

CAMUS-SBT

Continuous **A**dvanced **M**ultistage **S**ystem using **S**oil **B**io **T**echnology



Nature Based Waste Water Remediation Case Study

VisionEarthcare Pvt Ltd (VEC), SINE IIT Bombay
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Nature Based WWTP via CAMUS-SBT

CAMUS®-SBT® Waste Water Recycling

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Main Advantages

- 145 MLD installations
- **Low footprint ~0.6sqm/KLD same as MBBR**
- Green Ambiance (80% can be green space)
- High Quality Output (COD<50, BOD<10, TSS<10)
- Very low Energy Costs (only transfer pumps)
- Low Noise and Low Odor
- No Generator Backup Required
- Extremely Flexible Installation (any shape)
- Guaranteed results with VEC AMC/O&M
- Award winning Technology

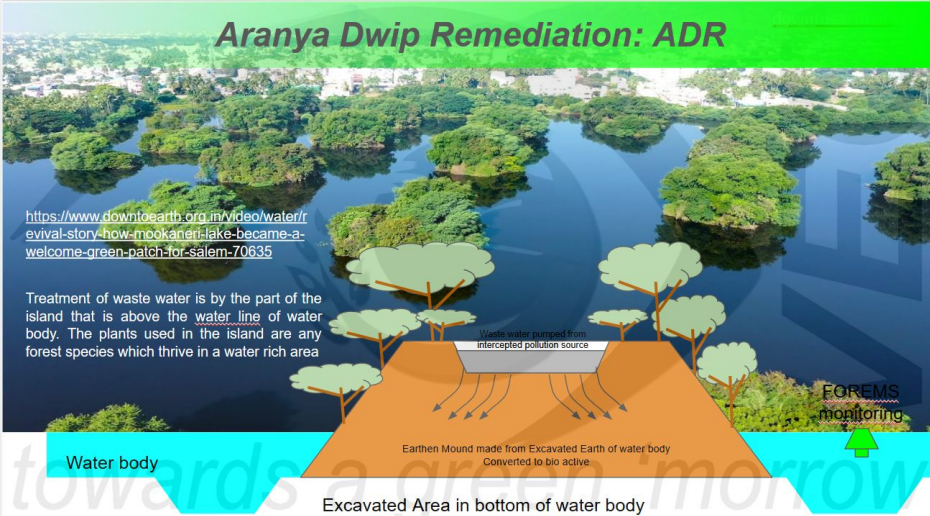
CAMUS-SBT has been recognized as Green Technology

Organization	Code
Ministry of Drinking Water & Sanitation of GOI (Jalshakti)	Niti Ayog
Ministry of Urban Development-Central Public Health & Environmental Engg. Organization	CPHEEO
Indian Institute of Technology, Bombay-Authorization	IITB
Indian Institute of Technology, Bombay to MJP	IITB
Karnataka Pollution Control Board	KPCB
Military Engineering Services appreciation	MES
Military Engineering Services registration as approved Technology	MES
Military Engineering Services appreciation- Delhi	MES
Urban Development Department, Government of Maharashtra MoU	UDD
Urban Development Department, Secretary Letter to Commissioners and COs	UDD
Grey Water Management in Rural India by Ministry of Drinking water and Sanitation	GOI
VEC Completion Certificates	

