# KULGAON BADLAPUR MUNICIPAL COUNCIL, KULGAON

## DIST- THANE (MAHARASHTRA)

# RAIN WATER HARVESTING PROJECT


(Kulgaon Badlapur Municipal Council win National award for barrier free environment created for the physically handicapped.)

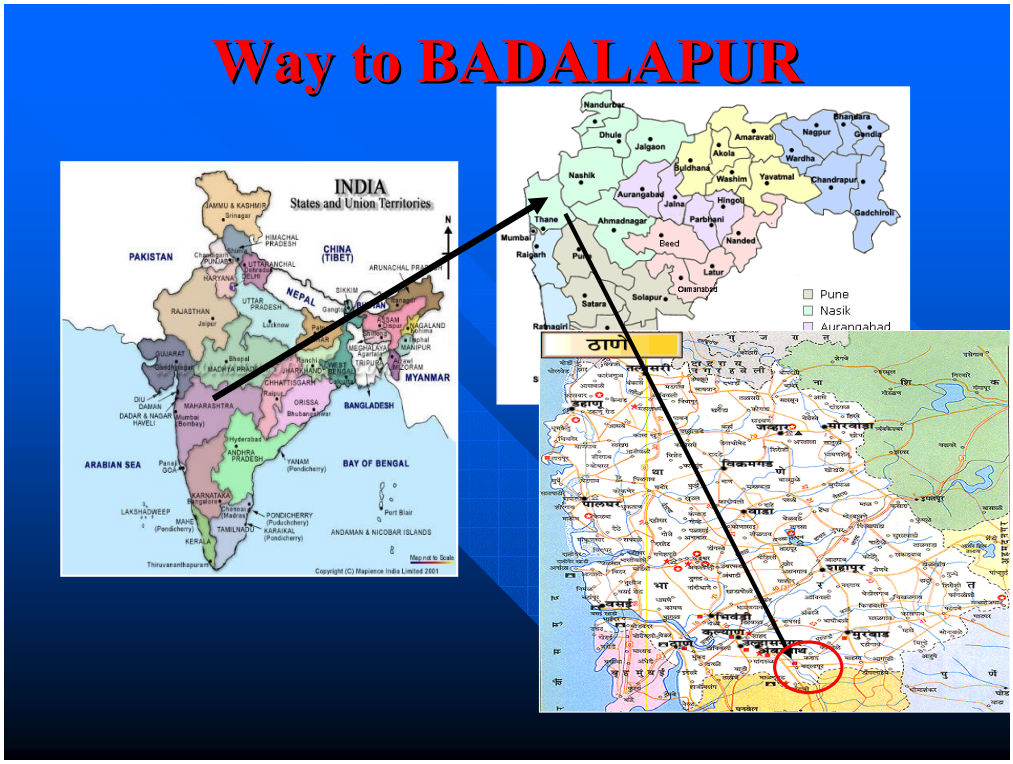
# KULGAON-BADLAPUR MUNICIPAL COUNCIL

**KULGAON, TAL-AMBERNATH, DIST-THANE**
**(MAHARASHTRA)**

# WELCOME

## INTRODUCTION:

Kulgaon Badlapur city is situated on the banks of Ulhas river amidst beautiful and peaceful natural surroundings of the sahayadris mountain range & is a fast developing city, since Badlapur city is connected to Mumbai metropolis through rail link, it has large population of middle class families it is widely acknowledged as a cultural centre where arts, cultural activities, a variety of social events & programmes & educational activities flourish and the city has rightly attained prime place on the cultural map of the state of Maharashtra.



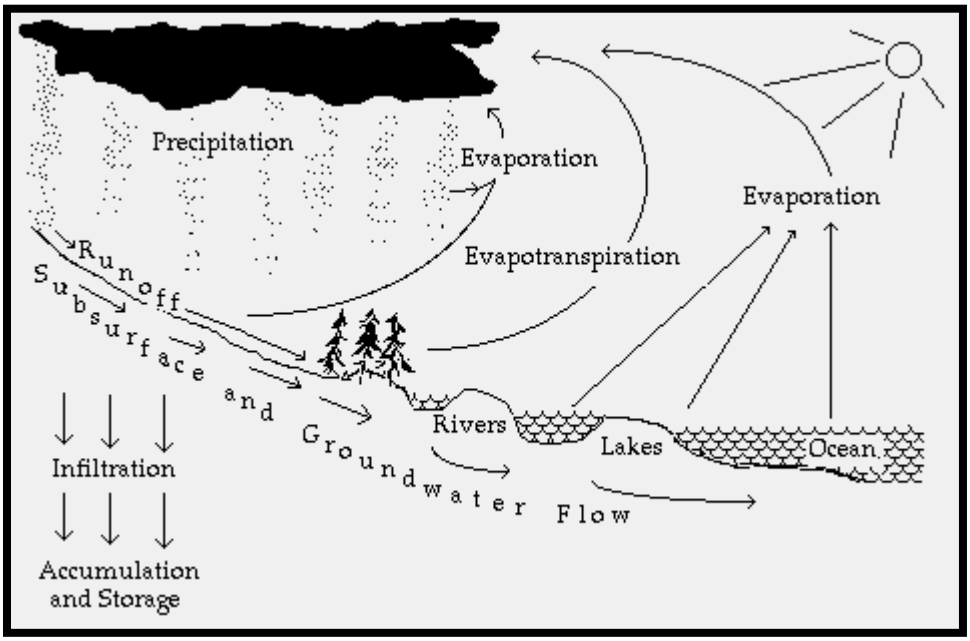
Kulgaon-Badlapur Municipal Council was established in 1992. It is a B class Municipal and having a population of 97,948 in 2001 census report. Kulgaon-Badlapur Municipal Council is located at central Rly main line between Mumbai-Pune section & away by 63 Km from Mumbai.


