

Case Study

**SANITARY LANDFILL AT MAVALLIPURA
BANGALORE**

Solid Waste Management

CASE OVERVIEW

Country: India

ULB: Bangalore, Karnataka

Sector: Urban Basic Services **Sub-Sector:** Solid Waste Management

Award Date: August 2004

Type and Period of concession: Build-Operate-Transfer contract for 20 years followed by post closure monitoring for 15 years

Stakeholders:

Contracting Authority	Bruhat Bengaluru Mahanagara Palike (BBMP)
Concessionaire	M/s Ramky Enviro Engineers Limited
Oversight Arrangement	Through the Concessioneing Authority and through the Independent Engineer appointed for regular monitoring.

Present Status of Project: The project is operational presently.

1. PPP CONTEXT

1. The Ministry of Environment and Forests notified the Municipal Solid Waste (Management and Handling) Rules in 2000. These rules are time bound, hold the Urban Local Bodies (ULBs) accountable and prescribe penalties for non-compliance and non-performance; triggering among other things the need for improved waste disposal practices such as scientific disposal and sanitary land filling.
2. Total generation of Municipal Solid Waste (MSW) in Bangalore at the time of commissioning of the project was about 2500 tons per day (including compostable and recyclable wastes). The city did not have a properly designed system for disposal and the wastes generated were disposed off at open dumping facilities on the outskirts of the city. This led to issues such as unhygienic conditions, pollution of ground water due to percolation of pollutants from the garbage into the earth, nuisance due to scavenging birds etc. There was clearly a need to implement a scientific disposal system for the city.

2. PROJECT DEVELOPMENT

2.1 PROJECT CONCEPTUALIZATION

The project envisaged a simple procedure for handling MSW generated in the city – rendering the wastes ‘inert’ followed by sanitary landfill of the inert residual matter. The landfill project was proposed for a capacity of 1000 tons per day spread over two sites. The first project (subject of this case) was for a 100 acres site at Mavallipura to handle 400 tons of MSW per day. Engagement with a private partner was

expected to bring the required technical capacity and experience to the project, and the Concessionaire was to be responsible for design, construction, operation and long term maintenance (20 years when the site would be operational and 15 years after closure of the site due to saturation) of the land fill. BBMP undertook the task of delivering the wastes to the site. Since no direct revenues (except possible sale of composts and recyclables) were to accrue from the project, it was decided to pay the Concessionaire on a 'tipping fee per ton' basis.

2.2 PROJECT DEVELOPMENT

1. Between 2001 and 2004, the Government of Karnataka (GoK) through the BBMP, the Transaction Advisor¹ and the Bangalore Agenda Task Force (BATF), which comprised of a team of experts in MSW management, undertook activities for setting up scientific landfills for the waste generated within the City. About 111 acres of land spread across nine sites within the Bangalore district was available for the purpose (allotted in 2000 by the Revenue Department, GoK).
2. BBMP conducted several background studies for the project through the Transaction Advisor including feasibility study, location analysis, capacity and expected duration for saturation of chosen site, quantum of wastes to be handled by the private player etc.
3. Preliminary investigations of feasibility of allotted lands for the purpose of developing landfills revealed that 7 out of the 9 sites could not be used due to various environmental and social (proximity to existing habitation and public resistance) reasons. The final sites were decided after conducting detailed Environmental Impact Assessment, commitments from the BBMP to relocate certain existing functions outside the mandatory 500m buffer zone (as per MSW 2000 Rules) and after additional acquisition of land since the allotted lands at the chosen sites was inadequate.
4. Detailed layout and drawings were prepared by the public agency for the land fill site and the use of the designs was optional for the Concessionaire. In any case the responsibility for the design was borne by the Concessionaire.
5. Review of the progress of project development activities was carried out on a weekly basis. The meeting was attended by representatives of BBMP, BATF, and the Transaction Advisor who discussed the various activities undertaken and action to be taken during the development stage. Whenever bottlenecks emerged, the matter would be taken up and resolved at the higher level with the Commissioner, BBMP or Secretary, Urban Development Department or any other senior office of the relevant Government Department.

