

# Water Management to achieve Sustainability in Satellite (Special) Township

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# Why Special Township...???

- x Population Explosion
- x Scarcity of Land
- x Scarcity of Housing
- x Congestion in Traffic
- x .....and the list continues...!!!

Ultimately leading to stress on urban infrastructure....

# What does Township Offer...???

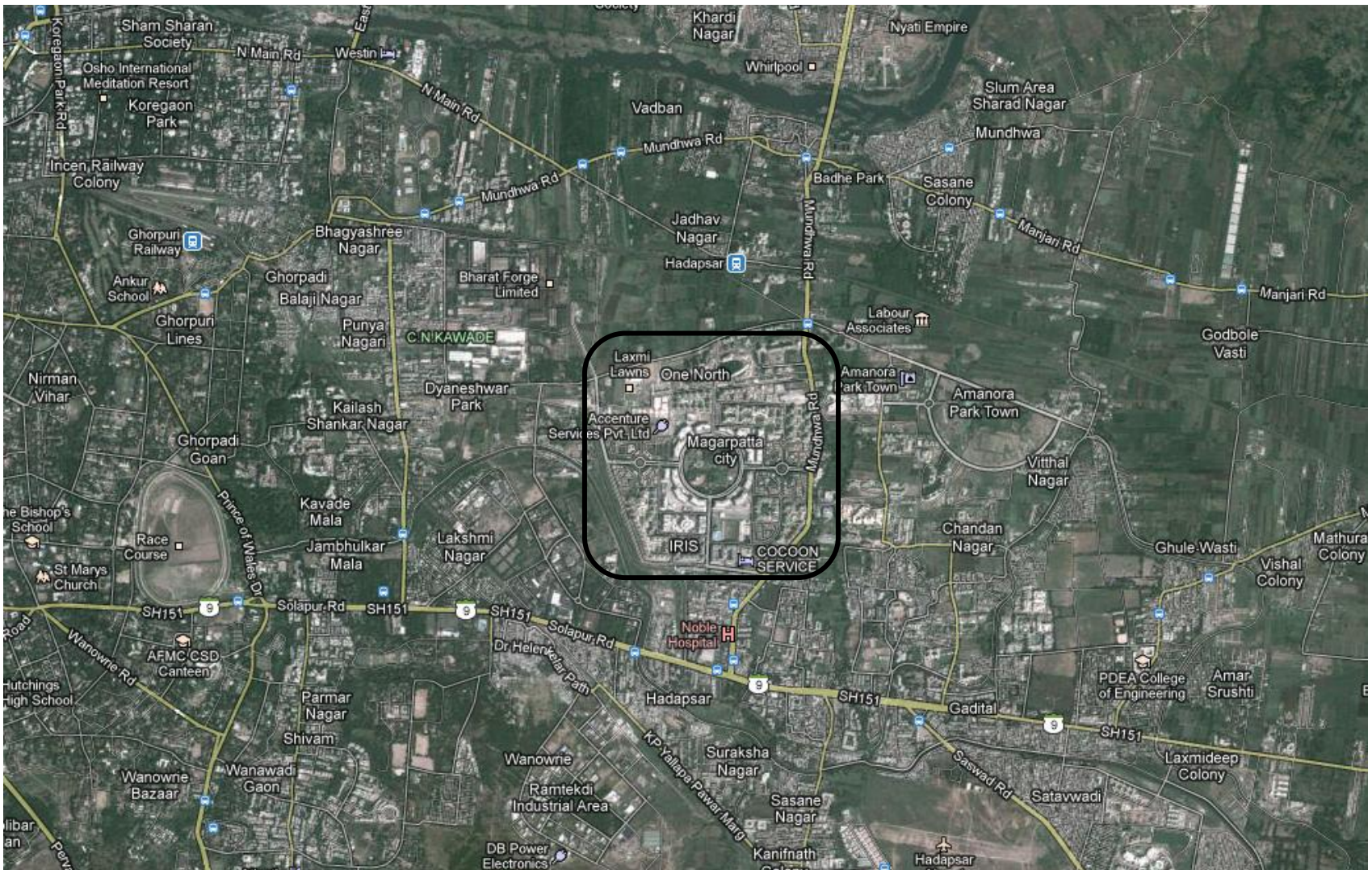
- ✓ Spacious Housing Units
- ✓ Green zones
- ✓ Wide roads
- ✓ ...and all the basic necessities...!!!

Grocery shops to educational institutes  
and also office spaces.

