

# FAVEO®

## PROJEKTLEDNING



# SLUSSEN- A COMPLEX UNDERGROUND FACILITY

BO WAHLSTRÖM

# The Slussen project

- Short introduction to the project
- General Fire Safety strategies
- Presentation of each part and the challenges and solutions within Fire Safety

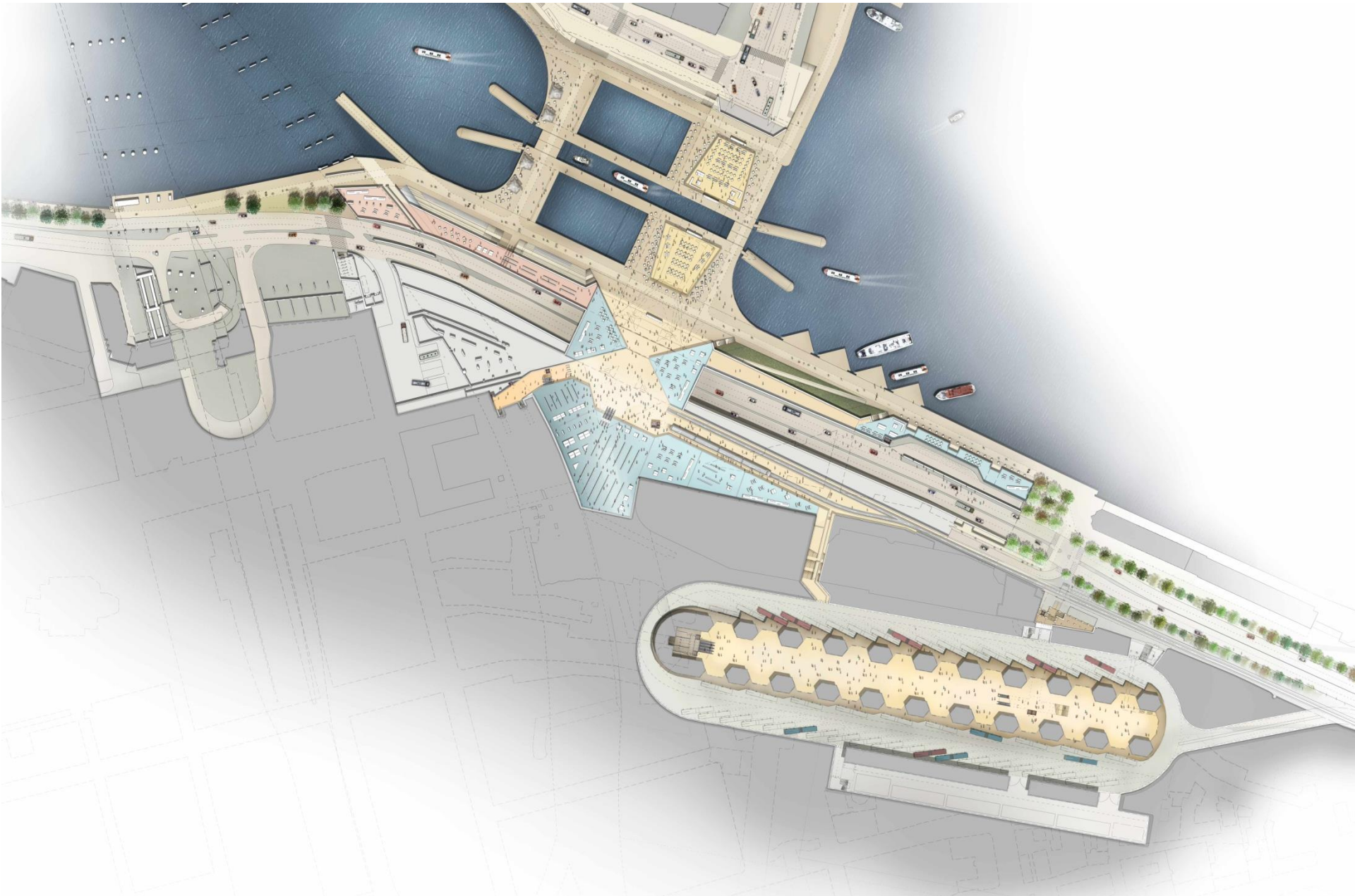


