

Guwahati Development Department

1.3 Performance Audit of Public Private Partnership (PPP) in Solid Waste Management (SWM) in Guwahati

Guwahati Municipal Corporation (GMC) is responsible for management of solid waste generated in Guwahati city. Municipal Solid Waste (Management and Handling) Rules 2000 envisaged mandatory setting up of infrastructure facility and servicing of Solid Waste Management (SWM) by 31 December 2003. Consequent upon fixation of the specified dead line for setting up of processing and disposal of waste, GMC proceeded to implement a SWM system in PPP mode through a private developer with approval of the Ministry of Urban Development, Government of India (MoUD). The objective was to improve public health and hygiene through scientific collection, transportation, processing and disposal of Municipal Solid Waste (MSW) with provision for recycling the waste and achieving savings in expenses. Preparation of defective Detailed Project Report (DPR) and execution of agreement based on an unapproved DPR (DPR-II) had put the implementation of the project and sustainability of the arrangement in doubt. Lack of proper planning led to non achievement of the objectives of reduction of air, water, environmental and land pollution, improvement of public health, recycling of the waste and achieving savings in expenses. The future of the project itself is in jeopardy as the solid waste dumping site and sanitary land fill area has been established in a national wetland area and is required to be shifted according to Wetland Rules, 2010.

Highlights

The land provided for setting up of the project did not comply fully with applicable parameters stipulated by Central Public Health and Environmental Engineering Organisation (CPHEEO).

(Paragraph – 1.3.9)

Waste to energy technology was not considered feasible in the approved DPR but included in the unapproved DPR II. However, this component was included in the concession agreement.

(Paragraphs – 1.3.11 and 1.3.12)

Excess release of grant of ₹7.99 crore was made to the developer beyond the norms of concession agreement.

(Paragraph – 1.3.15.4)

Expenditure of GMC doubled after commencement of the project in comparison to the expenditure incurred prior to commencement of implementation of the project without commensurate benefits or achievement of objectives.

(Paragraph –1.3.22)

GWMCPL failed to take appropriate measures against pollution of air, water and land.

(Paragraph –1.3.20.3)

The Boragaon landfill site shares a common boundary with a national wetland, which has a linkage with world heritage site of ‘Deepor Beel’ and pollution through seepage endangered the fish and migratory birds in the Wetland. The future of SWM project is in jeopardy as the site is in close vicinity of a national wetland, is in violation of Wetland Rules, 2010.

(Paragraph – 1.3.23.1)

1.3.1 Introduction

1.3.1.1 Definition of waste

Wastes are substances or objects intended to be disposed of or required to be disposed by the provision of national laws³⁸. Items like household rubbish, sewage sludge, waste from manufacturing activities, packaging items, discarded cars, old television, garden waste etc., can be considered as waste. There are different kinds of waste:

- Municipal waste generated by households consisting of paper, organic waste, metals etc;
- Hazardous waste generated by production processes, households and commercial activities and
- Bio-medical waste generated by hospitals other health providers consisting of discarded drugs, microbiology and biotechnology waste, human anatomical waste, animal waste etc.

Waste represents a threat to the environment and human health if not handled or disposed of properly. Only management of municipal solid waste by Guwahati Municipal Corporation (GMC) in Guwahati city has been considered in this performance audit.

1.3.1.2 Background

Guwahati, the capital city of Assam, is situated on the banks of the river Brahmaputra with an area of 216 sq km. Estimated population of the city was 9.84 lakh involving 1,84,454 households till 2006. GMC have estimated (2006) that total generation of waste of the city was 317 tonnes per day (TPD) and 322 gm per head. Total population of the city is 12.60 lakh (2011 Census) while generation of waste is projected by GMC at 435 TPD.

Solid Waste Management (SWM) by Guwahati Municipal Corporation (GMC) had inherent deficiencies like limited door to door collection, insufficient secondary collection points, carriage of waste in open trucks, absence of segregation, absence of processing facilities, crude dumping in land fill sites etc. Collection efficiency of waste by GMC was only 59 per cent (2006).

³⁸ According to Basel Convention.

According to United Nations Environment Programme (UNEP), strategy for waste disposal was to focus on waste prevention and minimisation through three Rs- 'Reduce, Reuse and Recycle'.

In line with the above, the Ministry of Environment and Forest, GOI issued (September 2000) MSW (M&H) Rules 2000 (Rules) under the Environment Protection Act 1986. These Rules stipulate seven steps of SWM comprising primary collection, waste segregation and storage at source, street sweeping, secondary waste storage, transportation, treatment and recycling and final disposal. The Rules, made it mandatory for all municipal authorities to create infrastructure facilities and services for SWM by 31 December 2003 including improvement of existing landfill sites, identification of landfill sites for future use and making sites ready for operation, setting up waste processing and disposal facilities and finally monitoring the performance of waste processing and disposal facilities.

Activities of collection, transportation and disposal of solid waste were shifted to a private developer in July 2008 as per Letter of Intent (LOI) for implementation of SWM project in Public Private Partnership (PPP) mode which started functioning effectively only from November 2008. Thus, there was delay of 59 months in setting up the SWM project from the stipulated date (31 December 2003). However, the Department stated (November 2011) that the delay was attributed to longer monsoon during last three years, bad site conditions, non-availability of specialised equipments in local markets, delay in release of funds and delay in finalisation of waste to energy technology.

The reasons stated by the Department is not correct because initiation of the project was delayed due to belated preparation of DPR-1 (December 2006) and DPR-II (January 2008).

During 2005-09 (up to November 2008), prior to starting of the project in PPP mode, GMC incurred an average monthly expenditure of ₹ 0.29³⁹ crore towards SWM.

1.3.2 Management of waste in Public Private Partnership (PPP) mode

In order to overcome financing constraints such as incurring large capital expenditure and to meet the demand for 'state of the art' technologies, public sector entities, sometimes, go for Public Private Partnership (PPP) arrangements. This is a contractual arrangement whereby the private proponent or developer undertakes the

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Year	No. of months	Amount	(₹ in crore)
			Average monthly expenditure
2005-06	12	2.88	0.24
2006-07	12	3.16	0.26
2007-08	12	4.12	0.34
2008-09 (Up to November 2008)	8	2.44	0.30
Total	44	12.60	0.29

construction including financing of a given infrastructural facility and operation and maintenance thereof. The private proponent operates the facility over a fixed term during which it is allowed to charge appropriate fees from users not exceeding those proposed in the bid or as negotiated and incorporated in the contract to enable him to recover his investment and operating and maintenance expenses in the project. The private proponent transfers the facility to the statutory or public sector entity at the end of the fixed term that shall not exceed, generally 50 years. Standard documents for PPP project are as under:

- Process documents: Request for proposal (RFP) for selection of consultant, request for qualification (RFQ) documents for pre-qualification of bidders and RFP for financial bids.
- Substantive documents: Concession agreement, manual of specification and standards and rules for user charges;

Besides, special purpose vehicle (SPV) or a special purpose company is to be set up under the relevant provision of Companies Act 1956 in whose name, land is to be transferred and other statutory clearances for the project are to be obtained. The SPV so set up should select the private partner through a transparent competitive bidding process.

The private partner would take over the company or SPV by purchasing its share for the duration of concession period and implement the project. On completion of concession period, the SPV along with the facilities created would revert back to Government or statutory entity.

The steps in entering into PPP arrangements, in general, are identification of the project/services and right type of PPP arrangement, preparation of feasibility report, selection of consultant through competitive bidding process, preparation of Detailed Project Report (DPR), project appraisal and approval by competent authorities, setting up of SPV, obtaining necessary statutory clearances, concession agreement with SPV, selection of private partner through international competitive bidding process and entering into agreement with selected private partner.

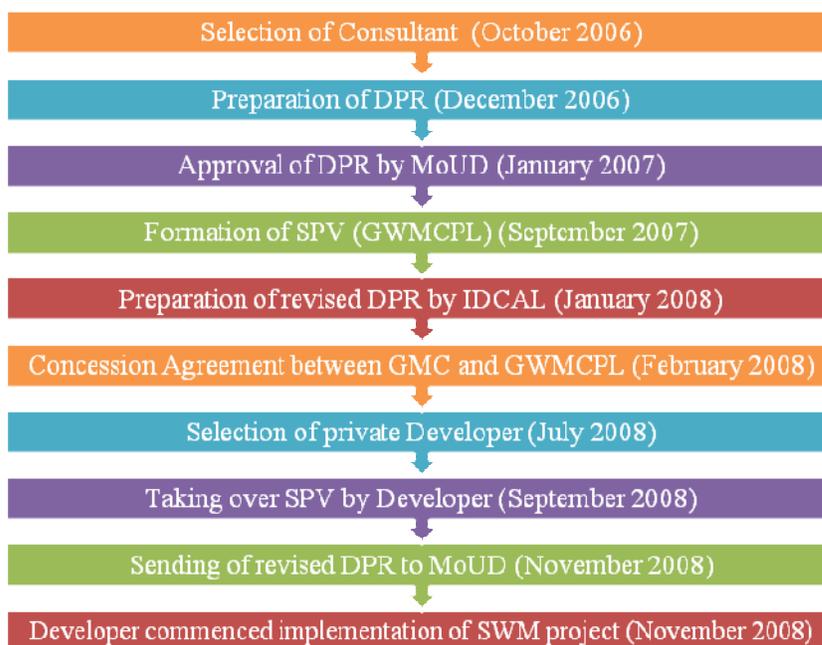
GMC conceived the idea of setting up SWM project in PPP mode on the basis of suggestion (October 2005) of the Ministry of Urban Development (MoUD), GOI and proposal (September 2006) for its financing by the Ministry of Finance, GOI. Accordingly, GMC in consultation with Government of Assam (GOA) prepared a DPR (hereafter called DPR-I) by a private company (IL&FS) for setting up SWM project in PPP mode, in December 2006. MoUD, GOI approved (January 2007) the project as provided in DPR-I at a total cost of ₹51.67 crore.