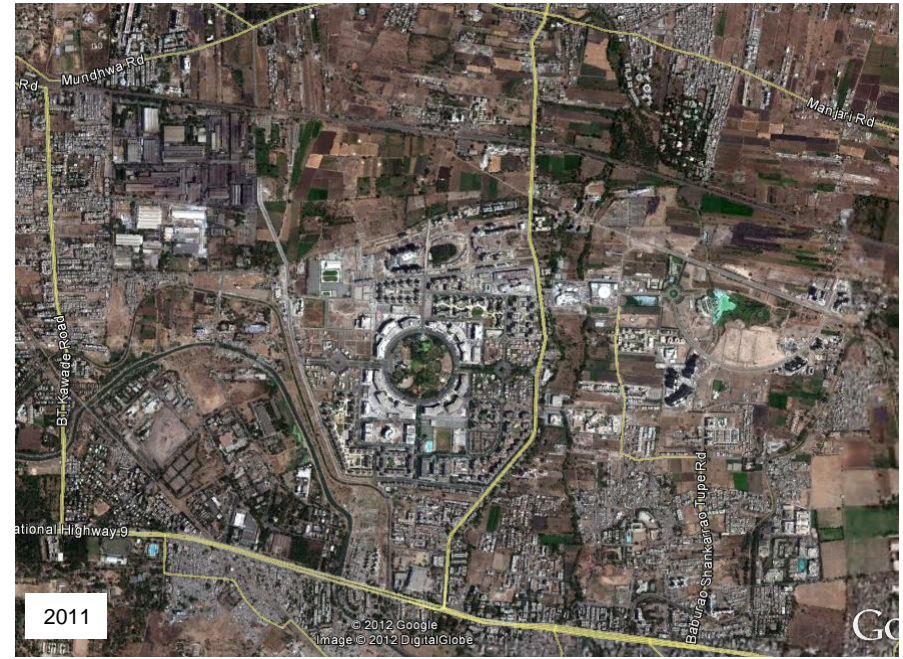
# Magarpatta City

- Farmer community called “Magar”
- Since 1960, land was under PMC jurisdiction.
- In 1982, identified as “Future Urbanisable Zone” & Urban Land Ceiling Act.
- 400 acres
- Ar. Hafeez Contractor
- Share holding
- Magarpatta Township Development and Construction Company Ltd.

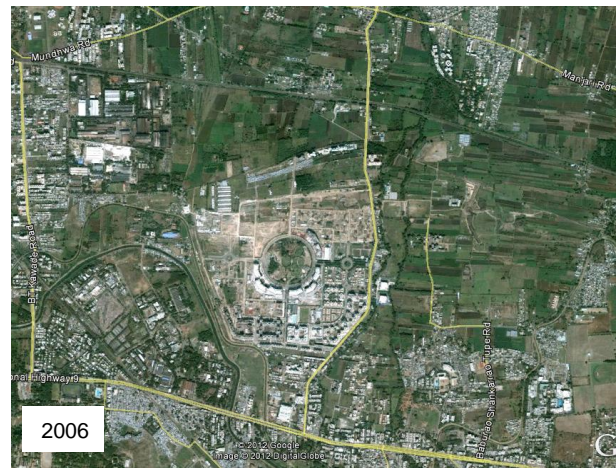
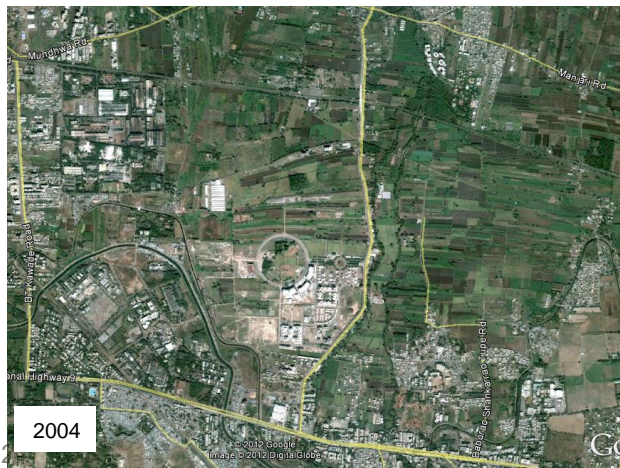
# Magarpatta, Pune



