



SURFACE WATER SOURCING STUDY FOR AUROVILLE CITY AREA

A study exploring a multi-sourcing
approach for Auroville with the
integration of Matrimandir Lake.

Study commissioned by Auroville Town Development Council

Auroville Centre for Scientific Research (CSR)

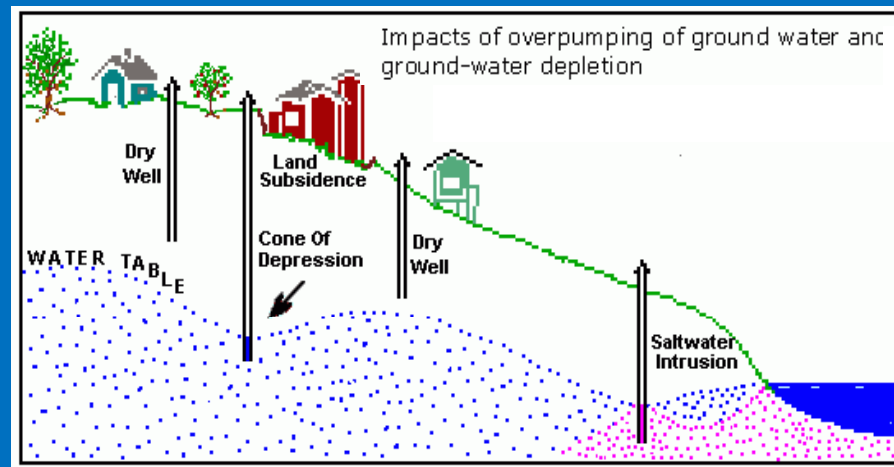
July 2013

The context

"There is enough water; the Aurovilians will have to use their ingenuity to collect it and make use of it"

The Mother.

- Auroville depends entirely on groundwater for its water consumption.
- Groundwater resources are continuously declining, with the threat of turning saline.

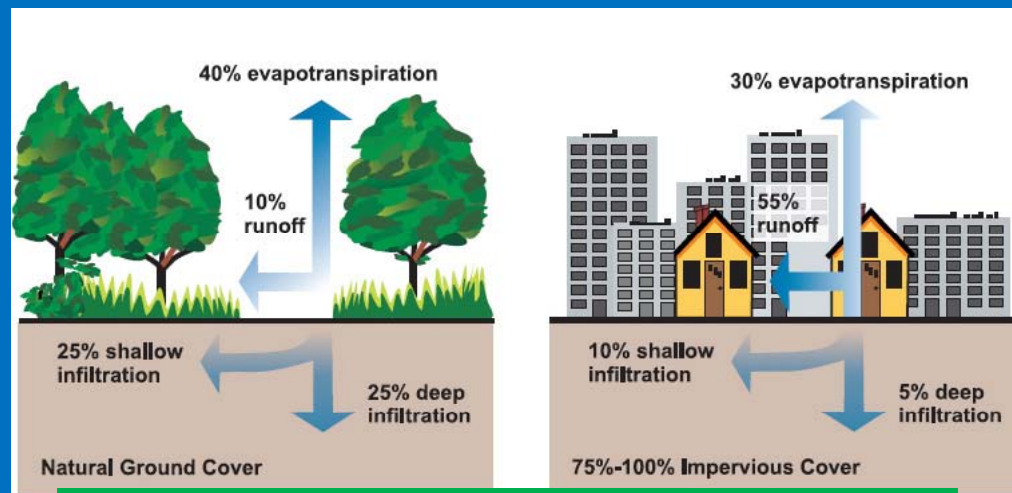


- Creating a reliable and secure access to water for Auroville will involve a multi-sourcing water strategy using rainwater, desalination and groundwater, combined with water saving and recycling practices.
- The systematic implementation of water saving practices, recycling and reuse is essential to ensure Auroville's future in this water stressed context.

The context

- Rainwater harvesting has a huge potential as a water resource for supplying water to the emerging city. However, it needs to be planned and integrated within the city lay-out.

The drainage and storage system must be based on topographical site outlay. Over time and by development, increase in run-off volume will occur, which can be collected and stored and become the main source of water for the city.