As envisaged in the PPP frame work, a consultant, Infrastructure Development Corporation Assam Limited (IDCAL⁴⁰) was selected (October 2006) by Guwahati Development Department (GDD), Government of Assam (GOA), for project

⁴⁰ IDCAL is a joint venture company of Guwahati Metropolitan Development Authority (GMDA) and Infrastructure Leasing and Financial Services Limited (IL&FS) Limited.

development assistance. Selection of consultant was done without inviting tender. GMC signed a Memorandum of Agreement (MoA) with IDCAL in August 2007. Thereafter, a SPV by the name of Guwahati Waste Management Company Private Limited (GWMCPCL) was registered (September 2007) under Companies Act 1956, for implementation of the project. In the meantime, GMC realized that the concept of conversion of waste to compost as proposed in DPR-I submitted to MoUD was not economically viable due to 'high cost of production and 'lack of marketability' of the product. The consultant IDCAL, therefore, was asked to prepare a DPR-II (hereafter called DPR-II), which was completed in January 2008. The DPR-II was sent to MOUD, GOI which was, however, not approved as of November 2011. A concession agreement based on unapproved DPR-II was executed (February 2008) between GMC and GWMCPCL to establish operate and maintain SWM system for a period of 20 years from the date of commissioning of the project. Subsequently, a private developer (M/S Ramky Enviro Engineers Limited) selected on single bid took over (September 2008) GWMCPCL with its entire equity share holding, rights and responsibilities vested as per the concession agreement. The chronological order of the process involved in setting up the PPP project is shown in Chart-1.

Chart-1: Chronology of implementation of SWM project in PPP mode



Source: Departmental records.

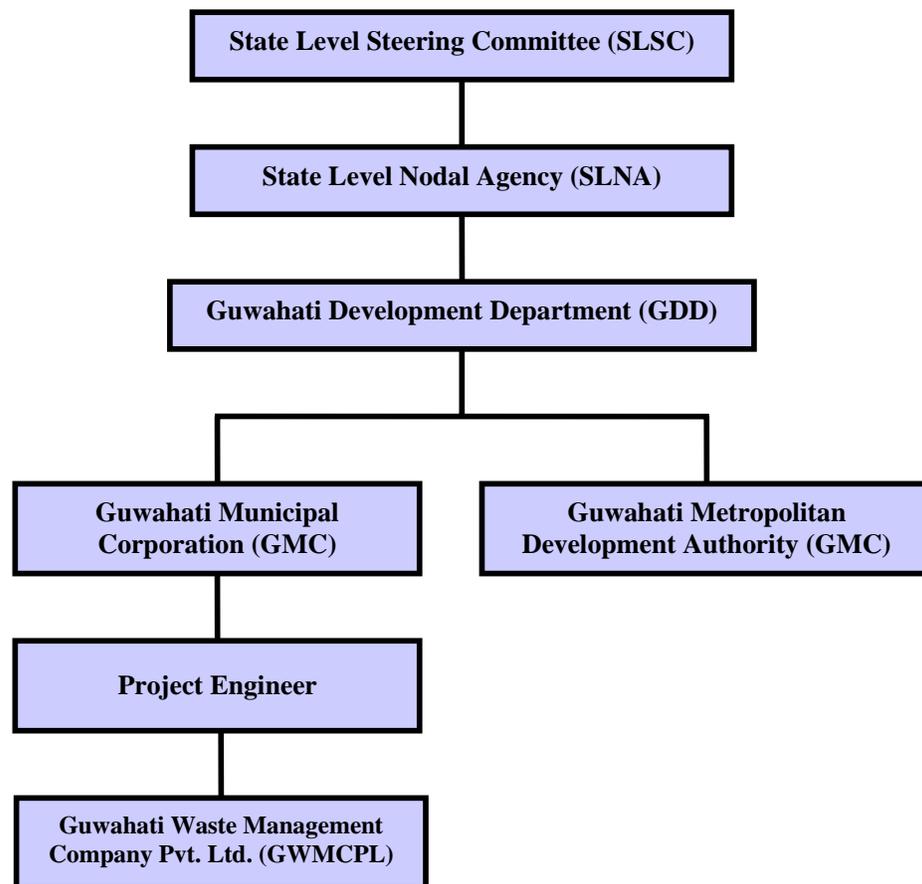
Details of pre-implementation arrangements and status and progress of implementation of the project which started functioning from November 2008 in PPP mode, are discussed under 'Audit Findings' in subsequent paragraphs.

1.3.3 Organizational set up

The SWM project was recommended to the Central Sanctioning and Monitoring Committee under Ministry of Urban Development (MoUD) constituted by GOI, for

sanction, by the State Level Steering Committee (SLSC) comprising Chief Minister as chairman and nine other members. A State Level Nodal Agency (SLNA) was constituted within Guwahati Metropolitan Development Authority (GMDA) with Secretary to the Government of Assam (GOA), Guwahati Development Department (GDD) as chairman and five other members. SLNA is responsible for assisting GMC for preparation of Detailed Project Report (DPR), obtaining sanction from SLSC, management and release of grants received from GOI and GOA, management of revolving fund and monitoring of the project for its smooth implementation. The organisational set up for approval and implementation of SWM project in PPP mode is shown in Chart-2:

Chart-2



Source: Departmental records.

1.3.4 Scope of audit

Performance Audit of the SWM project was carried out during May and June 2011 through a test-check of records relating to its implementation, in the offices of the Commissioner and Secretary, Guwahati Development Department (GDD); Chief Executive Officer, Guwahati Metropolitan Development Agency (GMDA); Commissioner, Guwahati Municipal Corporation (GMC); Project Implementing Unit

(PIU) and Project Monitoring Unit (PMU) of JNNURM, Government of India (GOI). The project was sanctioned (January 2007) at a total cost of ₹ 51.67 crore. Funding to the extent of ₹36.34 crore of the project cost was to be provided by GOI and GOA in the ratio of 90:10, while the developer was to contribute ₹ 15.33 crore. An amount of ₹ 17.58 crore (GOI: ₹ 15.82 crore, GOA: ₹ 1.76 crore) was released to the developer between April 2008 and December 2009 and expenditure incurred thereagainst is covered in this performance audit.

In addition, payment of user charges, tipping charges and other miscellaneous charges paid to the developer till March 2011 amounting to ₹17.38 crore⁴¹ was also covered in audit.

1.3.5 Audit objectives

Main objectives of the performance audit were to assess whether:

- The PPP model of SWM was based on well defined and structured feasibility studies and DPR;
- All applicable Rules/Laws were followed;
- Selection of site was made properly and with due care;
- Approvals were obtained to DPRs and for operation of the project from competent authorities;
- Bidding process was adequate and selection of Consultant, Special Purpose Vehicle (SPV) and Developer was done in fair and transparent manner;
- Agreements were framed properly after considering all aspects of approved DPR and relevant clauses were defined properly;
- Release of grants and payment of charges to Developer were done in accordance with the approved terms;
- The project was implemented efficiently, effectively and economically leading to achievement of targeted outcomes and results;
- Project was implemented in accordance with statutory provisions and there was no adverse impact on human, animal, avian and aquatic life including environment; and
- Monitoring system was adequate and effective.

1.3.6 Audit criteria

Audit findings were benchmarked against the following criteria:

- MSW Rules 2000, guidelines and rules of pollution control framed by competent authority;

⁴¹ User charge for primary collection: ₹8.16 crore + desilting of drain: ₹1.78 crore + desilting vehicle: ₹1.97 crore + secondary collection charge: ₹4.60 crore + Non recovery of POL charges: ₹0.64 crore + non-recovery of vehicle repairing charges: ₹0.23 crore.

- Mandatory instructions of GOA/GOI and various other statutory bodies/authorities;
- Correspondence /Minutes of different Committees, Concession agreements;
- Feasibility study reports, Detailed Project Report (DPR), Report of Project Engineer and
- Wetland Rules 2010.

1.3.7 Audit methodology

The performance audit commenced with an entry conference in June 2011 with the Dy. Secretary, Guwahati Development Department; GOA, Commissioner, Guwahati Municipal Corporation (GMC); Project Engineer and Officer on Special Duty, Project Implementing Unit, in which the audit objectives, criteria and methodology including visit to project sites and obtaining photographs of projects by audit were discussed. An exit conference was held with the Commissioner and Secretary to the Government of Assam, Guwahati Development Department and Commissioner of GMC on 04 November 2011 wherein the audit findings and recommendations were discussed. Replies of GMC wherever received have been suitably incorporated in the report. In the exit conference (04 November 2011), the Department assured to send para-wise replies, which was, however, not received (November 2011).

Audit findings

Audit findings are discussed in the succeeding paragraphs.

