

Successful Registration of CDM Project for Earning Carbon Credits

GORAI CLOSURE PROJECT



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Municipal Corporation of Greater Mumbai, INDIA**



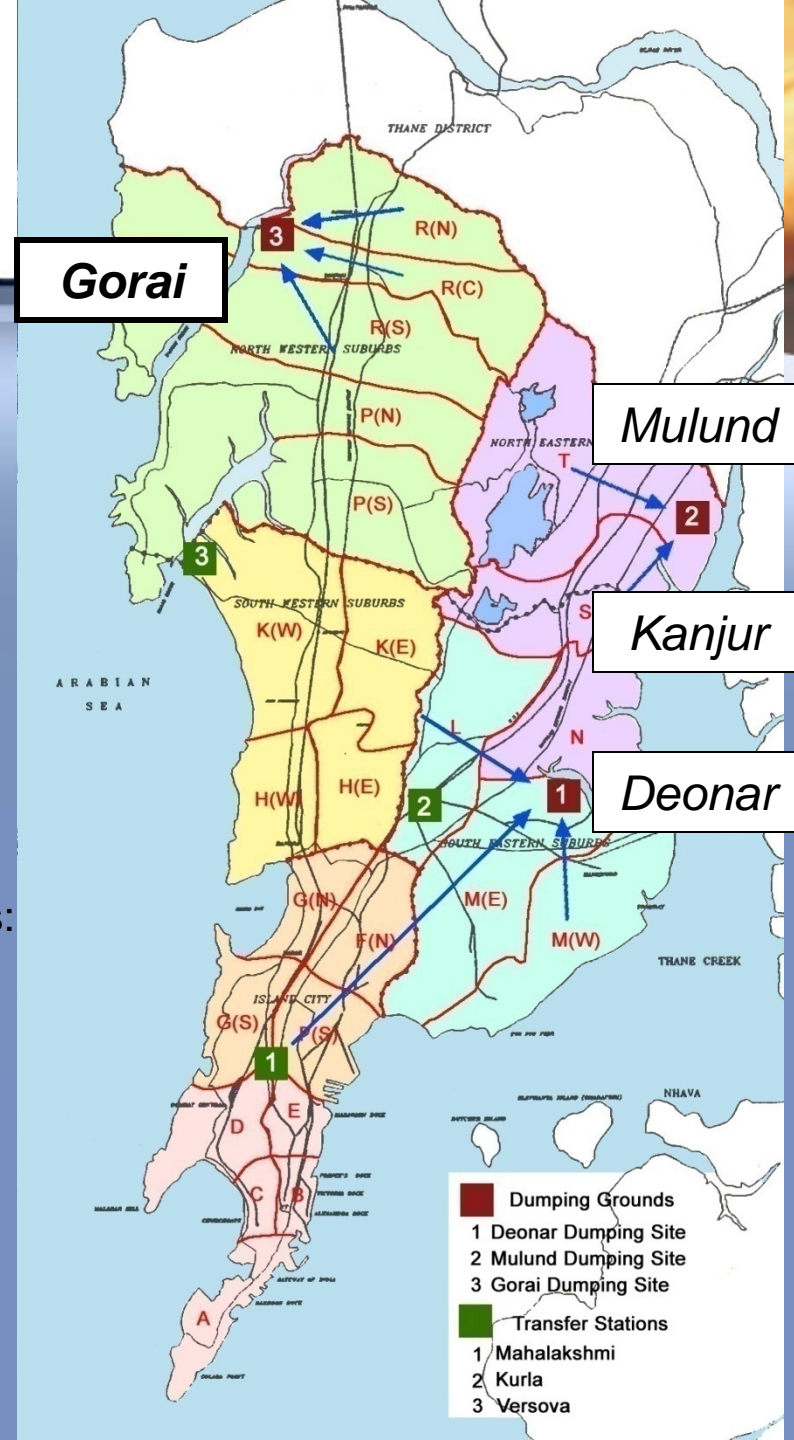
March 3, 2010



SWM in Mumbai

- Area (Greater Mumbai) - 437.71 sq. km
- Per capita generation rate - 450 gm/day
- Total MSW generated - 6,500 TPD (excluding C&D¹ ~2,400 TPD)
- Decentralized treatment system is limited - 100-150 tons/day
- Waste collected is dumped at 2 Dumping Grounds:
 - Deonar – 5,300 TPD
 - Mulund – 1,200 TPD
- Severe environmental and social hazards to surrounding localities and nearby creeks observed at the dumping grounds

