



Municipal Corporation
of Greater Mumbai

Solid Waste Management Department

Gorai Dumpsite Closure

A Success Story



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Gorai Project

Name of the Project	: Scientific Closure of Gorai dumping Ground & its Subsequent Maintenance
Client	: Municipal Corporation of Greater Mumbai (MCGM)
Consultant/Project Developer	: IL & FS Limited/IL & FS Ecosmart Limited
Contract Awarded To	: M/s. United Phosphorus Limited & Van Der Weil Strotgas BV (JV)
Total Contract Value	: Rs. 503 millions
Revenue from CDM	: Rs. 720 millions (Projected) : Rs. 245 millions (Received)



Gorai Dumping



The Gorai site is located in the Western Suburbs of Mumbai. It spreads over an area of 19.6 hectare (ha) & has been in operational since 1972. The site is adjacent to Gorai creek & is very close to habitation. The daily receipt of MSW was approx. 2200 TPD of MSW from Western Suburbs of Mumbai till 31 Dec 2007 after which MCGM had stopped dumping fresh waste at Gorai. The project envisages scientific closure and converting about 19.6 ha of land into green landscaped space. The Gorai site has residential areas in close proximity. The practice of open dumping that had been followed since 1972 has caused significant environmental damages in the neighborhood. Approximately, about 2.34 million tons of waste up to an average height of 26 meters was lying at the site.

Since the MSW accumulated over the site had almost attained its highest capacity, therefore, scientific closure of the site was recommended by IL&FS in accordance with the MSW (M&H) Rules, 2000. The contract for scientific closure was awarded to M/s. United Phosphorus Limited along with Joint Venture partners M/s. Van Der Weil Strotgas B.V. of Netherlands in 2007.

The work of closure has been completed on 25.07.2009 and the work of Operation and Maintenance of the site has started from 26.7.2009; for a period of 15 years.





The Scientific Closure Plan for Gorai Dumping Ground included the following components :

- ▶ Relocation and Reformation of existing waste.
- ▶ Covering of reformed slopes with liner system with soil.
- ▶ Landscaping.
- ▶ Surface water drainage for channeling the storm water.
- ▶ Construction of compound wall on the landward side, sheet piling on the creek ward side to prevent leachate from entering the creek.
- ▶ Installation of landfill gas collection and venting system.
- ▶ Installation of leachate collection system.
- ▶ Installation of flaring system.

The MSW was covered and compacted with C&D waste and thereon covered with liner system. This liner system comprises with

- Geo- Textile liner over C&D layer.
- HDPE liner - both side textured on slope area and plain on top area.
- Geo-Composite liner-composite of Geo textile and net.
- The soil layer for development of lawn.
- HDPE liner are also laid beneath peripheral roads and drains.

A landfill gas recovery system has been installed at the site in order to capture Methane (CH₄) emissions in future. To incinerate the landfill gases, enclosed flare system has been provided. This is the most reliable and environmentally safe process to incinerate the LFG. The flare system consists of flare burner along with chimney of around 12 meter height.



Gorai Project dedicated to Mumbai City on 18th August 2009 at the hands of Hon. Minister, MoUD, GoI, Shri Dr. Jaipal Reddy

Project Benefits :

- ▶▶ Quality of life of people of Gorai improved.
- ▶▶ Quality of marine life improved.
- ▶▶ Market value of property in the area increased resulting in increases in property tax collection to MCGM.
- ▶▶ Fishermen's income increased because of better marine environment.
- ▶▶ Mangroves got rejuvenated resulting in healthy biodiversity in this region.
- ▶▶ 19 ha. of green lung added to the City of Mumbai.
- ▶▶ GHG emission stopped resulting in reducing carbon foot prints in the city.
- ▶▶ Prevention in occurrence of problems like foul odour, fire, health hazards & breeding of flies & rodents.
- ▶▶ Power generation from methane of 1 MW for at least next ten years will be additional benefit.