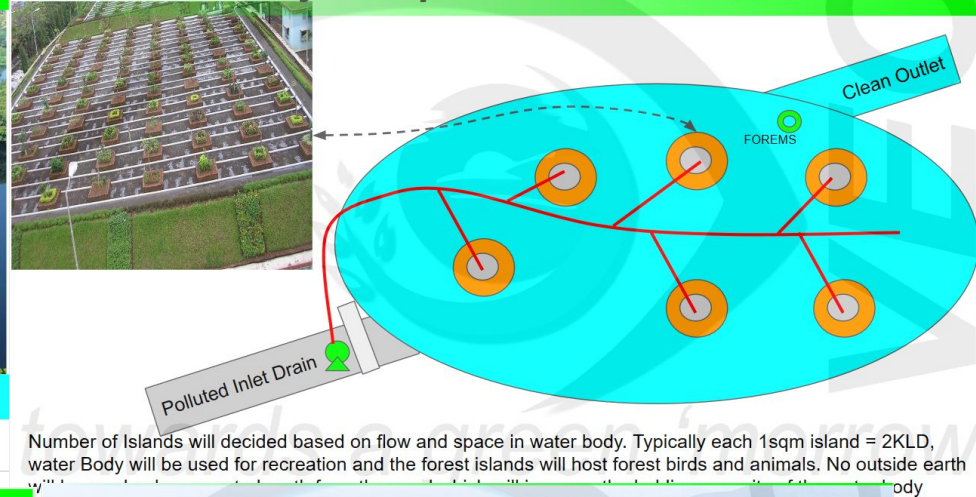


Aranya Dwip Remediation: Lakes/Sea

Aranya Dwip Remediation: ADR



Aranya Dwip Remediation: ADR



Project Objectives

- In-situ Treatment-No Extra Land requirement
- Rejuvenation of Lake
- Restoration of Flora and Fauna
- Recreational Facility installation to attract tourist and generate a source of revenue generation.

Project Credit : Salem Citizen Forum: Image credit : DowntoEarth



Peacock EcoCity Urban Design

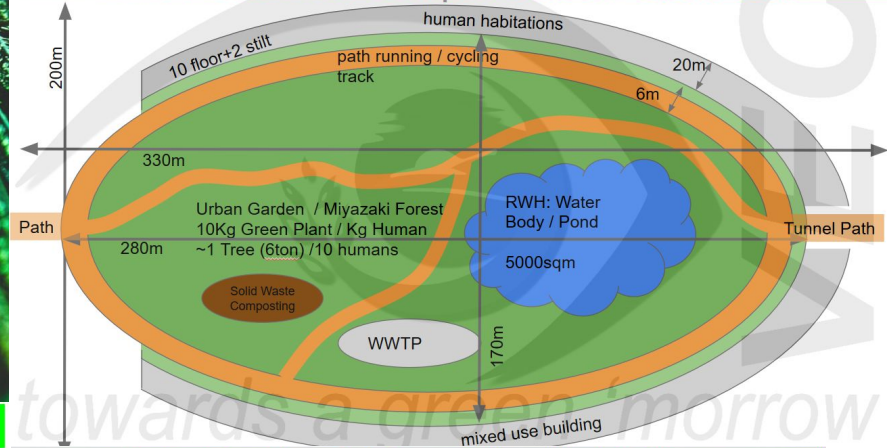
Peacock Model: Water Resilient Cities/Habitations



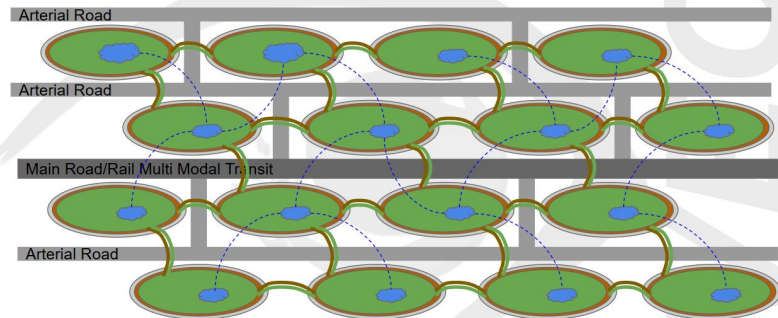
Water Resilient Cities/Habitations

- Storm Water System : Goals
 - Prevent Flooding in Storm events
 - Recharge of Ground Water for later use
- Waste Water Recycling System: Goals
 - Reduces the requirement of fresh water from outside
- Solid Waste Recycling / Composting
 - Recycle Plastics, Metals, Glass, Electronics
 - Compost BioDegradables support urban gardening
- Green Zones / Miyazaki Forests
 - Prevents Erosion
 - Provides transpirational cooling
 - Natural Wildlife and encourage Arboreal wildlife