Kulgaon Badlapur Municipal Council was honored By Hon. President of India with a national award for its barrier free environment created for the physically handicapped.

## RAIN WATER HARVESTING

### What is rain water harvesting?

Through out the history man has been dependent on rain water for his basic necessities. Water is the universal need as considered. The principal-limiting factor for human life. Way to help insure adequate water supplies for household, agriculture and for other purpose. The techniques of storing water for long time are called water harvesting.




In recent years indiscriminate use of water resources for irrigation, industrial and other forms of commercial usage has been under fast depletion. Rapid urbanization has drastically reduced the exposed soil covered area, which prevents infiltration of rain replenish the ground water resources.

Rain is the prime source of water. when one talks about water one can not help but discuss about the rain. When one discusses about the water conservation one again can not help but discuss rain water conservation or rain water harvesting for century world wide over and we have assessed its potential in solving present day water supply/ water sources problem.

***We are benefited by Rain Water Harvesting***

- It is an independent system.
- Appropriate to suit the requirement.
- Beneficial from economical angle.
- 24Hrs water available.
- Water quality is good enough with minerals & with zero suspended solids.

Due to seasonal rainfall ground resources annually increased naturally by way of infiltration through soil layers due to urbanization the soil surface exposed is drastically reduced therefore natural recharge gets diminished.

a) To reduce the flooding of river and chokes in storm drains.

b) To enhance the ground water storage and control decline of water level.

c) To supplement domestic water requirements.


ADVANTAGES

a) Providing drinking water (Whenever possible)

b) Provides potable water.

c) Provides irrigation water.

d) Increases ground water recharges.

e) Reduces storm water discharges urban floor and overloading of Sea waves treatment plant.

f) Reduces seawater ingress in coastal areas.

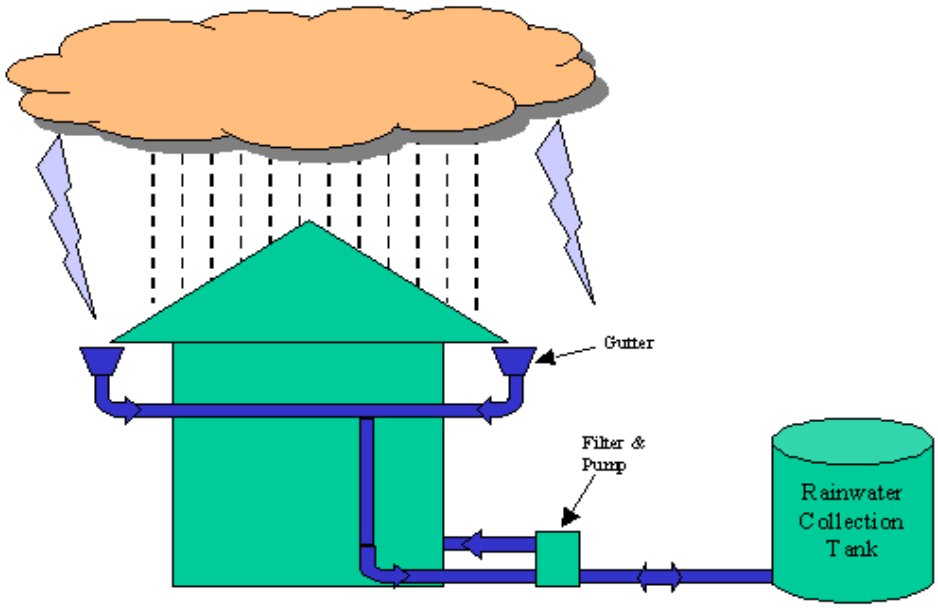

We at Municipal Council jointly working very hard on the issue of Rain water Harvesting form last four years. In the early stages we tried to motivate people to get involved in our lab scale projects on harvesting,

We stared with pilot plant project in lab with artificial soil, we tried to find out water velocities in various combination soil, the absorption rate in various strata, suction capacity etc. After doing the rain water harvesting we tried to lift the water from the same stream. Following the same we find out that the efficiency of the lifting is increased by about 20% up to the 4 months from the rainy season and 15% up to march . The rate is slightly decreased by 5% up to the next monsoon.

In the next year we increased the injection sources at various levels at various sources. The study was being done so systematically that our lab experts were on the job to innovate the concept to the commissioning. Ultimately we got the success to do the rain water harvesting as per our design criteria.

One of the major aspect before doing the rain after harvesting is to see the topography and other natural conditions including the boring depths at various places, their yield etc.

Following these efforts and the methodology, we have conducted/ constructed about 6 small projects of Roof Rain water harvesting at Ramnagri society, Shivganga society, Ramnager Shirgaon, Swami Dharshan society, SaiNiwas , Shreeram Kunj society at Dattawadi in KBMC Area.