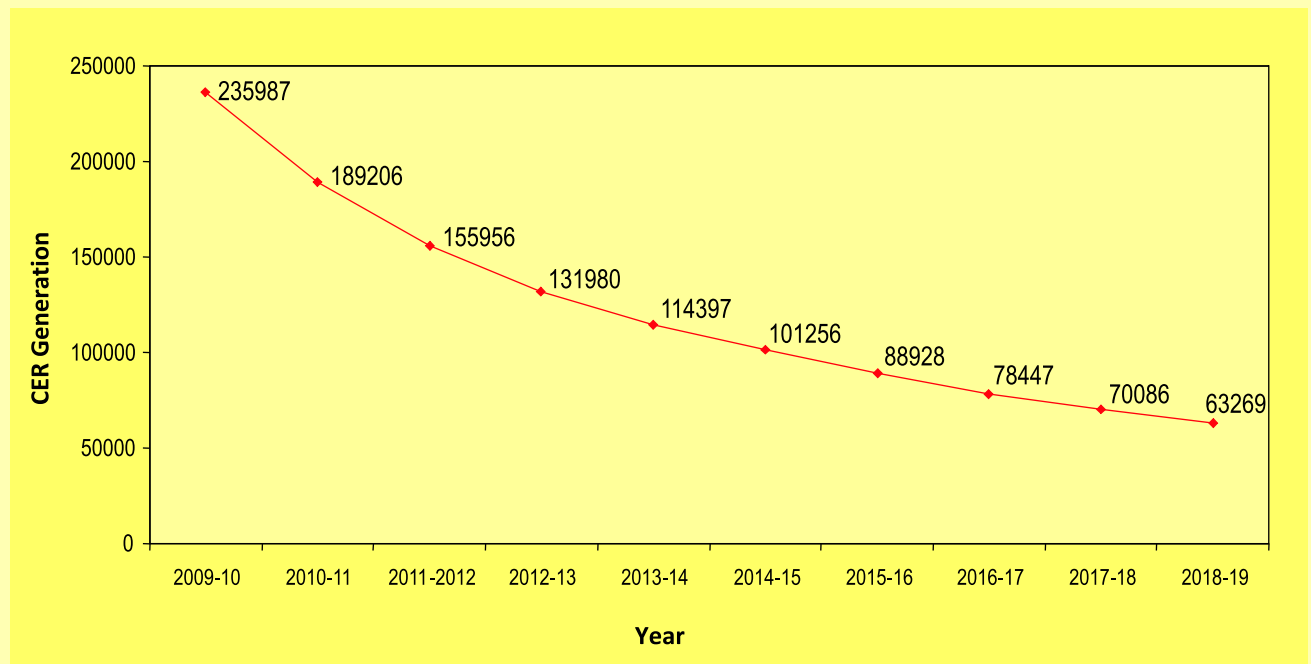
Methane Capture Project

MCGM has signed-up an Emission Reduction Purchase Agreement (ERPA) with Asian Development Bank (ADB), to receive advance upfront money against 300235 Nos. of CERs & 125789 Nos. of VERs. Part of CERs generated at Gorai Dumping Ground sold to ADB for which MCGM received an advance of Rs. 245 millions from ADB in lieu of sale of these CERs / VERs. It is expected that MCGM will receive total revenue of Rs. 729 millions from the sale of CERs. MCGM is free to sell balance CERs & VERs in future at the rate prevailing at that time.

CDM Project Features

- Estimated CERs over a period of 10 years : 1.2 million.
- Site is in operation from July 2009.
- High standards of compaction, cover, gas collection, leachate control and treatment, air quality, water quality, noise & odour control.
- Regular environmental monitoring.
- Isolation of the waste from coastal water bodies and provision of Green Belt.
- Received host Country Approval from Ministry of Environment & Forest, Government of India.
- The project is in the advanced stage of getting registered with the UNFCCC as per Kyoto Protocol.
- After closure the O & M work is awarded to M/s. United Phosphorus Ltd. for further period of 15 years.

CER Generation Potential (Estimated)



Gorai Project : Stepwise Developments

As on Dec. 2006



As on Sept. 2007



As on May 2008



Gorai Project : Stepwise Developments

As on Aug. 2008



As on Jan. 2009



As on June 2009

