



**LIFE GREEN SYSTEMS**  
Green Cities | Clean Waters | Better Life

## **STORM WATER MANAGEMENT / URBAN FLOOD MITIGATION**

Life Green Systems Stormwater Management System has been installed at client site in New Delhi, INDIA where other systems couldn't cope with the existing site conditions. The system was modular and customized to meet the definite requirement of the client and it has been installed in July 2014. To know more about

Life Green Systems please visit:  
[www.lifegreensystems.com](http://www.lifegreensystems.com)

### **CASE STUDY**

**BY**

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## TABLE OF CONTENTS

### 1 PROJECT SUMMARY

1.1 ISSUE	2
1.2 REQUIREMENT	2
1.3 SOLUTION OFFERED	3,4

2. INSTALLATION STEPS	5,6
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3. PROJECT OVERVIEW	7
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3.1 PROJECT TIMELINE & MILESTONES	8,9,10,11
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4. COST & TIME EFFICIENT BENEFIT ANALYSIS	12
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5. PRODUCT SPECIFICATION	13
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## **1. PROJECT SUMMARY**

The Client has been witnessing the acute issue of flood water in their premises at New Delhi, INDIA. Life Green Systems' expert team visited the site and suggested the best suited stormwater management system to resolve the issue and provided the modular and customized solution in order to resist the flood water in an intelligent manner. We have designed a well-fitted drainage system for the client to cut the water flow and recharge the flood water for future use.

Life Green Systems Stormwater Management Systems can be a sound environmental and economic investment when the effects on water conservation and storm water management are considered.

### **1.1. Issue**

Flood water in the commercial premises based out at New Delhi, India was the major problem; the client has been facing from a quite long time. Other conventional methods were failed to resolve the issue permanently. However, Life Green Systems innovative drainage systems and modular stormwater management systems were well designed to resist the entry of the flood water in their premises.

### **1.2. The Requirement**

The client was witnessing the water logging of 1.5 feet due to flooding inside factory premises. We identified the issue of overflowing of drainage pipeline with zero management of collecting rain water. We designed 4 rain water harvesting pits by installing LifeRain™ and constructed proper rainwater pipeline to capture rooftop rain water. Execution of sluice valve has been done by our technical team to operate drainage pipeline effectively.

To store and recharge storm water from building area of the client's premises in New Delhi of the project and the low infiltration capacity of the soil posed an additional problem. The recharge tank had to have a very large storage volume that influenced the design of the project, in order to be capable of storing all of the potential storm water volume.

### **1.3. Solutions Offered**

*Urban Flood Mitigation* through Storm Water Management System has been installed in New Delhi, India on June 2014 where other systems couldn't cope with the existing site conditions. Life Green Systems LifeRain™ rightly dealt with the flood water and provided an apt installation to the client. The LifeRain™ system is a modular technology that requires far less civil work. Life Green Systems Stormwater Management System is a sound environmental and economic investment when the effects of flooding and property damage are considered.

The Project makes use of:

- 200 cum flood mitigation
- 320 cum recharge capacity
- Dual step filtration: - Catch trap then micro filter.

Life Green Systems examines the problem and installed our high-end intelligent stormwater harvesting modular technology to provide an ultimate solution to the client. We've kept the CGWB norms in mind while installing the systems, this way we conserve and recharge the ground water for the future use. To stop the excess flood water in the client's premises, we made use of highly effective and innovative gate wall that solves its purpose to bring out the best possible results.

The solution was to design and install Life Green Systems Modular Tanks for the storm water management system, which are substantially higher performing than stone aggregate as they have a 90% void area in comparison to the 40% of stone. The volume required for the management of storm water was reduced to more than half of what was originally considered, producing significant saving in earth movement and labour, as well as being able to accelerate the installation of the works.

In addition to the compliance of the storm water management system to eliminate the possibility of flood, water harvesting systems were incorporated so that the recharged water can be used for future.

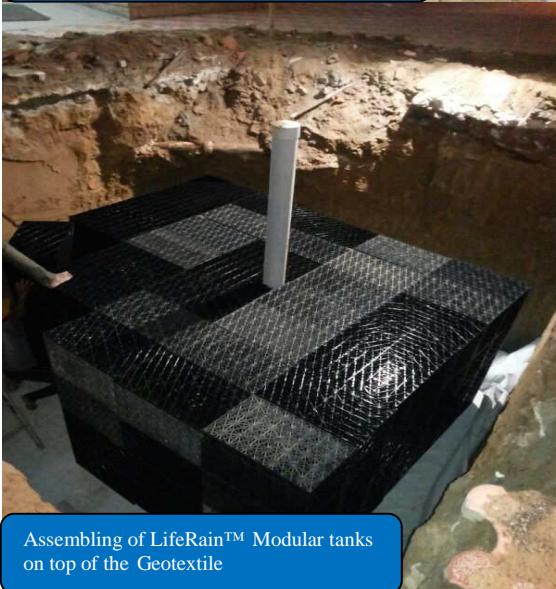
## 2. INSTALLATION STEPS INVOLVED:



Preparing the base for Life Green Systems LifeRain™ modular tank installation



Installation of Borewell to recharge the ground water



Assembling of LifeRain™ Modular tanks on top of the Geotextile



The modular tanks are wrapped with Geotextile



Backfilling the LifeRain™ Modular tank

### 3. PROJECT OVERVIEW

#### 3.1. Project Timeline

Project Planning
Particulars
LOI & Work Go Ahead
Site Mobilization
Drawing (GFC) to be issued to site
Initial Layout of Site
<b>First Stage:</b>
Drain Channels Near Office Block
Fencing/Marking of Area
Dismantling of PCC
Excavation of Channel & Dressing
Laying of PCC at Base
Brickwork
Plastering & Finishing
Laying of Pipes
Fixing of Grating
Drain Channels Near Gate -1 (Rama Road)
Fencing/Marking of Area
Dismantling of PCC
Excavation of Channel & Dressing
Laying of PCC at Base
Brickwork



Plastering & Finishing
Laying of Pipes
Fixing of Grating
Fencing/Marking of Area
PCC Breaking
Excavation/ Dressing
Sub Surface PCC (1:4:8)
Brick Work (1:4)
Plastering & Finishing (1:6)
Laying of Pipes
C:C (1:3:6) - 100mm
Backfilling
Fixing of Grating
Primer with Paint - Black Japan
Drainage Pipes Near Office Block
Removing of existing Pavers
Excavation for pipes & Pits
Construction of Pits
Backfilling and refixing of pavers
Routing pipes from Channels to Pits
Marking of the Area
Breaking of Concrete or Pavers removing
Excavation for Pipes
Laying pipes

Backfilling & Laying Concrete & Fixing pavers
Fixing Valves
Fixing of Valves in outgoing Sewerage Lines - 02 Num
1.5 m x 2.5m x 1.5m(H)
Excavation
PCC
Cutting of Pipes
Fixing of Valves with its accessories
Brick Work (
Plastering & Finishing
Back Filling with Earth
Manhole Cover/ Grating & Frame
PCC rest of Area
Fixing of Valves in outgoing Sewerage Lines - 02 Num
Water Testing
Excavation
PCC
Cutting of Pipes
Fixing of Valves with its accessories
Brick Work (
Plastering & Finishing
Back Filling with Earth
Manhole Cover/ Grating & Frame
PCC rest of Area

**Second Stage:**

Recharge Well ( 08 Num)

Approval from Client

Fencing/Marking of Area

Excavation 3 x 3 x 1.5 m

Machine Fixing

Well Digging

Lowering of Pipes Perforated Pipe

Filling of Gravel

**Third Stage:**

Delivery of Material

**Fourth Stage:**

Construction of Rain Water Harvesting Tanks

Fencing of Area

Approval from Client

Fencing of Area

Excavation by JCB

Dressing

Preparing Sand Bed

Compaction of Base

Placing of Geotextile

Placing of Matrix

Stitching of Geotextile

Backfilling of Area

Filter Installation	
Excavation	
PCC	
Fixing of Filters	
Connection of channel pipes to filter to pit	
Site Handing Over	
Testing & Commissioning	
Handing Over	
Virtual Completion Certificate	
<b>TOTAL DURATION OF PROJECT</b>	<b>4<sup>th</sup> May 2014      31<sup>st</sup> July 2014</b>

#### 4. COST EFFECTIVE SOLUTION

WHY Life Green Systems LifeRain™ for Stormwater Management & Urban Flood Mitigation???

The Life Green Systems Storm Water Management System & Urban Flood mitigation has been chosen for this site for the following reasons:

- The product cost was found to be less than the cost of the equivalent storage volume of perforated pipe or chambers typically used in French drain systems.
- The Life Green Systems trench provided maximum utilization of excavated area because the volume of the finished trench is the volume available for detention.
- No gravel thrust-blocking was required to support the trench which eliminated the costs associated with excavating for and handling of gravel.
- Compared to pipe or chamber perforations, the large ex-filtration surface of the walls and bottom of the Life Green Systems trench, will allow a lot more water to ex-filtrate into the ground.
- Due to high ultimate load bearing capacity yet open structure and open surface area, the trench is highly un-susceptible to long-term clogging caused by long-term compaction or silt migration.
- **High performance aesthetics:** Strong Structural design & lightweight.
- **Economical:** It saves time and money in installation and less civil works costs in any kind of soil.
- **Smart Utilization of space:** Top surface can be used for Parking lots, Gardens, Lawns, Children's playground, sports fields, etc.
- **Safety first:** Completely underground and no easy access to storage space. No risk, even for applications in schools.
- **Water Quality:** Ensures improved water quality of recharge water through LifeRain™ capillary action.
- **Low Maintenance:** Easy to maintain unlike conventional rain water harvesting systems.

- **Environmental Friendly:** LifeRain™ is made of 100% recycled Polypropylene.
- **Future Benefits:** It increases the value of the property and protects it from flash flooding and water shortage problems as the mains water dependence is significantly reduced after LifeRain™ installation.

**Specifications of LifeRain™:**

- Void surface area upto 96.4%
- Crash load capacity is 20 tons per sq. m.
- Load bearing capacity is upto 40 tons per sq. m.
- Material used is recycled polypropylene
- Vertical dimensions to ensure maximum strength