

# Information English



## Samedan flood protection project 2002 to 2006

### Facts and figures

New Flaz channel:	May 2002 to summer 2004
Completion of Flaz diversion:	late autumn 2003
Recultivation of the Flaz:	summer 2004
Renaturing of the Inn, Cristansains:	summer 2004/2005
Completion works:	summer 2005/2006
Total construction time	4.5 years

Excavated material:	300,000 m <sup>3</sup>
Rubble fill:	245,000 m <sup>3</sup>
Blocks for river bank protection:	75,000 t
Length of new works:	4,050 m
Length of extended dams:	1,700 m
Length of upgraded Inn:	3,250 m
Number of new bridges:	6
Remaining cleared area	11,255 m <sup>2</sup>
Temporary cleared area	3,985 m <sup>2</sup>
Claimed land area	17 ha

Overall costs	CHF 28,400,000
State and Canton	75%
Local authority and others	25%

### Contact

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## Samedan flood protection project 2002 to 2006

# For mankind and the environment.

Samedan is building for its future. With the implementation of the new flood protection project the lively capital of the Oberengadin will have achieved three goals: security, quality of life and nature.

Until 1870 the Flaz meandered through the wide, open plain of Samedan which was formed by rock material left behind by glaciers and deposited by rivers. Despite initial dam construction works, floods continued to hit the village and caused extensive damage. With five disasters (1951, '54, '55, '56 and '57), the Fifties of the last century go down in the history of Samedan as the «flood decade». The dams built between 1956 and 1958 have been able to protect the village from further flooding for many years. But channels of the Flaz and Inn which were designed according to the best knowledge available at the time have since proven to be too small.

Climatic changes such as shrinkage of the glacier and retreat of the snowline have also been contributory factors. The forecast water volumes in an extraordinary «100-year» flood have become so large that they could no longer be completely diverted and the residential areas of Samedan are once again threatened.

Referring to the Samedan Flood Protection Project in April 2002, the Swiss Landscape Fund (SLF) stated: «*Besides the substantially improved flood protection system the conceptually very impressive landscape restoration project includes an ecologically increased revaluation and spectacular, extremely natural relandscaping.*»

## samedan



# For security, quality of life and nature.



**Seriously threatened area**  
**Remaining flood area**

## Why?

During the harmless flooding in 1987, for the first time since the dam construction between 1956 and 1958 there were fears that an extraordinary flooding would overtax the capacity of the channel. Studies carried out by the Swiss Federal Institute of Technology, Zurich, also indicated that both the

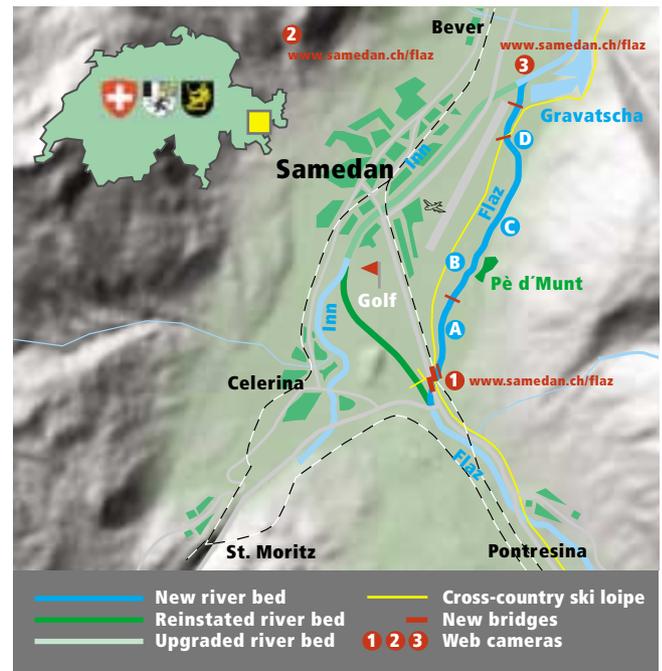
population and buildings in Samedan are threatened. For this reason the Government of Grison declared extensive stretches of the area of settlement as endangered zones and set the local authority a deadline at the end of 2005 for the elimination of these dangers. A feasibility study examined all possible protective measures such as barrage dams in Val Roseg and Morteratsch valley, the damming of the Upper Engadine lakes or the building of retention basins. Two variations were finally deemed feasible: 1) the enlargement of the existing channel with addition flood relief provision on the airfield plain; and 2) the diversion of the Flaz. An overwhelming majority of Samedan voters favoured the most ecologically sound diversion of the Flaz with renaturalization of the Inn.