Pre-implementation arrangements

1.3.8 Selection of consultant

Selection of consultant was not done by inviting 'request for proposals (RFP)' from technically competent entities. Guwahati Development Department (GDD), GOA unilaterally selected (October 2006) Infrastructure Development Corporation Assam Limited (IDCAL), as consultant for the project. Consequently, the best available technical expertise as well as competitive rates were not availed of in selection of the consultant. Reasons for unilateral selection of consultant were not available in records, nor stated. GMC entered into a Memorandum of Agreement (MoA) in August 2007 with IDCAL for Project Development Assistance.

1.3.9 Selection of site for SWM project

Selection of suitable site for the project is of utmost importance, as improper selection could lead to health hazard and environmental pollution, especially through surface and ground water contamination. GMC considered the following three sites for setting up the SWM project initially which were rejected for the reasons mentioned in Table-1.

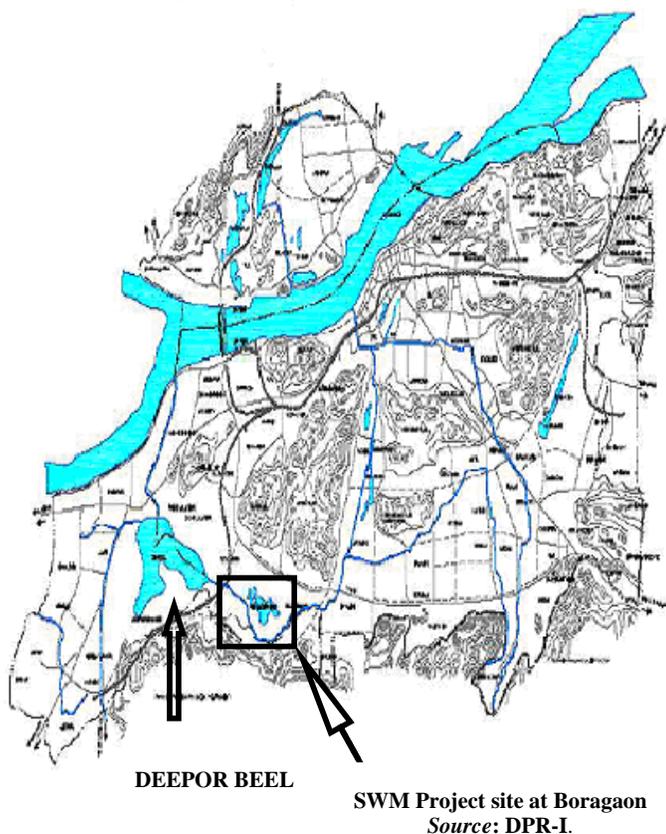
Table-1

Sl. No	Name of the site and its location	Reasons for rejection
1.	Sachal, Narangi, eight Km away from the city centre.	The location was unsuitable because of its close proximity to habitation and public complaints of odour, mosquitoes and garbage related menaces.
2.	Panikhaiti, 25 Km away from the city centre	This was a low lying flood plain of Brahmaputra river with risk of flooding and risk of ground and surface water contamination
3.	Garchuk, 12 Km away from the city centre	The location is in the foothills with risk of flooding from runoff water from the hills. It has a water body near the site with risk of surface water contamination

Source: GMC records.

GMC finally selected (2006) a site located at Paschim Boragaon, 12 Km away from the city centre having an area of 24.12 hectares for setting up SWM project. The site is in the flood plains of Brahmaputra and close to a small stream (mora nalha) which was streaming from Garchuk village and thereafter joining world heritage 'Deepor Beel' (location map alongside). Further, the land/site selected did not fully comply with prescribed parameters stipulated by Central Public Health and Environmental Engineering Organisation (CPHEEO), a regulatory authority, as indicated in Table-2.

MAP OF GUWAHATI



SWM Project site at Boragaon
Source: DPR-I.

Table-2
Non compliance of SWM Project with CPHEEO criteria

Criteria of Project (Location of)	As per CPHEEO norms	Violation of norms
River/Stream	The project site should be 100 m away from any river/stream	A Small stream passes through the site
Flood Plain	No landfill within a 100 year flood plain	The landfill site is within flood plain
Wetlands	No land fill within wet land	The landfill site is Wetland
Ground Water table	Ground water table to be more than 2 m	The ground water table is at the ground level
Airport	No land fill within 20 Km	The project site is within 10 Km of Airport

Source: GWMCPL records.

The site (photograph below) finally selected for setting up SWM project, thus, had the same defects for which the three other sites located at Sachal, Panikhaiti and Garchuk were initially rejected. GMC replied (November 2011) that as no other suitable land was available, the low land was selected to avoid delay in implementation of the project. Thus, the selection of site was done at the peril of air, water and environmental pollution. Besides, the selected site is in close proximity of a world heritage site and a national wetland.



SWM PROJECT ABUTTING THE DEEPOR BEEL

1.3.10 Detailed Project Report

GMC prepared (December 2006) Detailed Project Report (DPR-I) by engaging a private company “Infrastructure Leasing and Financial Services Limited (IL&FS),

Ecosmart, New Delhi”. This was prepared by accommodating the seven steps⁴² of SWM stipulated in MSW (M&H) Rules 2000. Recycling of 200 TPD of waste to manure was considered at the initial stage, which was to be enhanced to 500 TPD capacity (at developer’s cost) in the ninth year of 20 years project period. Yearly growth of population and per capita generation of waste were projected at 3.97 *per cent* and 1.41 *per cent* respectively over the years during the project period. The project cost of ₹51.67 crore was to be shared by GOI/GOA (₹ 36.34 crore) and selected developer (₹ 15.33 crore). Yearly operation cost of the developer was estimated at ₹12.63 crore to be recovered as collection fees (₹ six crore), tipping charges (₹ 1.99 crore) and sale of power and manure (₹4.64 crore). Approval to DPR-I, submitted (December 2006) by GDD, GOA, was accorded by the Ministry of Urban Development (MoUD), GOI in January 2007.

Scrutiny in audit revealed that DPR-I had inherent deficiencies as detailed below:

- (i) opinion of technical consultants in support of feasibility of project was not on record,
- (ii) utilisation of existing infrastructure (vehicles, equipments etc.) and manpower of GMC was not detailed;
- (iii) methodology for complete segregation of waste at primary and secondary collection points was not spelt out;
- (iv) manual of specification and standard of services was not prepared separately or included as a part of DPR;
- (v) neither viability of the project nor return on investment was defined/calculated and
- (vi) no contingency plan was drawn up to operate the facilities on termination of the contract.

1.3.11 Revised DPR (DPR II)

Although DPR-I was approved and first instalment of central share of funding also released (January 2007) by MoUD, GMC prepared (January 2008) a revised DPR (DPR II) through the consultant on the ground that the concept of waste to compost (as proposed in DPR-I) was not economically viable due to ‘high cost of production and lack of marketability of the product’. In the exit conference (November 2011), it was also stated that one of the reason for preparing DPR-II was availability of grant of ₹10 crore from Ministry of Renewable Energy (MNRE), if conversion of waste to energy was adopted in the DPR. To accommodate this factor, characteristics of waste generated in the city were radically changed in DPR-II from what was shown in the DPR-I. However, there were no reasons on record to show how the characteristics of waste had changed between December 2006 and January 2008. In the DPR-I, the

⁴² (1) Primary collection, (2) waste segregation and storage at source, (3) street sweeping, (4) secondary waste storage, (5) transpiration, (6) treatment and recycling and (7) final disposal.

concept of 'Waste to Energy' was completely ruled out due to less calorific value and high contents of moisture in the waste and the land was also found not suitable for setting up turbine generators for generation of power. By showing higher calorific value of the contents of the waste, in the DPR-II, energy generation from waste was shown as feasible. Accordingly, DPR-I was revised by adding provisions for setting up of 'Refuse Derived Fuel (RDF)' plant of 500 TPD capacity, power generation unit of six MW capacity and the capacity of compost plant was reduced from 200 TPD to 50 TPD. The project cost was enhanced to ₹ 102.15 crore in which developer's share was increased to ₹ 65.81 crore keeping the share of GOI/GOA at the original amount of ₹ 36.34 crore. Details of differences in the features of DPR-I and DPR-II are given in Table-3.

Table-3

Components	DPR-I	DPR-II	Remark
Project cost	₹ 51.67 crore	₹ 102.15 crore	-
Compost Plant	200 TPD in first year and to be enhanced to 500 TPD in 11 th Year	50 TPD only	As per DPR-II waste to compost concept is not economically viable.
RDF Plant	Nil	500 TPD	
Power generation	Nil	6 MW	The concept of conversion of waste to energy was ruled out in DPR-I due to high contention of moisture and less calorific value in the waste of Guwahati.
Characteristics of waste			
Fuel	0	43 per cent	
Organic	61.45 per cent	37.62 per cent	There were large variations in the characteristics of waste as indicated in the original DPR-I and DPR-II.
Inert	12.54 per cent	18.71 per cent	
Recyclables	25.56 per cent	0.62 per cent	
Others	0.45 per cent	0.04 per cent	
Total	100 per cent	100 per cent	
Calorific Value	800-1000 Kcal/Kg	1,400-4,043 Kcal/Kg	

Source: Departmental records.

1.3.12 Non-approval of DPR-II by MoUD

As of June 2011, the DPR-II had not been approved by MoUD, GOI due to large variation in the characteristics of MSW in DPR-II compared to that in DPR-I. Since variation in the calorific value in waste was considered to be alarming, the MoUD, *inter-alia* suggested (May 2009) to GOA that the component be verified through an independent Government Institution, as calorific value of waste would be the key factor for success of energy generation project. MoUD also asked GOA to clarify as to how the balance organic content of waste would be processed and disposed because of reduction of capacity of compost plant. Further, the deficiencies of first DPR remained unaddressed.

