

# THE CONCEPTUAL PREPARATION OF THE SOLUTION TO THE FLOOD CONTROL MEASURES IN THE CATCHMENT AREA OF THE RIVER BEČVA-CONSTRUCTION WORKS SKALIČKA

## KONCEPČNÍ PŘÍPRAVA ŘEŠENÍ PROTIPOVODŇOVÝCH OPATŘENÍ V POVODÍ ŘEKY BEČVY - VÝSTAVBA VODNÍHO DÍLA SKALIČKA

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### Abstract

Floods and their consequences are one of the most common situations for us. One of the tasks of State administration and self-government is to deal with the crisis situation that has arisen. In relation to each crisis situation are important preventive measures. The article deals with the role of State and local authorities in relation to preventive measures for flood protection in the river Bečva.

### Abstrakt

Povodně a jejich následky jsou jednou z nejčastějších krizových situací u nás. Jedním z úkolů státní správy a samosprávy je řešit krizovou situaci, která vznikla. Ve vztahu ke každé krizové situaci jsou důležitá preventivní opatření. Článek se zabývá problematikou úlohy státní správy a samosprávy ve vztahu k preventivním opatřením pro povodňovou ochranu obcí v povodí řeky Bečvy.

### Keywords

flood protection measures, protection of the population and territory of the Bečva River basin, water-work Skalička

### Klíčová slova

protipovodňová opatření, ochrana obyvatel a území v povodí řeky Bečvy, vodní dílo Skalička

## INTRODUCTION

The catchment area of the river Bečva is a territory which is one of the most vulnerable flood risk in the Czech Republic. Disastrous floods in July 1997 had a devastating effect on the seat in the basin and in the downstream section of the Bečva river Morava. One of the most affected municipality was the village of Troubky. This consequence of the floods with the designation "hundred years ' water" was the impetus for the search of the concept of the protection of this area before the flood. During flood events in 2010 again showed that you can't let up in the efforts to search for and implement a set of effective preventive measures that would lead to the reduction of flood risk. Although the flood nearly reached the parameters of the flood of 1997, caused serious damage, and again significantly affected a large number of the population. One of the possible preventive measures under consideration was to build a dry polderu Now here is a variant of construction of water works Skalička.

## THE ROLE OF PUBLIC AUTHORITIES IN CONNECTION WITH A FLOOD-PROTECTION IN THE BASIN OF THE RIVER BEČVA

An important task in preventing and preparing for a crisis situation to State administration bodies, bodies of territorial self-government and the physical and legal persons. The competence and powers of State authorities and bodies of territorial self-governing units and the rights and obligations

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of legal entities and natural persons not only in preparing for emergencies, but also in their solution, the law No. 240/2000 Coll. on crisis management.

Among State administration bodies include:

- the Government,
- ministries (Ministry of the Interior, the Ministry of health, Ministry of transport, Ministry of industry and trade, etc.),
- other central administrative authorities.

Among the institutions and regional authorities include:

- the authorities of the region and other authorities with jurisdiction in the territory of the region,
- the authorities of the municipality with extended competence,
- the authorities of the municipality. [1]

In the context of flood protection in the basin of the river Bečva is on preventive measures and participated in various organs of:

- the Government,
- Ministry – agriculture, environment, transport and finance,
- The regional authority of the Olomouc region,
- authorities of the 15 municipalities concerned.

An equally important role in the flood control measures in the basin of the river Bečva river basins of the Morava is a State enterprise that carries out the administration of the river basin of the Morava River, including the river Bečva.

## **CONCEPTUAL FEASIBILITY STUDIES [2]**

The sponsor and the Coordinator of the work on the nationwide conceptual feasibility study is the basin of the Morava, in cooperation with the Olomouc region, the Ministry of agriculture, Ministry of environment, Ministry of transport, Ministry of finance, and especially with all the 15 municipalities concerned. A study of Pobečví in scope (the territory of 45 km in length from the confluence of the Morava and Bečva rivers after the planned dry tank Skalička) has consolidated all existing local proposals into one nationwide of a mathematical model, in which were included the limits and requirements for flood protection of all of the above entities. Subsequently, an assessment of each of the flood control measures due to their effect, feasibility (technical, economic, and financial), conflict of interest (such as protection of nature) and repeated negotiations with all of the above bodies was achieved by all parties accepted the conceptual solution, both in the form of technical nature and close to the action.