## Project overview

The diversion of the Flaz will eliminate flooding danger in the residential areas. Comprehensive ecological findings as well as state-of-the-art computer-supported models will be used in the implementation of the project. This will provide a unique chance of exploiting opportunities for river structural works

which are both nearly natural and at the same time of high technical quality. In the upper section, in Punt Muragl, new bridges cross the Flaz. Thanks to 6 m wide bridges, the marathon loipe will be hardly affected; in future it will be much more easily accessible via a new link to the golf course loipe. Walkers and hikers will be able to reach the new river landscape via a new path network.

In the upper section the Flaz will flow through a cut with no dams, while water-meadows will be created in the near-natural middle section with variable river width. The Flaz



1875



**Samedan in 1875:**  
**the Flaz and Inn**  
**canalised for the**  
**first time.**

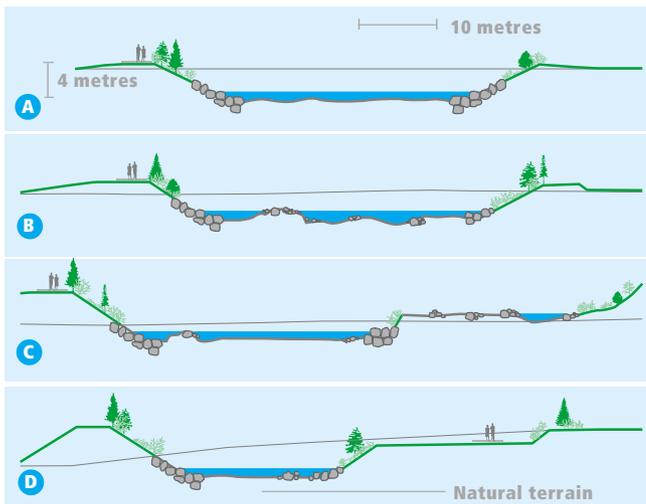
1927



1954



**Up until 1957**  
**Samedan was repeatedly**  
**hit by floods.**



**Profile types A to D**

will be separated from the plains by a flat longitudinal dam. Before the junction with the Inn in Gravatscha a channel will be built for low-water discharge and one for mean water and bounded by flat, cultivatable longitudinal dams.

### **For fauna and flora**

During the construction of the new Flaz bed, ecological building supervision will ensure careful treatment of fauna and flora. Valuable habitats will be maintained and new ones created. Thus Pè d'Munt, a high moor of national importance, will remain untouched. The old, strictly obstructed Flaz channel between Punt Muragl and the junction with the Inn will be discontinued and renaturalized with woods and meadows. Similarly with the Inn, which is also strictly regulated, ecological improvements will be carried out below the present junction: as there will more space for the Inn's water volume, its dams can be redimensioned and the channel made more attractive for fish and water birds.

### **Agriculture**

Diversion of the Flaz will require some 17 ha of land. Thanks to the understanding attitude of the farmers the necessary land was upgraded from pasture to meadow land and exchanged. The farms were simultaneously consolidated, making cultivation easier.

### **Involved parties**

Cooperation between the Federal government (Federal Office for Water and Geology), local government and the local authority offices of Grison (particularly the road department section hydraulic engineering) and neighbouring local authorities is contributing significantly to the success of this important project. Even from the start of the project the essential environmental questions were discussed in the environmental advisory commission, consisting of representatives of environmental organisations, local associations (fisheries, bird protection), involved local cantonal offices (environment, regional planning, nature and landscape, forestry) and local authority representatives, thus enabling this commission to submit its solution proposals during the early planning phases.

The Samedan local authority would like to thank all those involved for their excellent cooperation and the voters for their support, and it will make every effort within the project's organisation to achieve successful implementation of the Flaz diversion.

**samedan**



**1958**



**The dams constructed between 1956 and 1958 have prevented further flooding to date.**

**1987**



**Following the high water in 1987 the question was raised as to whether the flood protection measures in Samedan were sufficient.**