

DELIVERABLE D.T4.2.2

Setting up of emergency plans for the target
heritage sites - Czech Republic

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Authors:

TROJA (Tomáš Drdäcký)

ITAM (Miloš Drdäcký, Riccardo Cacciotti)



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I. DESCRIPTIVE PART

I.1 General information

Plan name: Flood evacuation plan for Prague-Troja cultural heritage

Plan area - for objects.

I.2. Site description and hazard analysis

The Historic District of Prague-Troja, situated north of the Prague City Centre rises on the iconic river Vltava, characterized by shallow banks smoothly continuing in the adjacent urban areas dating back to medieval times. The settlement is featured by natural heritage, hosting the Prague Zoological and Botanical gardens, and protected cultural monuments, namely the Baroque Chateau Troja and the Old Troja Mill. The contact of the district banks with the river reaches several kilometers and the territorial protection of Troja has been built only along a part of it. Large part of the Troja territory is not protected, which creates specific socio-economic problems in the community. The main risks posed to Troja are floods by the Vltava river. Fire is also recognized as risk.



Natural floods include summer floods generated by regional rains lasting tens of hours and summer floods on smaller affluent generated by local rains of a high intensity which project also in the lowland sections (e.g. 07/1954, 07/1981, 08/2002, 06/2013 events).

Natural floods further include winter floods generated as a result of snow melting together with rain precipitation. They are less frequent on the described territory, however their threat is also very important (e.g. 12/1993, 01/2003, 03/2005, 03 - 04/2006 events).

Troja Chateau is a Baroque palace built from 1679 to 1691 for the Counts of Sternberg. The Chateau is built from masonry walls, brick vaults in lower stories, wooden upper floors. The building is surrounded with a large garden with sandstone sculptures, fountains and small masonry building for storage of stone sculptures and garden maintenance. The central axis of the gardens projects towards the spires of the St. Vitus Cathedral in the Prague Castle. The risk of floods is limited to lower levels of the site i.e. the gardens and cellars where no permanent art exhibition is hosted. The garden wall is endangered with high water pressure.

The Old Troja Mill is directly endangered by Vltava River. Offices are located in the ground floor, including social and management facilities. At this level, also the reception, the staircase and the elevator can be found. The three upper floors host 30 apartments and service spaces; sewage water is pumped from the underground space and the water main duct presents an automatic backflow valve which preventing sewage backflow. Rain water from the parking lot roofs is drained on the adjacent terrain, while waste water in the garage is trapped in two waterproof traps of the volume 1 m³ each. The former mill race has been refurbished and converted to cellar boxes. The object is separated from the river by a protecting dike built in 1960s. After the flood in 06/2013 the elevators engine room was relocated to the loft space. At the same time a new staircase from the underground to the ground floor was constructed.

The Trojan Horse Gallery is a wooden building with ground and upper store floors. It houses a small café on the ground and exhibition spaces on the first floor. The first floor is accessible with a rather narrow staircase, the ground floor is easily accessible and partly open space. The site is built in a vicinity to an artificial wild water channel on the bank of the Vltava River. The site is equipped with electricity connection and water supply from an adjacent well. The Trojan Horse Gallery is comfortably accessible via an asphalt road with sufficient capacity even for lorries. The urgent application of protective measures is necessary even at low rise of water in the river because in such cases the access road may be flooded and closed for traffic. In more dangerous situations temporary barriers are installed and the access to the gallery is totally impossible.

The Bosna house is a family house made of mixed or brick masonry provided with modern collar beams. Brick vaults are in the underground, the other floors are wooden. Only family heritage moveable objects are present and can be evacuated.

I. 3. List of historic buildings with instructions for their protection

Immovable monuments:

No.	Characteristics of the historic object: - name - location / address - short description with the specification of the most valuable elements	Proposed method of protection (Divided into threats if there are differences in proceedings)	Necessary forces: 1. number of people: what services, volunteers, who else? 2. equipment: belonging to whom / stored where?	Estimated time needed for protection
	Troja Chateau U Trojského zámku 4/1, 171 00 Praha-Troja The chateau is built from masonry walls, brick vaults in lower stories, wooden upper floors. The building is surrounded with a large garden with sandstone sculptures, fountains and small masonry building for storage of stone sculptures and the garden maintenance. The garden is surrounded with a masonry wall. It serves as a gallery and exhibition space - the museum objects are placed on floors above the level of the highest water.	Protection of lower level (i.e. cellars) using sand bags	1.Volunteer Fire Brigade: 8 people. 2.Bags and filling material are provided by the owner.	4 hours
		Wrapping of sculpture in the gardens	1. Volunteer Fire Brigade: 6 people for wrapping the sculptures. 2.Plastic foil against soiling and contamination from dirty water provided by owner.	4 hours
2	Old Troja Mill Trojský mlýn, Povltavská 5/74, 171 00 Praha-Troja The building is made of massive masonry units, especially in the cellar level where the wheel was lacoted. Only personal belongings are stored in the bulding.	Protection from water of the masonry walls in the cellar	1. Residents committee: 6 people for placing the protection. 2. Plastic foil, sand bags and cylindrical flood bag kept in the storage room on site.	30 min
3	Trojan Horse Gallery Vodácká 1, 171 00 Praha-Troja Wooden building with ground and upper floors. It houses art exhibition spaces on the first floor. The asphalt access road may be flooded and closed for traffic even when only a low rise of water level in the river is experienced.	Anchoring objects too heavy to be evacuated	1. Volunteer Fire Brigade: 2 people. 2. Heavy duty strap, ropes included in the equipment of the brigades.	30min
		Evacuation of artworks	1. Volunteer Fire Brigade (2) + Owner (2) + Sokol Troja (3) + Truck Drivers (2). 2. Wrapping material at the Municipal District Office.	60min
4	House in Bosna Bosna, Pod Hrachovkou 274/3, 171 00 Praha-Troja Brick or mixed brick/stone masonry objects with vault or concrete slab ground floor ceilings, upper floors are in timber.	Anchoring of heavy floatable objects on site	1. Owners : 2 people and volunteers (2 people). 2. ropes available on site from owner.	30 min
		Protection of openings	1. Owners : 2 people and volunteers (2 people). 2. Shutters available on site from owner.	30min

Movable monuments:

No.	Artifact characteristics:		Monument protection:	Necessary forces:	Estimated time needed for protection	A safe place to which artifacts will be evacuated	
	Name/type	Quantity (n.)	Weight (kg)				
1	Wooden Silhouette	5	10	1. Wrapping. 2. 5x blanket + wire wrap twine.	1. Volunteer Fire Brigade (2) + Owner (2) + Sokol Troja (3). 2. Blanket, wire wrap twine in the Municipal District Office. 3. Vehicle transport.	30 min	Emergency storage space at local school, Trojska 110, Praha-Troja
2	Vase with plant	1	15	1. Wrapping. 2. 1x blanket + wire wrap twine.		5 min	
3	Wooden Nut	3	20	1. Wrapping. 2. 3x blanket + wire wrap twine.		20min	
4	Wooden Guitar	1	10	1. Wrapping. 2. 1x blanket + Wire wrap twine.		5 min	
5	Wooden Table	1	150	1. Anchoring the table to the gallery structure. 2. 2x heavy duty strap + 2x ropes.	1. Volunteer Fire Brigade (2). 2. Heavy duty straps, ropes. 3. Heavy objects should stay on site.	20min	
6	Smaller wooden artifacts	-	10	1. Safely wrapped. 2. 2x cardboard boxes.	1. Owner (2) + Sokol Troja (3). 2. Blanket, wire wrap twine in the Municipal District Office. 3. Vehicle transport.	10 min	Emergency storage space at local school, Trojska 110, Praha-Troja
7	Pictures, artist tools	-	20	1. Safely wrapped. 2. 3x cardboard boxes.		15 min	

I. 4. Materials and equipment necessary for protection

► Troja Chateau

No.	Materials/Equipment	Quantity	Place of storage	Responsible person contact
1	Plastic foil	50m ²	Storage and garden maintenance masonry building.	Troja Chateau maintenance department, contact: 283 851 614
2	Sand	5 ton	Storage and garden maintenance masonry building.	Troja Chateau maintenance department, contact: 283 851 614
3	Bags	250 pcs.	Storage and garden maintenance masonry building.	Troja Chateau maintenance department, contact: 283 851 614

► Old Troja Mill

No.	Materials/Equipment	Quantity	Place of storage	Responsible person contact
1	Plastic foil	20 m ²	Storage room in cellar space	Contact receptionist
2	Sand bags holding foil	10 pcs.	Storage room in cellar space	Contact receptionist
3	Cylindrical flood bag for holding foil (3m)	2 pcs	Storage room in cellar space	Contact receptionist

