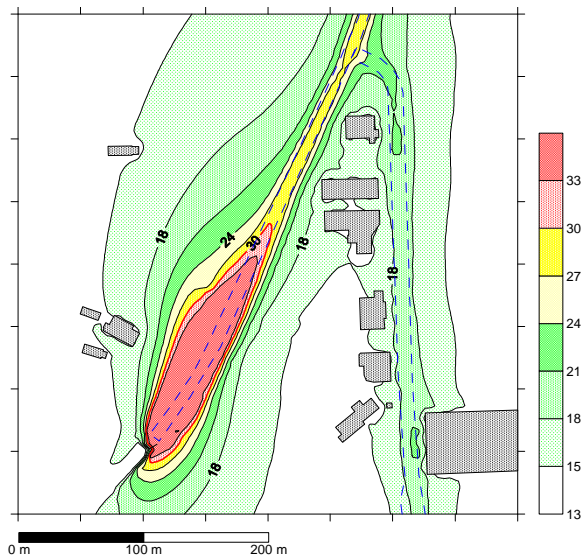


Schematic of smoke exhaust ventilation station



Location of northern tunnel portal, 2012



2020 annual mean of NO₂-concentration at the northern tunnel portal

Description

The Wiggis Tunnel in Netstal GL is designed as a 2'375 m long tunnel for bi-directional traffic. It will be equipped with longitudinal ventilation for normal operation and local smoke extraction in the case of emergency. The cable tunnel underneath the road surface will also serve as escape tunnel. It will be connected to the carriageway by staircases at regular intervals.

In case of emergency, the system reaction is fully automatic. If a stationary fire is detected, three smoke dampers in the false ceiling are opened. The smoke is extracted through the overhead exhaust duct. The exhaust fans are selected to extract a total flow rate of 250 m³/s. Jet fans are used in order to control the longitudinal flow in the tunnel.

The project has a strong impact on the pollution along the existing main road and in the vicinity of the tunnel portals. Especially residents living close to the main road may expect a considerable reduction in pollution levels.

At the tunnel portals, there are no residents exposed to pollution levels exceeding the air quality limits defined by the Swiss federal authorities. It is not recommended to use the ventilation to improve air quality. This would require vast amounts of energy without significant improvements for residents.

Services

- Assessment and sizing of the ventilation system for all tunnel alternatives
- Tunnel Ventilation Concept Design for Normal- and Emergency Ventilation
- Escape Tunnel Ventilation: Concept Design for Normal- and Emergency Ventilation
- Concept Design Documentation
- Air dispersion calculation of the PM10- and NO₂-concentration in the vicinity of the northern tunnel portal
- Documentation for the Environmental Impact Study on Air Quality