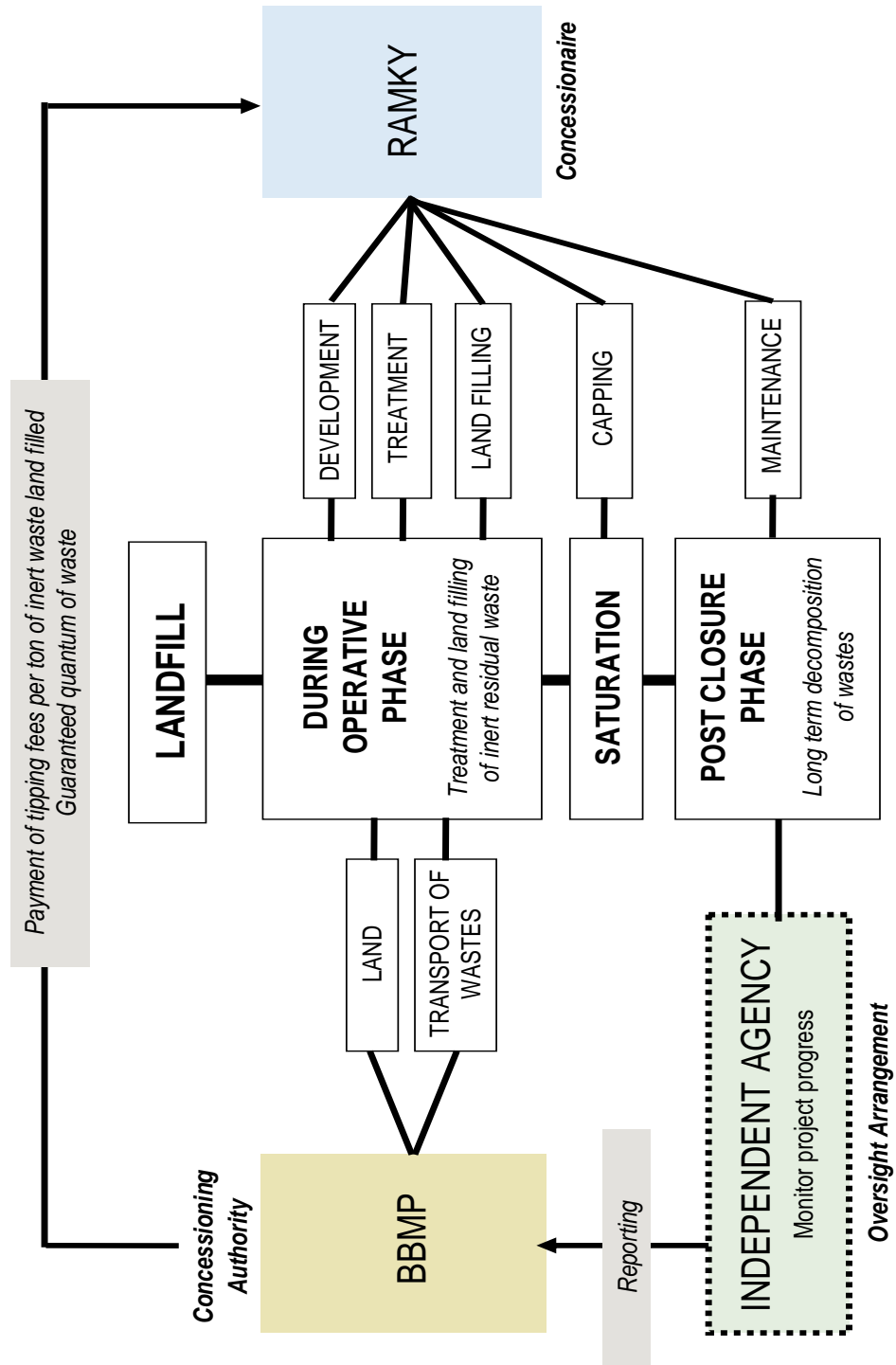
2.3 PROCUREMENT PROCEDURE

Procurement of the Concessionaire was based on a two stage (RfQ followed by RfP) competitive bidding process. The final contract was awarded to M/s Ramky Enviro Engineers Limited in August 2004, based on their lowest quote for tipping fee per ton of residual inert matter going into the landfill (bid parameter).