► Trojan Horse Gallery

No.	Materials/Equipment	Quantity	Place of storage	Responsible person contact
1	Packing blanket	50 pcs.	Municipal district office, Trojska 96	Dep. Construction & Environment tel.: 284686103
2	Cardboard box	10 pcs.	Municipal district office, Trojska 96	Dep. Construction & Environment tel.: 284686103
3	Heavy duty strap	2 pcs.	Voluntary fire brigade equipment	Fire brigade emergency number 150
4	Rope	2 pcs.	Voluntary fire brigade equipment	Fire brigade emergency number 150
5	Inventory kit (labels, item list, pencil etc.)	5 pcs.	Trojan Horse Gallery	Contact owner

► House in Bosna

No.	Materials/Equipment	Quantity	Place of storage	Responsible person contact
1	Cardboard boxes for family heritage evacuation	7 pcs.	In the storage room on-site	Contact owner

2	Rope	2 pcs.	In the storage room on-site	Contact owner
3	Window shutter	5 pcs.	In the storage room on-site	Contact owner
4	Door shutter	1 pcs.	In the storage room on-site	Contact owner

I. 5. List of the evacuation / protection order

The order for implementing the protection measures should be issued depending on the water level conditions in the river and the object exposure.

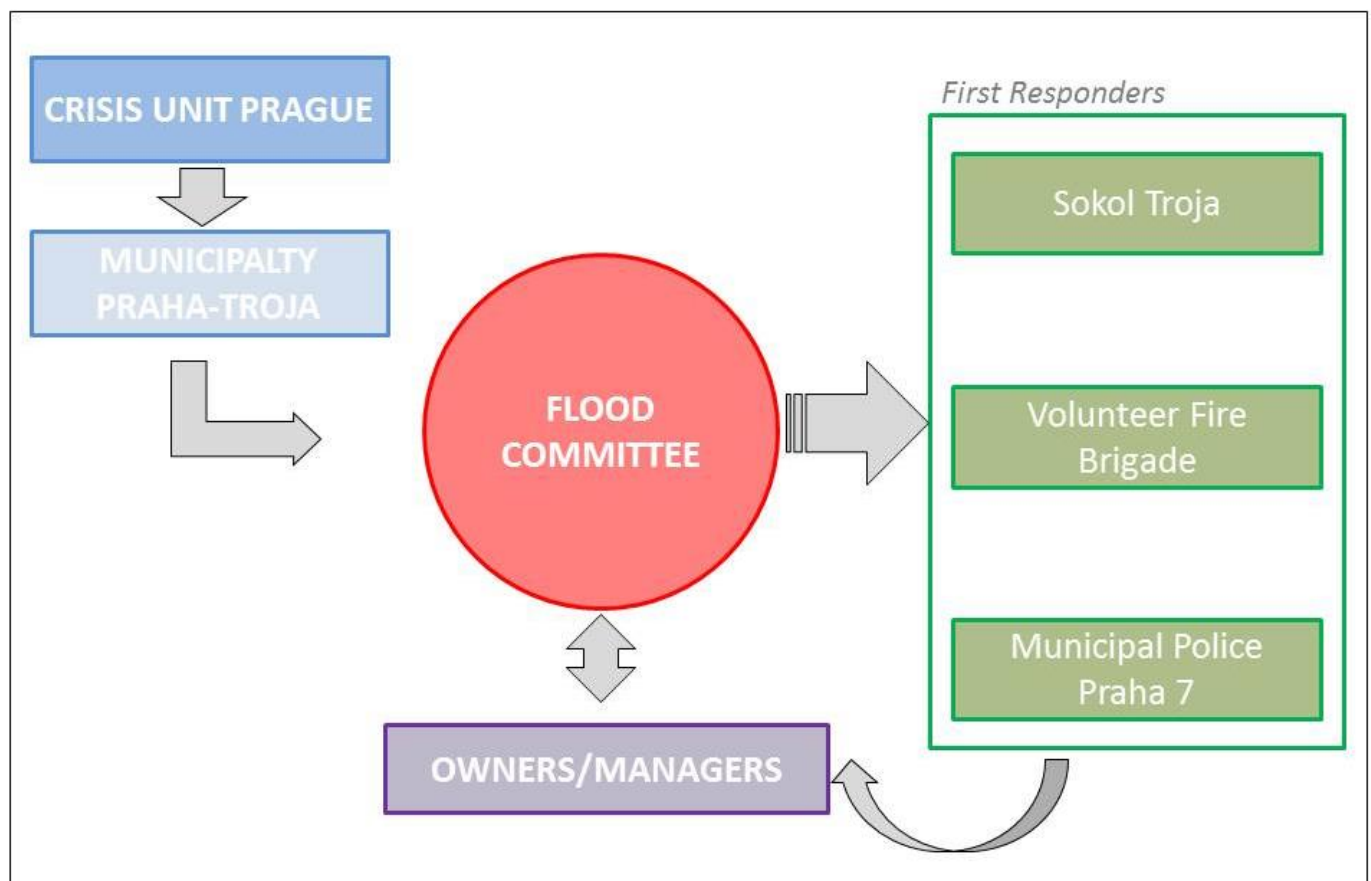
For even low water level increases, the Trojan Horse Gallery should be evacuated and the heavy art work objects to be left on-site should be properly anchored. The rescue team will be composed of Voluntary Fire Brigade members, Praha-Troja employees, Sokol Troja members, the Municipal police and the gallery owners plus the truck drivers. Also the house in Bosna should be evacuated at a very early stage as, similarly to the gallery, the evacuation route would flood for minimal water rises. In this case, the owner, in collaboration with local professionals, which should be contacted for advices, is responsible for implementing the protection measures. The owner, in preparation for the emergency, can take advantage of the Cultural Heritage Resilience manual for assessing the vulnerabilities of the site. He/she can ask for help from the Sokol Troja volunteers in disaster situation or even the fire Brigade if necessary. The Troja Chateau protection measures should be implemented following the order from the Flood Committee, in case a more significant flooding event is expected. The Volunteer Fire Brigade, in collaboration with the maintenance team of the Chateau, is responsible for positioning the sand bags and wrapping the stone statues in the gardens. Lastly, the Old Troja Mill residents committee should be in charge of implementing the protection measures once they are invited to do so by the Flood Committee. The Municipal police will monitor the conditions and traffic along the predefined evacuation routes for all sites in the Municipality of Praha-Troja.