Rainwater Collection Overview

After Completion of above project we are preparing 40 Building Mass Project cost Rs. 17 lakh at Shivdhashan Society in kbmc area. These projects were represented to MMR(Environmental Society)MMRDA. After having the no. of technical meeting with the experts of MMRDA, authority has given us the funds of Rs. 10 lacks and Rs. 5 lacks Amt (without Interest) to construct the project of rain water harvesting in the area of Shivdhashan Society. In addition to this fund, we constructed a RWH project at the cost of 17 lakh. Plan and other details enclosed.

# Rain Water Harvesting Project

at

SHIV DARSHAN SOCIETY
KULGAON-BADLAPUR MUNICIPAL COUNCIL,
Dist- Thane. (Maharashtra)

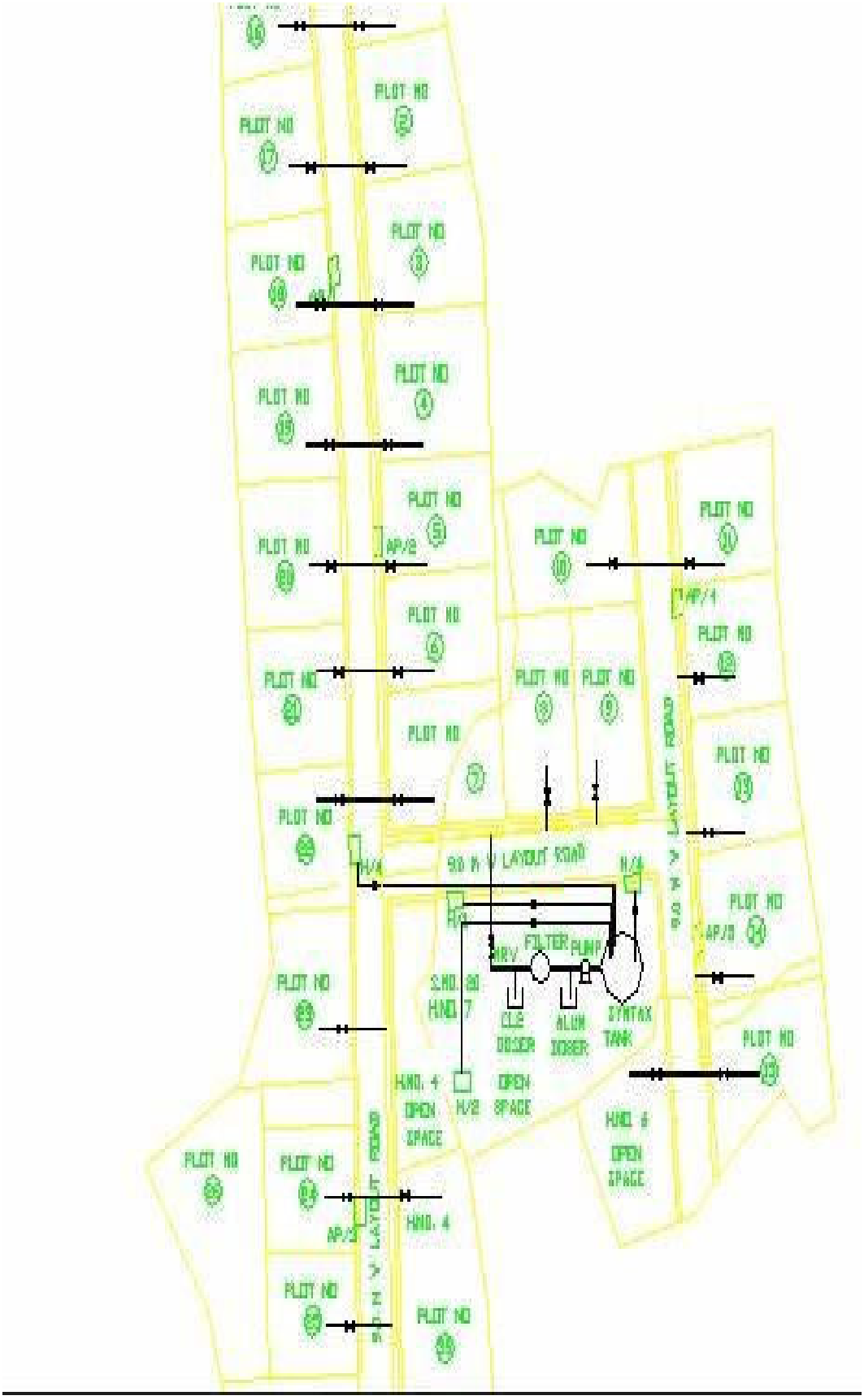
- **Project Finance by MMR (Environmental Society) & KBMC**
- Total Project Cost : Rs. 17.00 Lakhs
- MMR Society Funds : Rs. 10.00 Lakhs + 5.00 Lakhs (without interest
- KBMC Contribution : 2.00 Lakhs

At Kulgaon-Badlapur Municipal Council in Shiv Darshan Society, Harvesting is done at various locations Including Garden, well, in Between Buildings & at corner of Junctions.

Harvesting is done at various location at various heights top from 10 feet to 200 feet down below the ground level to inject the water in the natural cracks and in the natural resources.

Total Rain water harvesting quantity is about 50,000 cubic meter. Total sub soil water harvesting quantity is about 50,000 – 70,000 cubic meter. Available water per day is 200 cubic meter that is 73,000 cubic meter per year.