# Magarpatta, Pune



Source: Google Earth

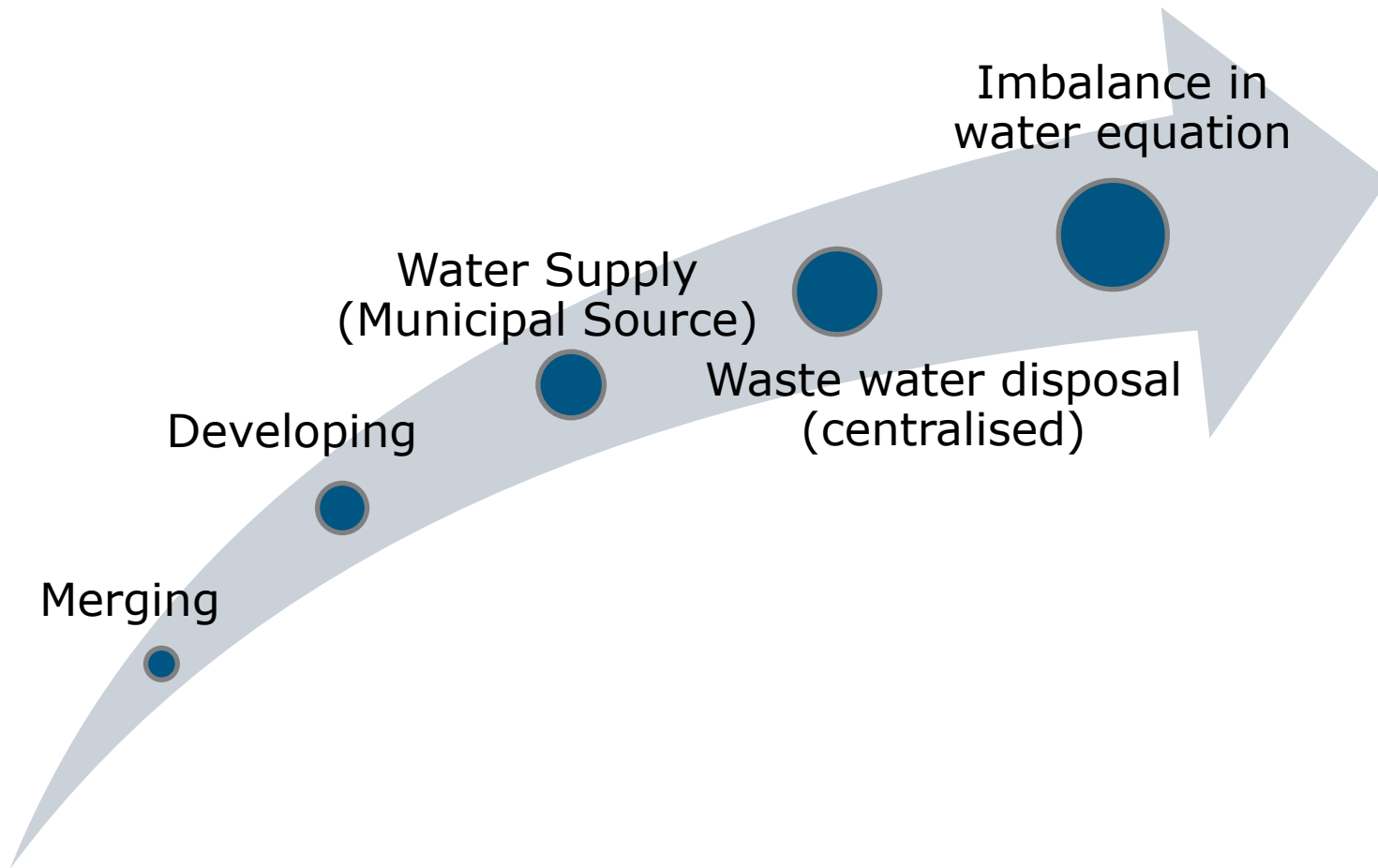


# The Master Plan



# The Developer's Approach

**Unsustainability**





# **SPECIAL TOWNSHIPS**

## **BYELAWS AND GUIDELINES**

# 1. General Requirement: Special Townships

## Schedule A: Regulations for Development of Special Townships

- ✓ Sufficiently wide means of access (not less than 18 mt. wide).
- ✓ Area not less than 40 Ha. (100 acres) at one place.

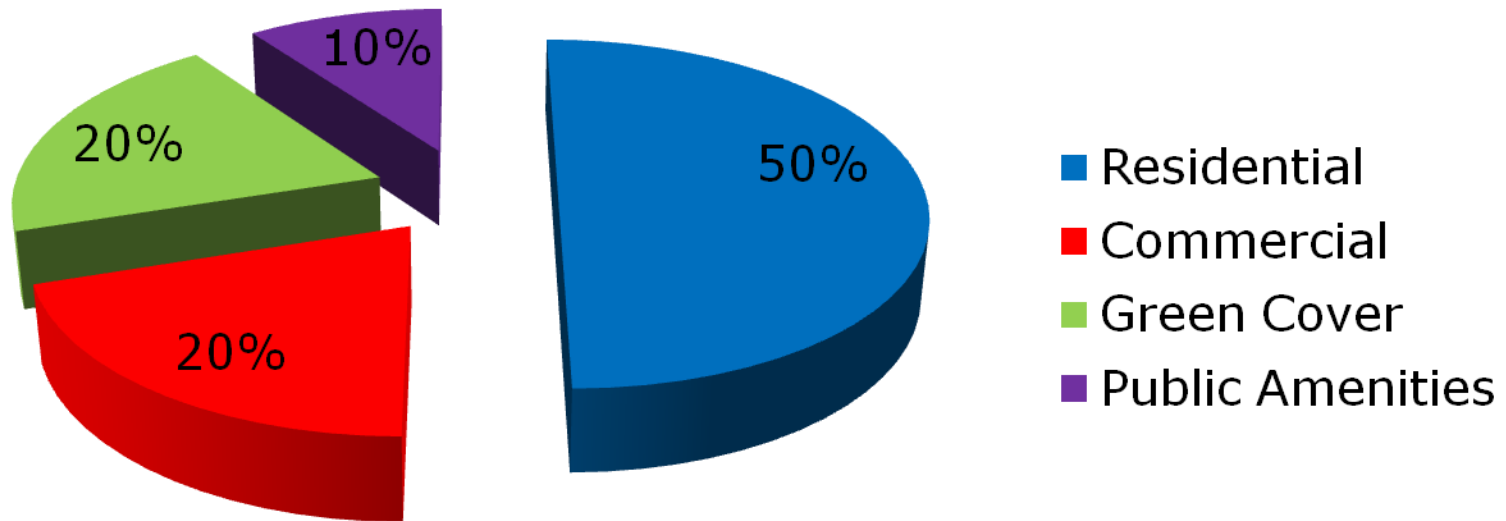
# 1. General Requirement: Special Townships

## Schedule A: Regulations for Development of Special Townships

- × Area under forest, water bodies like river, creek canal, reservoir, lands falling within the belt of 500 mt. from HFL of major lakes, dams and its surrounding restricted area.
- × Lands under the command are of irrigation projects.
- × Land within the belt of 200 mt. from Historical Monuments or Archeological importance.
- × Notified national parks, industrial zone, gaothan area, eco sensitive zone, wildlife corridor, quarry zone, tourism zone and catchment area of water bodies.
- × Defense areas, notified SEZ, port or harbours and airports.

## 2. Land Uses in Special Townships

### Land Distribution



# 3. Infrastructural Facilities

## Schedule A: Regulations for Development of Special Townships

- Roads including regional plan roads and approach roads with street lights.
- Water supply
- Drainage system

Development of amenities and its maintenance is responsibility of developer.