Thus, the viability of the project as well as sustainability of PPP arrangement became uncertain due to revision of the originally approved DPR and execution of concession agreement on revised but unapproved DPR-II.

1.3.13 Concession Agreement

Although DPR-II had not been approved by MoUD, GOI, a concession agreement based on this unapproved DPR-II was executed (February 2008) between GMC and GWMCPL (SPV) to establish, operate and maintain SWM system for a period of 20 years from the date of its commissioning with the following time frame for various project aspects to be maintained by selected developer. The letter of Intent (LOI) was issued to the developer in July 2008.

Table-4: Time frame for completion of different components of project

Project components	Time for completion
Waste collection and transportation	6 months from the date of LOI.
Processing of Waste	One year from the date of issue of LOI
Landfill facilities	One year from the date of issue of LOI.
Power generation	Two years from the date of issue of LOI.

Source: GMC records.

GMC replied that the DPR was not revised but, only a supplementary component was added to it and only in-principle approval was sought so that the GOI recognizes the existence of the IMSWP in Assam. Moreover, the agreement was signed in order to kick-start the solid waste management work. GMC's reply is not acceptable because in the second DPR the capacity of the compost plant was reduced to 50 TPD from 500 TPD (200TPD in first year and 300 TPD in 11th year) as proposed in the first DPR and setting up of RDF plant of 500 TPD and power generation of 6 MW were added and the cost of the project was enhanced to ₹ 102.15 crore from ₹ 51.67 crore. The consultant opted for second DPR as the first DPR was not economically viable. The MoUD also did not approve the second DPR for having variations in characteristics of waste between the two DPRs.

The concession agreement provided for payment of tipping charges⁴³ by GMC to developer of ₹130 per TPD to be escalated by four *per cent* annually, recovery of ₹50 per month by the developer from each household towards collection charges, while collection fees from bulk generators⁴⁴ of waste would be mutually negotiated between the developer and the waste generator based on quality and quantity of waste generated. The developer would be entitled to retain all income from sale of power/product, processing of waste and other recyclables.

Audit scrutiny revealed the following deficiencies in concession agreement:

- the agreement did not contain any enforceable performance standard or bench mark;
- there was no clause for payment of compensation by the developer for its failure to adhere to the time schedule for project completion;

⁴³ Tipping charges: Transportation cost of waste from secondary collection point to project site.

⁴⁴ Bulk generators: Commercial establishments, Hotels, Markets etc.

- there was no clause for levy of penalty in case of shortfall in achieving targets of collection, transportation and processing of waste;
- neither any specification of output was mentioned nor quality of service prescribed; and
- there was no justification indicated for payment of tipping charges of ₹ 130 per TPD by GMC after investment of substantial amount, as pointed out by MoUD, GOI.

1.3.14 Selection of Private Developer

The consultant (IDCAL) floated 'Expression of Interest (EOI)' with eligibility criteria of technical capability based on project experience and financial capacity of the bidders in leading daily news papers in November 2007. This EOI was issued on the basis of DPR-I approved in January 2007 by MoUD, GOI at ₹ 51.67 crore. In response to EOI, 13 Request for Quotations (RFQ) were received. Sub-committee constituted by IDCAL, considered and recommended nine firms to the core committee for short listing for issue of RFQ. Four firms were rejected as they did not meet the prescribed eligibility criteria.

RFQ was, however, issued (March 2008) to nine eligible bidders adding a new component/request of conversion of waste to energy based on DPR-II that was not yet approved by MoUD, GOI. This enhanced the financial cost of the project to ₹ 102.15 crore. Thus, the share of the developer increased to ₹ 65.81 crore⁴⁵ from ₹ 15.33 crore⁴⁶ in the DPR-I on which bids were invited in November 2007. It would appear that as a result of increase in the developer's share in financing the cost of the project because of inclusion of new parameter of conversion of waste to energy, only one bidder i.e. Ramky Enviro Engineers Limited, a Hyderabad based private company submitted their proposal.

Instead of going for retendering to ascertain the lowest competitive rate, GWMCPL accepted the tariff based bidding of the single bidder at negotiated per unit levelised tariff of ₹ 4.10 per unit of energy and selected Ramky Limited in July 2008 to operate the project on BOOT⁴⁷ basis. The Department failed to furnish any specific reply justifying the reasons for non exploration of retendering process, though called for.

As ultimately only a single bid was received and accepted, GWMCPL did not derive the benefit expected out of the bidding process in terms of availing the service of the most technically capable agency, especially as the project involved a challenging requirement of conversion of waste to energy which was not included in the DPR

⁴⁵ ₹ 65.81 crore=₹ 102.15 crore (Project cost) - ₹ 36.34 crore (Government contribution).

⁴⁶ ₹ 15.33 crore= ₹ 51.67crore (Original project cost) - ₹ 36.34 crore (Government contribution).

⁴⁷ Build-Own-Operate-and-Transfer (BOOT) shall mean a project based on the granting of a concession by a Principal (the Union or Government or a local authority) to the concessionaire, who is responsible for the construction, financing, operation and maintenance of a facility over the period of the concession before finally transferring the facility, at no cost to the Principal, a fully operational facility. During the concession period the promoter owns and operates the facility and collects revenue in order to repay the financing and investment costs, maintain and operate the facility and make a margin of profit

approved by MoUD in January 2007. No reasons for adding the energy component, midway in the tendering process, was furnished to audit, though called for.

It is thus clear that public private partnership in SWM was taken up without well defined and structured feasibility studies. A candid and fundamental document such as DPR-II was not approved by GOI for the last two and half years because of potent inconsistencies and avoidable shortcomings. Moreover, selection of dumping site was not made with due care as the site is in prohibited wetland. Bidding process for selection of developer did not generate adequate competition and transparency was lacking.

1.3.15 Financial management

Details of sanction and release of funds towards the project, expenditure incurred thereagainst and irregularities noticed in utilisation of funds are discussed below:

1.3.15.1 Sanction and release of funds

The Ministry of Urban Development (MoUD), GOI, approved the project at ₹ 51.67 crore which was to be shared by GOI and GOA (₹36.34 crore) in the proportion of 90:10 and by the selected developer (₹ 15.33 crore).

MoUD, GOI, sanctioned ₹ 35.16 crore in January 2007 as grant-in-aid for the project after adjusting ₹ 1.18 crore already released (2006) as award of 12th Finance Commission for SWM. Out of ₹ 35.16 crore, ₹ 15.82 crore was released (till June 2011) in two equal installments in April 2008 and December 2009 to GOA, which, in turn, released ₹ 17.58 crore including ₹ 1.76 crore as state share to GMC through GMDA (SLNA) for implementation of the project. Details of funds received and released to GMC for the SWM project and amount paid to the developer are shown in Table-5.

Table-5

(₹ in crore)

Year	Fund released by GOI	Fund released by GOA to GMC			Opening balance with GMC	Receipt of interest on Term Deposit	Total fund available with GMC	Fund released by GMC to GWMPCL	Closing balance of central share with GOA	Closing balance with GMC
		Central share	State share	Total						
2007-08	7.91	0	0	0	0	0	0	7.91	0	
2008-09	0	7.91	0.88	8.79	0	0.17	8.96	7.76	0	1.20
2009-10	7.91	7.91	0.88	8.79	1.20	0.20	10.19	9.82	0	0.37
2010-11	0	0	0	0	0.37	0.01	0.38	0		0.38
Total	15.82	15.82	1.76	17.58		0.38		17.58		

Source: GMC records.

No further grant was released by GOI as the DPR-II is yet to be approved by MoUD, GOI (November 2011). In the exit conference also it was stated (04 November 2011) by the Department that release of further fund depends on approval of DPR-II by MOUD.

1.3.15.2 Diversion of project funds

₹1.18 crore released (March 2006) under 12th Finance Commission award was decided (January 2007) by MoUD, GOI to be treated as part of the project finance/cost of ₹51.67 crore. Scrutiny of the records revealed that out of ₹ 1.18 crore,

₹21.86 lakh and ₹6.27 lakh were utilised by GMC for purchase of computer and repairing of a bus terminus respectively, which were beyond the scope of SWM activities. The balance funds was utilised for purchase of one Bulldozer (₹63.50 lakh) and one Excavator loader with Sweeper broom and unloader blade (₹26 lakh). These assets were neither transferred to SWM project nor did the GMC provide equal funds for the project. Details of utilisation of the said assets for the progress of SWM were also not on record. Thus, ₹117.63 lakh was not available for SWM. The department accepted (04 November 2011) the audit observation and stated that the assets acquired with the 12th F.C funds were retained and used by the GMC.

1.3.15.3 Inflated Utilisation Certificate

The first installment of grant from Jawaharlal Nehru National Urban Renewed Mission (JNNURM) amounting to ₹ 8.79 crore was received by GOA on 29 April 2008 from MoUD, GOI. Submission of Utilisation Certificate (UC) was a pre-condition for release of second installment. Scrutiny of the records revealed that UC for the entire amount was submitted (May 2009) by GMC though the developer spent only ₹6.93 crore till the date of submission of UC, which meant that UC was inflated to the extent of ₹1.86 crore. The Department stated (November 2011) that the errors if any would be rectified.