Peacock Model: Components of Each Node



Water Resilient Future Cities/Habitations



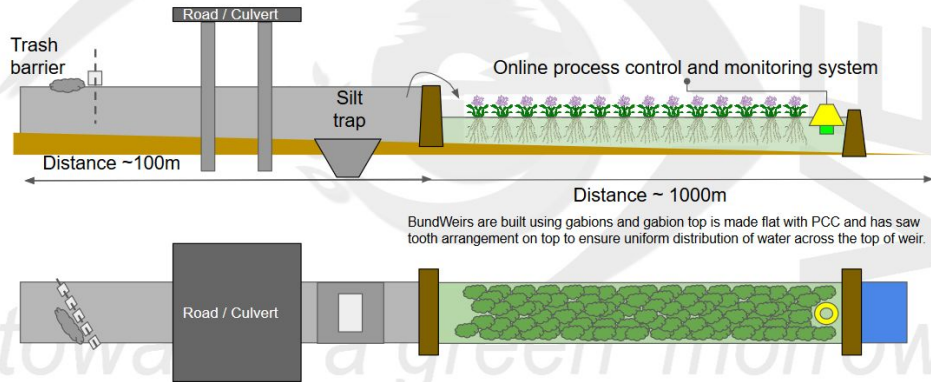
Network Environmental Assets:

- 1) The Ponds must be networked by Storm Water Drains
- 2) Network all cycle/walking paths
- 3) Network the green zones so arboreal wildlife can move between nodes

Insitu Remediation of Nallahs

Technology Alternative : SHEFROL Process

SHEFROL SWD~0.3m, implemented by multiple temporary Sandbag BundWeirs



BundWeirs are built using gabions and gabion top is made flat with PCC and has saw tooth arrangement on top to ensure uniform distribution of water across the top of weir.

- Demonstrate 100-200 Kg/MLD removal of COD using insitu technologies
- By Enhanced Nature based Natural Processes
- Minimal Power Consumption
- No Noise
- Essentially Passive devices
- Low maintenance
- Create tourism friendly installations

Insitu Bio Remediation (ISBR) Alternatives

Typical process is we arrest the Nallah with a small check dam and create Primary Settling Systems (TubeSettler, Clarifier, Settler Basin) if the TSS levels are very high. Separating the sludge and grit we process via solids composting. The clear water from primary clarification is further processed by a combination appropriate technology as listed below.

- Sheet Flow Root Level (SHEFROL) Process
- PTR: Phytoremediation (Aquatic Plants in Floating Islands)
- PCR: Phycoremediation (Algal Bacterial Cultures)
- FAR: Forced Aeration (using surface or diffusers)
- Floating Trash Barriers (stop plastic pollution)
- Monitoring : Floating Online River Effluent Monitoring (FOREM)

Technology : SHEFROL (Pondicherry University)



Project/Process Monitoring: FOREM

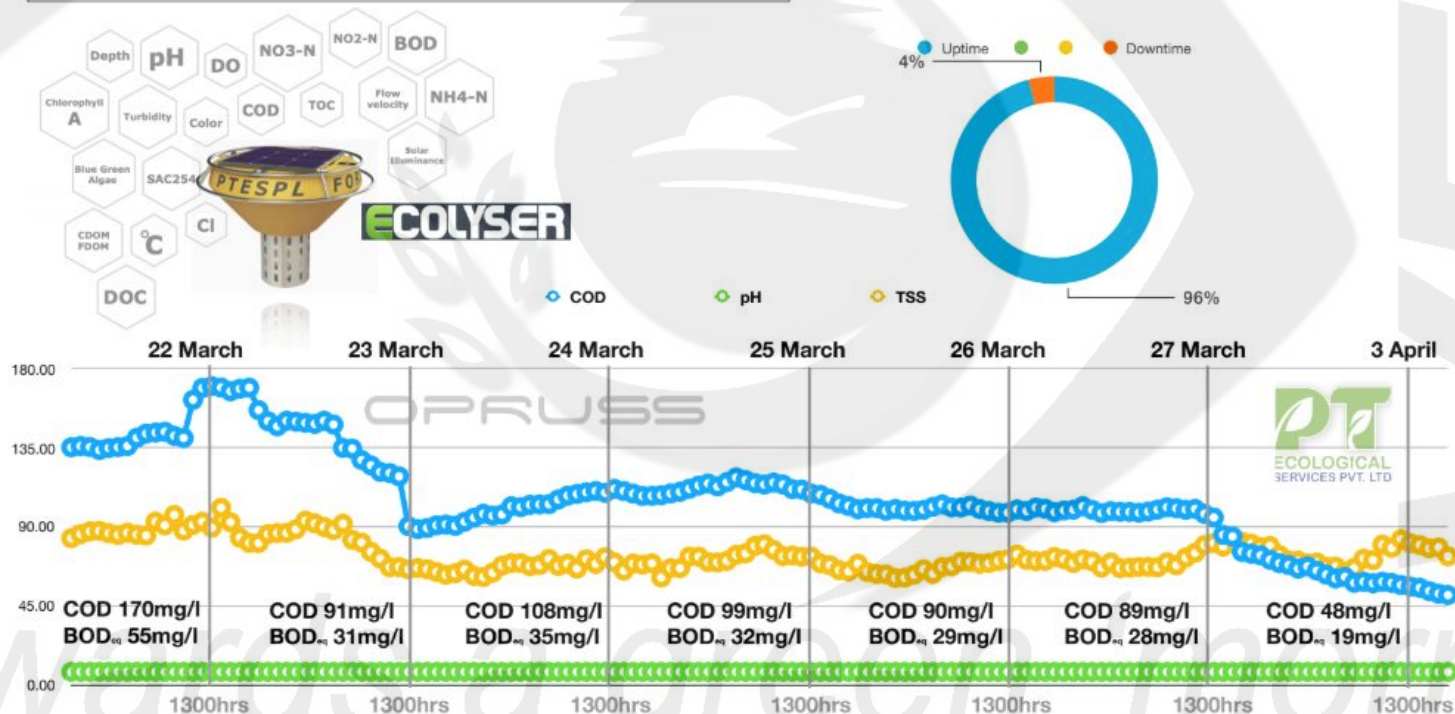
Installed in Najafgarh: FOREMS can be used for project monitoring to ascertain performance