Layout plan


PLOT NO
AP/2
AP/1
AP/3
H/4
H/2
90 M WIDE LAYOUT ROAD
24 M WIDE LAYOUT ROAD
FILTER
PUMP
MRV
CL2 DOSER
ALUM DOSER
SYNTAX TANK
H.NO. 4 OPEN SPACE
H.NO. 6 OPEN SPACE
H.NO. 7

**Diversion of Rain Water Down take pipe to Rain Water Harvesting Unit**

**Actual Rain Water Harvesting Site**
**“ShivDarshan Society”, Kulgao Badlapur, Dist- Thane**

## Detailed Estimate of Project.

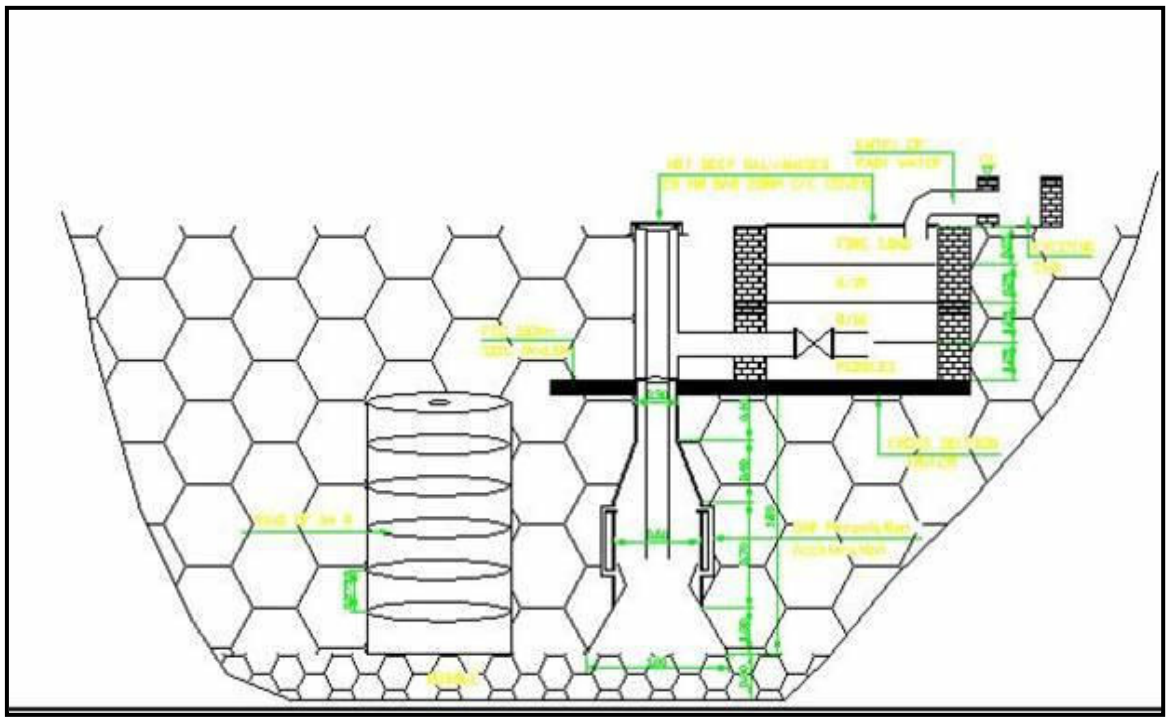
| Sr.no | Particulars of work | Qty |
|---|---|---|
| 1 | Excavation for water filtration,<br>Rain water harvesting system, laying of pipe ( from harvesting to syntax tank and from harvesting to individual building. ) and absorption pits and refilling with stone graded sand with different size.<br>Harvesting Unit Excavation 7'x7'x10'=490 say 500 cuft. X 4 Nos.<br>Absorption Pit Unit Excavation 4'x4'x8'=128 say 130cuft. X 5 Nos.<br>Piping Excavation 1200 RMx 0.3x0.3M | 2000 cuft.<br><br>650 cuft.<br>1080 cuft. |
| 2 | Piping Details<br>Harvesting Unit to 10,000 liters syntax Tank 1 inch dia.<br>Piping from Pressure sand Filter ( Main Header 2 inch Dia. )<br>Main Header to resp. building up to top of building ( Individual overhead tank. ) Pipe size 1inch | 250 M<br><br>500M<br><br>500 M |
| 3 | WATER FILTRATION SYSTEM<br>Rain water after filtration will be harvested in harvesting system and at absorption pit.<br>Size of filtration system 3'x4'x3' height .PCC 100 mm at the bottom of filtration system.<br>Size of PCC 3'x4x 100 mmx 4 Nos. (1.2 cum x 4 Nos.)<br>Wall thickness of Filtration : 0.225 M.<br>Each cubic meter qty 1.35, 4 Nos.<br>will be filtered before harvesting at resp. site.<br>Plastering : 25mm thick (Inside/outside ) Each unit quantity : 0.13 cum x 4 Nos.<br>The filter will be the combination of stone, graded sand with different sizes to allow rain water to percolate and to trap suspended and floating material.<br>Each unit quantity 1.2 cum x 4 Nos. refer drawing.<br>Filter will be provided with M.S 25mm MS bar with c/c 25mm.<br>Frame will be hot dip galvanized to avoid any scaling. 4 Nos.<br>Same type of frame will be provided above absorption pit. | 4.8 cum<br><br>5.4 cum<br><br>0.52 cum.<br><br>4.8 cum.<br><br>4 Nos.<br>5Nos. |