1. Construction and Demolition waste





Overall Waste Management Strategy



Site	Waste Allocation (TPD)	Available Area (ha)	Available for Processing (ha)	Partial Closure (ha)	Project Components*	Waste Processing Technology
Mulund	500	25	4	21	5 units of 100 TPD capacity each	Biomethanation**
Kanjur	4,000	65	65	-	<ul style="list-style-type: none"> • 1,000 TPD Composting • Bioreactor landfill • Sanitary Landfill 	Composting + Bioreactor Processing
Deonar	2,000	132	55	65	<ul style="list-style-type: none"> • 2,000 TPD Composting • Sanitary Landfill • Emergency Sanitary Landfill 	Composting
Gorai	-	20	-	19.6	<ul style="list-style-type: none"> • Impermeable liner (geomembrane and geo-synthetics) • Leachate and LFG Collection and Conveyance system • Flaring System • Landscaping 	Scientific Closure
Total	6,500					

Gorai Dumping Ground

- Gorai Site is spread over an area of 19.6 Ha and is located very close to Gorai creek and habitation
- Site was operational **since 1972** and received up to 1,200 TPD of MSW until Dec. 31, 2007
- Continuous dumping of waste had exhausted the balance life of landfill
 - About **2.34 million of waste** up to an **average height of 26 m** was lying at the site at the time of site hand over to the Contractor (May 2007)





Aerial View of Gorai Disposal Site



1099 ft

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Open Dumping at Gorai Site





General Environmental Conditions





Site Conditions During Monsoon





GORAI CLOSURE PROJECT



- Name of the Project : Scientific Closure of Gorai dumping Ground & its Subsequent Maintenance
- Client : Municipal Corporation of Greater Mumbai
- Project Advisors : M/s IL & FS / IL&FS Ecosmart Limited
- Contract Awarded To : JV formed between M/s Vanderwiel Strotsgas BV (Netherlands) and M/s United Phosphorous Limited (Mumbai)
- Project Duration : Two years for Execution of Civil Works followed by 15 years of O&M
- Total Contract Value : Rs. 500 million; Rs. 120 million (O&M cost for a period of 12 years)



