

Garibaldi

Lyon 6ème (Rhône)

Experimental project to recreate the water cycle in the city

The project

CONTEXT

Renovation of the existing area (phase 1 of the project from Rue Vauban to Rue Bouchot)

STAKEHOLDERS

Project manager: Grand Lyon
Project contractor: Atelier des Paysages – Alain Marguerit

DATE

2010 - 2013

COST

€23.8 million including €4.6 million for the hydraulic facility

- Public work(s)
- Urban zone
- Scale: Public space (roadways, park, etc.) (1.5ha)



AIMS

- Hydraulic management of rainwater
- Treatment of rainwater
- Urban air-conditioning (prevention of heat islands)
- Public space
- Instruction

SOLUTIONS ADOPTED

Techniques for implementation

- Valleys and ditches
- Drainage or infiltration trenches
- Tanks and cisterns

Other equipment

- Pump in the underground storage basin to enable reuse of rainwater

Operating principle

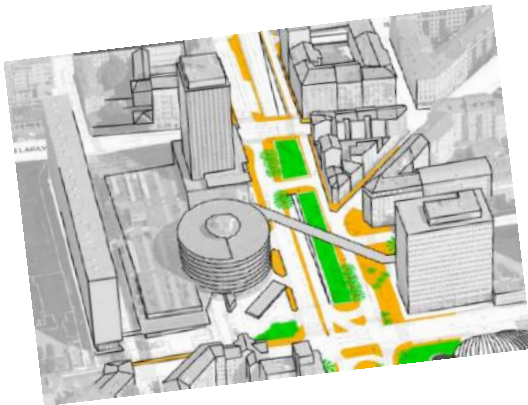
- Retention and infiltration

Monitoring

- Planned monitoring of holding facility and the quality of stored rainwater.

The reasons behind alternative management of rainwater

The aim of the Rue Garibaldi urban requalification project was to erase the 'urban motorway' image associated with this thoroughfare since its creation in the late 1960s. The road needed to be adapted to new urban functions, with an emphasis on public transport and soft modes such as cycling, in addition to fostering the development of biodiversity. The subsequent sectioning of the roadway enabled the integration of alternative techniques to manage rainwater. This helped to avoid the hydraulic risks linked to heavy rains, in addition to promoting the reuse of rainwater for plant watering and urban cleaning.



Sizing hypotheses

Intake surface of the area: 6.05 ha

Return period: 30 years

Storage volume: 1,300m³

Leakage rate: 5L/ha (non-imposed)