| | | |
|---|---|---|
| 4 | BORE WELL<br>Size of Bore 4 inch RF 200 ft<br>Casing Pipe 4 inch x 20 ft individual.<br>Submersible Pump ( 2 Hp )<br>200 ft 2 inch GI C class piping<br>200 ft 4 core armored cable from pump to panel board. ( At each location 300 ft.<br>Misc items including clams, fittings etc. | 4 Nos.<br>4 Nos.<br>3 Nos.<br>600 FT<br><br>3 Nos. |
| 5 | EXISTING WELL WATER LIFTING PUMP.<br>3 Hp Monoblock 3 phase.<br>Piping 2 inch( From suction to delivery end. ).<br>MOC PVC 4 kg | 1 No.<br><br><br>40 M |
| 6 | PANEL BOARD<br>Suitable size panel board with D.O.L.straters , three phase indicator lamp,Volt meter<br>Ampere meter, Main switch with Earthing .<br>System will be provided pump start on/off auto and manual operation. | 4 Nos |
| 7 | RAIN WATER HARVESTING EQUIPMENT.<br>Mechanized harvesting unit after filtration system to put water inside the cracks up to 200 ft from 10 ft. ( Refer the drawing. )<br>Absorption pits.Harvesting pits will be constructed in between the SW Drains or near to SW Drains. The system will be provided with excavation, Grilled angled frame with mesh with pebbles inside with PVC casing pipe with perforation for seepage. 1 inch kadappa with PCC 4 inch.<br>RCC-Hume pipe-<br>In between the harvesting unit for volumetric load 11” with 1meter dia concrete pipes provided with height 6fit ( 4 no set) | 4 Nos.<br><br><br><br>5Nos<br><br><br><br>24Nos |
| 8 | HARVESTING UNIT CHAMBER WORK<br>Size 0.3Mx0.3M.<br>MOC Double brick work<br>Each brick work qty 0.081 cum. X 4 Nos.<br>Wall thickness 9inch<br>Plastering 25 mm.<br>Plastering qty.0.018 x4 Nos.<br>Above the chamber, frame will be provided. MOC hot dip galvanized to avoid any scaling. 4 Nos.<br>25mm MS bar with c/c 25mm. | <br>0.324 cum.<br><br><br>0.072 cum.<br><br><br>4 No |

| | | |
|---|---|---|
| 9 | 10,000 liters syntax tank for the collection of harvested rain water. | 1 No. |
| 10 | DOSAMATIC DOSER<br>Alum doser and bleaching doser for coagulation and for zero bacteria on line following equipment is designed.<br>Min. Actuating Pressure : 0.3 Kg/cm2, Max. Operating Pressure : 5.0 Kg/cm2, Flow<br>Range : 1 to 30 LPH, Max. Hydotest Pressure : 7.5 Kg/cm2,<br>MOC-body : Polyacetal/Delrin, Piston : Teflon filled poly-amid plastic, NRU : Double P.T.F.E. Bal 1 type, Rubber Parts : Vitron, Metal Parts : SS 316, Suction Filter : P.V.C., Inlet Connection : ¾" B.S.P., Outlet Connection : ¾" B.S.P. | 2No |
| 11 | DULE MEDIA FILTER<br>Providing, fixing, testing and commissioning of vertical MS pressure filter fabricated from 6 mm thick MS plate shell and dished ends. Complete with initial charge of filter media, M.S. face piping with diaphragm valve. Test pressure : 5 Kg/cm2, Capacity 2000 lph<br>HOS : 1.5 M<br>DIA : 1.2 M<br>MOC : M.S. | 1 No. |

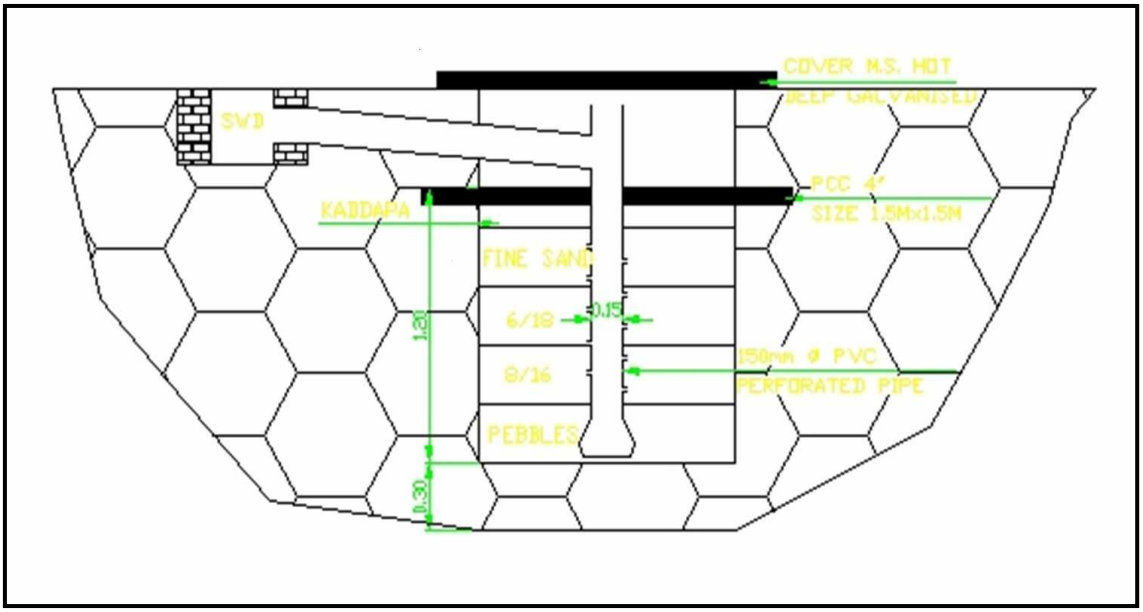
## Harvesting System :-

Mechanized Harvesting Unit after filtration system to put water inside the cracks up to 200 feet from 10 feet.