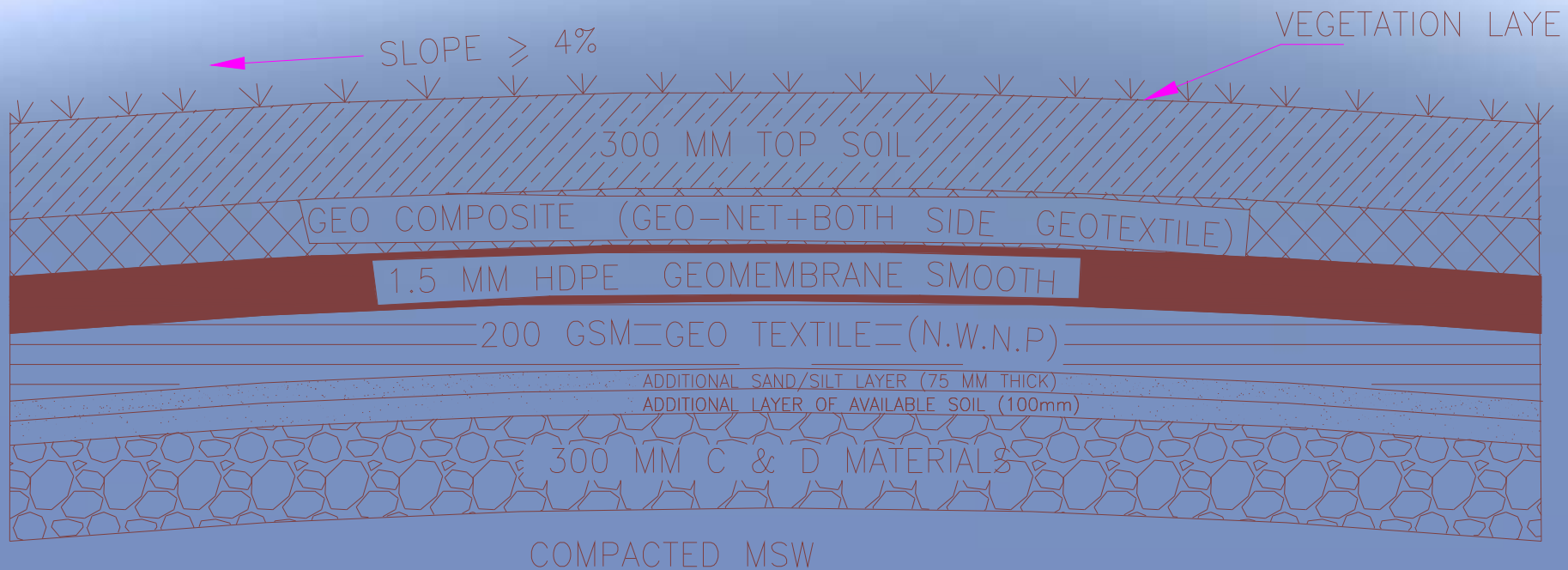
SALIENT FEATURES OF THE PROJECT



- Receiving, Relocating, Leveling, Reformation and dressing of existing MSW
- Laying of Cover Layer(s) which includes laying of
 - 300 mm thick C & D layer
 - 400/200 gsm Geotextile layer
 - 1.5mm thick textured/non textured HDPE Geomembrane
 - Geo composite layer
 - 300mm thick Top Soil layer
 - Vegetation Layer (green landscape)
- Construction of Sheet Pile, Boundary Wall, Storm Water Drain, Office Building, Internal Roads, and Walkways
- Construction of Gas and Leachate Collection Wells and sumps
- Installation of Gas Blower, Gas Burner and a Flaring system

