

## FACTSHEET RISK REDUCTION MEASURES

### Flood protection measures Ledenice - other measures

#### Where was it implemented?

Ledenice (South Bohemia Region, Czech Republic)

#### Fields of action

- watercourses

#### Related to measure from the catalogue of measures

- Small elevation oriented dikes
- Dry retention reservoirs with a constant flow
- Embankments in the bump curves of streambeds, boulder structures
- Strategic documents

#### Area characterisation

- **Area type:** non-developed area, urban area
- **Landscape type:** floodplain, ponds in urban area



Dry retention reservoir

Source: The Region of South Bohemia, The section of Territory Planning

#### Problem

The village Ledenice, including its central part, was repeatedly flooded during heavy rain events (1885, 1900, 1925, 1926, 1997, 2000, 2002, 2005) despite the absence of a larger stream and its relatively favorable location.

#### Description and aim

The subject of the project is the realization of a part of the measures which were defined in the Study of Flood Protection Ledenice, Ing. Daniel Vaclík, 1997. A comprehensive solution of flood protection of the area included the restoration of the Kačerovec pond, the construction of a safety spillway at the Slaviček pond, mud removal and repair of the Lazny pond dam, the safety spillway at the Parčáček pond and drainage on the square, watercourse treatment in Růžov, modification of the dam of the Dolní Hradský pond and construction of a bypass channel. The description of the other measures can be found on a separate factsheet.

The following general measures have been proposed in addition to the bypass channel to reduce the flood risk: increasing the natural retention capacity of the landscape, the use of the valley morphology for the realization of a retention reservoir, increase in flow capacity of watercourses, replacement of non-capacity functional objects of water management works. The restoration of the Kačerovec dam is an essential part of these measures (individual examples of other measures are given in the first paragraph). The original flood dam was ruptured in 1925 and caused a flood in the entire catchment area of the Spolský stream, including damage to the dam of the Svět pond in Třeboň. The Kačerovec dam was realized as a retention reservoir with low water level - in periods without precipitation it can be dried out. The construction costs amounted to 12,936,000 CZK, with the municipality receiving a subsidy of the Ministry of the Environment (revitalization of river systems) in the amount of 10 million. Volume of constant water level - max. 9,730 m<sup>3</sup>, maximum retention volume 192,727 m<sup>3</sup>.

#### Effect of measure

Protection of the endangered part of the village against floods caused by heavy rain events.

| Description of implementation  |   |
|--|---|
| <b>Effect horizon:</b><br>long-term  | <b>Involved stakeholders:</b><br>landowners, inhabitants of Ledenice  |
| <b>Implementation:</b><br>January till October 1999 (building permit - realization - dam Kačerovec), other measures till 2016)   | <b>Initiator / responsible</b><br>municipality Ledenice   |
| Lessons-learned  |   |
| The construction of the retention reservoir was the first measure, which was necessary for the construction of subsequent measures, although it did not fully protect the whole municipality against floodings.  |   |
| <b>Main success factor:</b><br>Obtaining a subsidy from the Ministry of the Environment - the municipality had previously sought to build a retention reservoir, but without a subsidy implementation was not possible.  | <b>Main challenge:</b><br>Technical design of retention reservoir dam to prevent repeated bursting of the retention reservoir and endangering the entire catchment area.                    |
| <b>Synergies / beneficial aspects:</b><br>Protection of a large part of the municipality (including residential buildings) against recurrent floods caused by heavy rain events; complementation of the comprehensive flood protection of Ledenice. The retention reservoir has already proven its effectiveness in 2000 and 2013. | <b>Conflicts / Constraints:</b><br>The construction was delayed by looking for the necessary funds (the total financing would amount to ¼ of the annual costs in the municipality's budget) |
| Key message to others starting with a similar task   |   |
| The municipality was not sufficiently protected even after the construction of the retention reservoir. It was necessary to implement follow-up measures. This is an exemplary solution of flood protection in stages.   |   |
| Contact  |   |
| The Region of South Bohemia, The Section of Territorial Planning<br><a href="http://www.kraj-jihocesky.cz">www.kraj-jihocesky.cz</a><br>Contact list: <a href="https://www.kraj-jihocesky.cz/ku_tseznam/os?id_os=94">https://www.kraj-jihocesky.cz/ku_tseznam/os?id_os=94</a>  |   |



