



**material in  
transition**  
The fragile  
mountain

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07.03.2025

# *fragile wood*



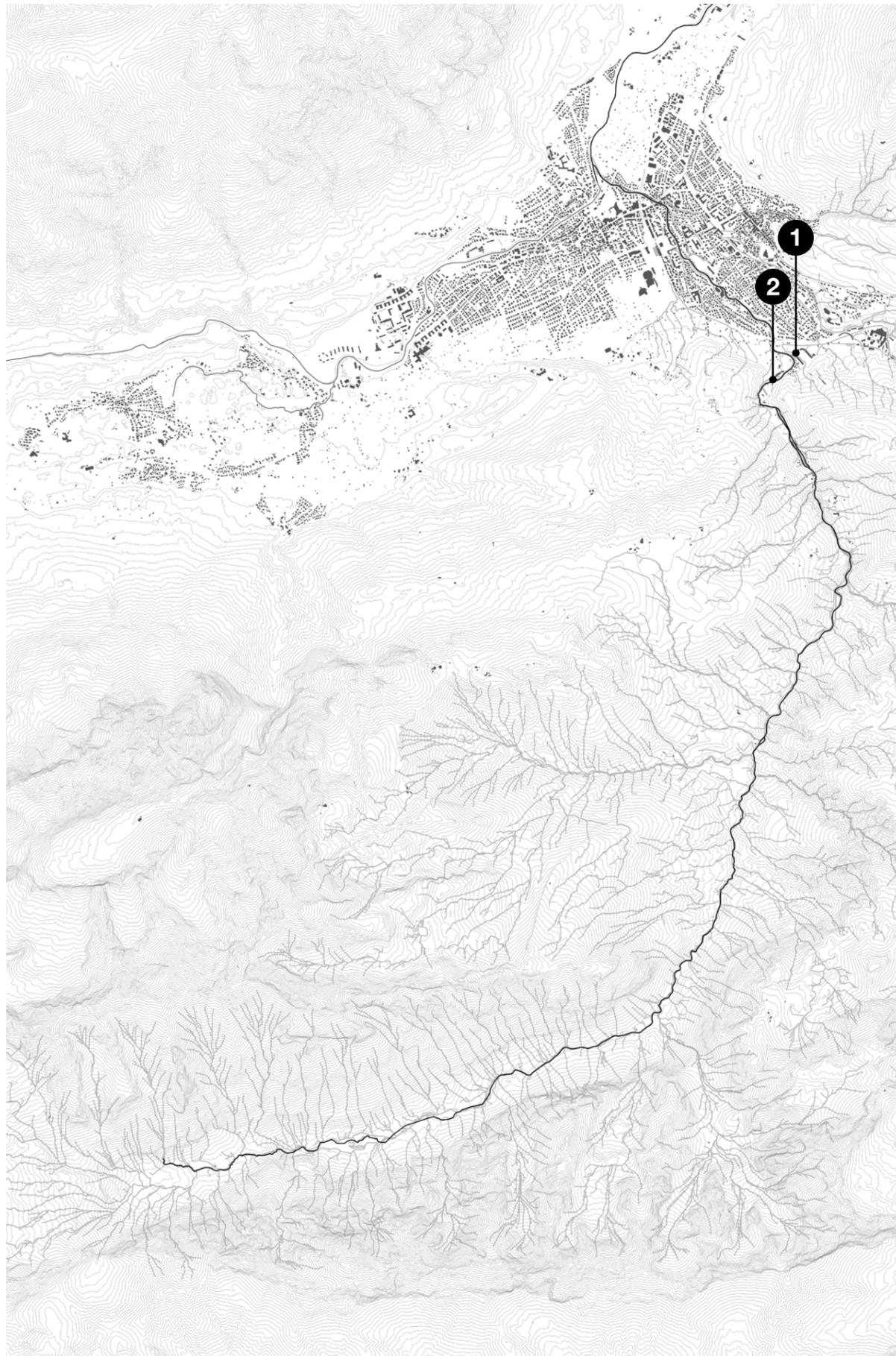
network of possible torrents during heavy rainfall

# *field journal*

The route of water defines the trajectory of eroded trees. All the torrents that form during heavy precipitation, shape a network of material transportation. The Partnach River serves as the main channel, continuously carrying water and debris. To understand the erosional patterns of wood in the mountain, I hike upwards, facing the movement of material downwards. The short encounters with the material are photographed and located in plane and height.



river Partnach and its supplying torrent network



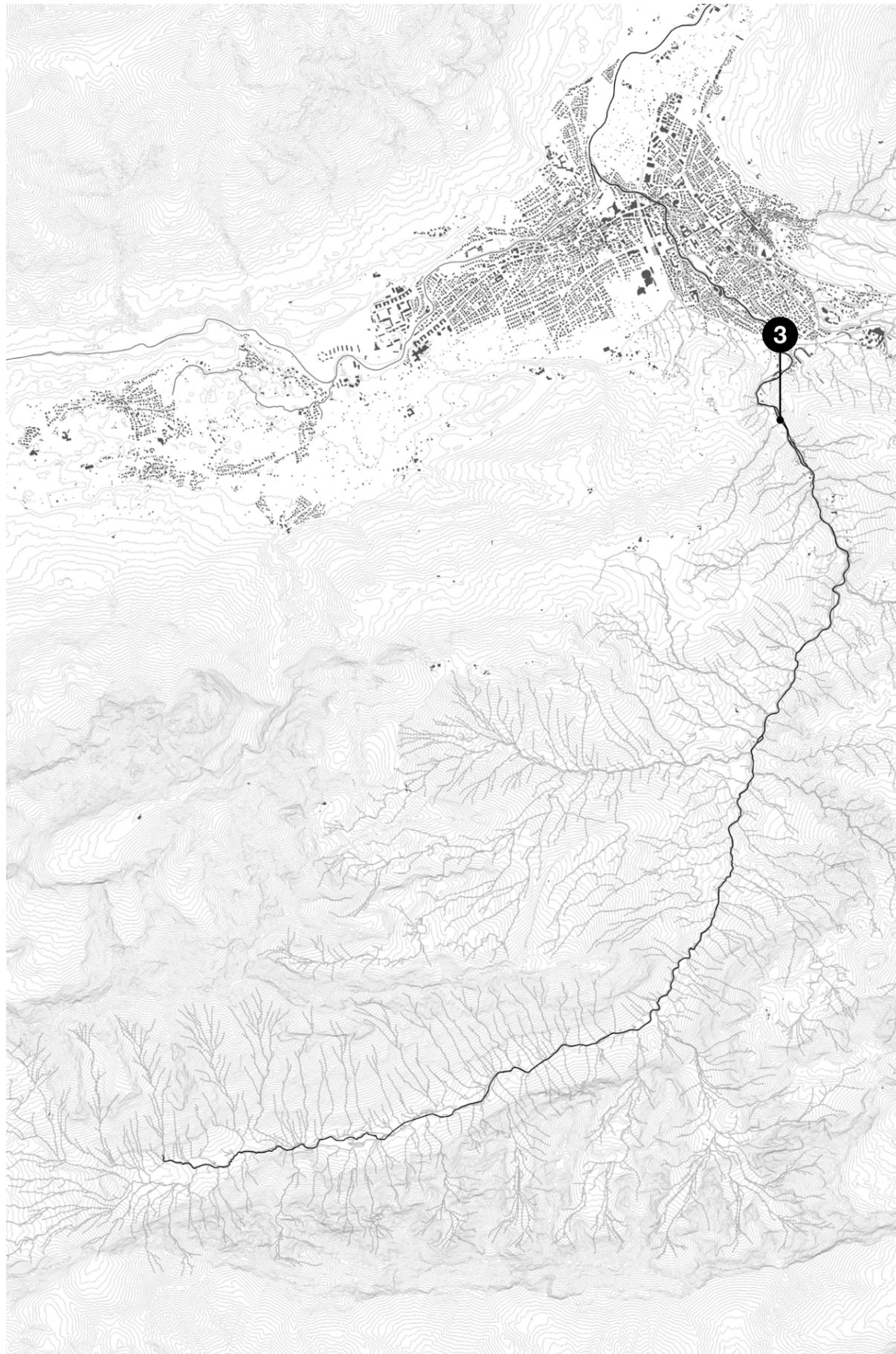
**Ski-jump and hay barns.** At the edge of Garmisch-Partenkirchen, two contrasting worlds meet. The ski jump, built for the 1936 Winter Olympics under the Nazi regime,<sup>1</sup> stands behind a traditional agricultural landscape of meadows and hay barns. These barns, constructed with stacked wood logs spaced to allow airflow, are designed to keep the hay dry.