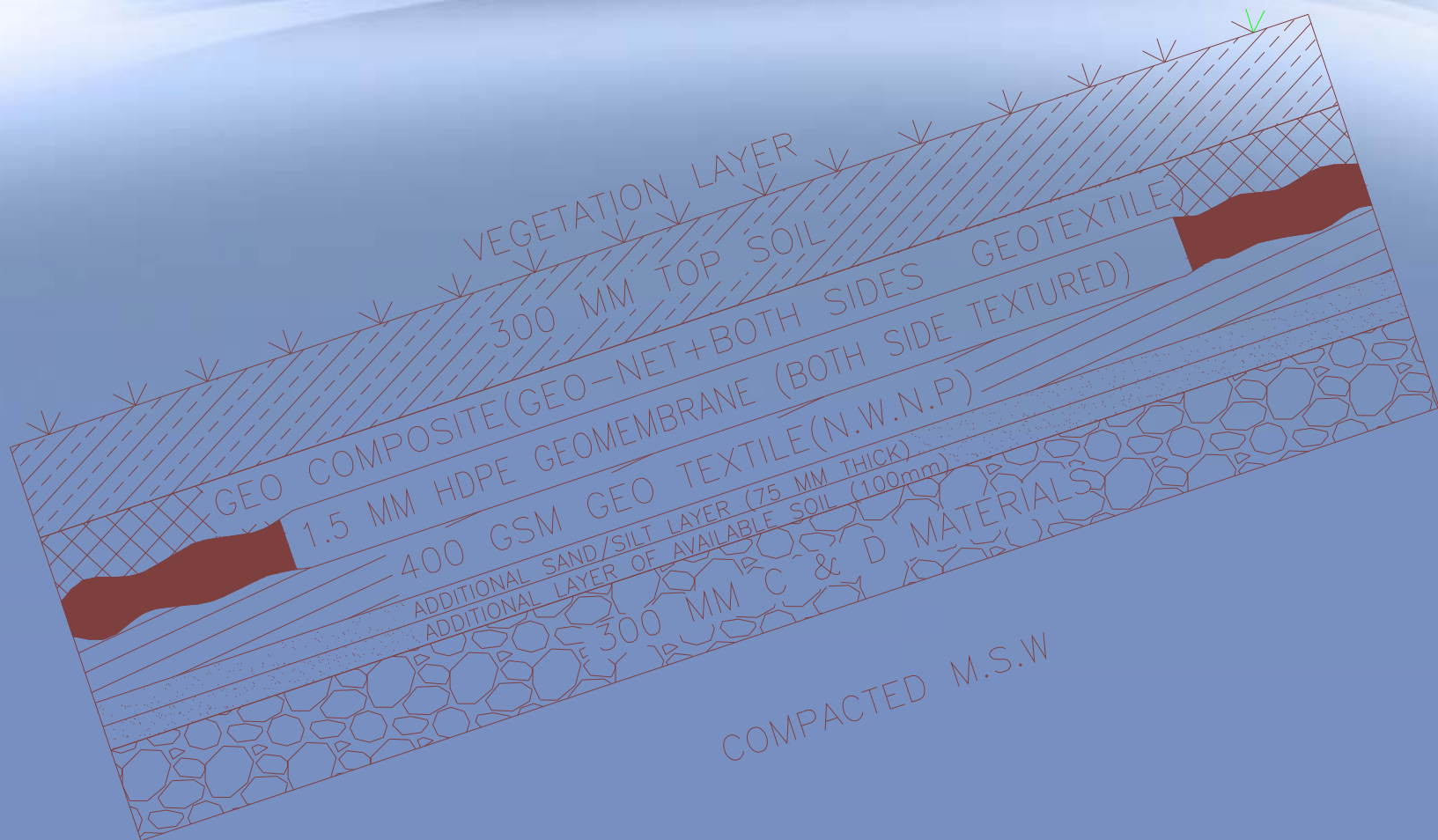


Laying of Liner System : Top Flat Area





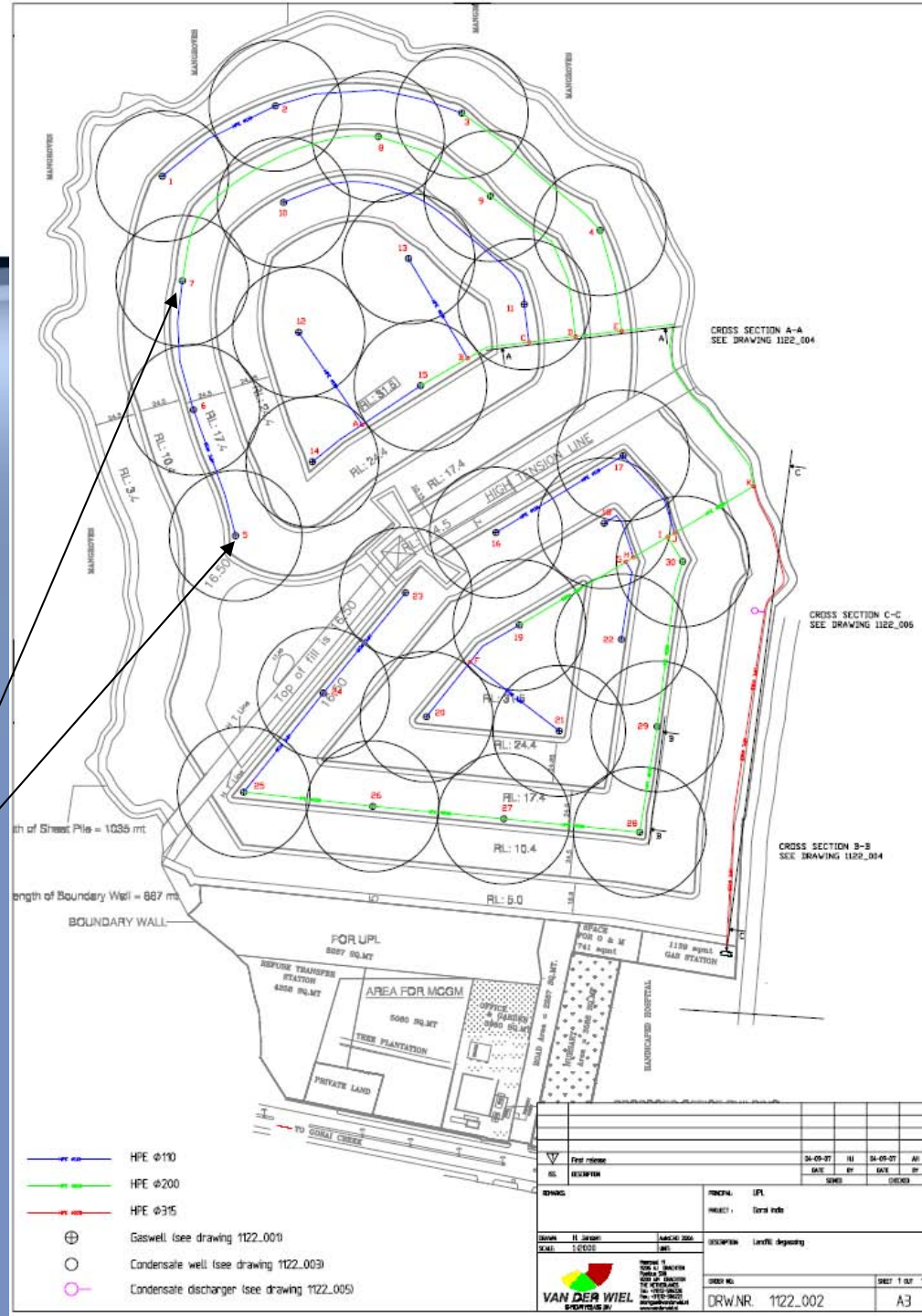
Laying of Liner System : Slopping Area





LAYOUT OF THE LANDFILL GAS COLLECTION WELLS

40 Landfill Gas Collection Wells



CDM Project Features - Gorai



- The Project Captures and destroys methane emissions from anaerobic decomposition of Municipal Solid waste
- Estimated CERs over a period of 10 years: 1.2 million
- High standards of compaction, cover, gas collection and leachate control and treatment, air quality, water quality, noise and odor control
- Regular monitoring
- Isolation of the waste from coastal water bodies and provision of Green Belt



Past Initiatives of MCGM for CDM Project

- MCGM invited tenders three times to select the consultants for the project
- In response to the first invitation, the Bidder backed-out after submitting the proposal, quoting high up-front payment
- In response to the second invitation, the Bidder quoted low up-front payment. Hence MCGM rejected the offer
- MCGM therefore decided to appoint a consultant for completing the CDM formalities
- In response to the third invitation, IL&FS has been selected as a consultant for the CDM project



Scope of Work of IL&FS Ecosmart as a CDM Consultant

- Preparation of Project Idea Note (PIN), Project Concept Note (PCN), Project Design Document (PDD); baseline study
- Obtaining Host Country approval from Govt. of India
- Selection of Designated Operational Entities (DOE) for the project; coordination with DOE for validation, verification and registration of the project with UNFCCC: Det Norske Veritas, Oslo, Norway is doing the validation for Gorai.
- Training Operator to implement monitoring protocols and audits
- Submission of verification report to UNFCCC, facilitate issue of CER
- Negotiate with buyer to get optimal CER price
