



Optimised Management Perspective for an urban Floodplain exposed to Conflicts of Interests between contradictory ecological and socio-economic Demands

C. Habererder (1), A.P. Blaschke (1), I. Baart (2), G. Haidvogel (3), T. Hein (2,3), S. Hohensinner (3), S. Preiner (2), W. Reckendorfer (4), K. Reiter (4), B. Schuh (5), G. Stanzer (5) and G. Weigelhofer (2,4)

(1) Institute for Hydraulic and Water Resources Engineering, Vienna University of Technology, Austria, (2) Wasserkluster Lunz GmbH, Inter University Center for Water Research, Lunz am See, Austria, (3) Institute of Hydrobiology and Aquatic Ecosystem Management, Department of Water-Atmosphere-Environment, University of Natural Resources and Applied Life Sciences, Vienna, Austria, (4) Vienna Ecology Center, University of Vienna, Austria, (5) ÖIR - Austrian Institute for Regional Studies and Spatial Planning, Vienna, Austria. (habererder@hydro.tuwien.ac.at)

Floodplains serve several environmental functions. Therefore, they are invaluable in many different aspects. Floodplains are morphologically formed by adjacent rivers in consequence of erosion and sedimentation processes. They are natural flood water retention basins and are characterised by a unique biodiversity of aquatic and terrestrial ecosystems due to dynamically fluctuating surface water and groundwater levels. Urban floodplains additionally interact with the society whereby socio-economic aspects arouse public interest. Conflicts occur where these socio-economic concerns meet ecological objectives and make it difficult for stakeholders to find the right satisfying management strategies in respect of sustainability.

The area of the case study is the Lobau, an urban floodplain that is situated close to the city of Vienna, on the north bank of the Danube. Through the last 130 years the Lobau has been exposed to severe changes particularly caused by the regulation of the Danube and flood control measures for Vienna. However, this area is a special habitat for endangered species of plants and animals and hence protected by various regula-

tions (MaB reserve, Ramsar site, Natura2000 and Alluvial Zone national park). Furthermore the Lobau meets socio-economic demands such as agriculture, services for forestry and fishery, serves drinking water supply and is used as a recreation area. For the further development of the Lobau it is important to find the best-compromise solution as balance between the before mentioned different socio-economic demands and ecological values. The aim of the project "Optima Lobau" is to support this complex management process by the development of a multi-criteria decision analysis. Basically, several scenarios with possible management approaches are provided that are based on hydraulic engineering measures. Ecological and socio-economic demands are examined and evaluated with the help of hydro-morphological, ecological and socio-economic models and differentiated by sub-scenarios that represent one maximised landuse in each case.

The hydraulic modelling provides a basis for the other participants of the interdisciplinary project work group. These models are an ambitious challenge because of the huge and flat terrain on the one hand and the large number of watercourses on the other hand. A two-dimensional numerical surface water model is applied to simulate the flow regime in the Lobau. On the basis of these results the groundwater flow is modelled and the potential impact of surface water is assessed to evaluate the effects of measures on the drinking water supply. The outcomes of the hydraulic modelling of surface water and groundwater include water table elevations, flow velocities and water depths. Furthermore, depths to groundwater and retention times of groundwater are contained. The simulation results of the numeric models agree well with the observed situation.