1.3.15.4 Excess release of grant

Clause 5.3.2(b) under Article-5 of the Concession Agreement stipulated that the developer should at first invest 20 per cent of the differential cost of total Project cost and only thereafter grant should be released on *pro-rata* basis to the total project cost according to the following formulae:

$$\text{Grant disbursement} = \frac{\text{Bills approved} \times \text{approved cost}}{\text{Approved cost} + 80 \text{ per cent of differential cost}}$$

Scrutiny of the records revealed that

- An amount of ₹6.93 crore was released by GMC to the developer before initial investment of ₹ 13.23⁴⁸ crore was made by the developer,
- Out of total bill value amounting to ₹45 crore submitted (May 2010) by the developer, bills amounting to ₹19.41 crore was approved and payment of ₹17.58 crore released thereagainst by February 2010. As, the total project cost had been enhanced to ₹102.51 crore, an amount of only ₹9.59⁴⁹ crore was to be released. An amount of ₹7.99⁵⁰ crore was, thus, released in excess of stipulation of the

⁴⁸ {20 per cent of (₹102.51 crore-₹36.34 crore)}

⁴⁹ Grants to be released= $\frac{\text{Bills approved} \times \text{Approved Cost}}{\text{Approved Cost} + 80 \text{ per cent of Differential Cost}}$
 $= \frac{₹19.41 \text{ crore} \times ₹51.67 \text{ crore}}{₹51.67 \text{ crore} + 80 \text{ per cent of } (₹102.51 \text{ crore} - ₹36.34 \text{ crore})}$
 $= \frac{₹1002.91 \text{ crore}}{₹51.67 \text{ crore} + ₹ 52.94 \text{ crore}}$
 $= \frac{₹1002.91 \text{ crore}}{₹104.61 \text{ crore}}$
 $= ₹9.59 \text{ crore.}$

⁵⁰ Excess of grants released=₹7.99 crore (₹17.58 crore-₹9.59 crore).

agreement. As of March 2011, the developer submitted bills for ₹45 crore, out of which bills worth ₹25.59 crore were neither measured/quantified nor site verification done by the Project Engineer. Thus, veracity of this expenditure could not be ascertained in audit.

1.3.15.5 Irregular release of advance for purchase of equipment

There was no provision in the Concession Agreement for payment of advance for purchase of equipment. However, in contravention of the terms and conditions for release of grant, ₹4.76 crore was paid (July 2008) by GMC to the developer as advance for purchase of collection and transportation equipment. It is pertinent to mention here that the agreement was executed with Ramky in September 2008, whereas the advance of ₹4.76 crore was provided irregularly to the developer in July 2008 itself. The developer submitted the adjustment bill thereagainst in November 2009. Though the bill of ₹4.76 crore for the equipment was passed by GMC for adjustment, the supporting documents viz, invoices etc., were not made available to audit, in the absence of which the authenticity of expenditure could not be verified in audit. The department stated (November 2011) that the advance was released to the developer in public interest and due to urgency. The reply is not tenable because the PPP concept was conceived to attract private capital so as to save scarce public resources.

1.3.15.6 Excess release of funds to developer on purchase of equipment

From the part statement of equipment purchased by GWMPCL, as available with GMC, it was observed that unit rates of certain Collection and Transportation (C&T) equipment were estimated at a much higher value in the DPR compared to actual unit cost of procurement made by the developer. This resulted in excess release of ₹44.05 lakh⁵¹ to the developer on purchase of C&T equipment.

1.3.15.7 Missing vehicles

Report of physical verification conducted by the Commissioner of GMC in April 2010, revealed that three Twin Bin dumper placer vehicles worth ₹ 37.50 lakh procured (November 2009) out of the grant amount released by GMC to the developer, were neither found in the project site nor were under repair. Despite issue of instructions to GMC by the GOA to take stern action against the developer for violation of agreement in this respect, GMC did not initiate any penal action against the developer (August 2011). While accepting the audit observation the

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Item	Quantity supplied (in number)	Rate per unit as per DPR (In ₹)	Rate per unit as per GWMPCL (In ₹)	Difference of rate (In ₹)	Excess expenditure (₹ in lakh)
1	2	3	4	5	6 (Col.2XCol-5)
Container TRY Cycle	219	15,000	10,400	4,600	10.07
Dumper Vehicle	25	12,50,000	11,14,085	1,35,915	33.98
Total					44.05

department stated (04 November 2011) that appropriate action would be taken if any deficiency was found. However, no reply from the Department was received (November 2011).

Thus, there was diversion of project funds, utilization certificates were given for inflated amounts, payments made to the developer outside the scope of the PPP arrangement, the developer did not bring in its share of financing the PPP arrangement in advance as stipulated and undue financial benefit was extended to the developer. These instances point to unprofessional and deficient financial management of a prestigious PPP arrangement.

Implementation of the project

1.3.16 Site Development

As per DPR-I, total area of 24.12 Hectare (180 Bigha) of land was allotted for the development of integrated facility for the management of MSW in Guwahati. Following works were required to be done for site development:

- Part-1: 9 Ha (90, 000 sq m) for the development of compost plant of 200 TPD capacity in phase-1 (in the first year) and 300 TPD capacity plant in second phase (in eleventh year),
- Part-2: 15.12 Ha (1,51,200 sq m) for the development of sanitary landfill,
- An approach road of length 1300 m was to be constructed to the project site; and
- RCC retaining wall of 8 M height around the sanitary land fill area was to be constructed.

Observation on different works connected with site development are indicated in the succeeding paragraphs.

1.3.16.1 Compost Plant

The site development of compost plant were to conform to the following two requirements:

- As the project site was in flood plain, the height of the plant site was required to be raised above highest flood level (48.56 m). To achieve this height the land was required to be filled up to a height of eight meter,

To construct compost plant of 500 TPD capacity, the size of the filled in plot was required to be 6.2 hectare (62,000 sq m). Filling up of land was to be done in a trapezium shape in the proportion of 1:3 (with reference to height) and base dimension of the plot would be 9 hectare (90,000 sq m).

Against the above requirement, the developer developed a total area of 38,500 sq m (220 m X 175 m) for 200 TPD compost plant (shown in photograph). Out of this, 24,500 sq m (175 m X 140 m) was filled up to a height of 6 meters and the balance 14,000 sq m (175 m X 80 m) was filled, up to a height of five meters instead of stipulated eight meters. Thus, the total volume of earthwork done was 2,17,000 cum (175 X 140 X 6 + 175 X 80 X 5). Earth filling below the highest flood level would not ensure protection of the project from flood damage. Though the compost bed was developed for the 200 TPD capacity, the plant (shown in photograph) of only 50 TPD capacity had been installed in February 2011. The initial level (base dimension) of the site developed for compost plant was not recorded in the Measurement Book. Besides, the Measurement Book on the basis of which payment of ₹2.72 crore was released, could not be made available to audit (June 2011). Thus, basis of payment of ₹2.72 crore could not be verified in audit and it was not clear as to how GMC had satisfied itself regarding the correctness of the quantum of payment and the quality and quantity of the execution of work.



AREA OF COMPOST PLANT DEVELOPED
(July 2011)



COMPOST PLANT (July 2011)

Details of length and breadth of base and top including height of the elevated area were required to be indicated in MBs for calculating quantity of earth filled in. However, measurements against earth filling were recorded in MBs without taking into account the actual breadth of the top and base. As a result, the ratio maintained for construction of the base with reference to height and area of top of the compost plant, could not be ascertained and verified. Thus, the measurements recorded in the MBs were defective and payments unverifiable. Possibility of excess payment could not be ruled out. Reasons for non production of the MB and basis of calculation of quantity was not furnished, though called for.

1.3.16.2 Land development other than Compost Plant

Out of 15.12 Ha of land earmarked for sanitary land filling in the DPR-I, 8.04 Ha were used as dumping ground for MSW. Remaining 7.08 Ha were taken up for development through land filling up to a height of two meters. As of March 2011, land filling of the whole area was yet to be completed. A total of 2,62,569.84 cum of earth filling was completed. Thus, a total volume of 4,79,569.84 cum (2,17,000+2,62,569.84) of earthwork was executed. Incidentally ₹262 per cum was the rate of earth filling adopted in the DPR which was found much higher than the rate of earth filling as per Assam Public Works Department (APWD) Schedule of Rate (SOR) 2007-08 of ₹168 per cum. However, payments were released at the higher

rate of DPR. Compared to the APWD, SOR rate of ₹168 per cum, there was an extra avoidable expenditure of ₹4.51 crore⁵².

1.3.16.3 Approach Road

As per DPR-I an access road with metalling and black topping of length 1,300 m was required to be constructed at a cost of ₹4.53 crore as per DPR-I. The cost of the proposed access road was reduced to ₹1.99 crore as per recommendation of CPHEEO, as 300 m metal road and kachcha roads already existed around the project site. Thus, the average unit rate for construction of the access road should have been ₹15,308 per running meter.

Scrutiny of records disclosed that the developer was paid ₹117.76 lakh (@ ₹24,279.60 per running meter) for construction of 485 m of kachcha road, which resulted in excess payment of ₹43.51 lakh⁵³. GMC stated (November 2011) that a re-verification would be undertaken and adjustment would be made from the pending bills in case of overpayment.

Moreover, smooth transportation of MSW in rainy season became difficult due to non-completion of the access road.