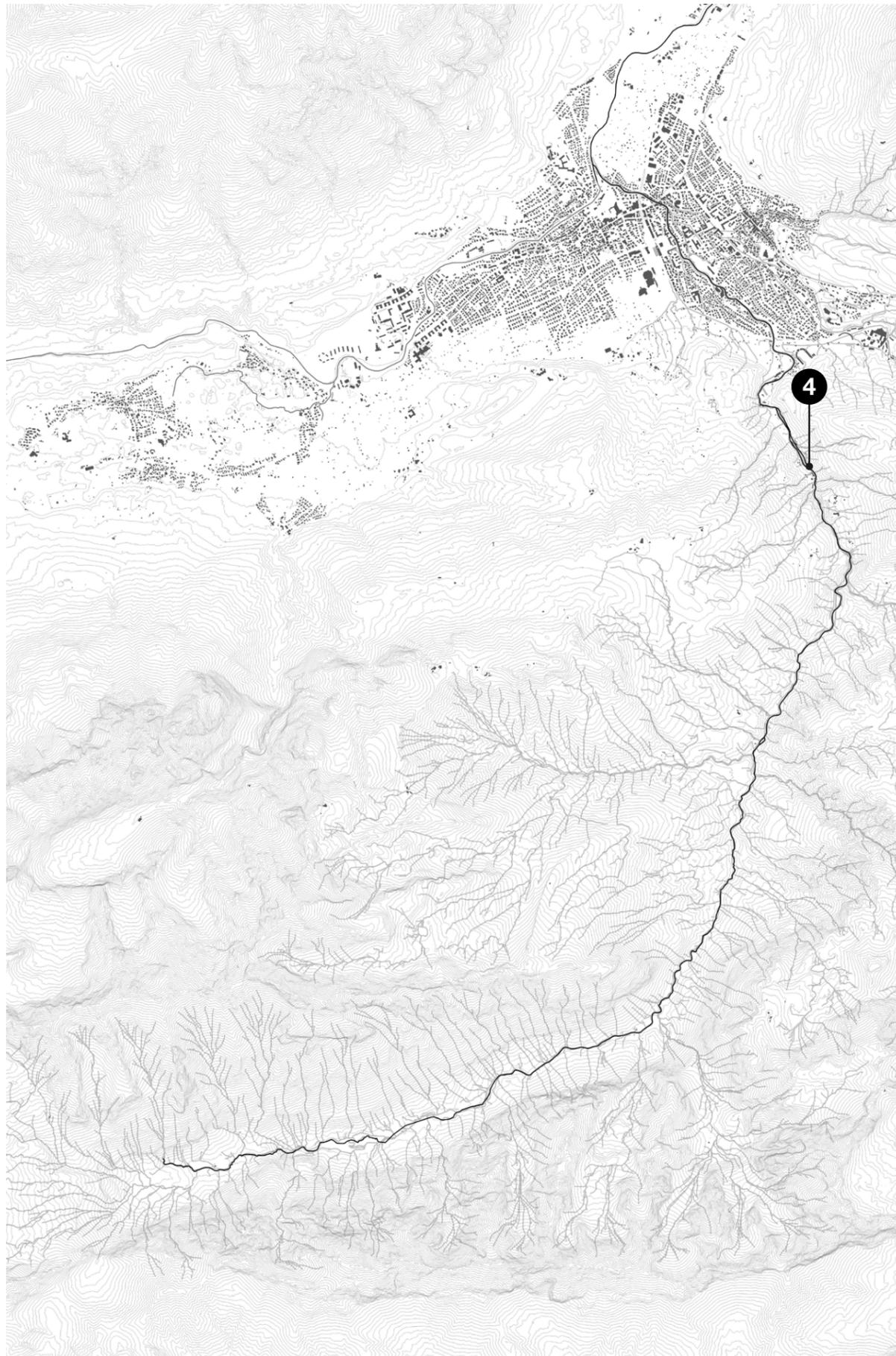
**Wood production.** Alongside the path, a wood-cutting facility stores its wooden planks neatly stacked in piles. Thin wooden spacers between the planks allow air circulation to prevent moisture buildup, while a metal cover protects the stacks from rain.

1 730 m  
2 750 m

1 Alois Schwarzmüller, 'Olympische Winterspiele, Garmisch-Partenkirchen 1936', Historisches Lexikon Bayerns, 27 November 2023, [https://www.historisches-lexikon-bayerns.de/Lexikon/Olympische\\_Winterspiele,\\_Garmisch-Partenkirchen\\_1936](https://www.historisches-lexikon-bayerns.de/Lexikon/Olympische_Winterspiele,_Garmisch-Partenkirchen_1936).