I. 6. List of rescue units, institutions and organizations that are intended to provide assistance

No.	Name	Address	Contact	More info
1	Municipal District Praha-Troja	Trojská 230/96, 171 00 Praha 7 Troja	284686103	Alarmed by Crisis Unit Praha
2	Crisis Unit Prague 7	U Průhonu 11 Praha 7	220 144 111	
3	Flood Committee (Municipal District	Trojská 230/96, 171 00 Praha 7 Troja	284691121	Established by Praha-Troja

	Office)			
4	Sokol Troja	Trojská 744/171a	728 213 254	Informed and alerted by Flood Committee
5	Municipal Police (Prague 7)	Praha 7, Holešovice, Argentinská 1098/17	222 025 970	
6	Fire Brigade	Sokolská 1595, 120 00 Nové Město	950 850 011 150 (emergency)	
7	Gallery Owner	Vodácká ulice, Praha 7	777 267 855	
8	Troja Chateau management	U Trojského zámku 4/1, 171 00 Praha-Troja	283 851 614	
9	Old Troja Mill reception	Trojský mlýn, Povltavská 5/74, 171 00 Praha-Troja	284686103	
10	Bosna owner	Bosna, Pod Hrachovkou 274/3, 171 00 Praha-Troja	284686103	

I. 7. Diagram of the alarm / notification system



I. 8. Operational Instructions

The Crisis Unit at City level updates the local authorities which in turn, under particular crisis scenarios, activates the Flood Committee composed of flood management experts and staff of

the Municipality Praha-Troja. The Flood Committee gathers in the Municipal District Office where the local Crisis Unit manages the whole crisis situation. The committee is responsible for alerting the group of first responders which comes into action once the level alert is raised to a probable flood expected. In parallel, the Flood Committee coordinates the activation of the emergency measures directly with owners which are constantly informed and guided through the emergency response plan. When the water level is sufficiently high, the protection/evacuation measures are implemented. First responders are asked to follow the access/evacuation routes to manage this phase of the response. The materials required for the interventions are collected at the Municipal District Office, where they are usually stored. Volunteer Fire Brigade and Troja Chateau's management team are in charge to put up the protection measures in the garden area. Sokol Troja members, Volunteer Fire Brigade plus a local transport company activated by the Committee is required to evacuate the gallery, with the support of its owners. Once loaded, the objects can be safely stored at the local School on Trojska 110. The residents' committee at the Old Troja Mill is in charge of following the professional emergency plan available for this object and additionally, once asked by the Flood Committee, is responsible for implementing the protection measures. The owner of the House in Bosna is required to implement the protection measures following the directions of the Flood Committee and local experts. First responders can be also asked to support owners in performing the required tasks. The Municipal Police is alerted by the Flood Committee and monitors the traffic situation along the access evacuation routes, reporting continuously to the Flood Committee which is acknowledged real time on the conditions of the escape routes.