## 3.1 Infrastructural Facilities: Water Supply

### Schedule A: Regulations for Development of Special Townships

The developer *shall* be required to **develop the source for drinking water (excluding the groundwater source) or secure firm commitment from any water supply authority** for meeting the daily water requirement of **minimum 140 litres per capita per day** exclusive of requirement of water for **fire fighting and gardening**. The storage capacity of the same shall be at least **1.5 times** of the actual required quantity as determined by expected population (Resident and Floating) and other uses.

# 3.1 Infrastructural Facilities: Water Supply

## Schedule A: Regulations for Development of Special Townships

The developer would be required to develop proper internal distribution and maintenance systems and *shall* specially undertake rain water harvesting, ground water recharging and waste water recycling *projects* within the township.

## 3.2 Infrastructural Facilities: Drainage

### System

Schedule A: Regulations for Development of Special Townships

The developer *shall* make suitable and **environment friendly** arrangements for the disposal and treatment of sewage and solid waste as per requirements of Regional Pollution Control Board, India. **Recycling sewage** for gardening *shall* be undertaken by developer.



## 3.3 Infrastructural Facilities: Garbage

### **Disposal** Schedule A: Regulations for Development of Special Townships

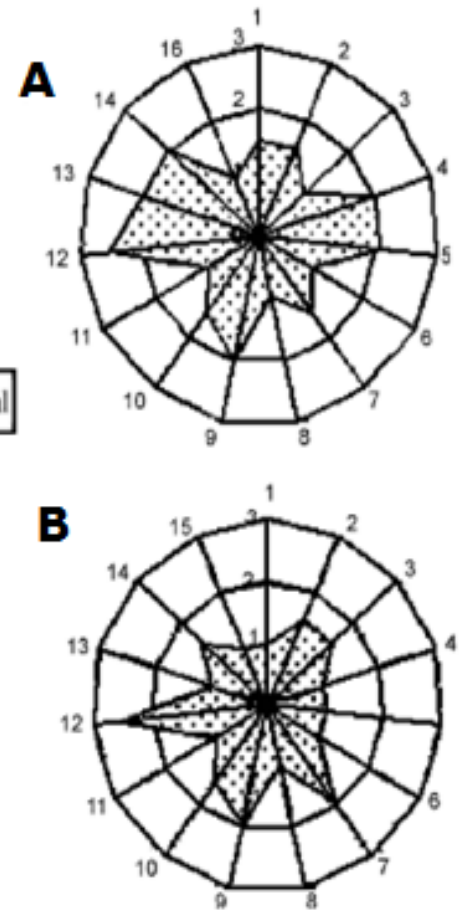
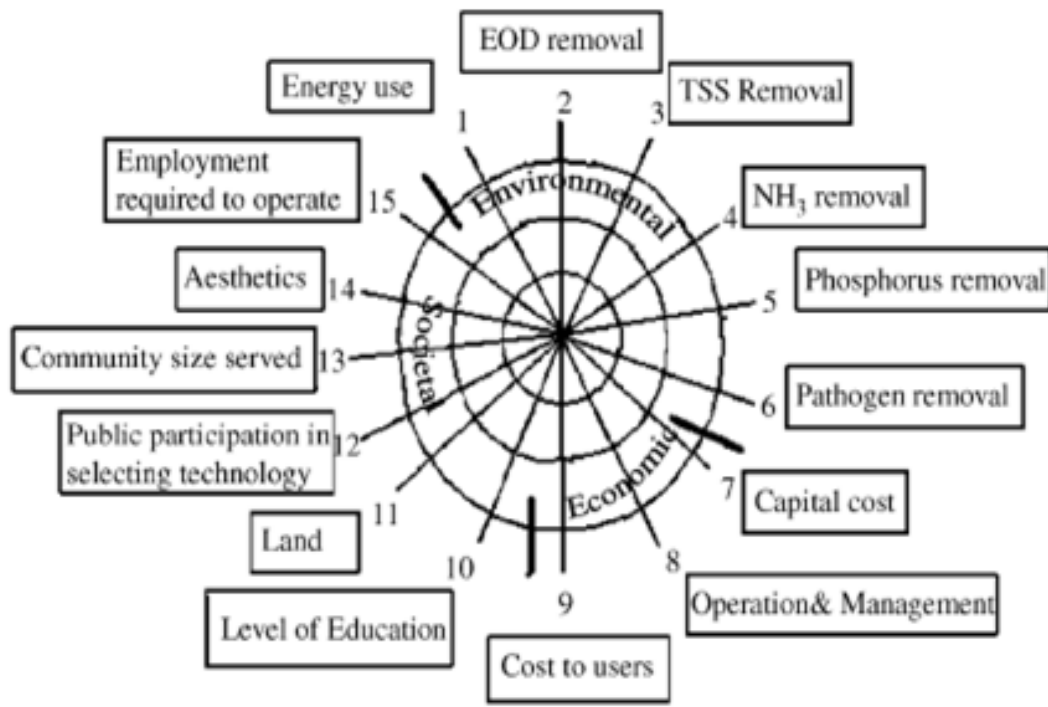
The developer *shall* develop **eco friendly garbage disposal system** by adopting the **recycling and bio degradation system** in consultation with Regional Pollution Control Board.

## 3.4 Environment

- × The development in townships shall not cause damage to ecology
- × Topographical changes
- × Changes in the alignment of cross section of existing water course.
- ✓ Environmental clearance
- ✓ At least 20 of the total area as parks well distributed in residential clusters.

