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Part 1 – Germany

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1. Characterisation of the pilot site

The German pilot site consists of the remains of the Roman watchtower 14/4 (4.5 x 6.4 m) and those of a small fort (c. 20 x 20 m). The remains of the small fort are not preserved above ground, but the outlines can be traced by clearly visible ground elevations.

The watchtower is listed in the Bavarian list of monuments under the entry: D-5-6830-0004 "watch tower 14/4 of the Raetian Limes".

The small fort is listed in the Bavarian list of monuments under the entry: D-5-6830-0007 "Roman small fort".



WT 14/4 of the Raetian Limes, photo by Marcus Speck



Ground elevations are corresponding to the Roman small fort, photo by Alexander Hilverda

Due to the specifications of the pilot site, consisting of the watch tower and the small fort, there are no noteworthy natural threats.

2. Threat analysis pilot site

The Pilot Site is not threatened by flooding or erosion associated with heavy rainfall events, given its topographical location on the crest of a ridge. Even a forest fire would not have a significant impact on the archaeological substance hidden in the ground of the Pilot Sites. The issue of 'Movable cultural heritage' is also not relevant in the context of the Pilot Sites.

Minimal superficial damage to the monument fabric could be caused by root plates opening up from storm-tossed trees. Since the Pilot Site is located on popular hiking trails, the stability of the trees growing in the monument area is regularly checked by the Bavarian State Forests for reasons of road safety.

- General security
not applicable
- Fire
not relevant
- Flood
not relevant
- Theft
not relevant

- Vandalism
not relevant
- Accidents/malfunctions
not applicable
- Deterioration/wear and tear
not relevant
- Climate
not relevant
- Light
not applicable
- Pests and mold
not applicable
- Pollutants
not relevant
- Severe weather
not relevant
- Earthquakes
not relevant
- Violence
not relevant

3. Responsibilities in cultural heritage protection – case study pilot site

Both archaeological monuments are part of component part 430s-399 "Watchtowers WT 14/1 to 14/27 including the fortlets of Gündersbach and Hinterer Schlossberg" of the transnational serial UNESCO World Heritage Site "Frontiers of the Roman Empire". They are not located at the Danube and are not part of the UNESCO World Heritage Site "Frontiers of the Roman Empire - Danube Limes (Western Section)". Therefore, a transnational strategy for the protection of cultural heritage in the event of a disaster for the selected pilot sites would have to be coordinated with the **site managers responsible for Hadrian's Wall in northern England and Antoninus Wall in Scotland**. However, due to the very different natural conditions in the north of Great Britain and in Germany, the risk assessment of the consequences of climate change for the three sections of the World Heritage Site "Frontiers of the Roman Empire" are carried out separately.

For Germany, this has been done by a working group of the Limes coordinators of the Limes-bearing federal states under the coordination of the office of the German Limes Commission. The result was the founding of the "Forest Working Group", as it is becoming apparent that the forest, where the archaeological monuments of the Upper Germanic-Raetian Limes are often particularly well preserved, will be especially hard hit by the consequences of climate change in Germany.

The "Forest Working Group" is in contact with specialists from the field of forestry who have decades of experience with forest management in the area of the Upper Germanic-Raetian Limes. In the course of meetings in various federal states, it has become clear that the expected damage events will have a very strong impact on the perceptibility of the ground monuments

in the forest and thus on the World Heritage mediation, but at the same time no significant damage is to be feared for the monument substance of the World Heritage Site hidden in the ground.

Both ground monuments are owned by the **Free State of Bavaria** and managed by the **Bavarian State Forests**. They are advised by the Coordination of Archaeological World Heritage Sites of the **Bavarian State Office for the Preservation of Monuments (BLfD)**.

4. Assessment of additional sites

4.1. Mertingen (*Submuntorium*)

The Danube Limes site Mertingen (*Submuntorium*) includes a fortress from the Claudian Period, an *burgus* from the late antique and the civil settlement (the *vicus*). The position of *Submuntorium* is strategically important as it is located at the northern end of the Via Claudia Augusta, where the Danube south route crosses. Today no Roman elements or buildings are visible above ground, the archeological structures remain underground and are partially covered with modern superstructures. Archeological excavations, geophysical surveys as well as aerial images have revealed a complex and detail history of the *castellum*, *burgus* and *vicus*.



Figure 1: The site is used for agriculture.

Google. Bilder © 2023

Likelihood	Almost certain					Agriculture, Vegetation
	Likely					
	Possible	Fire	Severe weather, Earthquake, Theft			
	Unlikely	Vandalism	Flood			
	Rare	Accidents/Malfunctions, Light, Pests and Mold, Pollutants, Climate, Violence				
		Insignificant	Minor	Moderate	Major	Severe
Impact						

4.2. Passau (*Boiotro*)

The *castellum Boiotro* is located in the center of the modern city Passau. Next to non visible archeological and excavated/conserved structures there are still elements from the Roman Period in the medieval and modern city which remained visible or have been partly integrated in new buildings. The first fort (*Boiodurum*) was founded around 90 CE near the confluence of the rivers Inn and Danube. The Late Antique *castellum Boiotro* was only build in the second half of 3rd century and lastet until the 5th century.



Figure 2: Southwest fan-shaped Tower.
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Likelihood	Almost certain					
	Likely					
	Possible	Vandalism	Fire	Flood	Construction Activity	
	Unlikely	Theft, Violence	Earthquake, Deterioration			
	Rare	Accidents/Malfunctions, Light, Pests and Mold, Pollutants, Climate				
		Insignificant	Minor	Moderate	Major	Severe
Impact						