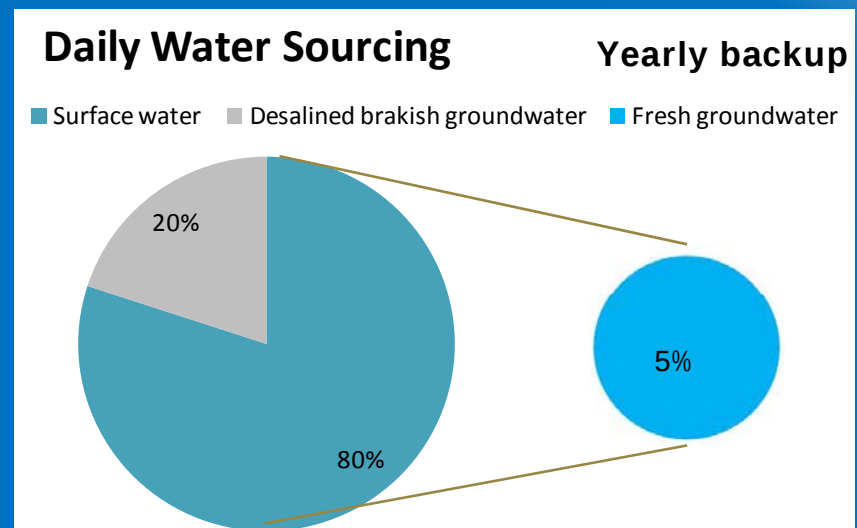


Example of changes in water balance through urbanization

- It is wise to plan, invest and implement infrastructure in relation to demand and population growth.
- The study adopts a 20 years timeframe for infrastructure planning, with a maximum population of 15,000 (10% growth) and the corresponding runoff and water demand.

Study outcomes

- The best combination of fresh water sources for all criteria, is 80% surface water, 20% desalinated brackish water. A backup of 5% of the yearly demand is ensured from protected fresh groundwater.
- It can developed in a modular way
- Population growth can be integrated by extending the drainage and storage system and adding the other sources according to the needs
- Multi sourcing requires that the design and implementation of water distribution systems are highly adaptable.



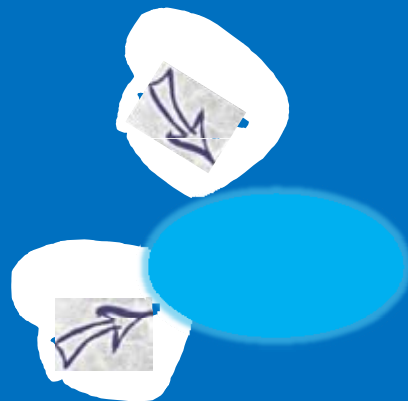
Study outcomes

Drainage and storage system

- A proper drainage system should respect nature, following contours and natural features and be integrated in the urban context.
- It must ensure efficiency, simple maintenance, proper pollution control, self cleaning mechanism, flexibility and esthetic look, as it becomes a prominent feature of the urban layout. Beauty is a necessary aspect of such a design.
- By segmentation and multi storage facilities, pollution control and further contamination can be mastered.
- Purification after storage will remain necessary, whatever the source of water, in order to reach supply standards.