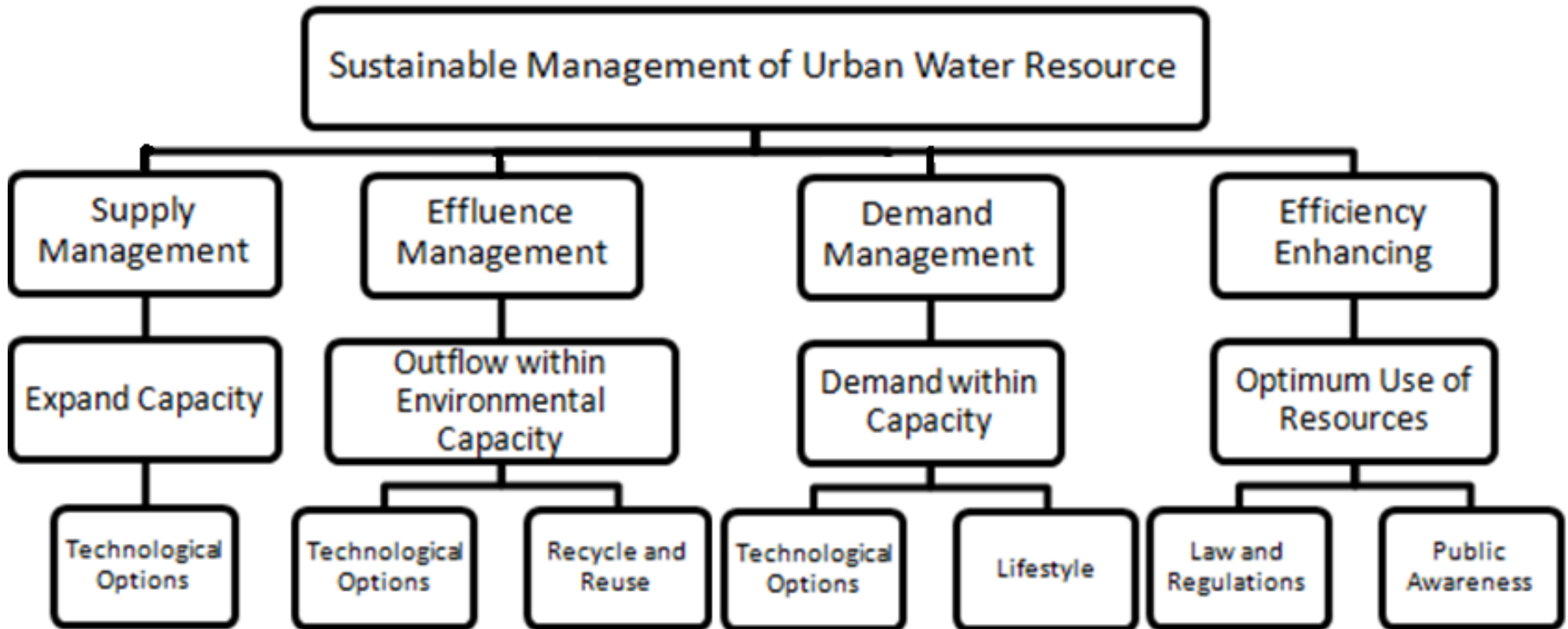
# **Sustainable Water Management**

# Centralised v/s Decentralised Treatment Technologies

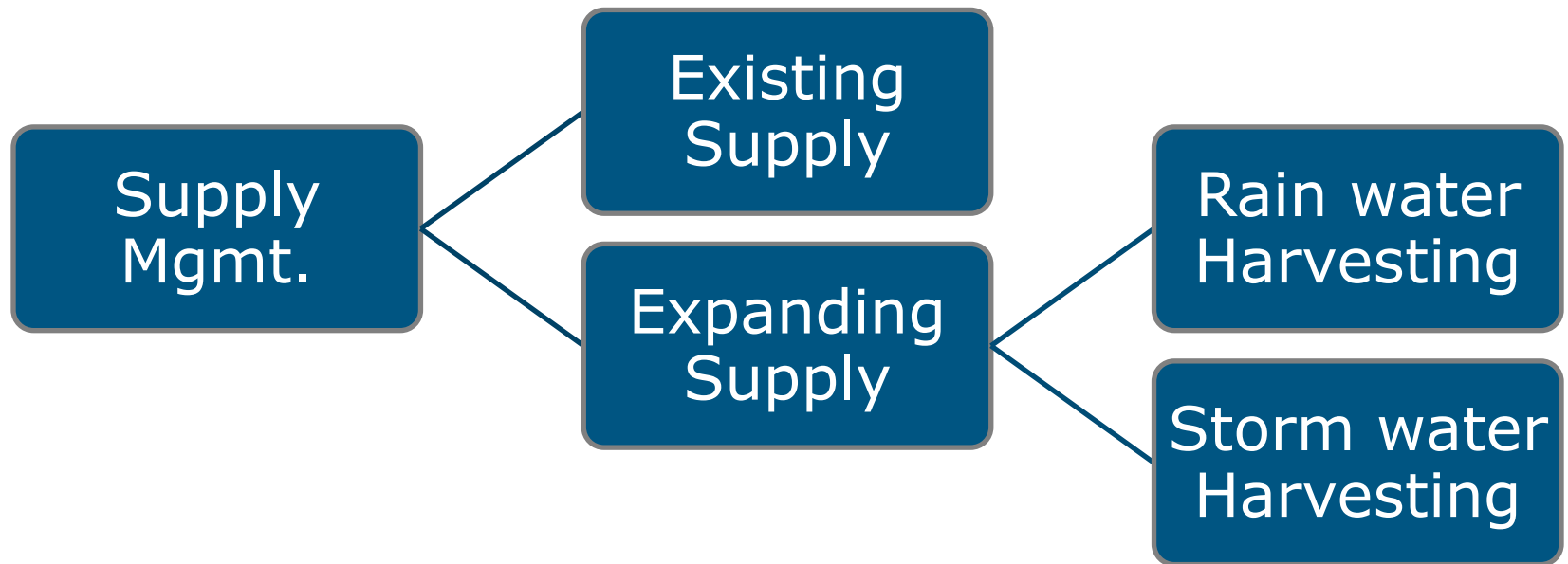


Source: Sustainability of wastewater treatment technologies; Journal of Environmental Management

