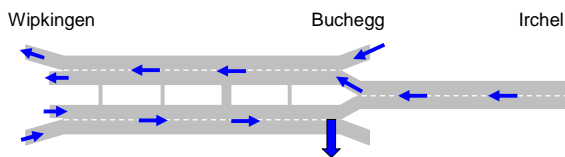
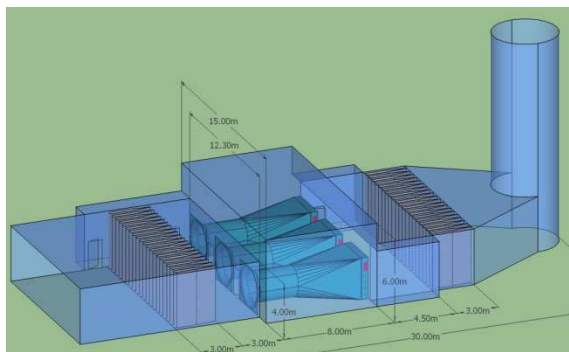


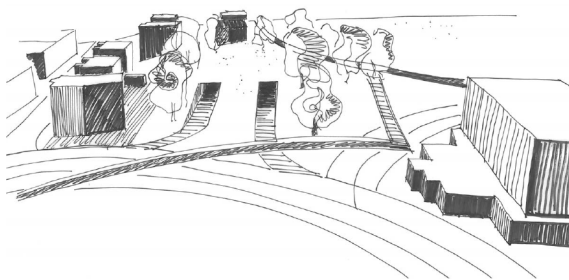
Driven tunnel profile with exhaust duct and jet fans



Normal ventilation schematic – section-wise longitudinal ventilation with point exhaust at Buchegg



Required space for main ventilation station



Visualisation of portal situation at Buchegg (option)

Description

Following an initial study of different traffic concepts, it was recommended to investigate the tunnel option „Rosengarten Tunnel 2x2“ to more detail. In order to reduce design risk and to assess investment costs, the study has been developed to further detail, e.g. with regard to environmental impact, ventilation and safety of this 2.3 km long urban tunnel network.

For normal operation, the tunnel ventilation will be based on a section-wise longitudinal concept. At the Wipkingen portal, an anti-recirculation wall has been added in order to separate the two parallel tubes. At Buchegg, a point extraction will operate continuously in order to separate the tunnel sections aerodynamically. Also, the extraction will reduce the environmental impact. A major part of tunnel emissions will be removed from the tunnel and dispersed in the atmosphere.

For smoke control during an emergency, the tunnel will be equipped with a local smoke extraction using remote controlled dampers in the false ceiling. In all tunnel sections, jet fans will be installed for control of longitudinal air flow in the tunnel sections.

Services

In the feasibility study for the Rosengarten-tunnel, HBI Haerter Consulting Engineers delivered the following services:

- Draft and comparison of three options for the tunnel ventilation concept for normal and emergency operation
- Estimate of the requirements for measures to reduce the impact of dispersed tunnel air on air quality in the vicinity of the portals, definition of measures to the ventilation system
- Concept of tunnel ventilation operation
- Tunnel Ventilation Concept Design
- Ventilation equipment schedule
- Definition of interfaces between ventilation and civil design
- Definition of space requirement for the fan building and the M+E substations
- Cost estimate for tunnel ventilation and M+E installations