# PETUS CASE STUDY

GENERAL INFORMATION

| PETUS description of tool in use | |
|---|---|
| **Name of the case** | **Maurice Audin Storm Water Detention Basin** |
| **Name of the tool** | Combination of tools:<br>- Inquiries, meetings, consultation, collaboration, partnerships, real time control. |
| **Country** | France, Seine Saint-Denis, Clichy-sous-bois |
| **City / region**<br>Total area (km2)<br>Population<br>Density (people/km2) | City: Clichy-Sous-Bois, 4 km², 30 000 inhabitants - 7 158 inhab / km² |
| **Tool user's profile**<br>a. Organization name (municipality, NGO, national or regional department, company, etc.)<br>b. Field of activity<br>c. Detailed contact/feedback (project website, e-mail, address, tel., fax) | Sewage and Water Section of the Seine Saint-Denis department (DEA: direction de l'eau et de l'assainissement) and the Municipality of Clichy-sous-bois<br><br>Thierry Maytraud<br>Water and Sewage Section of the Seine Saint Denis French Department<br>City: Rosny-sous-bois<br>E-mail: tmaytraud@cg93.fr |
| **Reviewer, date** | INSA-Lyon, France, last updating Feb 2005 |

**Short description of the case**

The Maurice Audin storm water detention basin (20 000 m3) belongs to the Department of Seine Saint Denis. A department is a subdivision of France administered by a prefect. This basin infrastructure was old, closed to public and often vandalized. The site was dangerous for people living near and for children who were used to play there. After public consultation, the decisions to rehabilitate it and to secure it have led the Department to open it to the public and to manage it jointly with the municipality.
The main restructuring action consists in considering different parts for different purposes: (i) a covered part closed off to prevent the playground's flooding for regular rains and to enable a pre-treatment by decantation; a real time control has been installed in this part, (ii) an open zone, liable to flooding, that is only used for flooding one or twice a year. This zone includes playgrounds and sport facilities (see figure 1 and 2).
Public consultation/information procedures have been implemented. Agreements between department and municipality have been defined to assign responsibilities.

This area is now the major sport area of the city.

The case was chosen because it represents a good example of transformation of a public-closed detention basin into a multifunctional hydraulic system.

This case study is related to the key-problem "Management and conception of urban water infrastructures" (Water sector).

| **Sector** | Waste | Energy | Water | Transport | Green/blue | Building & Land Use |
|---|---|---|---|---|---|---|
| | | | X | | | |

| **Scale of project** | Component | Building | Neighbourhood | City | Region |
|---|---|---|---|---|---|
| | | | X | | |

| **Status of project** | Starting up | Ongoing | Finished | Start | End date |
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| | | | | | |
|---|---|---|---|---|---|
| | | | | date | |
| | | | X | | Operational since 1998 |
| **Key words**<br>**Detention basin , storm water management, concerted rehabilitation, multi purpose facility** | | | | | |
| **Project**<br>a. Object (building, city park, wind farm, etc.)<br>b. Type of activity (regeneration, renovation, new development, etc.)<br>c. Type of product (plan, scheme, design project, etc.) | a. Object: Detention Basin<br>b. Type of activity: Restructuring<br>c. Type of product: Project | | | | |
| **Tool**<br>a. Character (according to WP3final0704.doc)<br>b. Benchmarks (qualitative or quantitative)<br>c. Availability (paid/ free) | a. Character: Simulation tool (Real Time Control) and governance<br>b. Benchmarks: no<br>c. Available: | | | | |
| **Decision-making process**<br>a. Stage of the tool implementation (preliminary, midterm, etc.)<br>b. Level (political, technical, etc.)<br>c. Public participation | a. Stage of the tool implementation: design stage of the project<br>b. Level: both political and technical<br>c. Public participation: inquiries, meeting | | | | |
| **Other** *(optional, if needed)* | | | | | |

DETAILED INFORMATION

## A. Detailed description of project and tool

### 1. Description of context

The Seine Saint-Denis General Council has been investing in the fight against flooding for many years through many and varied operations of storm water management, one of which is the reinforcement of the drainage network by the use of detention basin. The works are opencast, green, covered or wet ponds, covering large areas. The oldest ones, with few exceptions, are closed off (due essentially to security problems, potential vandalism, and maintenance). Today, in densely populated urban centres, these sites are highly sought after. Local people are demanding to be allowed to use these spaces. In some areas these sites which are perceived as not used are not respected and suffer heavy damage. To preserve these infrastructures against vandalism and to propose a better land use, the General Council has decided to open up these sites to the public.