1.3.16.4 Construction of Retaining Wall/Earthen Bundh

According to DPR-I a RCC retaining wall of a height of eight meter was recommended for construction around the periphery of 15.12 Ha of the allocated land for sanitary land fill (SLF) with a view to protecting the project site and stopping contamination of adjacent wetland and surrounding area. CPHEEO also recommended construction of 1,546 running meters of retaining wall around the SLF site.

Scrutiny of the records revealed that instead of retaining wall around the periphery, an earthen bundh was taken up for construction and a bundh (shown in photographs) of 590 m with five meters breadth and four meters height was completed around the Compost Plant, incurring an expenditure of ₹78.08 lakh as of March 2011. This was in deviation from the DPR-I and the objectives of protecting the project site as well as contamination of adjacent wet land could not be achieved.



EARTHEN BUNDH AROUND THE COMPOST PLANT
(July 2011)



EARTHEN BUNDH AROUND SLF AREA (July 2011)

⁵² $(₹262-₹168) \times 4,79,569.84 = ₹4,50,79,564.96$.

⁵³ $(₹24,279.60 - ₹15,308) \times 485 = ₹43,51,226$.

Despite the allotment/handing over of the entire project alongwith site to the private developer on BOOT basis, the GMC unauthorisedly incurred an expenditure of ₹1.30 crore towards construction of earthen bundh in the project site through a private contractor which amounted to extending unauthorised financial aid to the developer. Reasons for extending such unauthorised aid to the developer was not furnished, though called for. GMC stated (November 2011) that a re-verification would be undertaken and adjustment if any would be made from the pending bills. However, no further reply from GMC was received (November 2011).

Management of waste

1.3.17 Generation of waste

Proper assessment of quantity and characteristic of waste generated is essential for correct planning and successful implementation of solid waste management (SWM) project. Table-6 shows estimate of generation of solid waste in Guwahati as projected in approved (original) DPR.

Table-6

Year	Population	Per capita generation gm/day	Projected generation as per DPR TPD
2006	9,84,083	321.73	316.61
2011	12,60,419*	345.06	434.92

*Population as per Census Report 2011.

Source: Departmental records.

According to DPR-I, 200 TPD waste was to be processed in the compost plant. Concession agreement was based on DPR-II wherein 500 TPD and 50 TPD of waste were to be processed for Refuse Derived Fuel (RDF) plant and compost plant respectively. Subsequently GOA intimated MoUD in February 2011 that the capacity of compost plant would be maintained at 200 TPD as proposed in the DPR-I. Thus, a total of 700 TPD of waste was required for both the plants, whereas estimated generation of waste was only 434.92 TPD as of 2011. For optimum utilisation of the capacity of the plants, as per DPR the project is to wait till the year 2021 when generation of waste would be 700 TPD. This indicated that the DPR-II was prepared without ascertaining the ground reality of generation of waste. Besides, fuel derived power generation as mentioned in the DPR-I did not appear possible, with the available characteristic of the waste.

1.3.18 Primary collection

In accordance with the provisions of approved DPR and Article 5.10 and 5.11 of the Concession Agreement, the private developer was responsible for:

- segregated collection of MSW from each household;
- segregated collection of MSW from bulk generators like hotels, markets, malls etc;

- street sweeping on a regular basis including drain desiltation and
- create public awareness regarding segregated disposal of waste, payment of user fees etc. through cable network, newspaper and other means of communications.

Regarding payment of fees to the developer, as stipulated in schedule IX of the concession agreement and mandate issued by GMC in July 2008, the developer was authorised

- to directly collect collection fees of ₹50 per month from each household and
- for bulk generators, amount of collection fees would be settled through negotiation between generators and the developer, depending on the quantity of waste.

Primary collection of solid waste commenced from November 2008 and the developer recovered collection fee from each household up to June 2009.

Scrutiny of the records revealed that violating the provisions of Concession Agreement, GOA, GDD, relieved the developer from July 2009 from the responsibility of collection of user fees from households. Instead, GOA instructed GMC to pay a fixed amount of ₹45 lakh per month for coverage of one lakh households, provided the developer submitted coupons of satisfactory service signed by the households visited by the developer. The developer was also required to ensure drain desilting and street sweeping, etc. GMC was also instructed to enter into a written agreement to this effect with the developer. No such agreement was available in records provided to Audit. While admitting the audit observation the department stated (November 2011) that the agreement would be finalised after the bench marking of the service level agreement between the GMC and the private partner. The service level bench marks have been identified in accordance with the MoUD guidelines.



GARBAGE AT JUTIKUCHI (12 August 2011)



GARBAGE AT BIHARBARI (11 October 2011)

A total amount of ₹8.16⁵⁴ crore was paid to developer for primary collection during the period from July 2009 to March 2011, which was in contravention of the

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Period	Amount paid (₹ in crore)
July 2009 to March 2010	3.56
April 2010 to March 2011	4.60
Total	8.16

Concession Agreement. Thus, the payment would amount to extension of undue financial aid to the developer (photograph above showed garbage lying roadside).

Further, scrutiny of records revealed that the payment was made based on arbitrary assessment of performance certified by the Divisional Engineers of GMC, and it was not based on verifiable parameter of submission of coupons by households in support of satisfactory services by the developer. The performance certificate issued by the GMC Divisional Engineers revealed that the monthly coverage of the households by the developer towards primary collection was 61 to 80 *per cent* against one lakh households.

Thus, the performance of the developer towards primary collection against stipulated 1,84,454 households would be 33 to 43⁵⁵ *per cent* only. Payments were however released to the developer uniformly for 80 *per cent* coverage against one lakh households as per recommendation of GMC Divisional Engineers. Thus, certificates issued in support of satisfactory performance were not based on verifiable parameters rendering the entire exercise non-transparent.

Further, though desilting of drain and street sweeping were the duties of the developer, GMC incurred expenditure of ₹1.78 crore for desilting of drains and ₹1.97 crore towards procurement of street sweeping and desilting vehicles in 2010-11. Thus, there was a total undue financial aid of ₹11.91 crore⁵⁶ to the developer as of 31 March 2011. Besides, the developer was further benefitted by saving the cost of manpower otherwise required to be engaged for collection.

Despite providing inadmissible financial aid in addition to the due payments to the developer, primary collection of waste was not only much below per (33 to 43 *per cent*), but failed to protect the environment as per findings of State Pollution Control Board as well as complaints of dissatisfaction, raised by the public.

1.3.19 Secondary collection

Relevant Clause⁵⁷ of concession agreement stipulated that developer would be solely responsible for transportation of segregated waste from the Secondary Collection Point to the land fill /Project Site on payment of monthly tipping charges of ₹130 per ton with four *per cent* yearly escalation.

The agreement further stated that weighbridge should be installed by the developer at the site with video surveillance, to ensure maximum possible accuracy for weighing the trucks to determine the weight of each consignment and other details.

Though, concession agreement provided for payment of carrying charge from secondary collection point to project site @ ₹ 130 per TPD, GOA revised it on two occasions:

⁵⁵ 33% = (61,000/184454 X 100), 43%=(80,000/184454 X 100).

⁵⁶ ₹8.16 crore + ₹1.78 crore + ₹1.97 crore=₹11.91 crore.

⁵⁷ Clauses 5.13, 6.1 (d) and 7.1 (a) of the concession agreement.

- Mandate issued in July 2008 provided monthly fee of ₹ 24.45 lakh assuming carriage of 350 TPD of waste by developer,
- In the order issued in July 2009, GOA reduced the monthly rate to ₹13 lakh.

In actual practice, installation of weighbridge, which was mandatory, was not done till November 2010 by the developer. Thereafter, though it was installed but it could not be utilised for stated errors in readings. Thus, payments were made till March 2011 on transportation without weighing the waste, violating the relevant clause of the agreement.

Collection and transportation commenced in November 2008 and rates of payment for transportation from November 2008 to March 2011 were as under:

- From November 2008 to June 2009 payments were on lump sum basis @ ₹24.45 lakh pm assuming that the developer transported 350 TPD with token deductions in each month for less carriage,
- From July 2009 to September 2009 payments were also on lump sum basis @ ₹13 lakh pm,
- From October 2009 to March 2011, payments were released by determining weight on estimated carrying capacity of trucks and collection bins.

Table-7 contains details of transportation charges paid during the period November 2008 to March 2011.

Table-7

Period	Amount paid (in crore)	Total quantity of MSW transported (in MT)	No of days	Daily transportation made (TPD)	Daily average generation of MSW as per DPR (TPD)	Actual accumulation of waste at secondary point ⁵⁸ (TPD)	Percentage of accumulation against generation	Excess transportation shown (TPD)	Excess payment (₹130 X Column-4 X Column-9) (₹ in lakh)
1	2	3	4	5	6	7	8	9	10
November 2008 to June 2009	1.8	Not recorded	242	Payment made on lump sum basis.					
July 2009 to March 2010	1.12	83,923.80	273	307	371	255.43	69	51.57	18.30
April 2010 to March 2011	1.68	1,22,639.10	365	336	391	269.16	69	66.84	31.72
Total	4.6								50.02

Source: GMC and GWMCPL records.

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Year	Projected generation TPD	Increase of generation of waste in comparison to 2006	Percentage of increase of waste in comparison to generation in 2006	Actual collection at secondary point TPD	Percentage of accumulation of waste at secondary point
2006	316.61			218.45	69
2009	371	54.39	17	255.43	69
2010	391	74.39	23	269.16	69

Note: Actual generation of waste at secondary point during 2006 is calculated considering accumulation of waste against coverage of domestic household 43 per cent and others 100 per cent. Detail calculations are given in *Appendix-I.17*.