The Government in 2015 approved the initiation of the preparation and implementation of flood control measures in the basin of the river Bečva and close by means of technical measures, including dry tank Skalička. Preparation and implementation of flood protection in the basin of the river Bečva was divided into two stages. In the framework of the phase will be implemented technical and nature nearby measures ensuring transfer of flow in the range of 650-750 m<sup>3</sup>/s (i.e. approx. Q<sub>50</sub>). In II. the stage will be carried out aiming at increasing the water work Skalička flood protection at the level of the flood of 1997 (i.e. Q > 100).

Recommended a specific variant of the property compensation for the realization of the planned works, Skalička imposed by the Minister of agriculture, in cooperation with the 1. Deputy Prime Minister for economy and Finance Minister, the Government and handle to the 31. 10. the draft principles for the 2015 settlement rights to immovable things planned realisation of the works concerned, Skalička. Material approved by the resolution of the question of the Government also recommend changing the name of the forthcoming works on a Teplice water work Skalička (upcoming water work already does not interfere with territorial cadastral territory of Teplice nad Bečvou). For this reason, is no longer in the present material used strictly the new name – water work Skalička.

Whereas the determination of the amount of compensation for the establishment of servility is, according to spilt of the new civil code, a relatively new Institute and the experience with it, the only gain, it is proposed the establishment of a compensation deal for spilt to servility in the second phase of the property compensation works Skalička. This solution will allow the securing of additional supporting documents, in particular the elaboration of expert opinions and taking into account all of the context of the application of the Institute. The determination of fair and reasonable compensation, in particular, will be able to reflect the experience gained after the 1. 1.2016 when addressing compensation for restriction of ownership rights under the provisions of section 59a of the water law.



**Picture 1 Hranicko – flood of 1997**

**Source: Fire Rescue Corps of the Olomouc region**

The proposed material suggests rules for setting up the laws to properties affected by the planned realisation of the water dam Skalička in the first phase of property compensation (without element split). In this phase are solved also compensations for purchase of all constructions in this area affected by increasing of water dam, plots under the construction and plots in area supposed full damming at spot height 256,00 m (e, g, approx. In the range of Q20 – area made up by increasing the water dam while leaving the supposed parameters Problems with compensation for arranging of easement split will be properly analyzed and in term to 31.3.2017the rules for setting up of property laws to immovable property affected by planned realisation of water dam Skalička – second phase of property compensation will be introduced to government.

## WATER WORK SKALIČKA

Study of the Pobečví clearly and definitively confirmed the need for the construction of water works Skalička as an important measure to transform the "major" flood flows.

Water work should be located mostly in the left – bank part of the floodplain of the river Bečva Valley. The main barrier is the same profile that was designed for large tanks, where appropriate, variations of the dry tank, and is supplemented by a side led by dykes along the railway line. Fencing the area works, therefore, consists of two-roadway embankments, and the side of the Valley. The design of the perineum are both addressed as sprinkled with predominantly from local materials – alluvial gravel obtained in the area of floods. The construction works would achieve in a given territory flood protection on the level of the flood of 1997 (i.e.  $Q > 100$ ). The implementation of the proposed water works (with the retention volume of up to 35 million m<sup>3</sup>) would transform the floods of 1997 on max. Q<sub>50</sub>, which at 950 m<sup>3</sup>/s led to the protection of more than 100,000 inhabitants.

Regulating runoff provides "functional", which allows you to convert a certain flow rate and flow in the onset of the flood, as well as the safe transfer of the design flooding upon failure or blockage of dnových released. The capacity of the dnových pass at the maximum level in the tank is about 1 700 m<sup>3</sup>/s (without safety tinting) in and of itself so it covers roughly the untransformed culmination flow  $Q_{10\ 000} = 1\ 720$  m<sup>3</sup>/s limited capacity when the malfunction of one object field reaches 1 360 m<sup>3</sup>/s and with reserve untransformed culmination flow  $Q_{1\ 000} = 1\ 290$  m<sup>3</sup>/s (IE. that this work according to the current proposal complies with all regulatory requirements for its safety during the transfer of large water). For normal operation, it is assumed the capture of flood flows over the value of about 660 m<sup>3</sup>/s, i. e. approximately Q<sub>20</sub>. The manipulation can be customized according to the current situation on the Morava River and possibly delay the captured water in water works well into the flood flows below the confluence of the Morava.