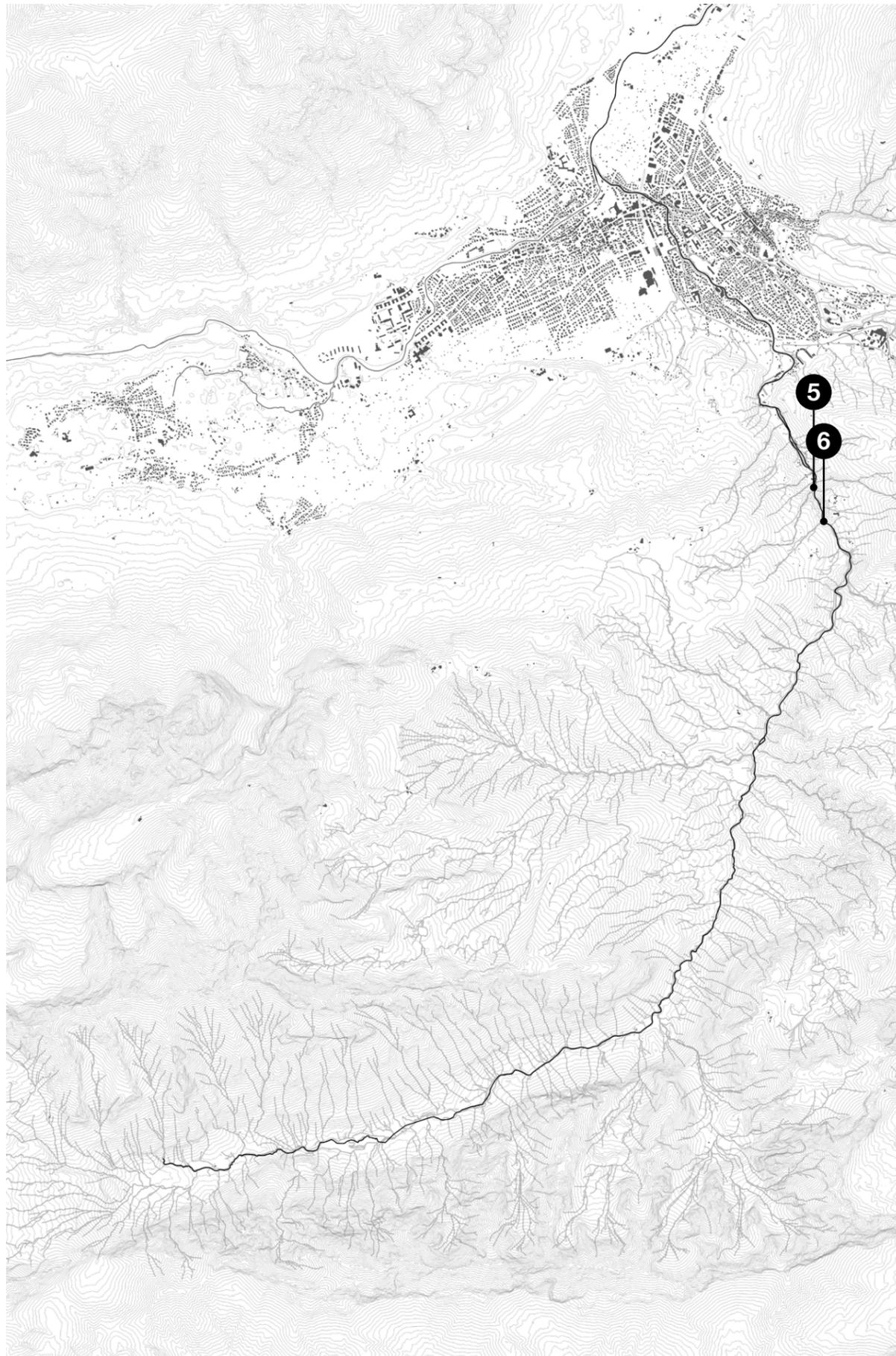


**Firewood stack.** While such a stack may seem ordinary, it is assembled with care and precision. The base is elevated to allow water to run off, preserving the wood. Though the pieces appear randomly stacked, the boundaries are clearly defined by wooden sticks driven into the ground. The gradient from fresh bright to weathered gray tells a story of time—of when material has been removed or added. A metal cover, secured with thin wire, protects the wood from rain. This carefully crafted structure reflects both a rationality and the inherent properties of the material

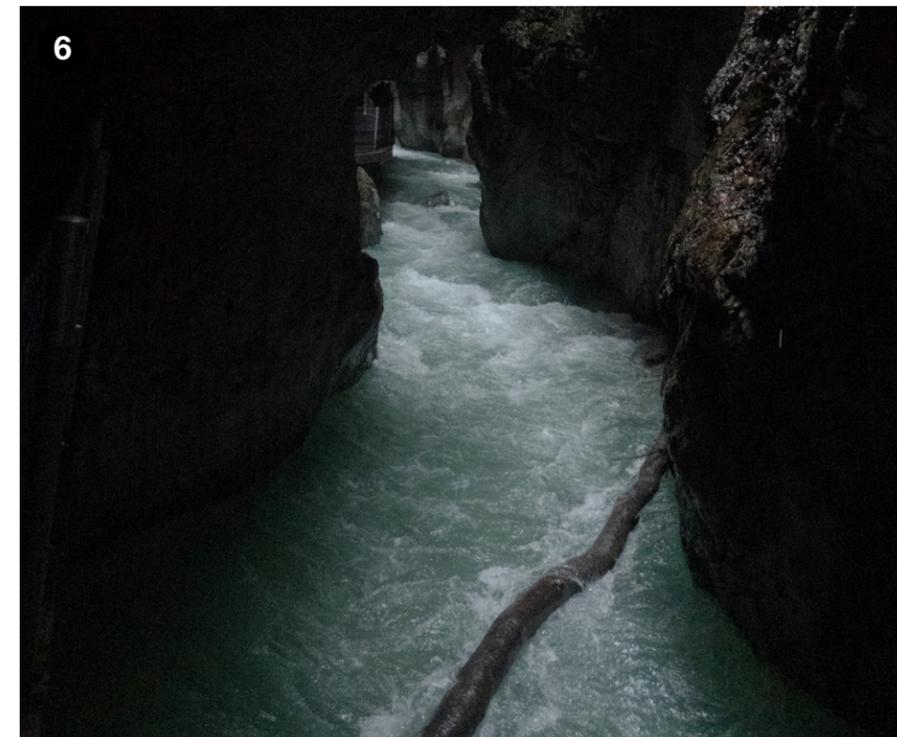
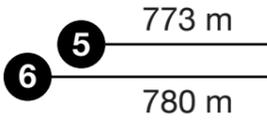


**Woodlog stack.** This building serves as the ticket booth for visitors to the Partnach-klamm, a narrow gorge carved by the Partnach River. Its construction of wood logs reflects the rugged mountain location. Historically, the Partnachklamm played a vital role in transporting timber from the mountains to the valley. The building's single-pitched roof is designed to withstand avalanches and rockfall that are common in this area. But also, the Partnach River's power is not to be underestimated. During heavy rainfall, it becomes a destructive force. After the June 2018 floods, a local news-paper reported: "The entire entrance area beyond the ticket booth has broken off, railings have been torn away, and the narrow paths are filled with tree trunks."<sup>2</sup>

<sup>2</sup> 'Eingang Kom-  
plett Weggerissen:  
Unwetter Hinterlässt  
Immense Schäden',  
Münchner Merkur, 13  
June 2018, [https://  
www.merkur.de/loka-  
les/garmisch-parten-  
kirchen/garmisch-par-  
tenkirchen-ort28711/  
eingang-komplett-  
weggerissen-un-  
wetter-hinterlaesst-  
immense-schae-  
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klamm-9949346.html](https://www.merkur.de/lokales/garmisch-partenkirchen/garmisch-partenkirchen-ort28711/eingang-komplett-weggerissen-unwetter-hinterlaesst-immense-schaeden-in-partnachklamm-9949346.html).