Drainage &
storage tank
for 15 000 P
= 300 000m³

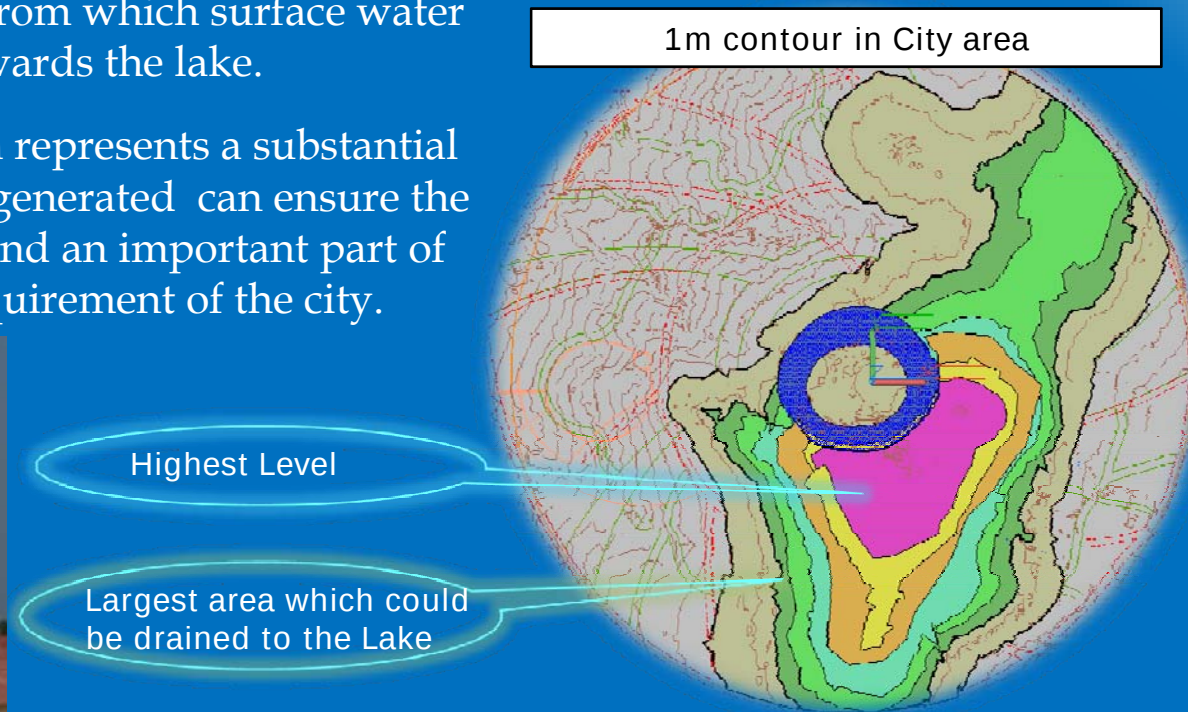


- The study results shows that a 300,000 m³ (60,000 m²/5 m deep) storage tank supplied by an appropriate drainage system is sufficient to supply 95% of the annual water demand for a population of 15,000.

Study outcomes

Matrimandir Lake – I

- Based on its designed foot print, there is a potential drainage area of 1 440 680 m² bordering the lake, from which surface water can be harvested towards the lake.
- Such a drainage area represents a substantial runoff. The volume generated can ensure the refilling of the lake and an important part of the overall water requirement of the city.

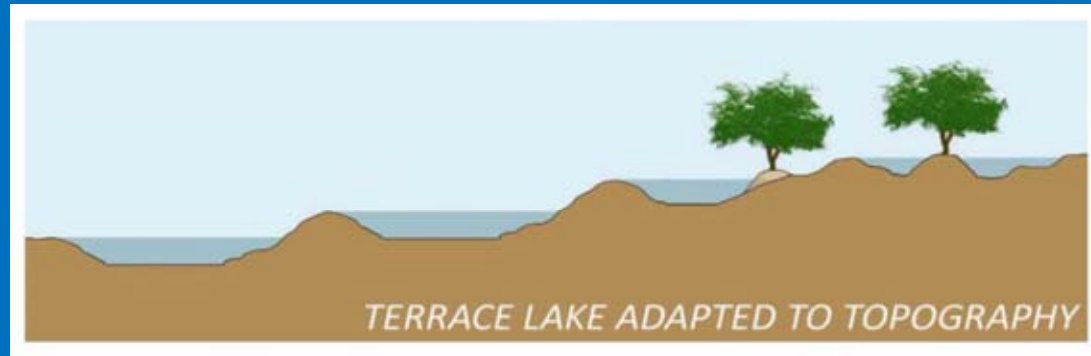


- Given its 3 functions : symbolical, aesthetical and practical, and its location uphill, the lake has a limited storage capacity and cannot be efficient as a reservoir for the city.

Study outcomes

Matrimandir Lake – II

- To turn Matrimandir lake into a positive asset for the water accessibility is possible, but the only option to achieve these objectives is to consider a terraced lake.