In the absence of arrangements for accurate measurement in weighbridge claim of daily transportation (shown in photograph) made by developer shown in the table (column-5) above had actually no basis. The depiction of daily transportation shown to have done was based on assumptions rather than measurements. Calculation on estimated carrying capacity of trucks and bins was also not accurate because it was subject to manipulation as trucks and bins may be half filled and shown as full.



HALF FILLED TRUCK CARRYING WASTE
(July 2011)

Further, as discussed in Para-1.3.18, there was 33 to 43 *per cent* coverage of primary collection of waste from domestic households to secondary point, the total collection of waste at secondary point could not exceed 69 *per cent*, even if 100 *per cent* accumulation of waste as projected in the DPR (Detailed in **Appendix-1.17**) from the bulk generators and other source was added with the waste collected from the domestic households covered under primary collection. Details are shown in Table-7. Thus, the estimated weights/quantity as recorded on the transportation bills of the developer were higher than the actual quantity transported. As a result, there was an excess payment of ₹50.02 lakh to the developer towards transportation charge considering 69 *per cent* carriage of waste (as accumulated at secondary point) to dumping site.

Further, for the period from May 2010 to March 2011, instead of paying at a fixed rate of ₹13 lakh per month, payments in 11 months was made by applying agreement rate on quantity estimated to be transported which had exceeded the rate fixed by GOA. This resulted in over payment of ₹12.32⁵⁹ lakh.

As such, the payment of transportation charge was not transparent.

Other observations made in this regard are as follows:

- During the period from November 2008 to June 2009 a total payment of ₹1.80 crore was made to the developer on lump sum basis (approximately @ ₹24.45 lakh per month) considering that the developer carried 350 TPD of waste during the period. Again, at the agreed rate of ₹130 per TPD according to concession agreement, the total cost during this period amounted to ₹1.10 crore (₹130X242 days X350 TPD). Thus, the developer was irregularly paid ₹0.70 crore (₹1.80 crore-₹1.10 crore) during the period.
- The developer was to bear all expenses incurred for collection and transportation of MSW and was entitled to get monthly payment as stipulated in the

⁵⁹ {Amount paid: ₹155.32 lakh- amount payable: ₹143 lakh (₹13 lakh X 11 months)}= ₹12.32 lakh.

mandate/order/ concession agreement. GMC provided vehicles including POL to developer for secondary collection of waste. The cost of collection (POL, maintenance, etc.) was to be borne by the developer. Accordingly, for providing GMC vehicles including POL, the cost of POL was recovered till March 2010 with a short recovery of ₹ 21.63⁶⁰ lakh. However, for subsequent period no recovery towards POL cost was made. This resulted in undue financial aid to the developer to the tune of ₹63.91⁶¹ lakh during November 2008 to March 2011. While accepting the audit observation GMC stated (November 2011) that appropriate action would be taken.

- Expenditure of ₹22.96 lakh incurred by GMC during October 2008 to March 2011 towards repairing charges of vehicles utilised by the developer was also not recovered from the developer.

1.3.20 Processing and disposal of waste to Sanitary Land Fill

According to the concession agreement, processing of waste was to start after completion of one year from the date of issue of LOI and all other activities including generation of power were to be completed within two years of the date of issue of LOI. Since LOI was issued to developer in July 2008, processing of waste and generation of power should have commenced from July 2009 and July 2010 respectively. Achievements in this regard till March 2011 were as follows:

1.3.20.1 Composting of waste

In violation of the approval of MoUD for installation of 200 TPD capacity of compost plant in first phase in view of high content of organic component (61 *per cent*) in the waste, a compost plant of reduced capacity of 50 TPD was commissioned in February 2011 and a meagre quantity of five TPD of manure was being produced. The developer applied for fertiliser clearance certificate from Agricultural Department in June 2011. No manure could be sold due to non-receipt of fertilizer clearance certificate from Agricultural Department. In the exit conference (04 November 2011), the Department stated that in accordance with provisions of DPR-I additional capacity of compost plant of 150 TPD would be installed from December 2011.

1.3.20.2 RDF and power generating unit

As GMC did not obtain certificate/report of a Government Institution on the characteristic of the waste, no works for setting up of RDF plant to process 500 TPD of waste and power unit to produce 6 MW of Electricity were taken up (March 2011).

⁶⁰ Total expenditure made by GMC towards POL: ₹ 49.36 lakh (15.38 +33.98) in 2008-09 & 2009-10.
Less amount recovered by GMC from developer : ₹ 27.73 lakh (9.82+17.71) in 2008-09 & 2009-10.

⁶¹ Short recovery made : ₹ 21.63 lakh.

Period	Amount (₹ in lakh)
Short recovery of POL	21.63
Non-recovery of POL	
April 2010 to March 2011	42.29
Total	63.92

1.3.20.3 Disposal of waste to Sanitary Land Fill (SLF)

Out of 15.12 Ha (1,51,200 sq m) land earmarked for SLF in the DPR-I, 93,548 sq m (514 m X 182 m) was taken up, of which 38,220 sq m (182 m X 210 m) was developed through earth filling (photograph below) at an average height of two meters. Work on earth filling in SLF area was in progress (August 2011).



LAND FILL AREA IN WET LAND (August 2011)



SANITARY LAND FILL AREA (August 2011)

There were abnormal delays in setting up waste disposal mechanism. Meanwhile entire unprocessed waste was dumped at land fill site as was done under the earlier system causing severe adverse impact on air, environment, land and wet land areas. In the exit conference (04 November 2011), the Department stated that unprocessed waste already accumulated at project site would be compacted with soil and would be used for growing trees at project site. Until that time, unprocessed waste continued to be dumped at project site.

1.3.21 Delay in implementation of the SWM project

Memorandum of Agreement (MoA) was executed between GMC and the consultant IDCAL in August 2007 for Project Development Assistance and Letter of Intent (LOI) was issued to the developer in July 2008. Delays in implementation of the SWM project on the part of the Consultant and private developer beyond the date stipulated in concession agreement are given in Table-8 below:

Table-8

Component	Time Schedule for completion	Present status/ month of completion	Period of delay	Remark
Delays on the part of the Consultant in significant activities				
Selection of developer	February 2008	July 2008	Four months	
Transfer of SPV	2 nd week of March 2008	September 2008	Five months	
Delays on the part of the developer				
Processing of waste	July 2009	February 2011	18 months	50 TPD compost plant commissioned only
Landfill facilities	July 2009	Not yet completed		
Power generation	July 2010	Not yet completed		

Source: GWMCP and Departmental records.

There were inordinate delays in the fulfilment of different activities and completion of the different components of the project on the part of the consultant and developer

respectively. No action could be initiated (November 2011) against the consultant and the developer due to absence of any penalty clause in the MoA and concession agreement executed with the consultant and developer respectively.

1.3.22 Non-reduction of expenditure of GMC

Despite extending financial support of ₹17.58 crore received under JNNURM to the developer and transfer of the duties and responsibilities of collection of MSW under PPP to the developer, GMC failed to reduce its expenditure towards primary and secondary collection in comparison to the period prior to commencement of the project, as depicted in Table-9.

Table-9

(₹ in crore)

Expenditure prior to commencement of SWM project				Expenditure after commencement of SWM project			
Period	Months	Total expenditure	Average monthly expenditure	Period	Months	Total expenditure ⁶²	Average monthly expenditure
2005-06	12	2.88	0.24	2008-09 (11/08)	5	1.18	0.24
2006-07	12	3.16	0.26	2009-10	12	6.64	0.55
2007-08	12	4.12	0.34	2010-11	12	9.54	0.80
2008-09	8	2.44	0.30				
Total	44	12.60			29	17.36	

Source: GMC records.

During the period of implementation (November 2008 to March 2011) of the project, average monthly expenditure on SWM incurred by GMC was more than double in comparison to that incurred in the earlier period (April 2005 to October 2008). Thus, one of the main objectives of PPP project i.e., “savings in expenses’ was not fulfilled.

Thus, implementation was deficient to the extent that site development was not according to DPR, percolation of leachate to adjacent wetland not arrested, collection efficiency of waste much below par, irregular payment of user charge and tipping charges, processing of compost of negligible quantity, non-transformation of waste to energy and non-reduction of the expenditure of GMC.

1.3.23 Compliance to Rules and impact assessment

1.3.23.1 Impact of waste on health and environment

Waste represents a threat to the environment and human health if not handled or disposed of properly. Surface and ground water contamination takes place when waste reaches water bodies. A specific environmental hazard caused by waste is leachate,

⁶² Details of expenditure towards primary collection, secondary collection, desilting, POL and Vehicles.

Year	Primary Collection	Secondary Collection	Desilting	POL	Vehicle Purchase	Vehicle maintenance	Total
2008-09 (from November 2008)	0	1.09	0	0.05	0	0.04	1.18
2009-10 (from July 2009)	3.56	1.83	0.93	0.16	0	0.16	6.64
2010-11	4.60	1.68	0.85	0.42	1.97	0.02	9.54

which is the liquid that forms, as water trickles through contaminated areas leaching out the chemicals. Movement of leachate from sanitary landfills may result in hazardous substances entering surface water, ground water or soil. Thus, improper management of waste has consequences both on the environment as well as health of people.