### 2. Description of project

The Clichy-Sous-Bois storm water detention basin (20 000 m3), called Maurice Audin, belongs to the Department of Seine Saint Denis. A department is a subdivision of France administered by a prefect. This installation was closed off, but nevertheless the place was very attractive for the children who used to play there, and to open gaps in the fence, although it is very dangerous (problems of security: from health risk due to water bad quality up to the drowning risk). Indeed, in densely populated urban centres, this kind of sites is highly sought-after. Thus, local people asked to be allowed to use these spaces.

A partnership between the Department and the municipality of Clichy-Sous-Bois enabled a rehabilitation of this detention basin. Besides its hydraulic function, it also has a leisure function with playgrounds. Indeed, the new detention basin has 2 compartments:
A covered part (not accessible to the public) of 3500 m3 was created for frequent rains (return period[1] ≤ 1 year). This part is closed off and has 2 functions:

- It prevents the playground's flooding for regular rains
- It enables a pre-treatment by decantation.

An open zone, liable to flooding, that is only used for flooding one or twice a year. This zone includes playgrounds and sport facilities (see figure 1 and 2).

Figure 1: Maurice Audin Basin

[1] Return period is a statistical term used to describe the rate of occurrence of a particular event. In urban drainage analyses, it is defined as the average period between occurrences of an event (rainfall) greater than or equal to a given value. For example, a ten year period event is often described as having a frequency of once in ten years.

Figure 2: Maurice Audin Basin. In background is located the covered part of the basin (under the stairs).

The detention basin has yet a double function:

- Hydraulic function
- Leisure and sports.

Pedestrian paths and specific access were developed, and the fence was kept to make the management easier (as a public park).

Moreover, devices have been added to the basin in order to be controlled by real time and Maurice Audin basin belongs now to the whole works managed with real time control process by the department: remote surveillance for the water levels and flows, and remote surveillance release rate. This real time control system allows making the area dedicated to the leisure more secure (in forecasting flooding) and in addition it enhances the sewage system management (water discharges control).

However the problem of the 'project continuity' was raised in this case. The success of the project through time depends of the cleaning of the leisure facilities and security system maintenance.

## 3. Description of tool

- **Meetings and inquiries** were organised with inhabitants of the neighbouring residences, associations of property owners. Before all these procedures, the population has petitioned the department to complain about the dangerous state of the basin. This action has been supported by the Major of the city.

- **Consultation** of: the police, the gymnasium keeper, municipal services (youth and sports service, development service), and the DEA maintenance service (DEA = Direction de l'Eau et de l'Assainissement = direction of water and sewage).

- For the users' security, sensors enabling to measure the water level were placed in the covered part of the basin, with a **real time control system** to regulate the outlet flow rate. It is a case-specific tool, developed as part of the project. Also important signing has been designed to remind that this area has a double function- leisure and sewage. The signing is both to respect the law- regulatory signing- and to explain public the functioning of the flooding zone- educative signing. The regulatory signing comprises interdiction signs, indications of potential flooding zone, sound and visual signs to alert public of imminent overflows (sirens). The educative signing comprises ground markings and explanatory boards.

- Collaboration was set up between the municipality services and the organisation responsible for reshaping the city's sensible districts (which received low social level population).

- A **partnership between the Department and the Municipality** was set up at the beginning of the project. Thus, an agreement indicates each one's maintenance role: the Department is the owner of the site and is responsible for the hydraulic use of the basin (in charge of cleaning after flooding), and the Municipality is responsible for the use of the public space (maintenance, health and safety, as if it were a public park). They both have to present an annual balance sheet:

a. For the Department: number of flooding, number of site cleaning…,
b. For the Municipality: number of interventions after damages or for urban furniture replacing…

- Commitments enable to manage all that is not mentioned in the agreement:

- The Department has set up an overflow prediction system: besides the regulatory

and educative signing, and sirens, remote monitoring allow users to evacuate in case of flooding,

- The Municipality has to manage the place as a public park, with schedule, regulations; also activities are proposed by monitors during open hours.

**B. Tool implementation**

## 1. Argumentation for choosing the tool

The use of certain tools like dialogues and the regulatory and educative signing was motivated by the district context: inhabitants, especially young ones need to be listened to and informed about what is being planned.
The use of commitments- between the city and the Department- and other collaboration tools was necessary in order to maintain the site in good operating conditions.
The use of real time control allows a better management of hydraulics and environmental functions of covered part. It secures the area allocated to leisure and sports and also an efficient management of the whole sewage system.