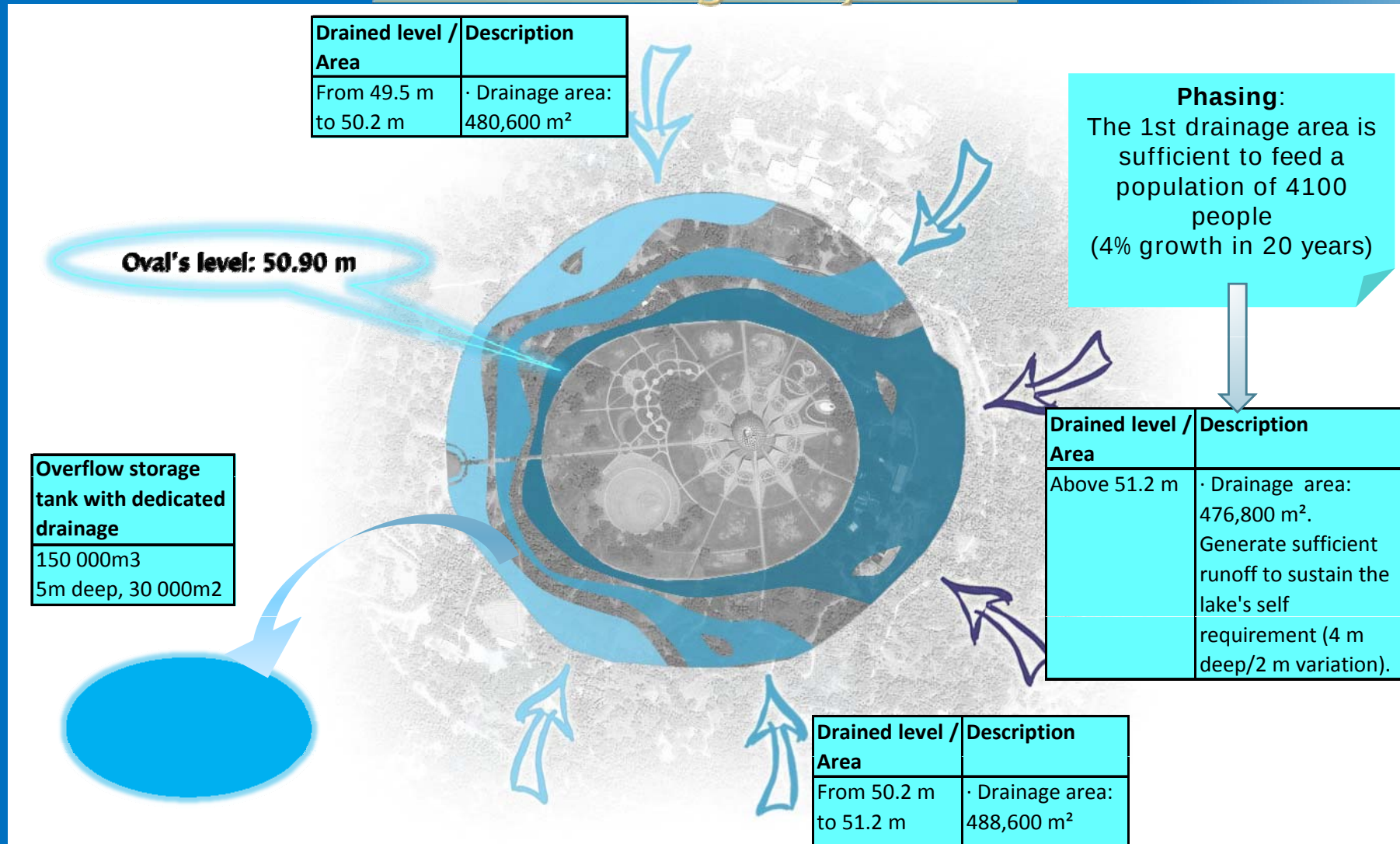
- Each terraced section of the lake can be fed by a dedicated drainage system, in accordance to the topography, overflowing to the terrace below.



- Around Matrimandir, soil movement and displacement should be minimized by incorporating the topographical features of the area.
- Matrimandir lake will generate at times very large overflows. The overflows need to be collected in a secondary tank.