- Assisting MCGM in selection of Operator for Installation, Operation and Maintenance of Gas to Energy Project





CDM Project Time Line



Sr. No.	Various Steps of the Project	Date of Completion
1.	Work awarded for SWM Consultancy by MCGM to IL&FS	May 2005
2.	First Local Stakeholders Consultation	November 2006
3.	Detailed Project Report Submitted to MCGM	October 2007
4.	Signing of Concession Agreement between MCGM & UPL for the closure activity	October 2007
5.	Appointment of IL&FS Ltd. as CDM Consultant by MCGM	April 2008
6.	Use of UNFCCC Approved Methodology to calculate CER	May 2008
7.	Submission of Project Idea Note	June 2008
8.	Submission of Project Concept Note	July 2008
9.	Submission of Project Design Document	July 2008
10.	Application for Host Country Approval (HCA)	August 2008
11.	Appointment of Designated Operational Entity (DOE)	August 2008
12.	Period of International Stakeholder Consultation	Oct-Nov 2008
13.	Press Conference for the Project	November 2008
14.	Second Round of Local Stakeholders Consultation	November 2008
15.	Commercial & Legal Negotiation with the buyer, assuring off take of CERs generated from the project	June 2008-January 2009
16.	Identification of Buyer	January 2009
17.	Issuance of draft validation Report	January 2009
18.	Issuance of Host Country Approval (HCA) by National CDM Authority	February 2009
19.	Signing of Emission Reduction Purchase Agreement (ERPA)	March 2009
20.	Advance Received from Asian Development Bank	September 2009
21.	Registration with UNFCCC	February 2010



CDM REVENUES



- Ecosmart was instrumental in getting an ERPA signed with Asian Development Bank
 - MCGM will get an advance of **Rs. 267 million** for the CER's sold until 2012
 - The total expected revenue generation for the CER's is **Rs. 729 million**
- The project demonstrates that the carbon credit finance mechanism can catalyse environmentally sustainable and financially viable closure of existing dumping sites