# 4. Methodology



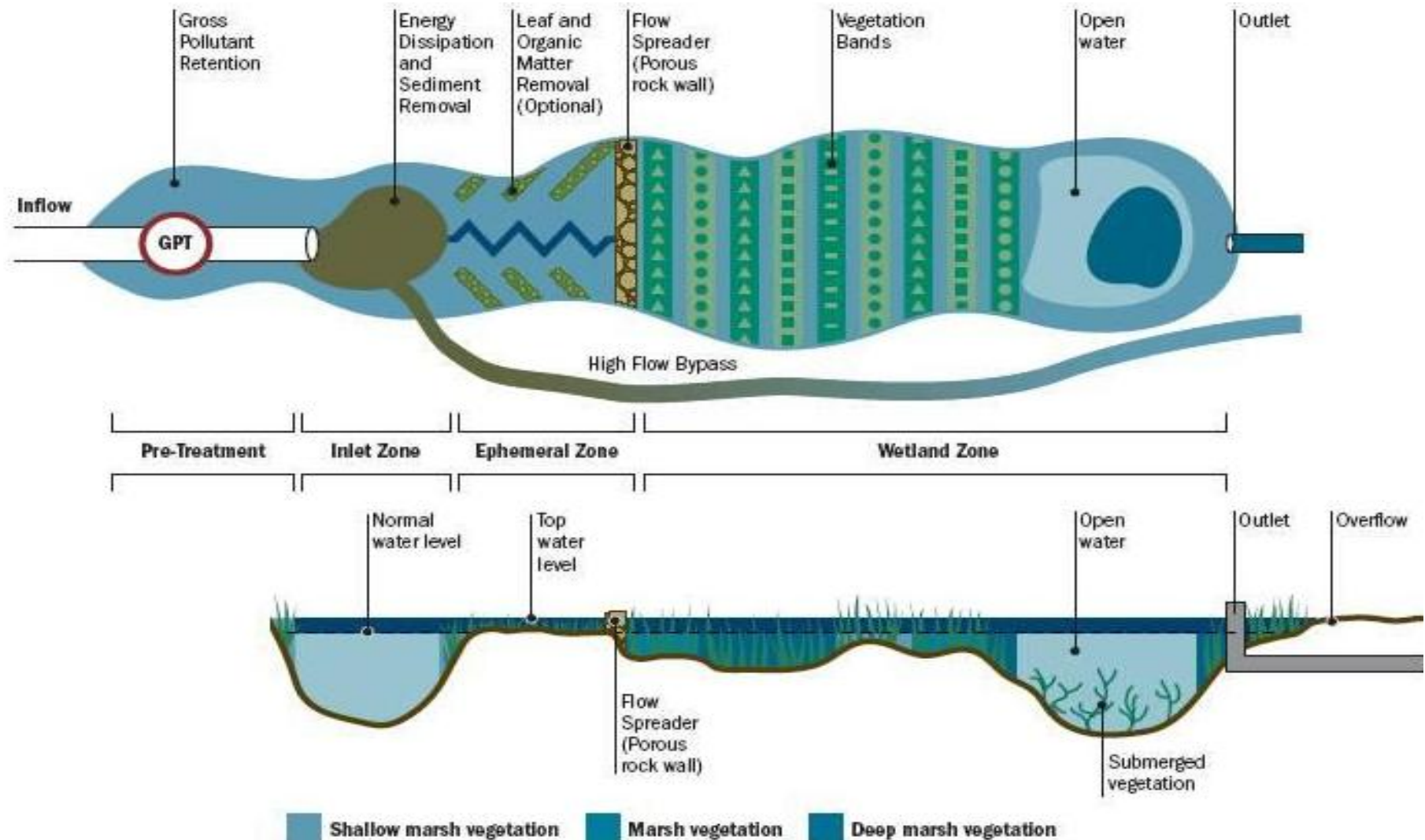
# 4.1 Supply Management



**Wetlands**



# 4.1.1 Constructed Wetland: Concept



Adopted from Melbourne Water (2005). Constructed Wetland Systems - Design Guidelines for Developers. Melbourne, Victoria

## 4.1.2 Floating Islands



Source: [floatingwetlands.blogspot.in](http://floatingwetlands.blogspot.in)\_kevinsonger