The population of the protected water work is scheduled around 110 thousand. The calculation is made according to the number of the affected population in the towns and villages in the flood of 1997 and taking into account the areas where are reflected the positive effect of the transformation of the flood water. The extent of the affected territory between water and the confluence with the Bečva Moravia is 7 270 ha, in the basin of the Morava in the section from the junction with the meat processing plant after Duke Spytihněv is 13 260 ha. The extent of the territory of a protected work is scheduled in the basin water Skalička Bečva after confluence with Moravia is 5 800 ha. The extent of the territory in the basin of the Morava-protected below the confluence with Bečvou you cannot quantify the variability due to the effect of the flow-through conditions. [3]

**Table 1 - Estimated technical parameters of the water works of Skalička**

Water work Skalička		
Maximum height of dam above the ground	m	12.5 *
The volume of Earth Dam	million m <sup>3</sup>	1.5 *
Max. retention levels	m n m (B.p.v.)	264 *
Flooded area at max. the surface of the	HA	623 *
The retention volume at max. the surface of the	million m <sup>3</sup>	35
The cost of realization of the works	mill. Czk without VAT	2 687 *

*the value is based on the investment plan of the year 2012*

Source: Ministry of Agriculture of the Czech Republic

When the flood in July 1997 have exceeded the damage to property to the State, municipalities, of legal and physical entities in the catchment area of the Bečva district Přerov 2.8 billion. CZK.

Realization of itself works will be financed from Skalička State budget. The security of own funds from the State budget for implementation of this measure in the future will be dealt with by a separate Government material.

### **FINANCIAL SETTLEMENT OF THE IMMOVABLE PROPERTY CONCERNED THE IMPLEMENTATION WORKS SKALIČKA**

Financial settlement of the immovable property concerned the realization of any works or water works is a very sensitive issue. This is no different for the proposed flood measures. Financial settlement for construction works Skalička will cover seven cadastral territory.

### **THE SELECTED VARIANT OF PROPERTY COMPENSATION SOLUTION**

The Government has recommended a variation of the property compensation for the realization of the planned works Skalička-purchases of all buildings in the territory of the raising works, the land under the building works, the ground and the land in the area of the anticipated standing horny on dimension 256.00 m (i.e. in the range of approximately Q20 -area resulting from the raising of the water works in the maintenance of the existing proposed parameters and swamped capacity of about 3 million m<sup>3</sup>). The settlement of other land concerned will be dealt with in the form of easement of spilt (area of approx. 3.9 million m<sup>2</sup>). On these grounds will be allowed to continue farming.

In the case of flood, when water work will use his retention capacity (beyond standing horny), will cause the flooding of land, on which will be negotiated in the so-called. Ministry of spilt. The land will be used for the provisions of § 68 of the Water Act and the related payment of refunds (the territory intended for controlled spilt flood).

Bought up area of predicted permanent damming will be most affected in terms of editing programs. The management here will be very limited, and rather will serve as a "wildlife corridor" with revitalizationi elements.

### **DETERMINATION OF UNIT REFUNDS**

The amount of the refunds for the settlement of the rights to immovable things concerned in connection with the realisation of the works Skalička is dependent on unit prices for mass valuation of immovable property. The construction works will affect seven Skalička cadastral territory.

The resulting margin unit refunds based on the expert opinions for the determination of unit prices for bulk pricing for individual types of immovable property in specific cadastral areas, which the investor (the river basin of the Morava, s.p.) had to handle for the following types of immovable property (see table 2):

- Family House, cottage and vacation holiday house
- holiday cottage, Garden Cottage
- the side of the building
  - the stables
  - the barn
- buildings for business
  - buildings for trade and services
  - shed for storage

- land building
- land other

In the territory, according to the investment plan of the year 2012 is a total of 43 buildings, of which 23 habitation, 11 objects to a family recreation and 9 other objects (agricultural, etc.).

The principles for the settlement of the property compensation phase (without servility of spilt) based on the specified unit of refunds for individual types of immovable property and the annex No. 1 of the proposed Government resolution. Unit replacement cost includes real, according to the expert's report and the incentive compensation (for loss of profit, move, move, business activities, etc.). The resulting refund the purchase for a specific thing to culture will always be fixed individually on the basis of the expert's report. The proposed procedure is similar as in the implementation of the water works of Nové Heřminovy.

The total financial resources required for the implementation of the proposed property compensation (without servility spilt) should be in the range of between 410-579 million. CZK. With regard to the current state of the immovable property concerned is recommended earmarking of funds on this phase property compensation to the amount of 520 miles. CZK.