## Absorption Pit :-

Pit will be constructed in between the SW Drains. The system will be provided with excavation, Grilled angel frame with mesh with rubbles inside with PVC casting pipe with perforation for seepage.



Awareness about Rain Water Harvesting in various schools.

महाराष्ट्र शासन

पाणी पुरवठा व स्वच्छता विभाग
मंत्रालय
मुंबई ४०० ०३२

प्रथम पारितोषिक

प्रमाणपत्र

संत गाडगेबाबा नागरी स्वच्छता अभियानांतर्गत सन २००२-२००३
या वर्षी दुसऱ्या फेरीतील गट क्र. २ (अ वर्ग व ब वर्ग नगरपालिका)
मधून जिल्हास्तरीय सर्वोत्कृष्ट कामगिरी बजावल्याबद्दल
नगरपालिका जिल्हा
यांस भारतरत्न पंडीत जवाहरलाल नेहरु स्वच्छ नागरी स्पर्धेअंतर्गत
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दिनांक : १४ एप्रिल २००३

आर. आर. पाटील
मंत्री

महाराष्ट्र शासन

पाणी पुरवठा व स्वच्छता विभाग
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विशेष प्रमाणपत्र

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विशेष प्रमाणपत्र प्रदान करण्यात येत आहे.

सुलेखा कुंभारे
राज्यमंत्री

अजित पवार
मंत्री

## CERTIFICATES FROM GOVT. OF MAHARASHTRA

महाराष्ट्र शासन

पाणी पुरवठा व स्वच्छता विभाग
मंत्रालय
मुंबई ४०० ०३२

द्वितीय पारितोषिक

प्रमाणपत्र

संत गाडगेबाबा नागरी स्वच्छता अभियानांतर्गत सन २००४ - २००५
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रणजित कांबळे
राज्यमंत्री

अजित पवार
मंत्री

महाराष्ट्र शासन

पाणी पुरवठा व स्वच्छता विभाग
मंत्रालय
मुंबई ४०० ०३२

विशेष प्रमाणपत्र

संत गाडगेबाबा नागरी स्वच्छता अभियान सन २००४ - २००५
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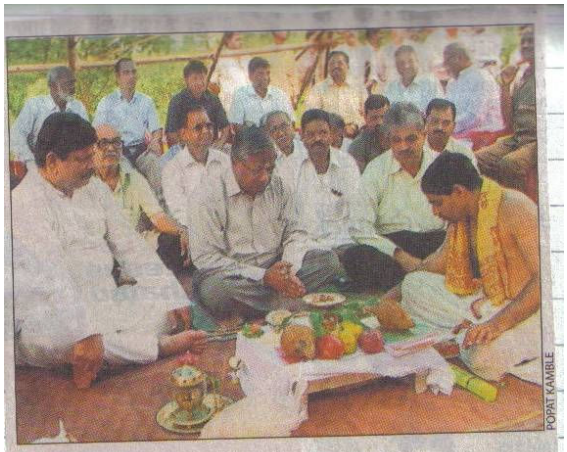
विशेष प्रमाणपत्र प्रदान करण्यात येत आहे.

रणजित कांबळे
राज्य मंत्री

अजित पवार
मंत्री

दिनांक ३०, ९ ,२००५



POORVI KAMBLE

# KBMC STARTS ECO-SANITATION PROJECT

**Alka D Joshi** | *Badlapur*

THE municipal council of Kulgaon-Badlapur have launched a pilot project that would convert human excreta into fertilizer. The project titled 'Ecological Sanitation, short form Ecosan, considers human excreta and water from households as resources that can be recovered, treated and safely used as manure.

The Kulgaon-Badlapur Municipal Council (KBMC) inaugurated the Ecosan project at the Adarsh Vidyalaya premises in the last week.

"The system offers a range of low-cost, high-tech sanitation option which is hygienically safe, comfortable to use and environmental friendly. It's also more economical than conventional systems," informs Ram Patkar, KBMC president.

The KBMC and the Adarsh Vidyalaya have initiated the project with guidance from the Indian Water Works Association (IWWA) and German firm Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

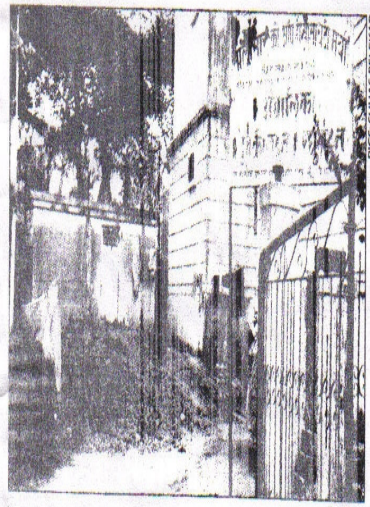
"The Ecosan project has been very successful in banana plantations in our country and is really appreciable that the KBMC accepted such a project," says Martin Wefller, a representative of the GTZ.

