

## Imperia (IT)

### *Setting/Problem*

The city of Imperia is addressing a problem of flooding in the districts of Oneglia and Castelvechio di Santa Maria Maggiore – in particular in a critical area that can be considered as a five sided polygon bounded on the North by the Collette stream basin, on the West by the Impero river, on the East by the Santa Lucia stream and on the South by the harbour. The insufficient capacity of the urban drainage system combined with the transformations of the streams into culverts, cause problems for water quantity and quality. During heavy rainfall events, floods are frequent and furthermore the collapse of the combined sewer system produces shedding in the coastal bathing water. After the inundations in 1998 and 2000, the Municipality carried out a plan to change the sewer from combined to separate and to restore the flow rate of the streams/culverts. The general conditions have improved, but during heavy rainfalls events large parts of the town are still subject to flooding.



### *Objective*

The objective is to adopt the most adequate technical solutions that allow for effective flooding control in the area. For each critical point, the following sets of technical possible solutions are considered:

- Collette stream. As the stream often overflows, it is proposed to increase the hydraulic section and consequently the flow rate. Given that the Collette stream is an underground culvert, however, the part of the stream corresponding to Via Issel could be reopened and the road system modified accordingly. As the upstream part is a scarcely urbanized area, renovation of green areas could be planned to create recreational values.
- Oliveto stream. As the major problems are an insufficient/inadequate hydraulic section and the presence of an ancient bridge that causes a sudden narrowing, it is proposed to enlarge/reshape the riverbed and to build concrete beds.
- Area between Via XXV Aprile and Via Fanny Roncati Carli. As the existing rainwater drainage system has become inadequate due to recent urban growth, it is proposed to build a new rainwater sewer system on both sides of the hill. In order to reduce the storm water management problems, stormwater discharges could be partially disconnected from the main drainage system and conveyed to the Municipal stadium.
- Area Cascine. As several flood events have seriously damaged the commercial activities in the area, it is proposed to divert rainwater of the Cascine stream basin into neighbouring drainage systems and waterways. Alternatively, an open channel could be

planned along the old railway track nearby the Impero river (the new railway track should be in use before 2015) to collect storm water from this urban catchment and to discharge directly into the Impero river. The old railway station could be included as part of the new green corridor, while the renovation could also include the Toscanini Gardens as to provide a new recreation area (including, for example, bicycle lanes). Finally, remediation of the area nearby the outfall of the Impero river (where several bird species have settled) could be developed as fauna oasis.

### *Expected outputs*

The output expected from the DST is a cost-benefit analysis of the different possible technical and natural solutions for each critical point, considering not only the costs and benefits of the drainage system but also the impacts on urban planning and on citizens' welfare. The DST is also expected to provide information on the best strategies to involve stakeholders in this process.