**Table 2 – the Margin per unit of refunds for the financial settlement of the water works of Skalička – stage I majetkoprávního settlement (without servility rozlivu)**

Type of real things (current use)	Total acreage	Simp.	The unit replacement (min.-max. CZK/mj *)	The cost of the implementation of the property compensastinzh (min.-max. CZK)
Family House, cottage and vacation holiday house	21 000	m <sup>3</sup>	5 552-7 842	116 592 – 164 682
holiday cottage, Garden Cottage	1 050	m <sup>3</sup>	2 407-5 982	2 527-6 281
secondary buildings (stables + barn)	9 400	m <sup>3</sup>	1 625-2 308	15 275-21 695
construction (buildings for trade and services + Hall for storage)	22 600	m <sup>3</sup>	2 034 – 6 448	45 968 – 145 725
land (building)	43 500	m <sup>2</sup>	457-722	19 879 – 31 407
land (other)	2 228 766	m <sup>2</sup>	94	209 503
<b>A total of</b>				<b>409 747-579 294</b>

\* values are given including VAT

Source: Ministry of Agriculture of the Czech Republic

With regard to saving financial resources, it is proposed to implement the gratuitous transfer of the immovable property, which is owned by the State and will be without prejudice to the implementation of the planned works, the rights to manage Skalička State undertaking River basin of the Morava, s.p. The total area of land owned by the State concerned, the planned water work is about 67 ha. Without land, with which it has the right to manage the river basin of the Morava, s.p. the total acreage of State land is approx 27 ha. In preparation for the implementation of the property compensation works Skalička geometric plans are processed, which shall specify the plot concerned the maximum spilt. On the basis of these geometric plans will use on free land transfer, or their parts in the area. In the event that this procedure will appear as a more efficient, may be transferred free of charge to the whole plot, for which there is no prejudice to the full maximum spilt.

It is assumed also that you won't need to buy about seven parcels owned by the Olomouc region, which could be inserted into upcoming events such as the promotion of the Olomouc region prepared measures to anti-flood arrangement

### SECURITY FUNDS ON REALIZATION OF PROPERTY COMPENSATION

To the realization of the security of the proposed property compensation works Skalička will use funds from the budget of the operation State of financial assets in the total amount of the 520 million CZK for the period 2016-2023. The premise of drawing see table no. 3. Funding for the year 2016 it will be necessary to ensure, in the framework of the Ministry of agriculture in the form of transfer of funds from the budget already approved chapter Operations of State financial assets. From the year 2017 will be subsequently released financial resources on the basis of the request of the Ministry of agriculture in his budget for the basin of the Morava, s.p., and provided that the financial resources will be included in the medium term the chapter Operations of State financial assets.

**Table 3 – the assumption of pumping in the years 2016-2023 – stage I property compensation (without servilityof spilt)**

Year	2016	2017	2018	2019	2020	2021	2022	2023
Cost (million. CZK)	20	90	100	90	80	70	40	30

Source: Ministry of Agriculture of the Czech Republic

### CONCLUSION

Submit a proposal for the policy of settlement rights to immovable things concerned planned the realisation of the works was the resolution of the Government of Skalička day 1. July 2015, the Minister of agriculture, in cooperation with the 1. Deputy Prime Minister for economy and Finance Minister, saved the Government and handle to the 31. October 2015, submit a draft policy for the settlement of the rights to immovable things planned realization of the works concerned, Skalička.

Whereas the determination of the amount of compensation for the establishment of servility is, according to spilt of the new civil code, a relatively new Institute and the experience with him, the only gain, it was suggested that these replacements will be addressed in the second phase of the property compensation works with the date of submission of the Government of Skalička until 31 December 2006. 3.2017. This material contains the phase property compensation, when they are dealt with compensation for the buy-out of all buildings in the territory of the raising works, land under construction works and zemníků and the land in the area of the anticipated standing on the Hill of horny 256.00 m (i.e. in the range of approximately Q20 -area resulting from the raising of the water works in the maintenance of the existing proposed parameters).

It was proposed to allocate the financial resources of EUR 520 million. CZK for the realization of property compensation of buildings and the land concerned by the proposed measures.

With regard to the saving of the funds was also designed to realize the gratuitous transfer of the immovable property, which is owned by the State and will be without prejudice to the implementation of the planned works, the rights to manage Skalička State undertaking River basin of the Morava and until 31 December 2007. December 2017.

In order to ensure savings funds in the implementation of their own purchases are stored to ensure the blocking state land in the jurisdiction of the State Land Office in the management of cadastral territories concerned planned the realisation of the works, to Skalička 31. December 2015.

It was also designed to ensure consideration of the process of settlement of the immovable things affected the realization of the planned works with Olomouc and Zlín Skalička region and other relevant bodies of self-government.

## LITERATURE

- [1] Act No 240/2000 Coll. on crisis management
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