FOREMS: Water Asset Monitoring System

Lockdown reduces COD load in Najafgarh

PTESPL FOREMS AT NAJAFGARH DRAIN LOCATED AT N-28030'58.8", E- 76058'17.9"
Hourly report from Mar21 2020 to Apr04 2020



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Maharashtra Govt Urban Development MOU

Support to Urban Development Department, Government of Maharashtra in
Soil Bio Technology (CAMUS-SBT) in Sewage treatment plants (STPs), in various Urban Local Bodies in Maharashtra.

Government of Maharashtra

MOU made and entered into on 1st November, 2017

BETWEEN

FIRST PARTY:- Urban Development Department, Government of Maharashtra located at Nariman Point, Mantralaya, Mumbai-400021, (hereinafter called the **UDD MAHARASHTRA**) which expression shall where the context so admits include its successors and permitted assigns) of the other part.

AND

SECOND PARTY:- Vision Earthcare Pvt Ltd, (VEC@SINEIITB) a company incubated in the Society for Innovation and Entrepreneurship (SINE) 3rd Floor CSRE Building, IIT Bombay, Mumbai 400076 and registered under the Societies Registration Act (XXI of 1860), having its registered office at Flat-202, Bldg-4, Mandakini, Safal Cosmopolitan Housing Society, Plot 17, Sector 19A, Nerul East Navi Mumbai-400706 (hereinafter called **Vision Earthcare VEC@SINEIITB**) which expression shall where the context so admits include its successors and permitted assigns of the other part.

Preamble:

Soil Biotechnology (SBT) is globally patented IP of IIT Bombay invented by Prof H.S. Shankar of IIT Bombay and his students. SBT IP is licensed to VEC@SINEIITB for promotion, marketing, sales and support services. A highly scalable version of incorporating the SBT IP called Continuous Advanced MultiStage System using Soil Bio Technology (CAMUS-SBT) - a registered trademark of VEC@SINEIITB. CAMUS-SBT has the following attractive features

1. Low life cycle costs
2. Completely customized solution as per the demographic requirements
3. Low power consumption along with the green attributes
4. Small footprint
5. Can handle fluctuating loads