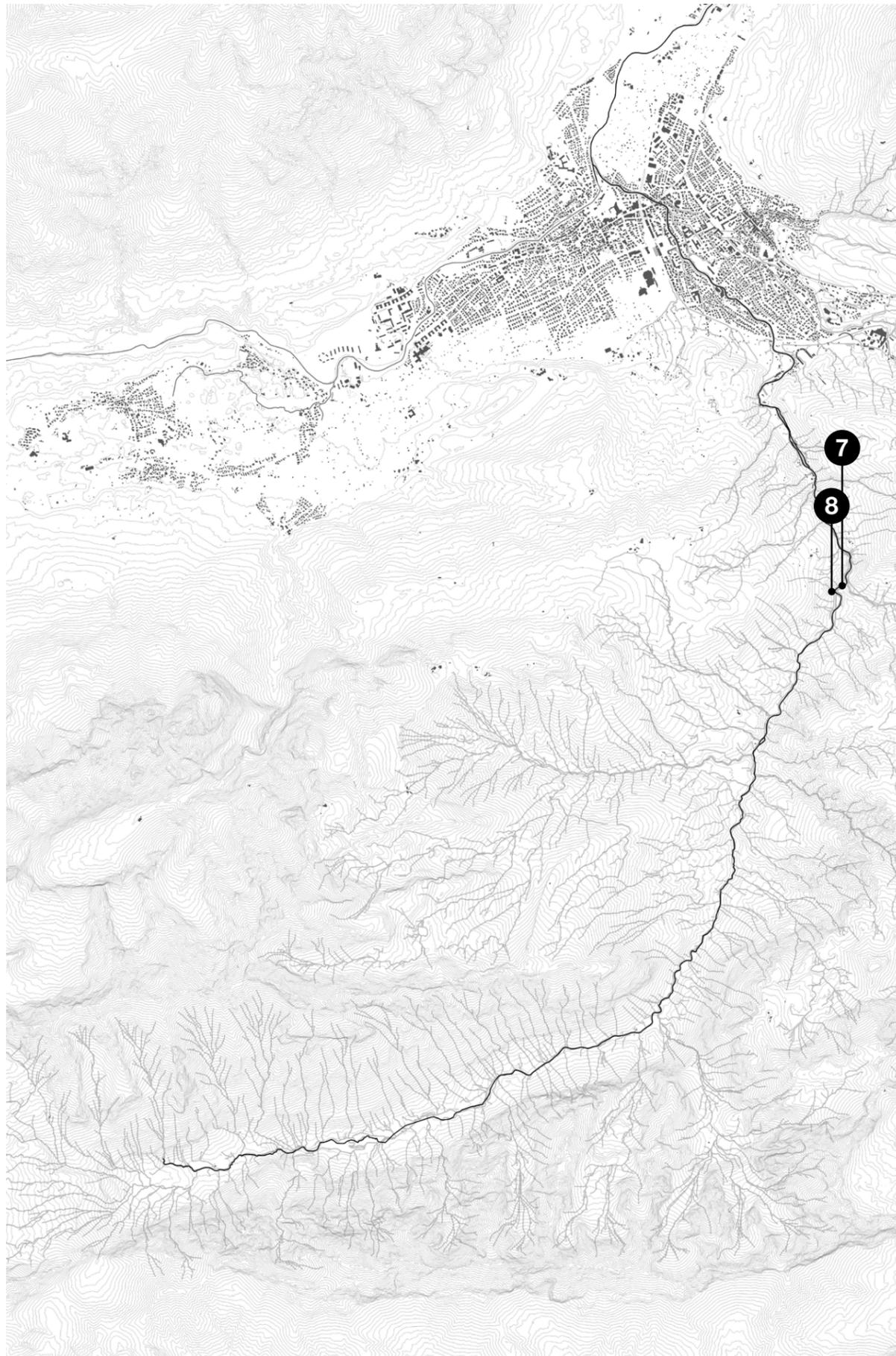


**Driftwood.** The narrow Partnachklamm accelerates the water running through it in a loud soundscape. Wooden logs coming from eroded trees of the mountain are transported through it.



**Log jam.** If bigger logs accumulate, there is a high risk for a log jam which if it breaks releases the dammed up water all at once. This can lead to high damages to infrastructure below the jam. As the gorge is a tourist hotspot it is checked regularly and the entrance is controlled

3 Johannes Hübl, 'Machbarkeitsstudie Zur Wildholzbewirtschaftung Am Ferchenbach, Garmisch-Partenkirchen', IAN (Vienna: University of Natural Resources and Life Sciences, January 2019), 28.

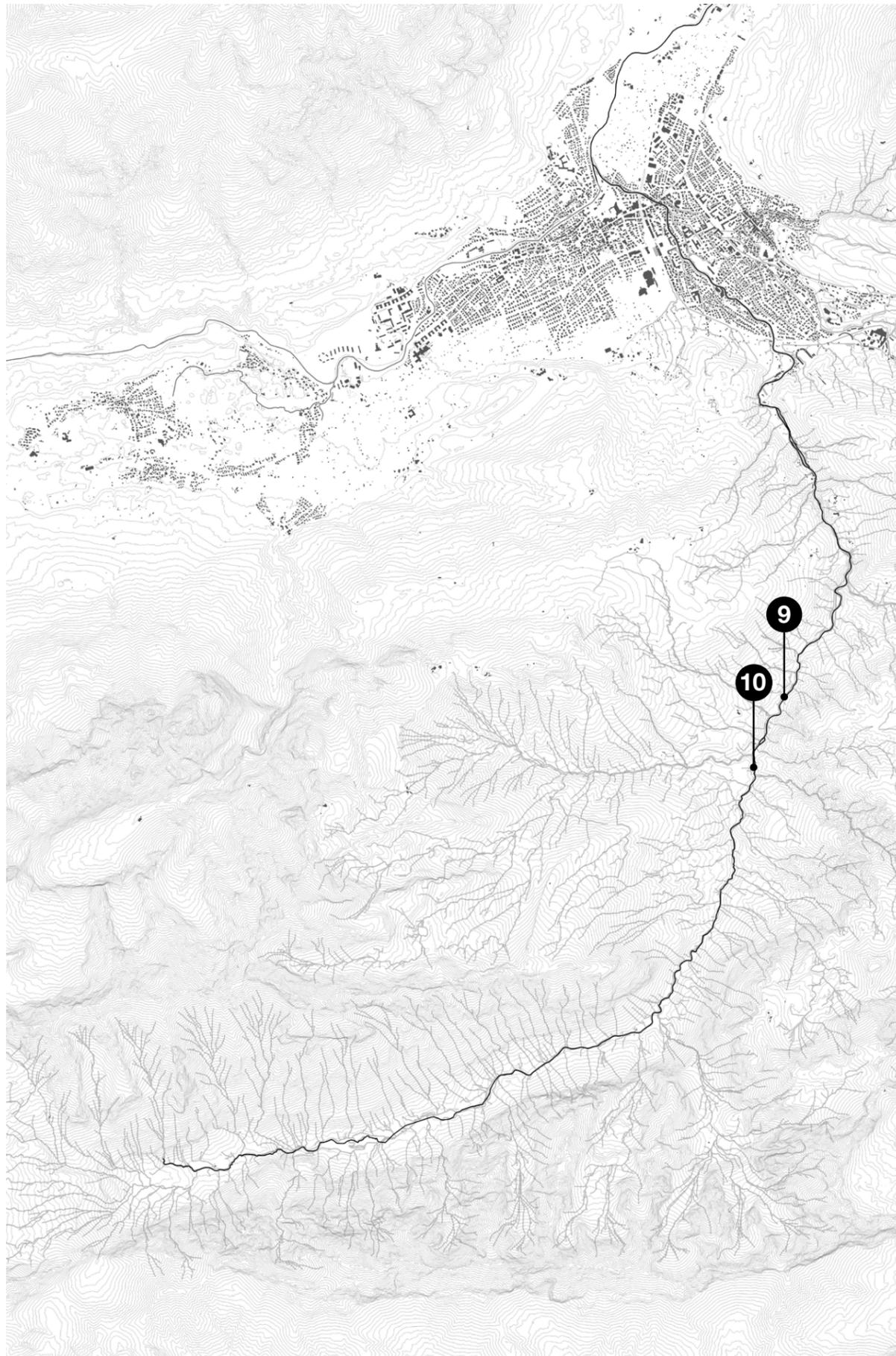


**Wood dump.** Right after the Partnachklamm piles of wood are found. Some of the logs are regularly, some irregularly shaped.

8 7 804 m  
806 m



**Sorting.** A few meters further a woodworker is sorting the dumped wood into stacks next to the path. When asked about the wood's origin, he explains that it was retrieved from the river after sliding down the slopes. He adds that this is the second time this year such a large amount of wood had to be removed.