## 4.1.2 Floating Islands: Concept

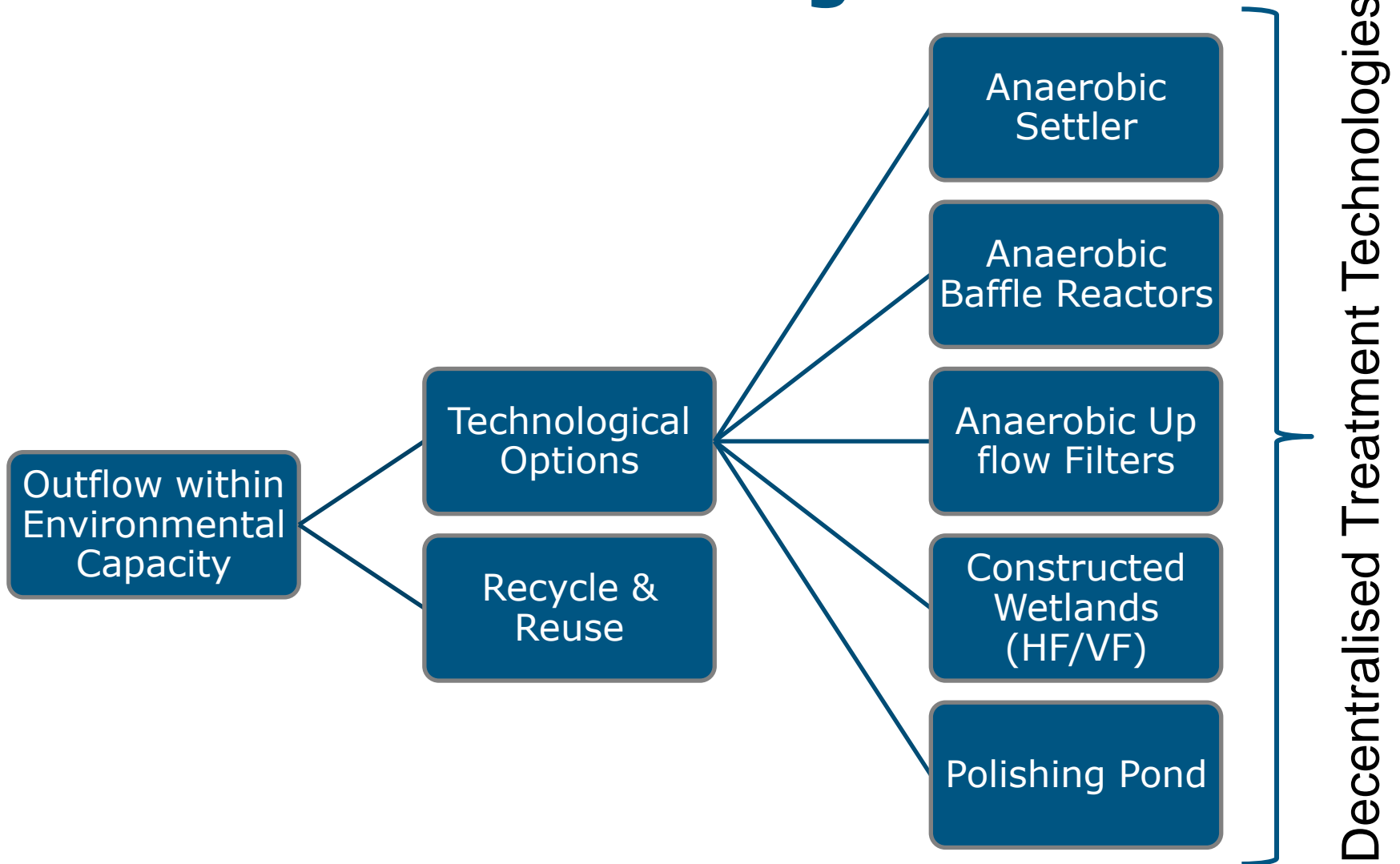


### Material:

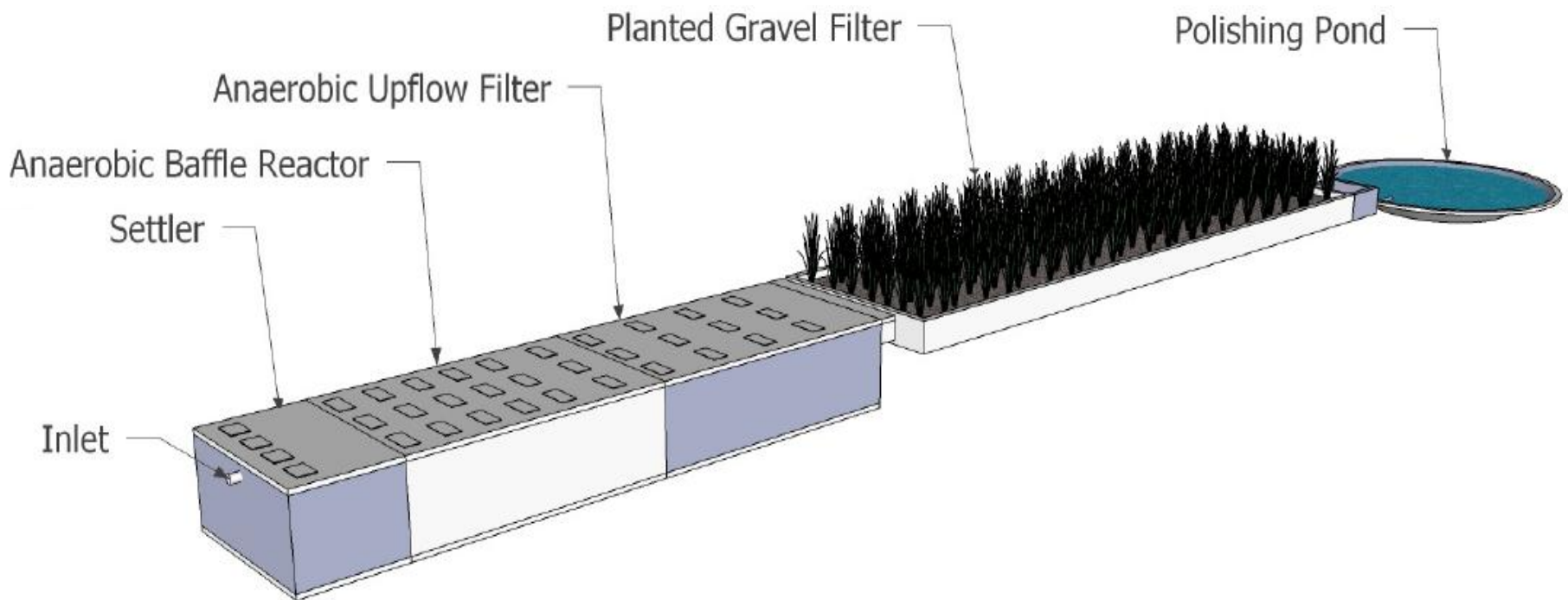
- ✓ PVC pipes
- ✓ Sealant
- ✓ Coir
- ✓ Nylon net
- ✓ Canna Plants