Retention reservoir Kačerovec during flood in 2013  
Source: Ledenický zpravodaj - municipality newsletter)



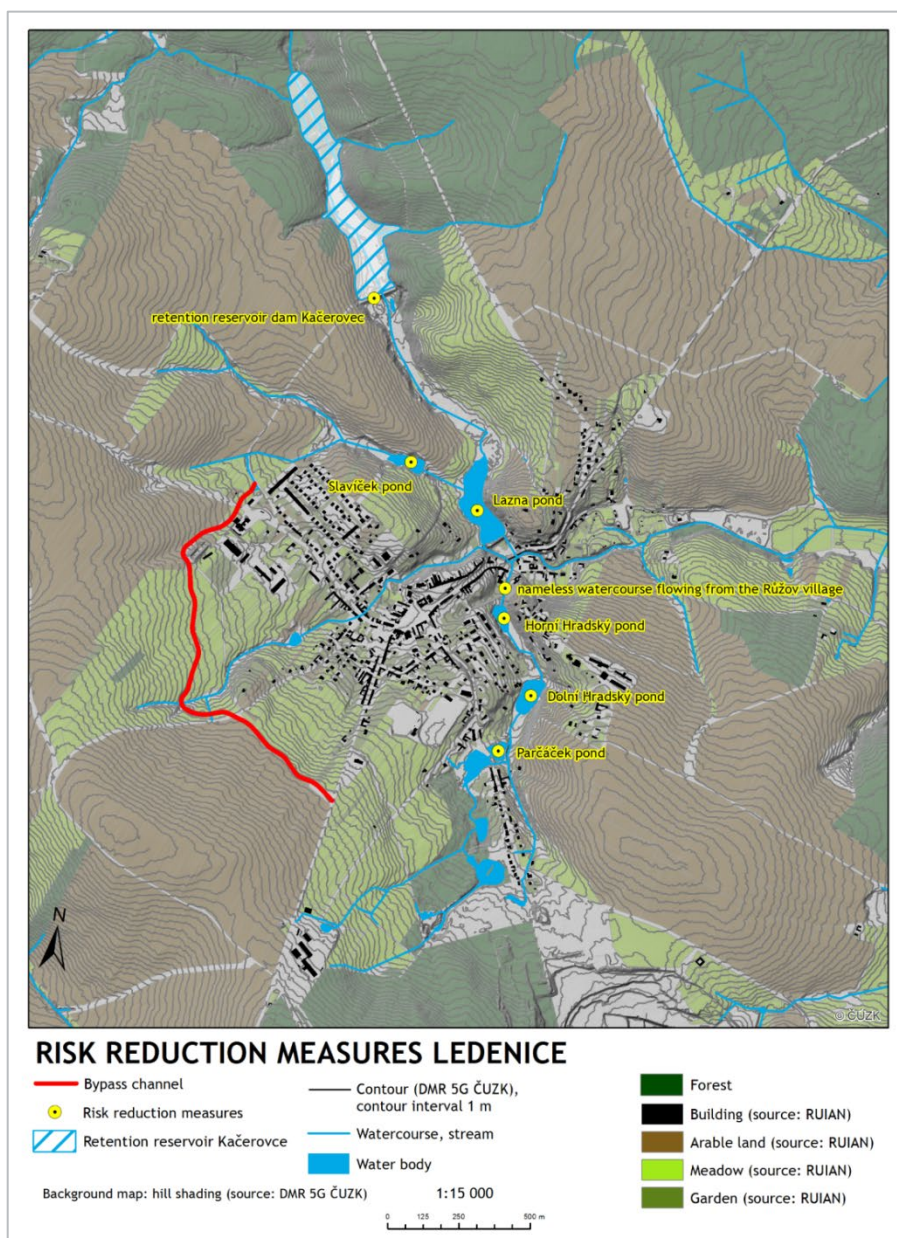
Spillway of the retention reservoir in 2019 (same place)  
Source: The Region of South Bohemia, The section of Territory Planning





Retention reservoir dam

Source: The Region of South Bohemia, The section of Territory Planning



Source: The Region of South Bohemia, The section of Territory Planning