

RAILWAY LINE STAINACH - ATTNANG, LANDSLIDE STABILISATION KOPPEN STREET

Client: Austrian Railways Infrastructure AG

Development Period: 2009 to 2016

THE PROJECT

The Austrian Railway line Stainach-Irdning - Attnang-Puchheim is situated between Bad Aussee (Styria) and Obertraun (Upper Austria) at the slope toe of mount Koppen in immediate vicinity to the *Koppentraun* river. At km 30.8, mass slides have been observed for a long time at the slope ascending from the railway track. These mass movements led to considerable cracks and vertical displacements at the provincial road L 701, which is located 50 m above the railway line.

In order to assess the causes for the mass movements and for the observation and evaluation of the displacement behaviour, comprehensive geological mapping and underground investigations have been carried out and several inclinometers installed. Because of the recorded consistent creeping deformations and repeatedly observed abrupt increase of displacements, a high risk with regard to sudden, large-scale slope instabilities existed. In order to ensure a safe operation of the railway line, measures for the stabilisation of the sliding slope have been worked out.

The measures were implemented in the years 2015 to 2016.

OUR FUNCTION

The scope of work of BGG Consult comprised first the planning, supervision and evaluation of several investigation campaigns and inclinometer measurements. Resulting from the explorations and measurements, the hazard potential was assessed and presented in geotechnical expert's reports. Based on comprehensive stability analyses, proposals for the stabilisation measures were worked out. During the realisation, the works were supervised from a geotechnical perspective.

Concept for the stabilisation:

The sliding mass extends over a width of up to 180 m and holds a depth of up to 20 m. The slipping mechanism can be described as several, partly deep reaching, combined rotational slides. The technically and economically best stabilisation option was considered as a large-scale excavation at the upper part of the slide body, with the effect of a load relief at the head area. Additionally, the surface has been remodelled in order to improve the drainage situation. The excavated material was used for the upgrade of an existing avalanche barrier in the vicinity of the slide. Thus, the transport and dumping costs could be reduced significantly.



Sliding area after completion of the stabilisation works