Operation checklists as a support for authorities and relief units in the event of flooding - a pilot project for the municipality of Hermagor (Austria)

Gernot Koboltschnig, Dr.[1]; Stephan Senfter, Dipl.-Ing.[2]; Marian Unterlercher, Dipl.-Ing.[2]

INTRODUCTION:

Integral risk management takes into account all phases of the risk cycle. But „taking into account" does not imply how far and how deep the phases of the risk cycle are implemented for a certain risk. Concerning floods, event documentations in Austria have shown that in general there already is a high standard concerning flood warning, hazard maps, structural protection measures and the power and equipment of disaster relief units. On the other hand hazard maps show further needs for structural protection measures - which cannot be realized quickly due to financial limitations of (especially small) municipalities - and hazard maps already show „hot spots", which in case of floods could be easily mitigated. For these reasons a pilot project has been elaborated to establish operation checklists to support authorities and relief units and to fill the remaining missing link of the risk cycle.

PILOT PROJECT AND STUDY AREA:

The municipality of Hermagor, situated in the valley of river Gail (southern Austria), is threatened by potential floods from two rivers named Gail and Gössering and their tributaries. Based on hazard maps a need for further structural flood protection measures has been shown and further steps for the planning are already ongoing. However, due to the time for planning, authorization and the construction phase the realization of all required technical protection measures would take several years. In order to face potential flood events in an appropriate and aim-oriented way, operation checklists for the support of authorities and relief units were elaborated. The checklists should assist the operation controller in case of flooding in order to concentrate available resources in time and at critical places and therefore minimize the extent of damage.

METHODOLOGY:

The basis for the elaboration of the checklists has been the 2d-hydraulic model used for the hazard mapping. As flood hazard maps in Austria are taking into account four hydraulic intensities (first bank overflow, HQ_{30}, HQ_{100} and HQ_{300}) further small stepped scenarios (so called „flood lamellas") have been calculated. This helps to develop a better understanding of the process and to focus on flood intensities where a remarkable increase of the damage potential linked with a tactical change for relief units is necessary (what flooding occurs at what discharge, at what place, in what chronological sequence). The huge number of flood lamellas has been discussed with stakeholders from the authorities (region, district and municipality), relief units (fire brigade, police and red cross) and administration (flood protection, road maintenance, railway, electricity and water supplier) to reduce the number of scenarios and to consider potential counter measures. In a second stakeholder workshop counter measures were defined in detail for each scenario. The involvement of stakeholders to elaborate checklists has been of great importance. The definition and selection of stakeholders took into account people:

- who will practically use the checklist in the event of flooding (primarily district authority, mayor, operation controllers, relief units) and/or
- who provide an essential technical input and/or
- who are responsible for linking disaster control on regional and national levels

RESULTS:

The results of the development process ultimately contain checklists divided into maps and a textual part. The map comprises relevant flood plains including associated water depths for each scenario. Furthermore, especially sensitive infrastructures

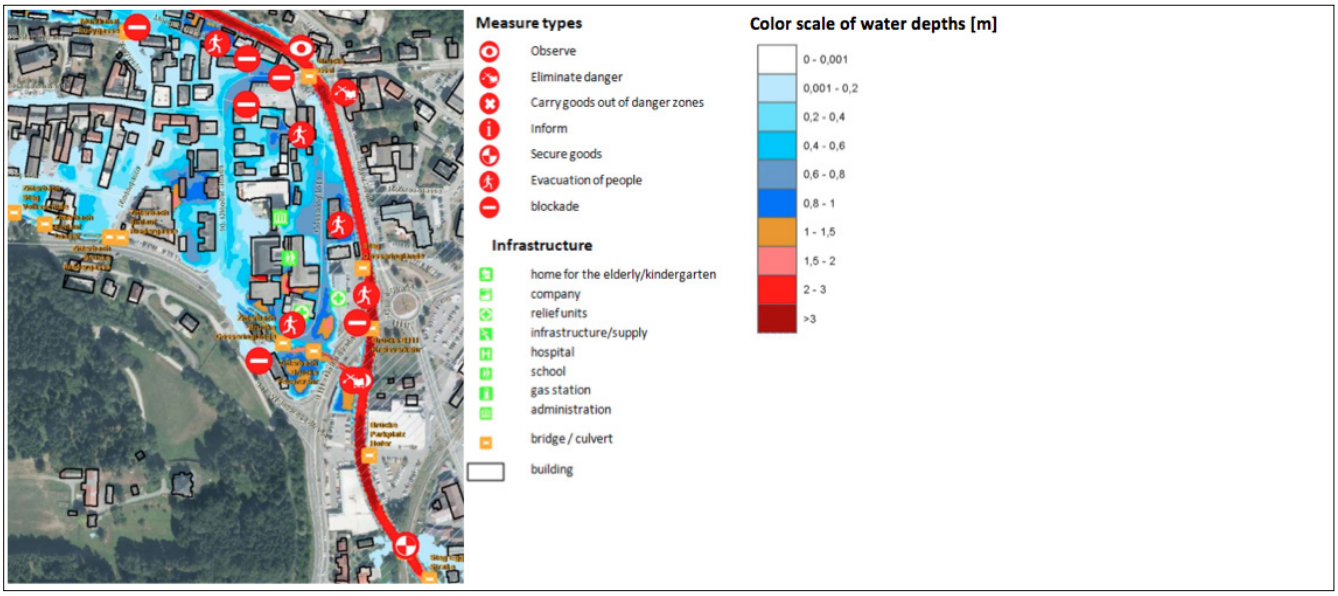

Figure 1. map detail of the operation checklist, scenario 3 - detail (left); legend (right)

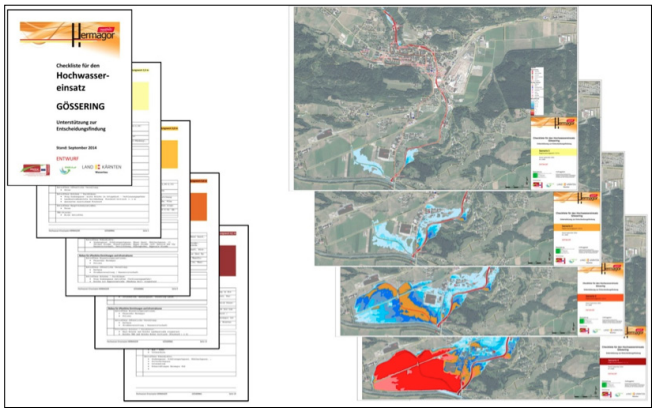

Figure 2. operation checklist with a textual part and maps

have been marked and labeled. Measures were located by using symbols (Figure 1).
The textual part presents the following, separately for each scenario:

- a definition of the assumed scenarios
- a description of effects and risks
- a list and description of necessary intervention measures (who? what?)

The definition of different scenarios was based on specifics of the rivers concerted alarm models that determine under which circumstances different alarm levels occur and who leads the operation during these levels. The definition of the alarm model has been especially tricky as the catchment area of river Gössering is only 78 km² and there is no hydrologic flood forecast. The alarm level therefore depends on precipitation forecasts, which were categorized based on hydrologic model results to determine what precipitation combined with assumed pre-wetness could cause what flood scenario.

CONCLUSIONS:

The operation checklists are a fixed and necessary component of the practice and operation strategy of the municipality of Hermagor.

KEYWORDS

operation checklist; flood scenarios; flood mitigation measures

1 Regional Government of Carinthia Klagenfurt, AUSTRIA, gernot.koboltschnig@ktn.gv.at
2 REVITAL Integrative Naturraumplanung GmbH