Ground permeability: Non-homogeneous

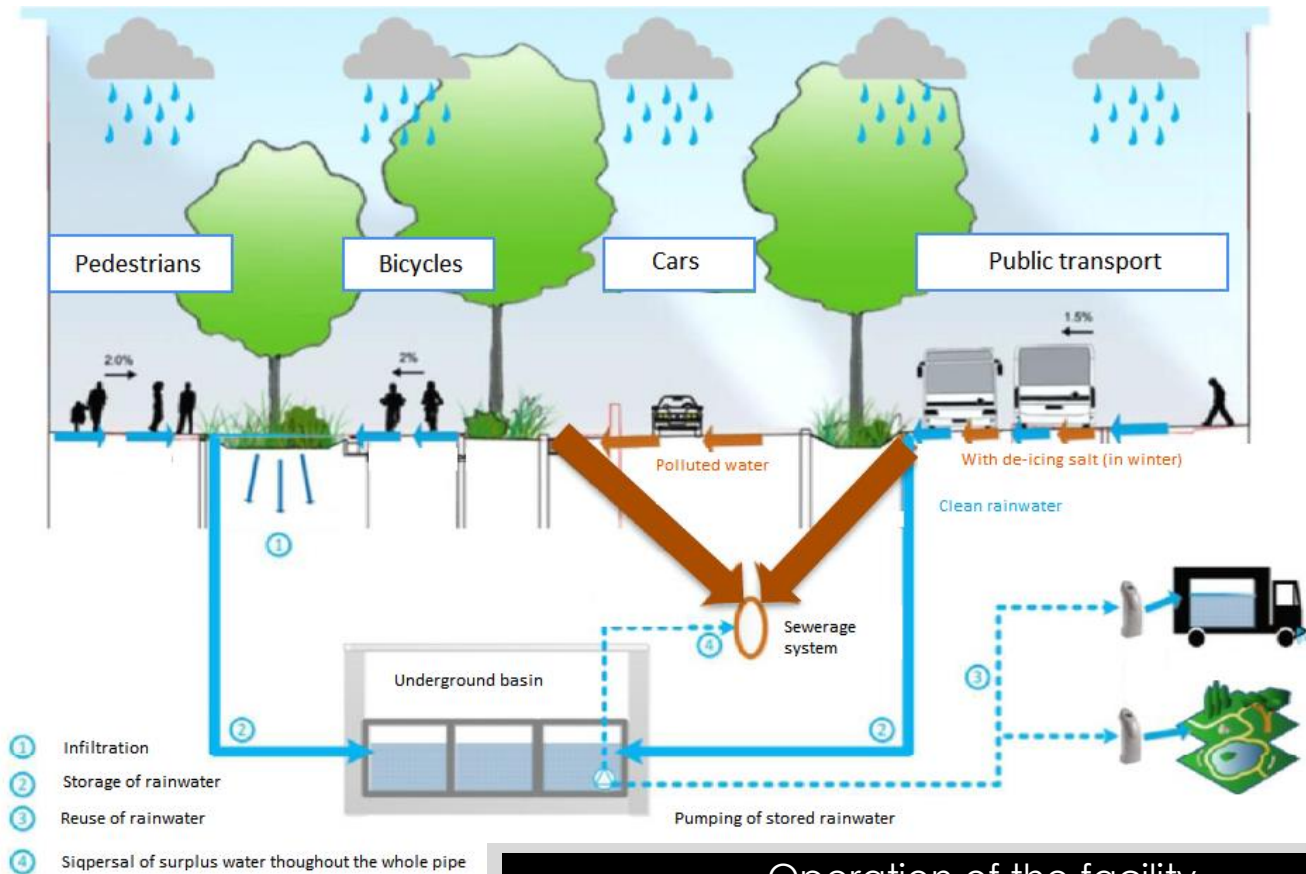
Safety coefficient adopted: -

Topography: flat



How does it work?

Runoff from specific roadways (pedestrian footpaths, cycle and public transport lanes) is collected in a former underground trough which was converted into a water storage point. This storage point consists in an aggregate crater and a concrete basin, which enables the re-use of water to clean roadways and water green spaces. This is made possible thanks to a pump system fitted in the tank. Water transport is either automated via automatic sprinklers, or carried out by the roadside cleaning vehicles of Grand Lyon. Water which passes through heavy traffic lanes is considered as polluted. It is thus discharged in the combined sewerage system. The same goes for heavy rains: a stormwater overflow was installed in the underground water storage basin.

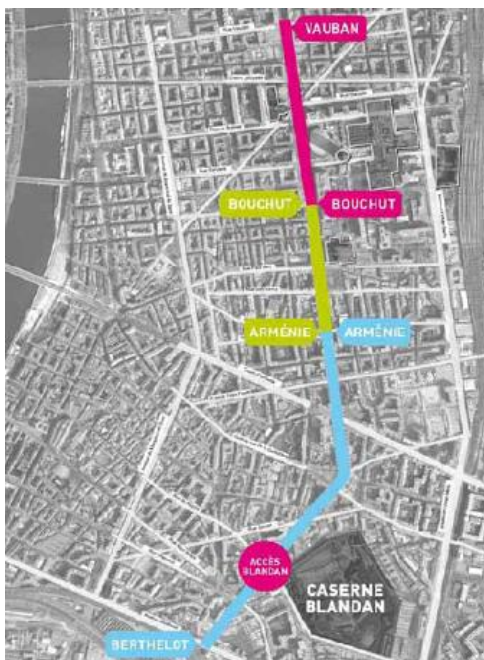


Operation of the facility

Given the innovative nature of the systems installed, frequency projections are approximate at present and are to be confirmed.

- **Operational inspections** by Grand Lyon:
 - Pipe network: Twice per year
 - Recovery grids: Twice per year
 - Grit chambers: 4 times per year (the 1st year)
 - Wintering and by-pass water gates: 4 times per year
 - Pre-diagnostic tests on collectors: every 20 years
- **Dredging of hydraulic facilities** by Grand Lyon:
 - Recovery grids: Once every 4 years
 - Grit chambers: Twice per year
 - Collectors: Once every 8 years
- **General maintenance** by the Green Spaces Department of the City of Lyon:
 - Grassland: Twice per year
 - Areas in frequent use: more regularly

A cooperative agreement for general and exceptional maintenance exists between the two departments.



Feedback



What worked well

- ➔ A reduction in the connection of rainwater to the sewerage system.
- ➔ The system is adapted to new urban transport modes.



Plans for the future

- ➔ The underground basin will form the subject of an experimental study.
- ➔ The ARS [Regional Health Agency] has raised concerns relative to the proliferation of mosquitoes. If this proves to be the case, biological products will be required in order to eliminate larvae in the underground basin.
- ➔ The basin was sized according to existing rainfall levels. It is not known if these capacities will cope with flooding due to climate change.



If we were to repeat the project?

- ➔ The use of gravel to store underground water was rejected due to concerns for its operational effectiveness. This led to a cost overrun of the operation.

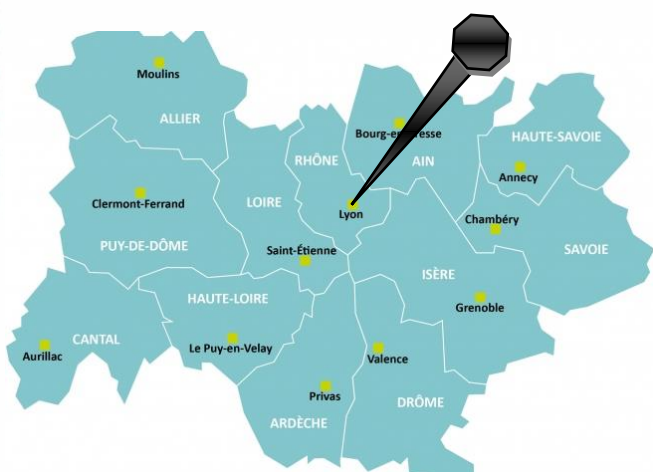


Photo credits:
Fiche n°17 Aqua Add – Added Value – Garibaldi
Grand Lyon
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For more information

To visit the site:

Location: Rue Garibaldi, Lyon 6^{ème}
GPS: 45,759345-4,852309

➔ **Open to the public**

For more information and/or to visit the operation, contact:

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