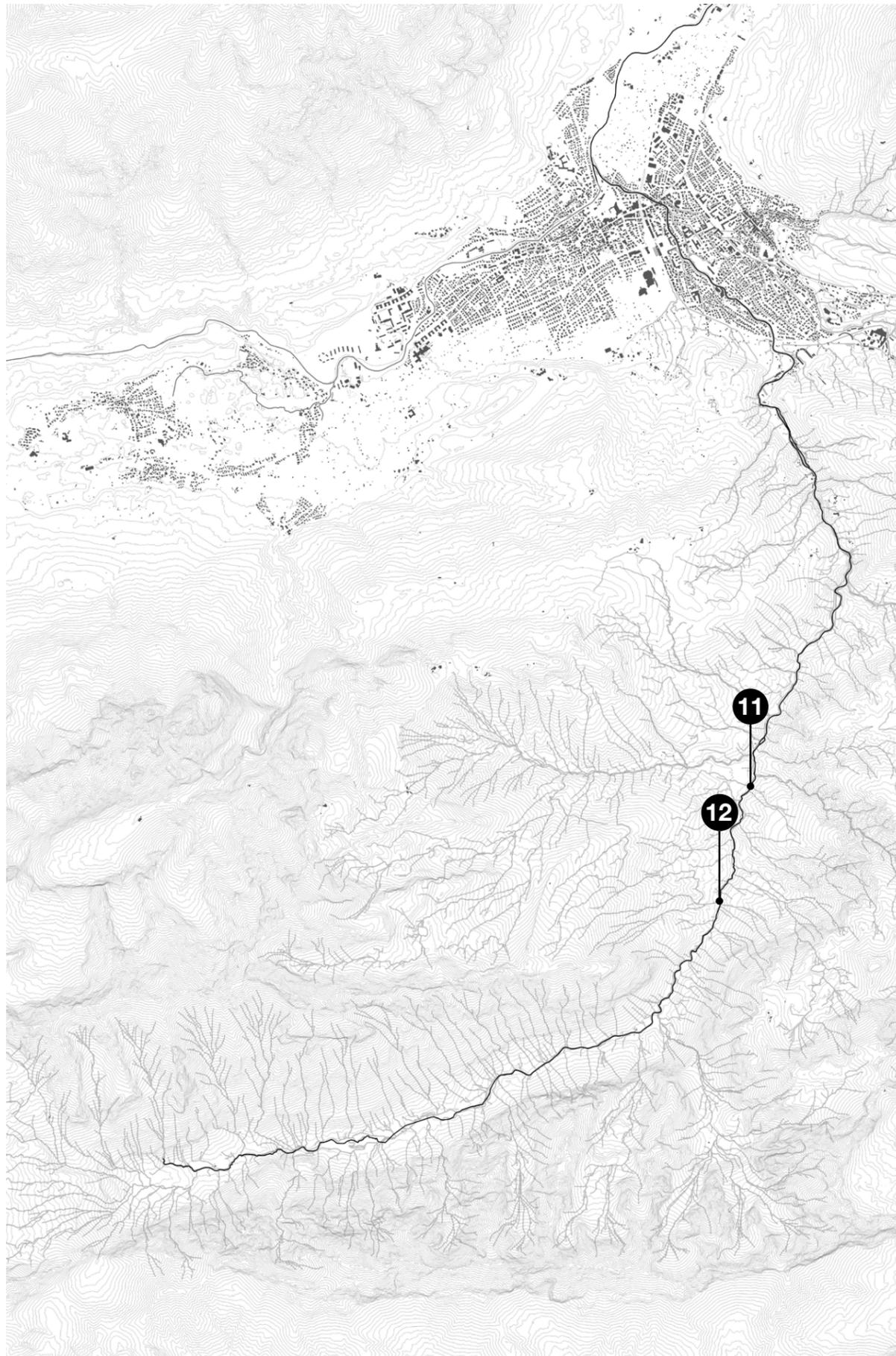
9 832 m

10 864 m

**Traffic in the forest.** Following the path upstream, there is a surprisingly high rate of truck traffic. An empty truck passes by, only to later return with a container filled with wood chips.



**Wood chips.** The wooden logs that are collected from the river are shredded and loaded into containers to be transported away.



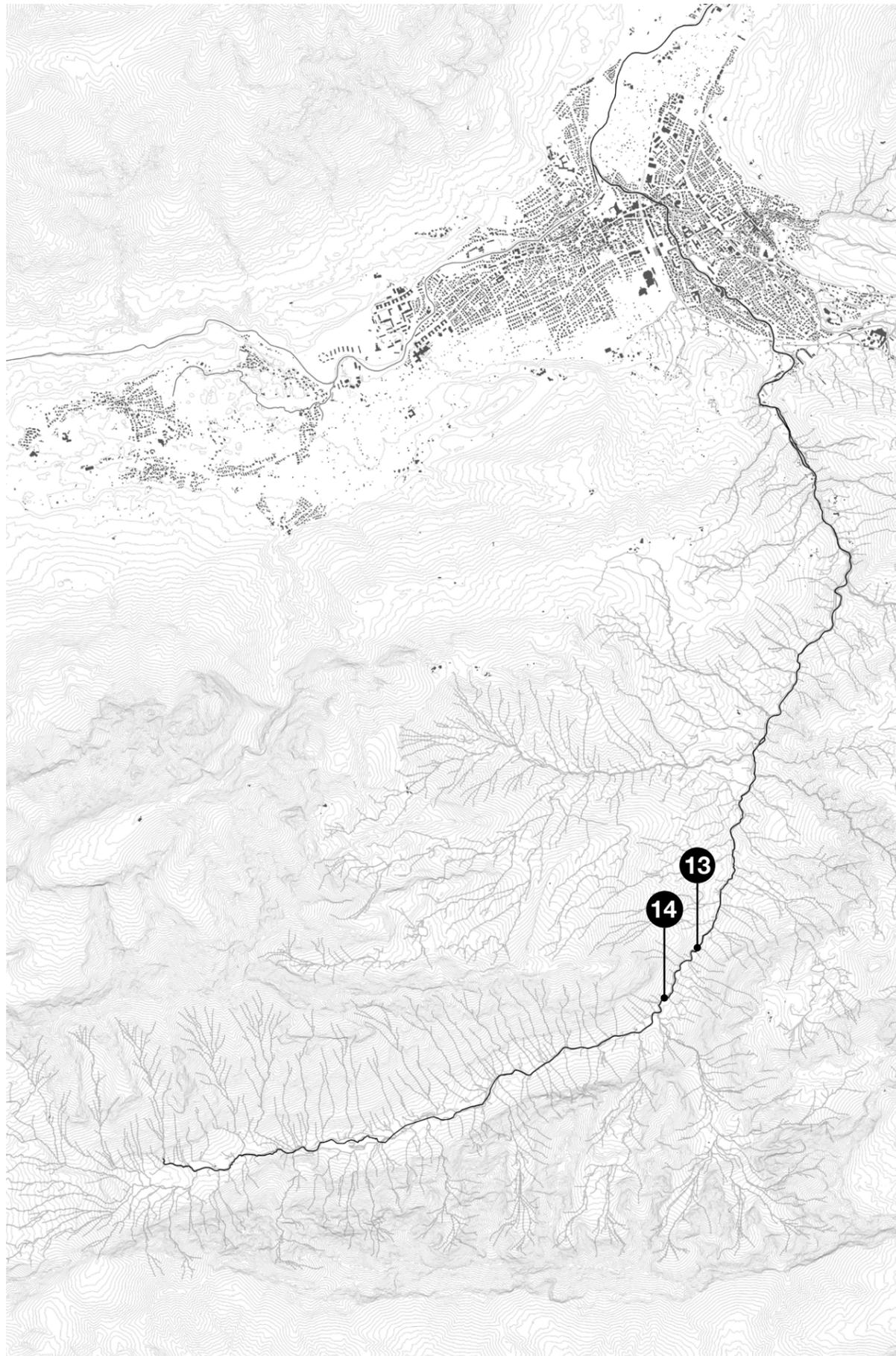
**Log bridge.** Wooden logs are used to bridge the Partnach River, allowing the path to continue on the other side.

11 877 m

12 998 m



**Path enforcement.** During heavy rainfall, debris flows of mud, stones and wood can damage sections of the hiking path, sweeping away material in its way. To maintain this crossing over an active channel, wooden logs sourced from the site are used to stabilize the path.