Rule 4 and 5 of Municipal Solid Waste (M&H) Rules 2000 allocated responsibilities to State Governments and Municipal authorities for proper management of municipal solid waste. These rules further stipulated that all waste processing and disposal facilities should be set up after authorisation from the State PCB, MoEF and Airport Authority.

Violation of the aforesaid Rules and its impact on health and environment were as under:

- An examination of records of GDD/GMC revealed that MoEF and State PCB, granted ex-post facto conditional authorisation in August 2009 and February 2010 respectively insisting on (i) compliance to MSW (M&H) Rules 2000 and (ii) taking special care to prevent any over flow, seepage and leakage of affluent in low lying areas. GMC, however, did not ensure that the developer adhered to both the conditions. Further, Airport Authority had not issued authorisation (July 2011).
- The implementation schedule (Schedule-II) of the Rules specified activities to be taken up by the operators to ensure that all waste generated in the Municipality is collected. Audit observed that only 69 *per cent* of the generated waste, projected as per DPR (Ref: Para-1.3.19) was collected by the developer. The remaining quantity of 31 *per cent* solid waste is polluting the environment posing serious health hazards thus frustrating the primary objective of setting up of SWM project.
- According to the assessments (September 2009) of local public representative, various organisations/committees, senior citizens and eminent dignitaries' of Guwahati, the performance of the developer was not satisfactory. Garbage was piled up for days together allowing it to decay and emitting unbearable foul smell. The State Pollution Control Board (SPCB), Assam also ratified (July 2011) the views of city dwellers and termed the initiatives taken by GMC as inappropriate. SPCB asked GMC (July 2011) to make the garbage collection and disposal system in the city more efficient by taking appropriate measures. Some photographs showing accumulation of garbage in different parts of Guwahati city are given below:



GARBAGE AT MALIGAON (October 2011)



GARBAGE AT ABC POINT, GS ROAD (October 2011)



GARBAGE AT BHANGAGARH (14 October 2011)



GARBAGE AT NARIKAL BASTI POINT, ZOO NRENGI ROAD (14 October 2011)



GARBAGE AT HATIGAON (13 October 2011)



GARBAGE AT NARENGI (14 October 2011)



GARBAGE AT GEETANAGAR (14 October 2011)



GARBAGE AT CHRISTANBASTI (14 October 2011)

The photographs amply illustrate the point that the piling up of garbage is prevalent in all localities of Guwahati.

- Audit observed that segregation of waste at source was not done, leading to different kinds of waste being mixed together for dumping. This limited the possibility for processing the recyclable waste and in the event of processing un-segregated waste for composting, the suitability of its use in agricultural activities would be doubtful.

- Waste was being transported in open trucks (photograph alongside) as well as in bins in unhygienic manner causing environmental pollution and health hazards.



TRANSPORTATION OF WASTE IN OPEN TRUCK (June 2011)

- Against the stipulation to process 200 TPD for composting and 500 TPD for RDF for energy generation, the operator is processing only 50 TPD of waste for composting on trial basis and the remaining unprocessed waste was dumped (photograph alongside) in landfill areas and open dumping space.



OPEN DUMPING OF WASTE (June 2011)

- The site selected (photograph alongside) for dumping and disposal of waste did not satisfy a few vital parameters fixed in MSW Rules 2000 {as discussed in Para-1.3.9}. It is also located adjacent to world heritage 'Deepor Beel', a wetland of international importance. An expert team constituted by the Planning Commission, GOI to review the status of implementation of the National Wetland



DUMPING AREA IN WELL (July 2011)

Convention and Management programme during their visit to 'Deepor Beel' observed (August 2008) that garbage dumping yard was abutting the margin of the Beel.

Thus, there was every possibility of the solid and liquid waste leaching into the Beel during rainy season. An Independent Public Committee constituted (September 2010) by the Government, also observed (November 2010) that 'Boragaon landfill site' is not suitable from environmental safety point of view as it is located at a place having common boundary with world heritage 'Deepor Beel'. Movement of leachate may result in hazardous substance entering surface water, ground water and soil and endanger not only fish, migratory birds and the whole ecosystem of the 'Deepor Beel', but would affect environment and human health also. Some photographs of linkage of SWM project site and world heritage 'Deepor beel' are given below:



VIEW FROM THE SWM PROJECT SITE



SWM PROJECT VIEW FROM DEEPOPOR BEEL



VIEW FROM THE DEEPOPOR BEEL SITE



SWM PROJECT VIEW FROM DEEPOPOR BEEL

Audit also observed that the wet land adjacent to sanitary land fill (SLF) area and garbage dumping ground (photograph alongside), which has linkage with the Deepor Beel through a tributary could not be isolated completely even though measures such as providing storm water drains, leachate management, raising the ground level above Highest Flood Level etc. were considered in the project.

DUMPING OF UNPROCESSED MSW IN LOW AREA
(July 2011)

Unprocessed MSW continued to be dumped in the open low lying area (60 bigha approx.) adjacent to wetland in violation of MSW Rules 2000.

- Wetland (Conservation and Management) Rules, 2010 published by Ministry of Environment and Forests, GOI, Notification no. G.S.R.252 (E) dated 24 March 2011, states that 'Deepor Beel' was categorised as Ramsar Wetland of International Importance under the Ramsar Convention. According to Rule 4(i) (iv) of the Rules *ibid*-“the existing practice of solid waste dumping, if any, that existed before the commencement of these rules should be phased out within a period not exceeding six months from the commencement of these rules.

Thus, the future of the entire project would be in jeopardy as the solid waste dumping site and sanitary landfill area are required to be shifted in near future.

1.3.24 Monitoring and evaluation

(i) At the State Government level

As per Gazette Notification (Government of Assam) dated February 2008, PPP Cell was set up for monitoring and evaluation of PPP Projects in the State. Scrutiny of the records revealed that as the Cell was formed belatedly, it was never approached and consulted in preparing pre-feasibility report relating to PPP Project on Solid Waste Management (SWM), submission of SWM project proposals/DPR for approval of Empowered Committee/Apex authority including bidding process and technical assistance. Details of works done by Project Monitoring Unit of State Government under JNNURM on SWM project were also not on record.

(ii) At SPCB level

According to Article 6 of MSW Rules 2000, State PCB shall monitor the compliance of the standards regarding ground water, ambient air, leachate quality and compost quality as specified under the rules. This was required to make sure that waste disposal methods did not lead to contamination of air, ground water and surface waters.

SPCB issued ex-post facto conditional authorisation to the developer to run SWM project in February 2010. Tests to check ground water, leachate quality and sample of waste quality were performed by SPCB during January –February 2009 and February-March 2010. SPCB stated (July 2011) that collection and disposal of MSW in Guwahati Municipal area was not satisfactory and required to be revamped. Details of remedial action, if any, taken by the developer was not on record.

1.3.25 Conclusions

The principal objectives of SWM project in ‘PPP’ mode implemented through a private developer was to improve public health and hygiene through scientific collection, transportation, processing and disposal of MSW besides recycling the waste and achieving savings in expenses none of these objectives was achieved. The project was ill conceived from the very beginning due to inherent defects in processing like selection of technical consultant, preparation of two DPRs, one of which remained unapproved by GOI, selection of site, selection of private partner (developer), concession agreement etc.

The DPR approved by fund sanctioning authority (MoUD) was not adopted. Concession agreement based on DPR-II was signed by GMC and GWMCP. Resultantly, MoUD, GOI stopped funding after initial disbursement. The private developer was selected on single bid. Public interest was not safeguarded while preparing concession agreement. Consequently, the developer was relieved of the responsibility of adhering to the time schedule or maintaining performance standards and continued to be paid inadmissible amount towards user and tipping charges by GMC, which was not covered by PPP arrangement for SWM. Selection of site for project in wetland was done violating MSW Rules 2000 and Wetland Rules 2010

putting the future of the project in jeopardy. There were financial irregularities and the user charges/tipping charges paid to the developer were not based on any measurable parameters and therefore non-transparent. Therefore, the intended objective to reduce expenditure on SWM also could not be achieved.

There was no basic improvement in the service provided compared to that which existed before the project period. The present system had so far failed to protect the environment and the wetland from leachate contamination. Power plant stipulated to be set up by July 2010 was not yet started as of November 2011. Instead of 200 TPD capacity compost plant, a meager quantity of five TPD compost was produced on trial basis.

Thus, the objective of improving health and hygiene through scientific collection and transportation with provision for recycling was not achieved under PPP arrangement.

The PPP in SWM undertaken by GMC suffered from lack of clarity in selection of consultant and developer, poor strategic plans and other associated activities, which led to avoidable extra expenditure, extension of undue financial benefit to the developer, delay in project implementation, low service quality and adverse impact on environment and health.

1.3.26 Recommendations

- Realistic and authentic DPR should be prepared based on survey and structured feasibility studies.
- Proper assessment of generation and characteristic of MSW should be made before proceeding towards implementation of the project.
- Public interest should be safeguarded while framing clauses of concession agreement and provisions of the clauses of concession agreement should be strictly adhered to.
- The financial arrangements of payment of user charges and tipping charges should be transparent.
- Waste processing should be made mandatory by the developer and it should be impressed upon the developer to improve the existing dumpsites to make them more sanitary and aesthetic.
- In view of the alarming possibility of contamination of surface water, ground water and soil for setting up the project site in wetland in violation of MSW rules 2000 and Wetland Rules 2010, the State Government should consider remedial measures urgently.
- The SPCB should draw up comprehensive schedules for sustained monitoring of compost plants, landfill sites and other installations.