MOU with Maharashtra Govt as Technology Provider

MES Projects



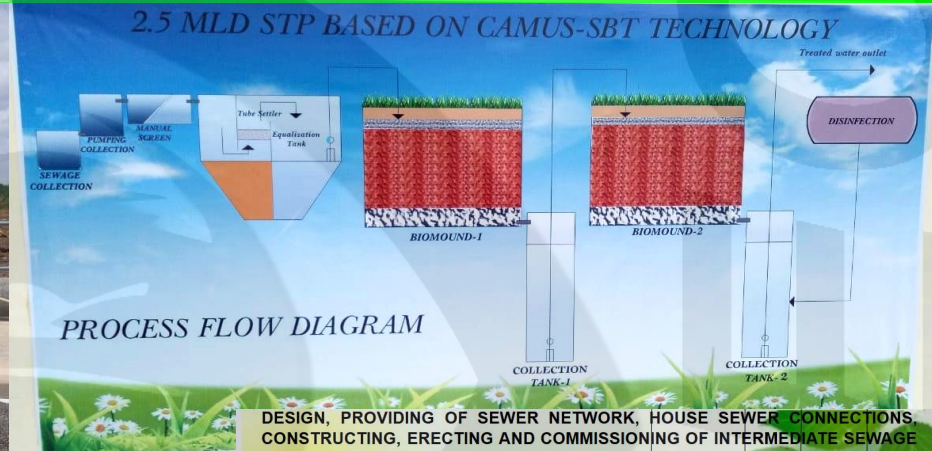
3MLD BMC plant 2005 and 2019

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Pandharpur 2.5MLD



DESIGN, PROVIDING OF SEWER NETWORK, HOUSE SEWER CONNECTIONS, CONSTRUCTING, ERECTING AND COMMISSIONING OF INTERMEDIATE SEWAGE PUMPING STATIONS, SEWAGE TREATMENT PLANT OF 2.5 MLD CAPACITY, based on CAMUS-SBT Technology at Pandharpur Municipal Council, Pandharpur

Employer:
Pandharpur Municipal Council

Operator:
M/s Khilari Infrastructure Pvt Ltd.

Project Management Consultancy:
M/s Yash Engg. Consultant Pvt Ltd.

Technology Provider:
M/s Vision Earthcare Pvt Ltd

Unique
Features
of
CAMUS-SBT

Low Energy
Consumption

Uses Natural
Ingredient

Green
Technology

Low on
Mechanization

Zero Synthetic
Chemicals

Raw Sewage to Treated Water



Pandharpur 2.5MLD



2019-7-15 10:57

Pandharpur 2.5MLD

Pic Date: 03/Jan/2020, plantation was done in Aug 2019



Pic Date: 13/Aug/2020, plantation was done in Aug 2019.



Parameter	Outlet
BOD	5
COD	15
TSS	6

Pandharpur 2.5MLD



L-R: 1. Raw Water, 2. EQT, 3. CT1, 4. CT2, 5. Drinking water for Consumption

Plant Process Walkthrough Video (www.youtube.com/watch?v=nJJUgP9BObw&feature=youtu.be)

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NDMC Lodhi Garden 0.5MLD



Finance Minister Mr. Arun Jaitley inaugurating CSBT-STP (2017)

NDMC Lodhi Garden 0.5MLD



Nagpur Improvement Trust 1 MLD



Treated water 28 Aug 2019



From LtoR ISC, ET, CT1, CT2 and Drinking water

Parameter	Outlet
BOD	6.37
COD	19.8
TSS	BDL

Process Walk Through: <https://youtu.be/Rb3NvigBMb8>

NIT Nagpur 1MLD



Plant Process Walkthrough Video

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Accept Society 15KLD



15KLD CAMUS-SBT Plant at Accept Society Bangalore (an AIDS hospice) <https://acceptindia.org/>

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Fire Luxur Bangalore 300KLD



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The HDFC School Delhi 60KLD



Kishangarh Airport 60KLD



Vadodara Airport 200KLD



Jammu Airport 200KLD



Jammu Airport 200KLD



Rachna Towers 120 KLD



CSE Alwar 20KLD



IIT BHU 300KLD



L-R:1. Raw Water, 2. CT1, 3. CT2, 4. Drinking water



MES Nirman Park Vizag 100KLD



L-R: 1. Raw Water, 2. Treated Water, 3. Drinking water

MES Satvahana Vizag 300KLD



MES SVN Colony Vizag 1000KLD



HDIL Mumbai 650KLD

Works under your Garden



Raw Water and Treated Water



UK Pey Jal Devprayag 1400KLD



BBMP Bangalore 1400KLD



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Hindware, Hyderabad 40 KLD



Capricorn, Pune 125 KLD



Loma Developers, Aurum Grande Ghansoli 660 KLD



HSIL, Hindware, Hyderabad 75KLD



Vaishnodevi Trust, Jammu 30KLD



Kolhapur Court House 600 KLD