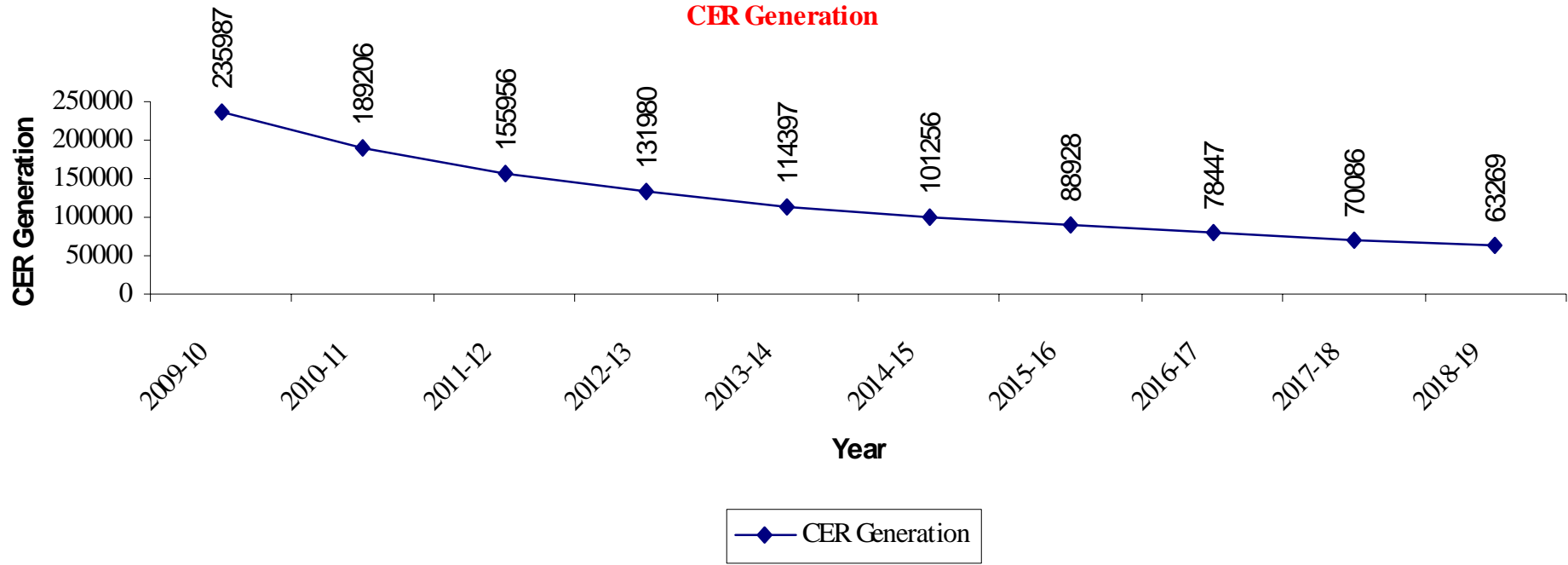
Main features of ERPA with ADB



- Advance given without any Bank/Corporate Guarantee
- ADB would off-take first 300 thousand CER generated from the project till 2012 and first 125 thousand ER generated (VERs) from the project in 2013-14 and provide a prepayment of 267 m INR in 2009.
- Willingness of the buyer to sign contract for post 2014 CERs after March, 2009 once payment of the first contract has been made.
- After repaying ADB's Prepayment, remaining (approximately 50%) of CERs from the project will still be available to be sold in spot market to retain upside exposure for rise in CER prices
- ADB would provide technical support to the project for registration of project.



CER Generation potential (estimated)



Total CER Generation from the project over 10 year period : 1.2 million

Total expected revenue generation from the CERs : Rs. 729 m (approx.)

Value of Emission Reduction Purchase Agreement (ERPA) : 300, 235 CERs (till 2012)

: 125, 789 VERs (2013-2014)

Revenue available through ERPA

: Rs. 267 m



Future CDM Projects of Mumbai **MAKING OF MUMBAI**



Project Name	Expected CER from Closure	Expected CER from Processing	Expected Total CER
Kanjur	0	69,55,333	69,55,333
Mulund	1,55,634	17,58,810	19,14,444
Deonar	6,36,000	27,12,844	33,48,844
Total	7,91,634	1,14,26,987	122,18,621



Benefits to City



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.





Thank You...