The inauguration function witnessed the presence of MLA Ramdas Mote, MLC Sanjay Kelkar and SICON representative Johnson Hib among others.

While explaining about the advantages of Ecosan project, D B Panse, chairman of Ecosan asserted that such a method would enable complete recovery of nutrients in household wastewater and its reuse in agriculture. This helps to preserve soil fertility and safeguard long-term food security, while minimising the consumption and pollution of water resources.

Panse asserted that it's not a technique but philosophy to recycle wastage. He informed that human excreta contain rich fertilizers such as potassium, sodium and phosphorus that will enhance fertility of land and also reduce use of chemicals in agriculture.

# KBMC starts rain water harvesting project



PICS: SUJITAS RELEKAR

**Vinayak Jadhav**

Tired of acute shortage of water, the Kulgaon Badlapur Municipal council (KBMC) has announced a new project to end shortage of water. The project involves harvesting of rain water and would be set up in a mega residential colony on an experimental basis.

Ram Patkar, the chairman of the KBMC informed that the new project involves making Badlapur and Kulgaon self dependent for water supply in the long run. "It is the first such project of its kind in the entire state. We have selected a group of 40 buildings for the purpose. The buildings would be supplied with filtered ground water from the project", he said and added that the council would assess the experiment before making the project common in other parts of the council.

The Mumbai Metropolitan Region (MMR) Environment Society is funding the Rs 16 lakh for the project. The Shiv Darshan society, a cluster of 36 buildings has been selected for the pilot project. Four other buildings in the vicinity are also included in the project. Together, the 40 buildings have around 500 flats.

Like other rain water harvesting projects this project is also based on the same theory. The civic administration would create facilities to recharge underground water resources using the rainwater. The waters from the project would be supplied to the Meenatai Thackeray filtration plant where they would be treated before being passed on to the cluster of 40 buildings for a period of one year. The waters from this project would be supplied to other areas if the need so arises.

The project is extremely cost effective. The KBMC will charge Rs 70 per flat in the colony of 500 flats for the project. Out of the collected amount of Rs 35000 per month, Rs 15000 would be spent on the maintenance of the project every month. The remaining sum would be used to improve cleanliness and garbage disposal mechanism of the area.

Notably the KBMC gets waters from the state owned Maharashtra Jeevan Pradhikaran (MJP). The MJP supplies water to the region at the rate of Rs 6.90 per 1000 litres. Besides this, the state agency often cuts waters to the area particularly during the summer months leading to scarcity of water in most parts of Kulgaon and Badlapur. The present project is aimed at ending the dependence upon MJP and at the same time ensuring proper environmental balance.

Publicity in Various News Papers

# PHOTOGRAPHS OF PROJECT


**Inlet of Rain Water Harvesting**

Filtration system for Rain Water

Installation of equipments

Rain Water Harvesting Treatment Plant

Treatment Plant Panel Board

**Experts at site**

INSPECTION at Site by
Shri Ram Patkar, Hon. President of Kulgaon Badlapur Municipal Council
Shri Prakash Borse , Chief Officer Kulgaon Badlapur Municipal Council

# OUR GOLDEN STEP IN WATER RECYCLING.

Recently We have also entered in to the system of Recycling of Waste water. Our President visited Germany on 19th June 2007 along with MJP Chief Engineer and other senior officers after Indian Water Works invited personally. The complete study program was designed for 10 days. During the same he has visited various sites including rain water harvesting, Ecological sanitation and recycling technology projects.

This visit has given him a healthy technical back up for the said project.

Some of the photographs enclosed.

The basic technology of Ecological sanitation(ecosan) is a new paradigm in sanitation that recognizes human excreta and household wastewater not as waste but as resources that can be recovered, treated where necessary and safely used again.

The technology helps the recovery of nutrients in wastewater and their reuse in agriculture.In this way, they help preserve soil fertility and safeguard long- term food security, whilst minimizing the consumption and pollution of water resources.

Conventional sanitation technology are coming under increasing critism for being economically and ecologically unsustainable.It is evident that the United Nations MillenuimDevelopments Goals(MDG)

cannot be achieved by conventional sanitation solutions alone and that alternative approaches are urgently needed.

**Indian Scenario**

Most towns and cities in India face serious problems in providing adequate sanitation, sewers and wastewater management systems for the whole community..Where conventional, waterborne sewerage systems exist, human wastes are flushed away with huge amounts of scarce freshwater, polluting rivers and the drinking water sources of people living further downstream. In addition, more than 650 million Indians do not have access to adequate sanitation at all- there is a huge demand which cannot possibly be met by conventional sanitation systems due to enormous costs for the pipe network, lack of water and serious environmental drawbacks.For this reason, many countries(almost 65 nos) likeHolland, China, Mali, Nepal,etc have a paradigm shift to provide sustainable sanitation and waste management. Ecosan is an established, cost effective and environmentally as well as socially sound alternative that can help to solve the pressing problems concerning inadequate sanitation. This not only improve the environmental situation, but also improves the living conditions in a sustainable way and lowers risks for human health. Put shortly, it is an approach to turn waste into wealth.