## 2. Barriers for the tool implementation

There are few barriers that have really interfered with tools implementation. The most important one is the lack of benchmarks as it is a new experience of combining water infrastructure and leisure facilities. In that way, consultation procedures and commitments between actors had to be created due to lack of knowledge about similar projects.

**C. Influence of the tool on the decision-making process**

## 1. Description of the decision-making process/procedures

The project was triggered off by a petition from the district inhabitants, and by a letter from the City Mayor to the Department. The decision making process was then based on a dialogue between the different actors of the project.
Consequently, studies and inquiries were done in order to conceive the project and its financial management. Meetings were then organised to present the project to the public.

From the consultation procedure, the following orientations were raised:
- creation of a site easy to use for inhabitants
- creation of a site open to public with play activities
- preservation of enclosures with well defined entries in the strategic points
- active participation of the actors involved in the urban life of the district: the municipality and the population for maintenance of the site.

## 2. Tool in decision-making process

During the works, an important effort on communication was done: educative signing was set to explain the project progress to the inhabitants, and the site had to be watched over by a guardian to avoid damages.

## 3. Transparency of decision-making process

This project could be realised thanks to petition of the inhabitants. Then, it became feasible thanks to the collaboration between the Municipality and the Department.
As it is mentioned previously a strong consultation was made with the surrounding inhabitants at the stage of the project inception. It was to get a good knowledge of the social and urban context of the detention basin, and also of the inhabitant's perception, expectations and fears about the potential site renewal without missing the technical aspects.

## D. Expert assessment/analysis/comment of the tool effectiveness

## 1. Assessment by tool users

- The actors (DEA and the municipality of clichy-sous-bois) have a very positive experience of this project. It was the first collaboration between the DEA (direction of water and storm water management) and Clichy-sous-bois municipality. This project allowed people working in the field of urbanism and those working on the field of storm water management, to become aware of the necessity of associating both domains in their projects. The feedback of this experience can be used on other projects.

- The project seemed very costly because it was the first time the Department spent money for rehabilitation and not for creation of additional water storage. Construction and equipment costs amount to about 140€/m3 of stormwater. The major part of this cost is due to: (i) The covered part of the basin, (ii) The wish from the DEA to integrate the basin into a remote managed network of storm water detention basins.

- The rehabilitation of the basin has a positive effect on the resident population: a decrease of the number of vandalism acts was noticed, which decrease consequently maintenance costs.

- Supervisors were hired for animation and to avoid any violence between teenagers of different neighbourhoods. Some tournaments are now organised on the site. The leisure and sports facilities are used a lot by nearby inhabitants and schools. Surveys and supervisors interviews show that this area is now the major playing/sport areas of the city.

- As far as the basin is concerned, it would be interesting to:
    - Improve the site signing: for example, it could be interesting to integrate a transparent part between the covered part of the basin and the zone liable to flooding, so that the public could see the water level,
    - Follow rigorously the basin exploitation, with more communication between municipal services and the Department, to enable the project continuity. Furthermore, there is a need of training for the technical services to enable project durability as the teams follow one another.

## 2. Reviewer's assessment

- After this project, the managers became aware of the need to allocate a larger part of the budget for: educative signing, project coaching and urban furniture choice (not too fragile).

- For the DEA, this project allowed to learn new methods of conception / realization / management of this kind of structures, taking into account the multipurpose and associating 3 notions: urbanism, public space conception (for user's security) and storm water management.

- This project is a success: increasing of the credibility of the approach and the utility of the tools.

| **E. Additional information on the case study available** | |
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| Websites | http://www.cg93.fr/ |
| References *concerning the case but also the key words or problem* (papers, articles, reports, laws, etc.) | • Chocat B (coord). Encyclopédie de l'Hydrologie Urbaine et de l'Assainissement. Paris : Tec&Doc Lavoisier. 1997. 1124p.<br>• Azzout Y, Barraud S, Cres FN, Alfakih E. Techniques alternatives en assainissement pluvial. Paris : Tec& doc Lavoisier, 1994.<br>• Ellis B, Chocat B, Fujita S, Rauch W, Marsaleck J. Urban Drainage : A multilingual glossary. IWA publishing. 2004. 512p.<br>• Perez-Sauvagnat I, Maytraud T, Piel C. "L'ouverture au public du bassin de retenue Maurice Audin : un pari difficile mais necessaire ". 3rd International conference on innovative technologies in urban storm drainage. Novatech 98'. Lyon (France) : 4-6th May 98 pp 313-320 |
| Other sources (Interviews, conferences, discussions, etc.) | Interview with Thierry Maytraud on the 17th July 2003 and 22th September 2004. |
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