¹ Infrastructure Development Corporation (Karnataka) Limited (IDeCK)

3. CONTRACTUAL ARRANGEMENTS

3.1 PROPOSED CONTRACTUAL STRUCTURE



3.2 OPERATOR OUTPUT OBLIGATIONS

The Concessionaire was responsible for

1. Finalizing the design after consultations with the Independent Engineer appointed for the project and after approval from the BBMP within 90 days of commencement of contract
2. Financing and undertaking all construction work for the waste processing unit and landfill facility. Completing at least one cell of the landfill (ready for receipt of inert waste) within 10 months from the signing of contract
3. Processing the waste transported by the BBMP (maximum of 600 tons per day beyond which the Concessionaire could decline to process the excess) to the designated site, making it inert and disposing the inert residual matter at the same site through sanitary land filling technique.
4. Conversion of amenable portions of the MSW into compost/manure and supplying a fixed 500 tons to the BBMP per year
5. Carrying out procedures as per the specifications prescribed in the MSW Rules 2000 and obtaining necessary clearances from the Karnataka Pollution Control Board (KPCB) on a periodic basis.
6. Continuing operations for 20 years or up till the saturation of the landfill (whichever comes earlier)
7. 'Capping' the landfill upon saturation and undertaking 'post closure maintenance' for the next 15 years
8. Handover of the project facility in good operating condition and free of cost at the end of the contract period

3.3 OBLIGATIONS OF THE CONCESSIONING AUTHORITY

The Concessioning Authority was responsible for the following:

1. Handing over peaceful possession of chosen site for the project to the Concessionaire within a period of 15 days from the start of the concession.
2. Supplying a minimum quantity of 400 tons of MSW per day at own costs. Supplying only inert waste to the Concessionaire up till the completion of the first landfill cell.

3.4 REGULATORY AND MONITORING ARRANGEMENTS

The BBMP monitored the performance of the Concessionaire as per the provisions of the contract. M/s Tetra Tech India Limited was appointed as the Independent Engineer for:

1. Conducting regular monitoring
2. Approving (where required as per contract) the design, implementation and maintenance of project facilities
3. Reporting to both the parties involved on various physical, technical and financial aspects of the project based on field visits and inspections,
4. Granting completion certificates, verifying weighing equipment, monitoring of compliance with prescribed methods for land filling, verification of extent of saturation of the landfill and reviewing matters related to safety and environmental management

5. Assisting the parties in amicable settlement of disputes.

3.4 PROJECT FINANCIALS

1. All investments for constructing, operating and maintaining the site for the project period (including investments required during post-closure maintenance phase) were borne by the Concessionaire.
2. Revenue for the Concessionaire was essentially through ‘tipping fees’ per ton of inert residual waste landfilled at the site. 85% of the tipping fee was paid immediately, and 15% was to be paid upon successful post closure maintenance of the site. A separate ‘Post Closure Performance Account’ was created and the Concessionaire was to receive the remaining 15% in the form of 60 quarterly payments over 15 years.
3. BBMP guaranteed a minimum supply of waste (400 tons per day) to the Concessionaire, failing which the BBMP had to bear charges for the remaining quantum.
4. The Concessionaire was expected to work towards obtaining carbon credits through management of greenhouse gas emissions. Benefits of the carbon credits (when available) would be shared equally between the Concessionaire and BBMP.
5. Proceeds from sale of manure developed from the MSW accrued entirely to the Concessionaire (except the minimum annual supply of 500 tons to the BBMP). Proceeds from sale of recyclables also accrued to the Concessionaire.