1. 9. Organization of exercises and training in the field of cultural heritage protection.

Training events, even with public engagement, should be organized at least twice a year in order to increase the awareness and knowledge on sustainable and cost-effective preparedness measures among wider audience. In this context, evacuation and protection exercises for the Praha-Troja cultural heritage should be organized. Exercises are designed to teach rescuers how to react correctly in crisis situations. A detailed scenario must be prepared for practical exercises each time. The main goals of these events are: a) to individuate responsibilities for decision making according to the relevant skills of the stakeholders; b) to set priorities and adequate response actions; c) to train the evacuation of movable heritage and the implementation of preventive protection measures against flooding for large artifact. The exercises should simulate as closely as possible real emergency situations. A participated evaluation of the training should follow, in order to provide valuable information for updating the flood emergency plan of the Municipality.

II. GRAPHIC PART

II.1 Organizational Map

- immovable monuments, places with movable monuments,

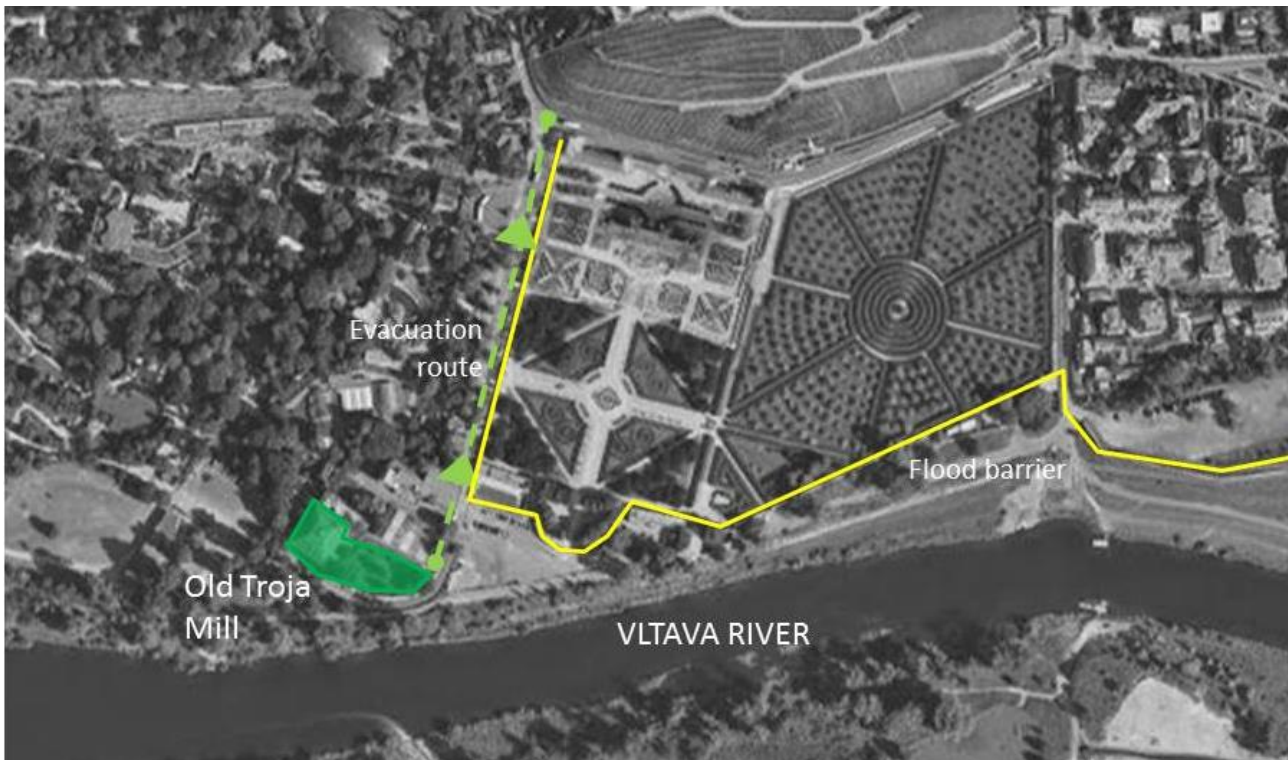


- headquarters / location of rescue units and/or organizations, potential threats



II. 2. Map of evacuation routes

-Old Troja mill



-Trojan Horse Gallery



- House in Bosna