**Advantages of ECOSAN**

- **.**Improvement of health by minimizing the introduction of pathogens
- from human excreta into the water cycle,
- .promotion of safe, hygienic recovery and use of nutrients, organics, trace elements, water and energy,
- .Preservation of soil fertility,
- .Conservation of resources,
- .Preference to modular, decentralized partial-flow systems for more appropriate, cost efficient solutions,
- .Promotion of holistic, interdisciplineary approach,
- .Material flow cycle instead of disposal.

Our first step in this project is,

Adarsh School Kulgaon Badlapur.

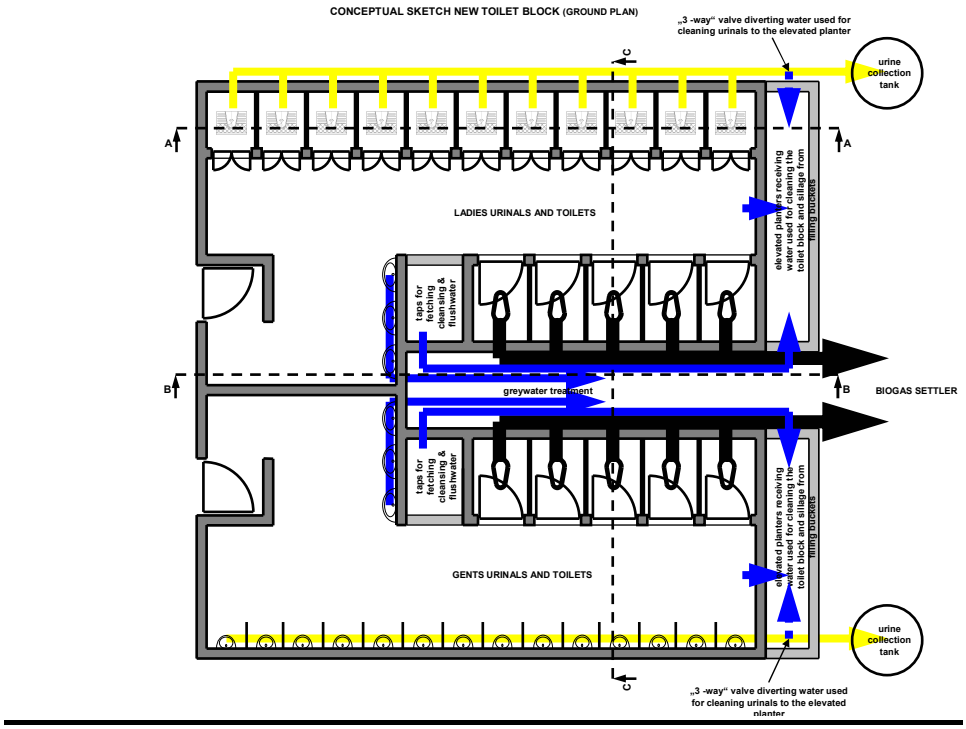
No. of Students 11,000

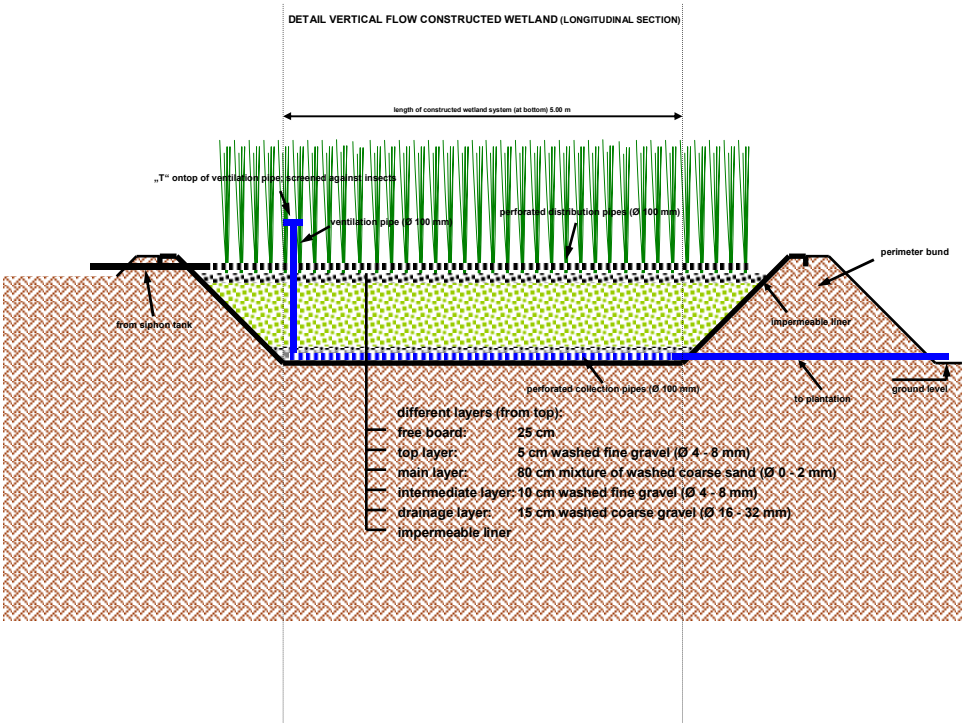
Total Project cost Rs. 32,00,000.00

The project is approved by Maharashtra Jeevan Pradhikaran.

Expected Finance Rs. 5,00,000.00 from GTZ (German Co. )

# The project is designed as under.




THANKS
KULGAON BADLAPUR
MUNICIPAL COUNCIL,
DIST- THANE (MAHARASHTRA)