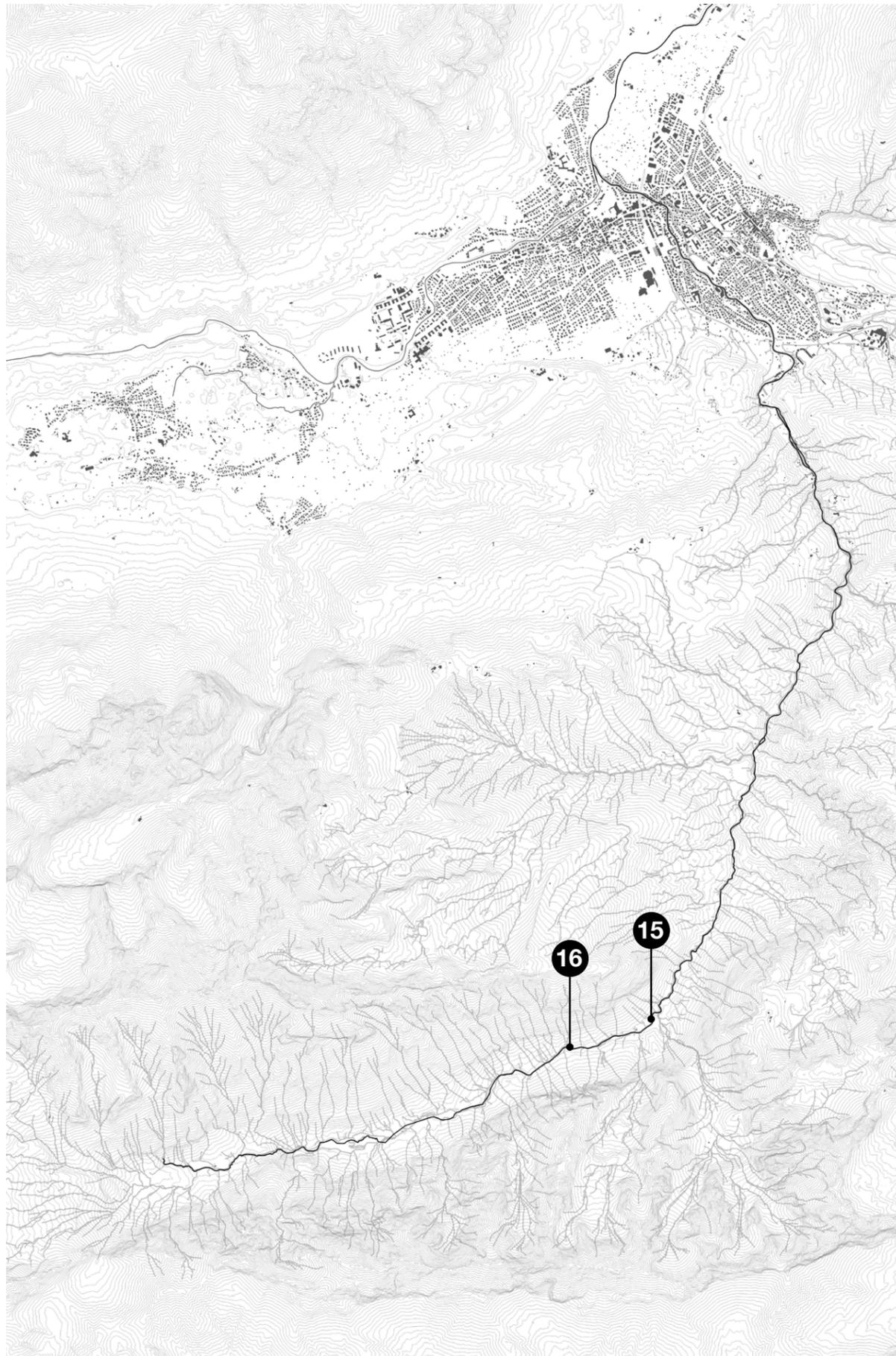
**Landslide.** The erosion of trees is closely tied to the ground they grow on. When an unstable slope collapses, the trees are washed downhill, eventually ending up in the river on the valley floor.

13 1.008 m

14 1.036 m



**Debris landscape.** During periods of high water flow, large amounts of wood are carried towards the valley and deposited along the way once the water level recedes. What remains is a characteristic, chaotic debris landscape - an integral part of the mountain environment, yet one rarely depicted in popular imagery.



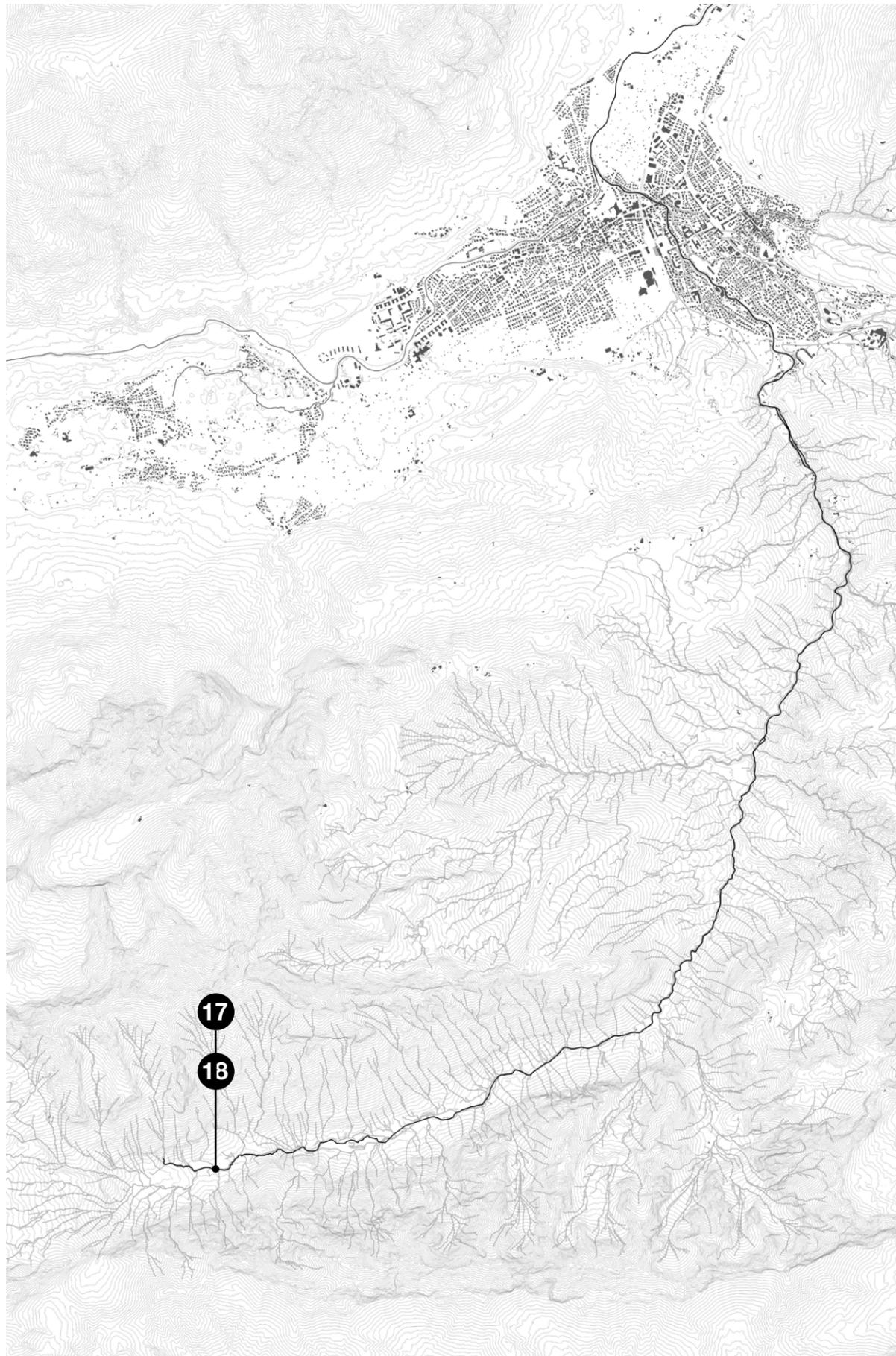
**Naturwald.** Most of the forest in this area lies within a natural reserve, where no harvesting or timber extraction takes place. Instead, the forest is left to degrade and regenerate naturally, following its own ecological processes.