Cost of one island  
measuring 1m x 2m  
= Rs. 750 only.

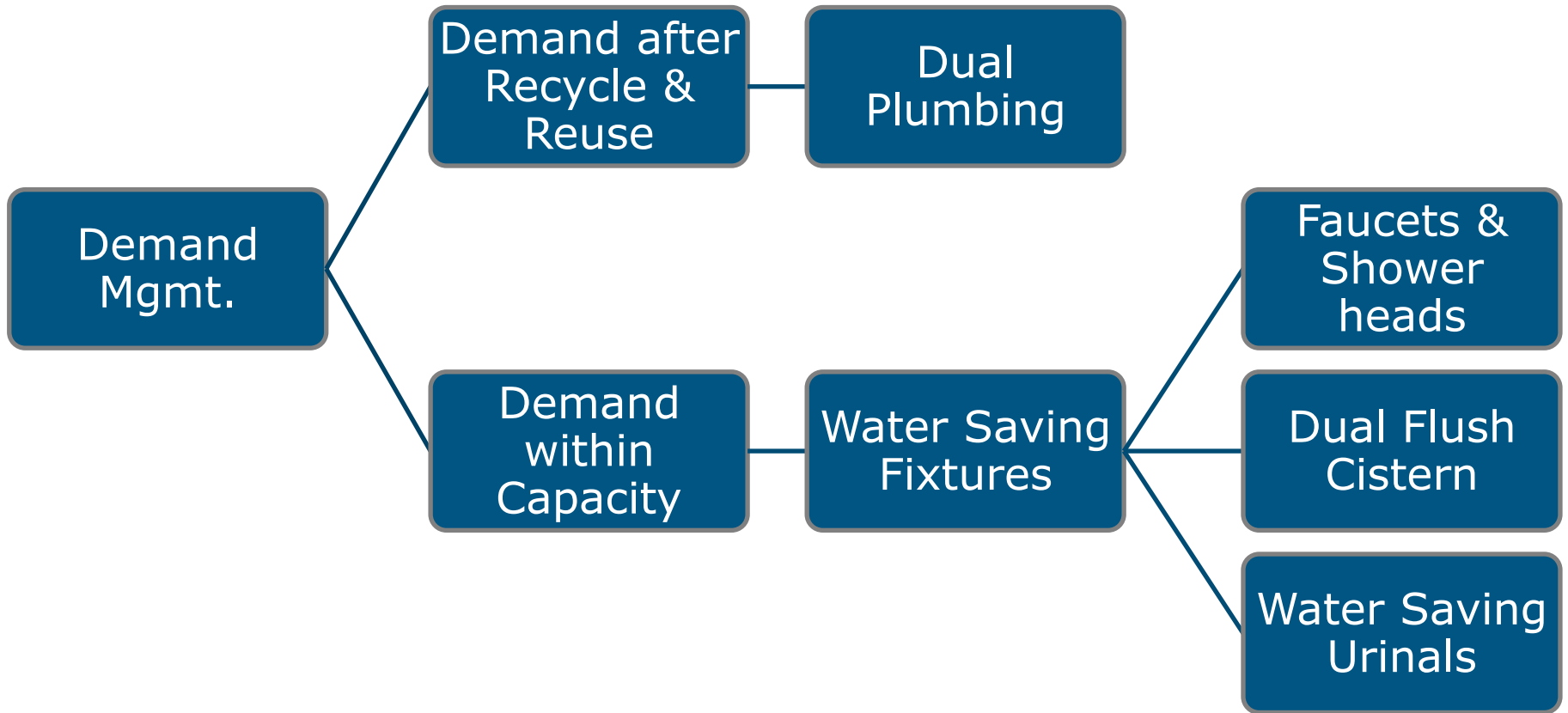
# 4.2 Effluence Management



## 4.2.1 Decentralised Treatment System



# 4.3 Demand Management



## 4.4 Efficiency Enhancing



### **Water Resources:**

- ✓ Fresh Water
- ✓ Rain/Storm Water
- ✓ Treated Grey Water
- ✓ Treated Black Water

# Conclusion

- ✓ “Shall” changed to “Should”.
- ✓ “Project” or “Pilot” changed to full scale implementation.
- ✓ Separate byelaws for different resources.
- ✓ Development of guidelines.
- ✓ Life cycle analysis to measure sustainability & cost effectiveness.
- ✓ Cost recovery policies.

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# Thank you...

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