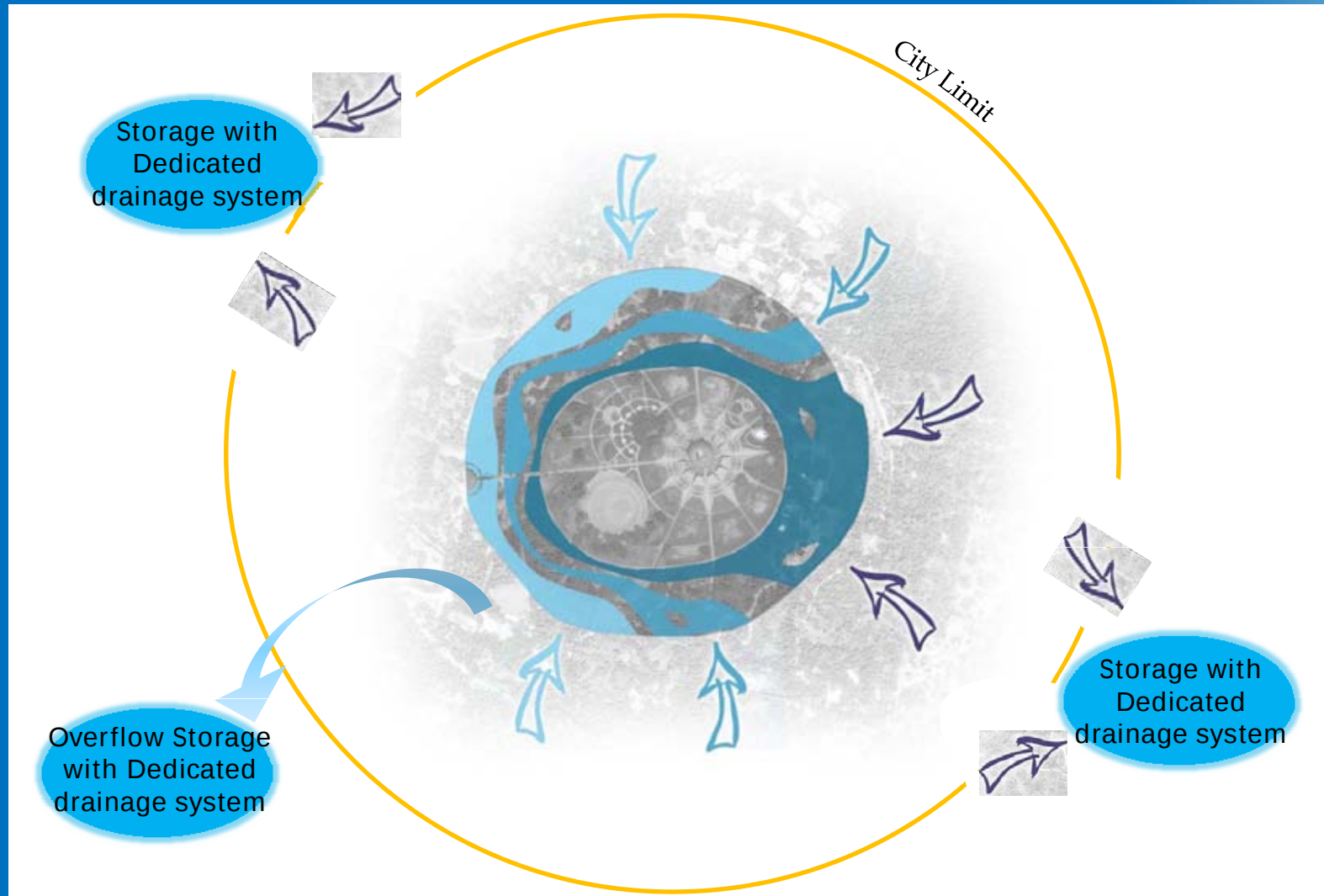
Study outcomes:

Integration II- Matrimandir Lake's storage and drainage system



Study outcomes:

Integration III – Surface Water system



Study outcomes:

Integration IV- Multi sourcing