15 1.067 m



**Falling Trees.** The ever-changing flow of the Partnach River interacts with the trees growing along its banks. Over time, the water erodes the soil around their roots, destabilizing them until they eventually collapse into the river.

16 1.175 m



**The Old Reintalanger Hut.** When Joseph Neuß became the first person to ascend the Zugspitze in 1820, he spent the night at this very spot. However, the hut we see today was built in 1881 by the German Alpine Club (DAV) as a traditional log cabin. The locally sourced wood and stone used for its construction reflect its natural surroundings.<sup>3</sup>

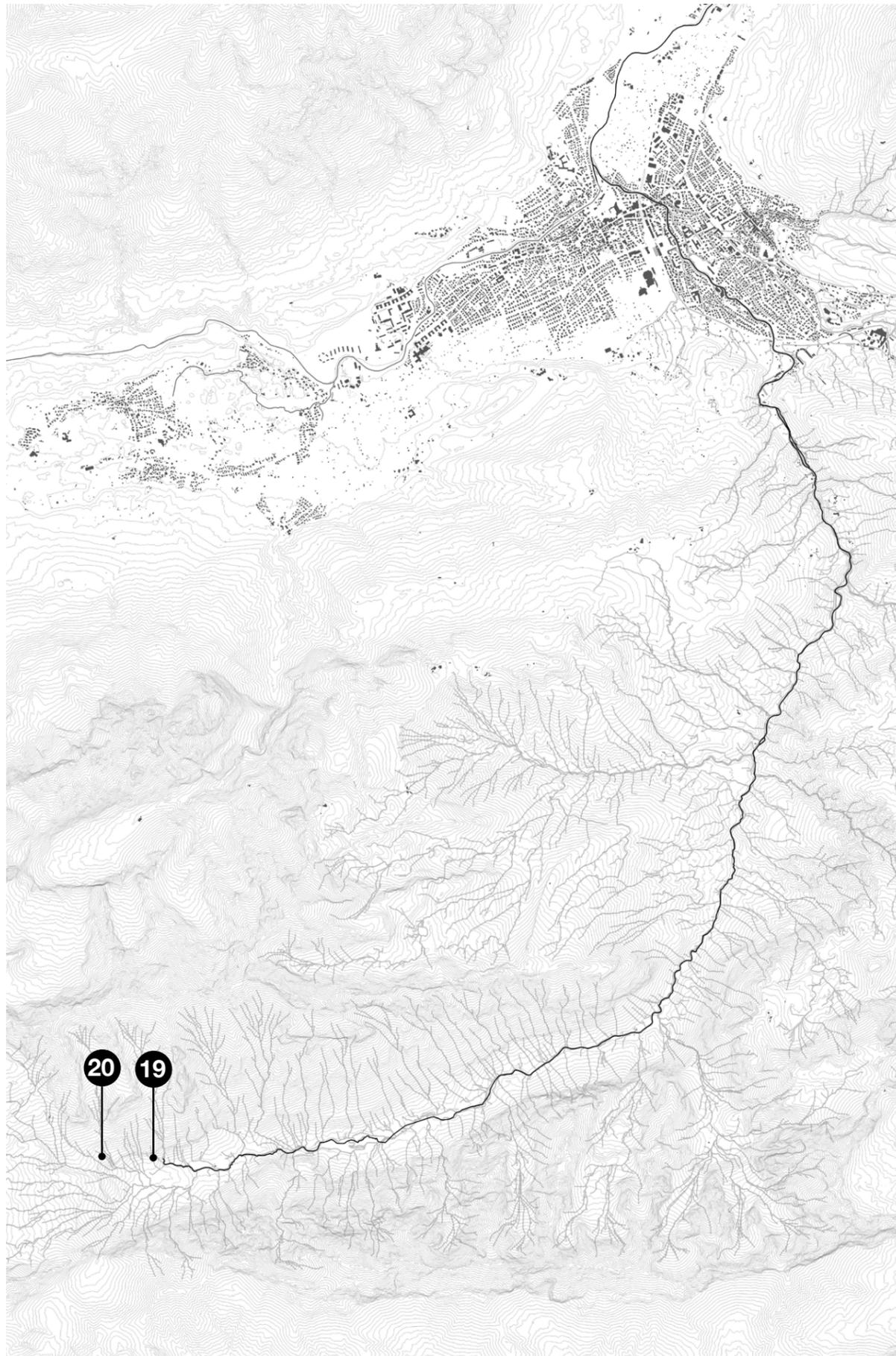


**The New Reintalanger Hut.** Located next to the old hut, the New Reintalanger Hut was built in 1912. As the number of ascents to the Zugspitze surged in the early 20th century, a larger hut with a stone base and wooden shingle façade was constructed to accommodate the growing influx of hikers.<sup>4</sup> Today, the old hut serves as an emergency shelter for hikers like myself, who venture off-season to take on the journey.

4 'Die Geschichte Der Reintalangerhütte', Deutscher Alpenverein München und Oberland, accessed 17 January 2025, <https://www.alpenverein-muenchen-oberland.de/reintalangerhuetten/geschichte>.

5 Ibid.

16-17 1.369 m



**19**  
**Protection Forest.** In the dynamic interplay of erosion, the forest plays a crucial role. Tree roots stabilize the soil, while the forest canopy protects it from direct rainfall, reducing surface erosion. In alpine regions, protection forests also help to buffer avalanches and rockfall, which is why they are an integral safety measurement close to human settlements.



**20**  
**Tree Line.** Just before the final ascent to the Zugspitze plateau, the last trees come into view. Beyond this point, only hardy pine scrub can survive the harsh conditions. However, with the changing climate and rising temperatures, this tree line is gradually shifting higher, altering the alpine ecosystem and redefining the natural boundary between forest and scrubland.

