction if above criteria are not met for the Month: 2.50%
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Section D: Random Check with regards to Leachate generation/ disposal

Recycled water disposal standards

S. No	Parameter	Standards for the various modes of disposal of Leachate		
		Disposal standards	Measurement recorded	Does it violate the minimum/maximum standard: Yes/No
1.	Bio-chemical oxygen demand, ppm, max	100		
2.	Chemical oxygen demand ppm, max.	200		
3.	Methane composition %, min.	70		
Payment deduction if any one of the Leachate standards are not satisfied: 2.50 %				

Schedule H Schedule of Rates quoted by the Contractor

Financial Year Beginning	Amount in Rs. per month

Schedule I Sampling Procedure

- (i) The Waste is first unloaded on to a clean and impervious hard surface.
- (ii) The Waste is then thoroughly mixed with the help of a spade and a cone is formed of the Waste.
- (iii) The cone of Waste is then flattened and divided into four quarters.
- (iv) Remove two opposite quarters and mix together the remaining two quarters.
- (v) Repeat the process until a sample having approximately 20% of the original waste volume is obtained.
- (vi) After such a representative sample is obtained, segregate the waste based on biodegradable, non-biodegradable waste.
- (vii) Weigh the biodegradable waste and divide it by the total sample weight.

