FACTSHEET RISK REDUCTION MEASURES

Appropriate design of unsealed roads and stream crossing in forests - Korbitzer Schanzen, Kirchsteigbachtal

Where was it implemented?

City of Meissen, Saxony, Germany

Fields of action

Forests

Related to measure from the catalogue of measures

- Appropriate design of unsealed roads and stream crossing in forests
- Culverts - suitable hydraulic design

Area characterisation

Area type: rural

Landscape type: hilly, forest

Appropriate construction design of a rebuilt bridge after the heavy rain event in the "Stadtwald" area. Source: P. Voigt

Problem

On 27 May 2014, the district Meissen-Triebischtal was affected by a heavy rain event of 40-60 l/m² precipitation per hour in the catchment area of the Triebisch river and its tributaries. Resulting floodings and mud flows on and from farmlands passed the forested valleys, reached the settlement area of Triebischtal and caused damages of 6 mio. Euro. Also the bridges of the local recreation area "Stadtwald" were destroyed or clogged by debris.

Description and aim

Two bridges destroyed by the heavy rain event were rebuilt to reconnect the existing forest track network in the "Stadtwald" area (picture above). Destroyed culverts and bridges in nearby areas were replaced by fordings (picture next page). By this means the increased stream width as a result of the heavy rain event can be obtained to increase the runoff capacity while decreasing damage potential alongside the river. The natural characteristic of the stream with positive ecological effects is further ensured.

Effect of measure

The use of glass fibre as construction material improves the resilience of the bridges and reduces upkeep in contrast to a wooden design. The stabalization of slope areas reduces erosion of debris and sediments. Recovery and reconnection of the forest track network by fordings (instead of bridges) prevent from log and debris jams and contribute hence to a controlled water runoff. Fordings simplify forest management, e.g. simple crossing of fordings for timber transports.

Fording within the stream bed of the brook "Kirchsteigbach"
Source: P. Voigt

Description of implementation

Effect horizon:
long-term

Implementation:
11/2017 – 01/2018

Costs:
not known, funded by flood damage repair package 2013

Involved stakeholders:
building department, lower water authority, lower nature protection authority

Initiator / responsible:
City of Meissen

Lessons-learned

Main success factor:
The destruction of bridges due to the heavy rain event in 2014 led to a need for action, triggered a change into an alternative, constructive use of fordings and ensured funding of the measure.

Main challenge:
The measure is located in a special area of conservation (SAC). Fortunately, obligations and restrictions were kept to a limited scale as the measures were regarded as reconstructions and not as new constructions.

Synergies / beneficial aspects:
The whole area of "Stadtwald" is a local recreation area. The measure is regarded as a benefit for recreation by local residents and invites to take a walk in the forest.

Fordings need a much lower upkeep than bridges and reduce the risk of log and debris jams.

Conflicts / constraints:
Fordings limit the accessibility for wheelchair users and perambulators and might not be able to cross when the water level is high.

Key message to others starting with a similar task

Check for possible old, destructed or destroyed bridges. Ask inhabitants or consult maps for locations. Receiving a building permission for reconstruction might be easier than for a completely new construction.

Contact

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Further information (in German)

Steffen Wackwitz (2015): Das Starkniederschlagsereignis in Meissen im Sommer 2014, in: WasserWirtschaft 9/2015, URL: https://www.springerprofessional.de/das-starkniederschlagsereignis-in-Meissen-im-sommer-2014/6110106, 13.11.2019. (in German)

Stadt Meissen (2015): press realease - Naturnahe Instandsetzung des Kirchsteigbaches gelungen – Mehr Schutz vor Hochwasser und Starkregen, URL: https://www.stadt-meissen.de/8847.html, 13.11.2019.