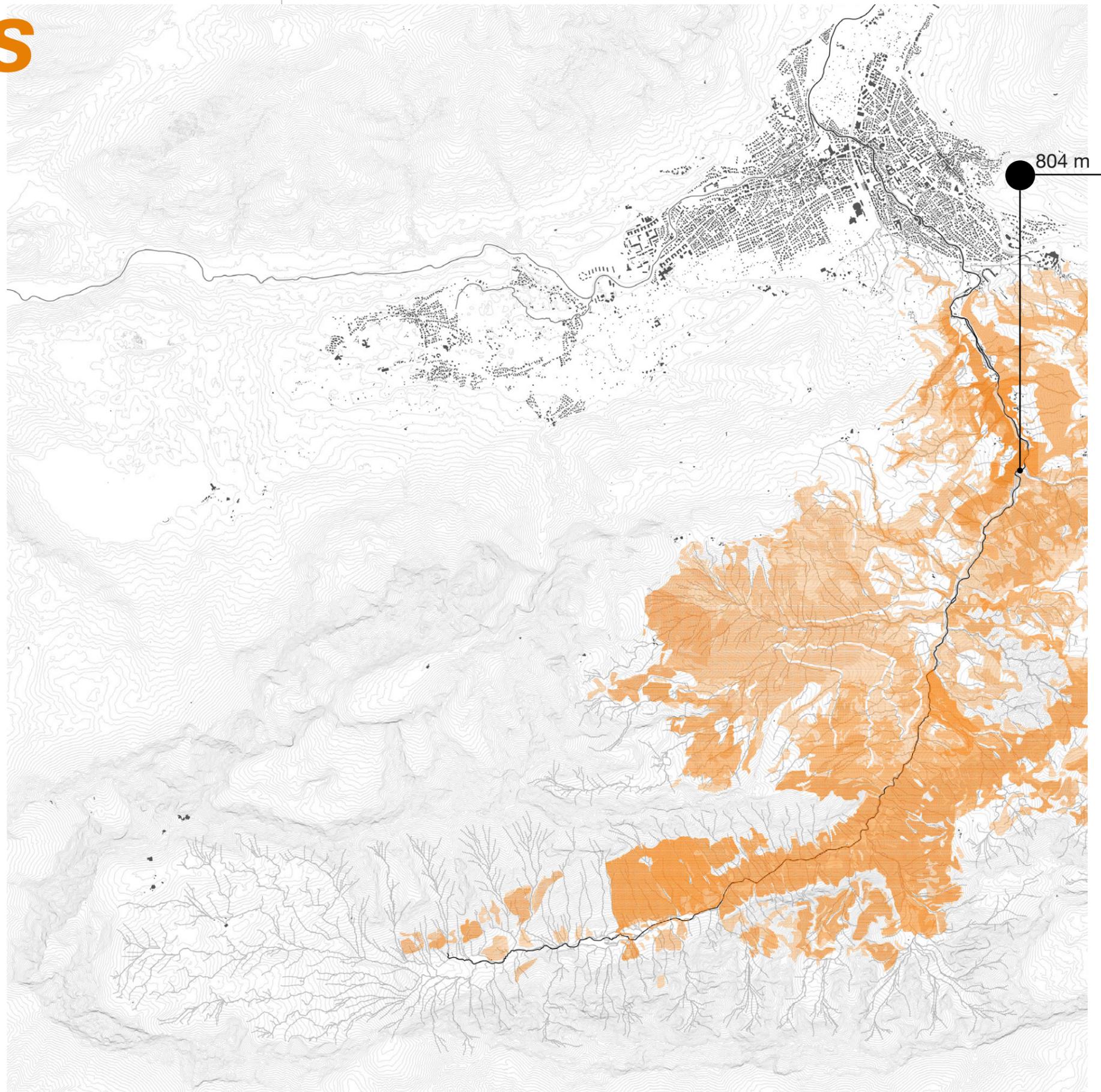
**19** 1.416 m  
**20** 1.510 m

# conclusions

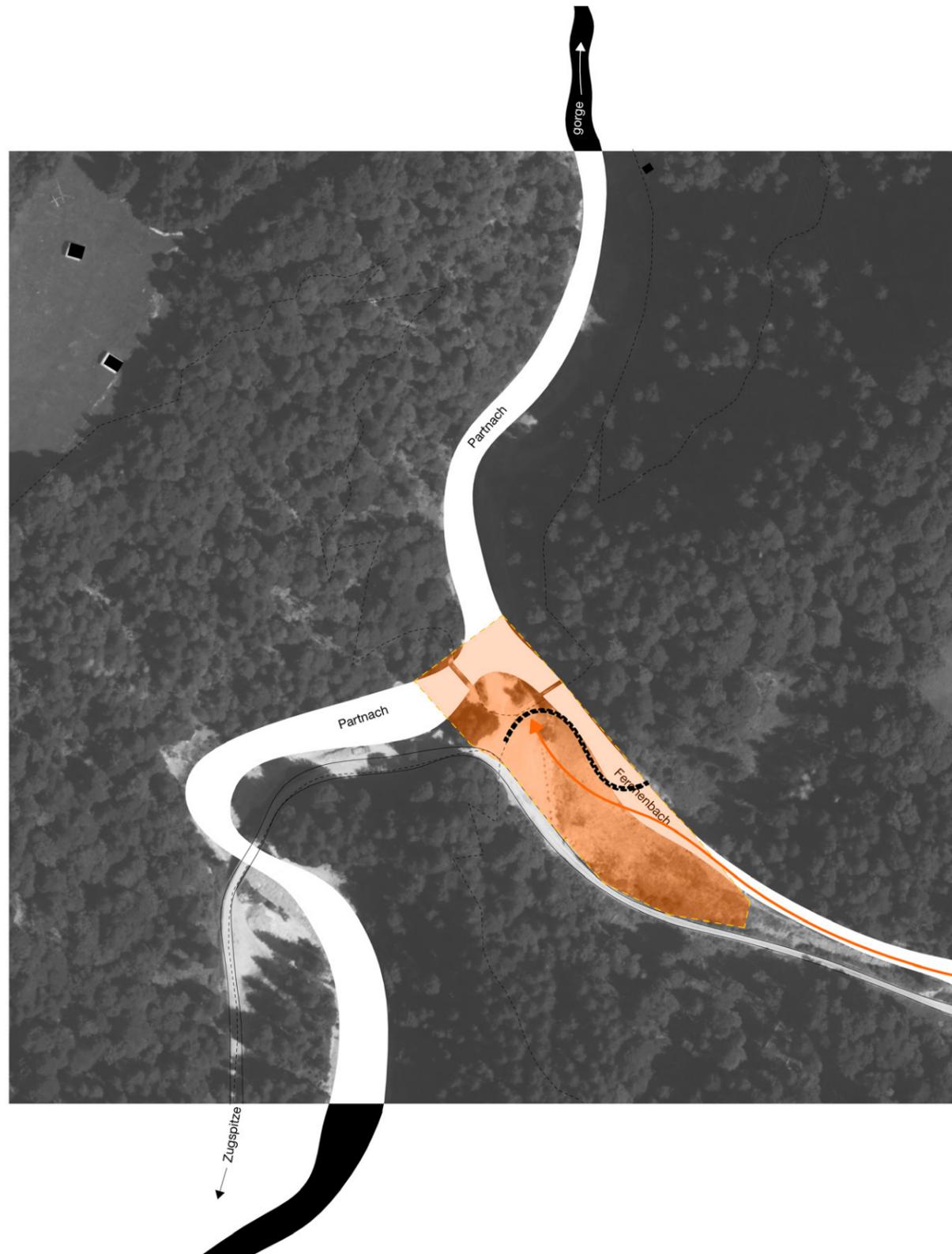
From the treeline downward, trees are subject to natural erosion, often weakened by water carving into their roots or swept into the valley by the River Partnach during landslides. In the remote, higher altitudes, tree logs find purpose in stabilising trails, constructing bridges or mountain huts.

However, as the landscape descends toward the town and visitor numbers rise, the driftwood carried by the mountain river during heavy rainfall poses increasing risks to public safety and infrastructure. To address this, a new driftwood rake is being constructed at 804 meters above sea level, just before the river enters the gorge. Its goal is to intercept hazardous logs before they reach inhabited areas, marking a key intervention where natural processes meet human management.

From this point down to the town of Garmisch-Partenkirchen, the landscape is shaped by productive forestry, which keeps the forests young and robust. Wood production here also creates a functional landscape of wood storage, from traditional log piles to sawn timber left to dry.



forests in the catchment area of river Partnach



**Driftwood management.** While trees provide critical protection against soil erosion, avalanches, and rockfall, they become vulnerable during periods of heavy rainfall. Collapsing soil and washed-out roots cause trees to fall and be swept toward the valley floor, where they are carried by rivers to the city of Garmisch-Partenkirchen. The narrow Partnach Gorge, located just before the city, plays a vital role in managing this driftwood. Logs can become trapped between the steep, narrow rock walls of the gorge, creating blockages that dam the water and pose a significant risk of flooding from sudden outbursts.

Given that the Partnach Gorge welcomes over 200,000 visitors annually, this type of risk is deemed unacceptable. Prevention efforts focus on the constant maintenance of the riverbed before the gorge, particularly at the confluence of the Ferchenbach and Partnach rivers, where two powerful mountain torrents meet. After the severe storms of 2018, which resulted in the tragic death of a visitor and the destruction of path infrastructure, new efforts have been prioritized to keep the river clear of driftwood. As part of this initiative, local water management authorities have proposed the construction of a wood rake in the Ferchenbach River to reduce the volume of driftwood, especially during periods of heavy rainfall.



**Under construction.** During the field trip, ongoing construction activity was observed, indicating that the plans are already being implemented. Due to the challenging accessibility of the site, construction efforts involve temporary installations of bridges and roads to facilitate the process (see image above).

The location is highly frequented, serving as a destination for many tourists who visit the gorge as well as hikers heading to the summit of the Zugspitze.