3.4 PROJECT RISKS AND ALLOCATION

Construction Risk	Including time and cost overruns was borne by the operator. Overruns due to delays in handover of land by BBMP, including removal of encumbrances obstructing free access to the site was borne by BBMP.
Operating Risk	Borne by the Concessionaire since operations and procedures were to be conducted as specified in the contract and in accordance with various environmental and MSW rules.
Performance Risk	Borne by the Concessionaire since the contract specified the output parameters to be achieved and penalties could be imposed in case of default. This was further allocated through a Performance Guarantee valid for a period of 24 months from the date appointed as per contract
Investment Risk	All capital and O&M expenditure was borne by the operator for developing and managing the landfill facility
Revenue Risk	Even though payment was based on a ‘tipping fee per ton’ basis, the revenue risk for the Concessionaire was mitigated through assured quantum of waste supply by the BBMP. The Concessionaire however bore the ‘payment risk’ from the BBMP since no separate fund was created for the project so as to ensure timely payments
Policy Risk	The Concessionaire was protected against changes in laws and policies that could affect their operations.

3.6 DISPUTES RESOLUTION MECHANISM

All disputes were to be resolved amicably through direct discussion between the parties involved (with the help of the independent oversight body where needed). In the event of non-resolution the dispute was to be settled through arbitration processes as prescribed under the Arbitration and Conciliation Act, 1996.

4. PARTNERSHIP IN PRACTICE

The land fill presently treats and disposes almost 200-300 tons of MSW per day. While this is lesser than originally envisaged (refer 4.2) the facility is by and large meeting its commitments.

4.2 PROJECT SHORTCOMINGS

1. The project originally envisaged a facility spread over 3 sites with a capacity to handle 1000 tons of MSW per day. This first project at Mavallipura required 100 acres of land to be made available to the Concessionaire. In reality however only 70 acres were eventually handed over since the BBMP realized that 30 acres of the proposed site were not under its possession. As a result the project handles approximately 200-300 tons of MSW per day instead of the earlier objective of 400 tons and above.
2. Local villagers living in the vicinity of the landfill have objected to the project, both through resistance before the start of the project as well as during the operation phase by locking up the facility on some occasions. The primary concern of the villagers is the run-off of leachate during heavy rains.

4.3 LEGAL/CONTRACTUAL ISSUES

There were no formal disputes, though the issues mentioned above caused concern. Matters have been settled between BBMP, the Concessionaire, and the local villagers through repeated and ongoing negotiations.

5. LESSONS LEARNT

1. The failure of the BBMP to hand over committed quantum of land for the sanitary landfill has resulted in both reduced capacity of the scheme as also reduced revenue expectations for the private Concessionaire (quantum has reduced but period of concession has remained the same). Though the issue was resolved amicably it could have had very serious consequences for the future of the project since the very basis of the revenue forecasts had been changed. The importance of gaining possession of adequate land before committing to the obligation cannot be understated.
2. The project also highlights the importance of committed efforts by Public Authorities to ensure implementation of a project. The procedure of weekly meetings amongst project stakeholders to ascertain project progress and regular monitoring and intervention by top management followed in the case became a trendsetter for all future projects.

3. The project provided a unique opportunity to levy appropriate user charges, create a revenue stream for future recurring and capital expenses for SWM and create a framework which would be sustainable for the ULB in the long run. However due to certain logistical reasons the BBMP has not been to implement such user fees.
4. Importance of proper information, education and communication (IEC) so as to avoid resistances from other stakeholders. This is particularly important in sectors such as waste management due to the 'nuisance' value and 'not in my back yard (NIMBY)' syndrome associated with its processes.
5. The complaints of the citizens may nevertheless have been justified and as such projects of this nature should insist on incorporating environmental safeguards and if required insist on use of more appropriate and safe technologies.