# Introduction

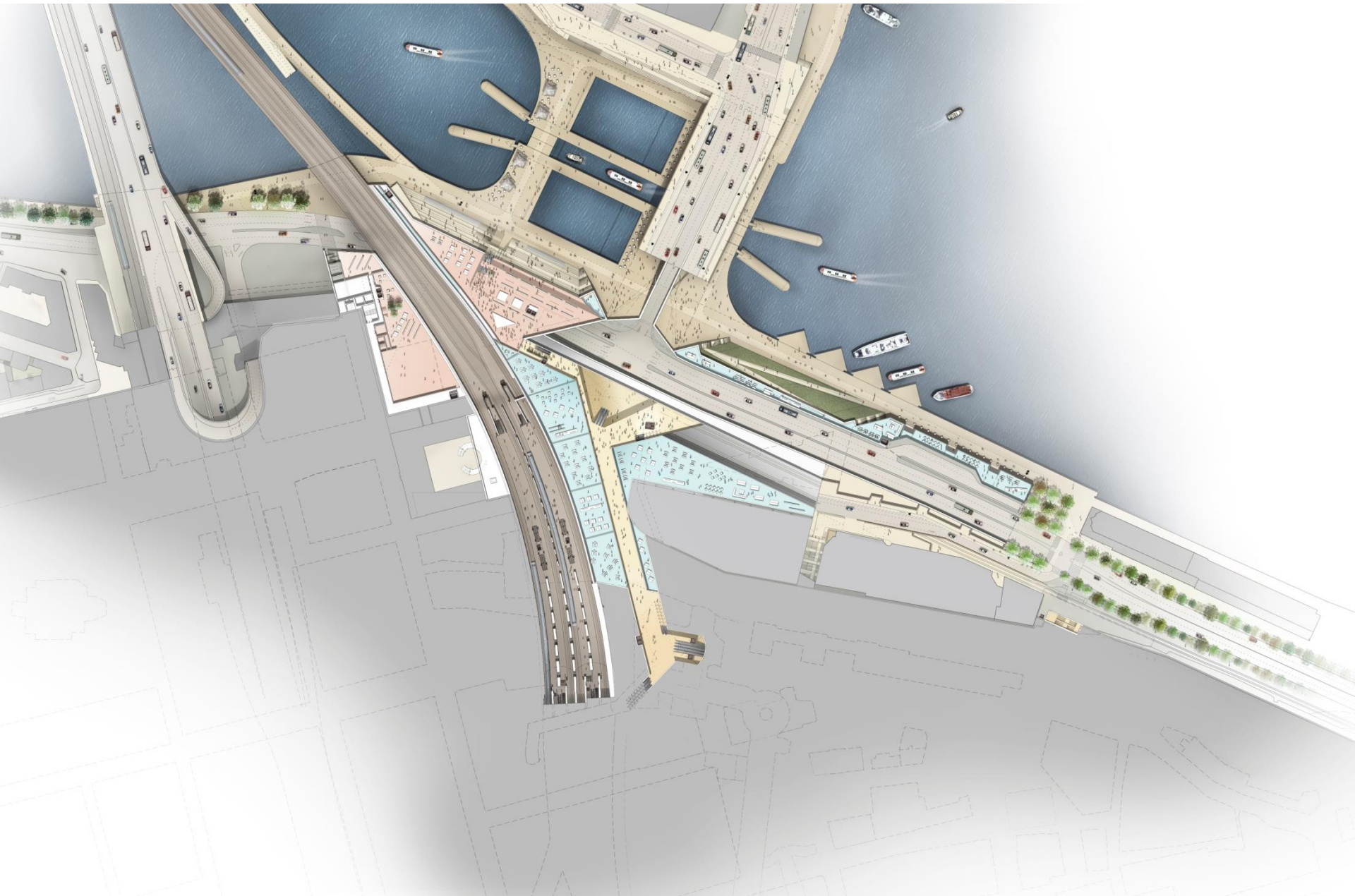


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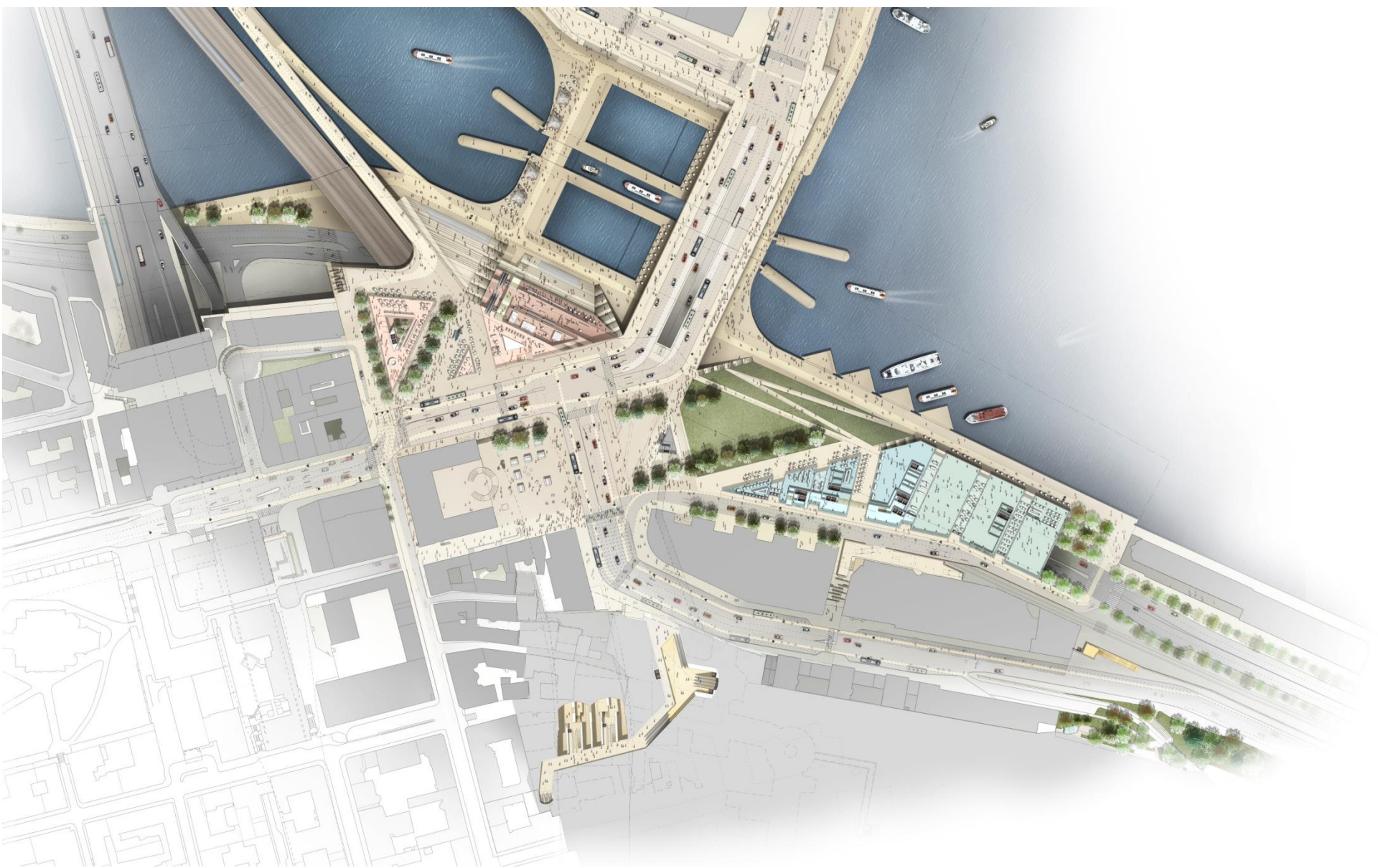


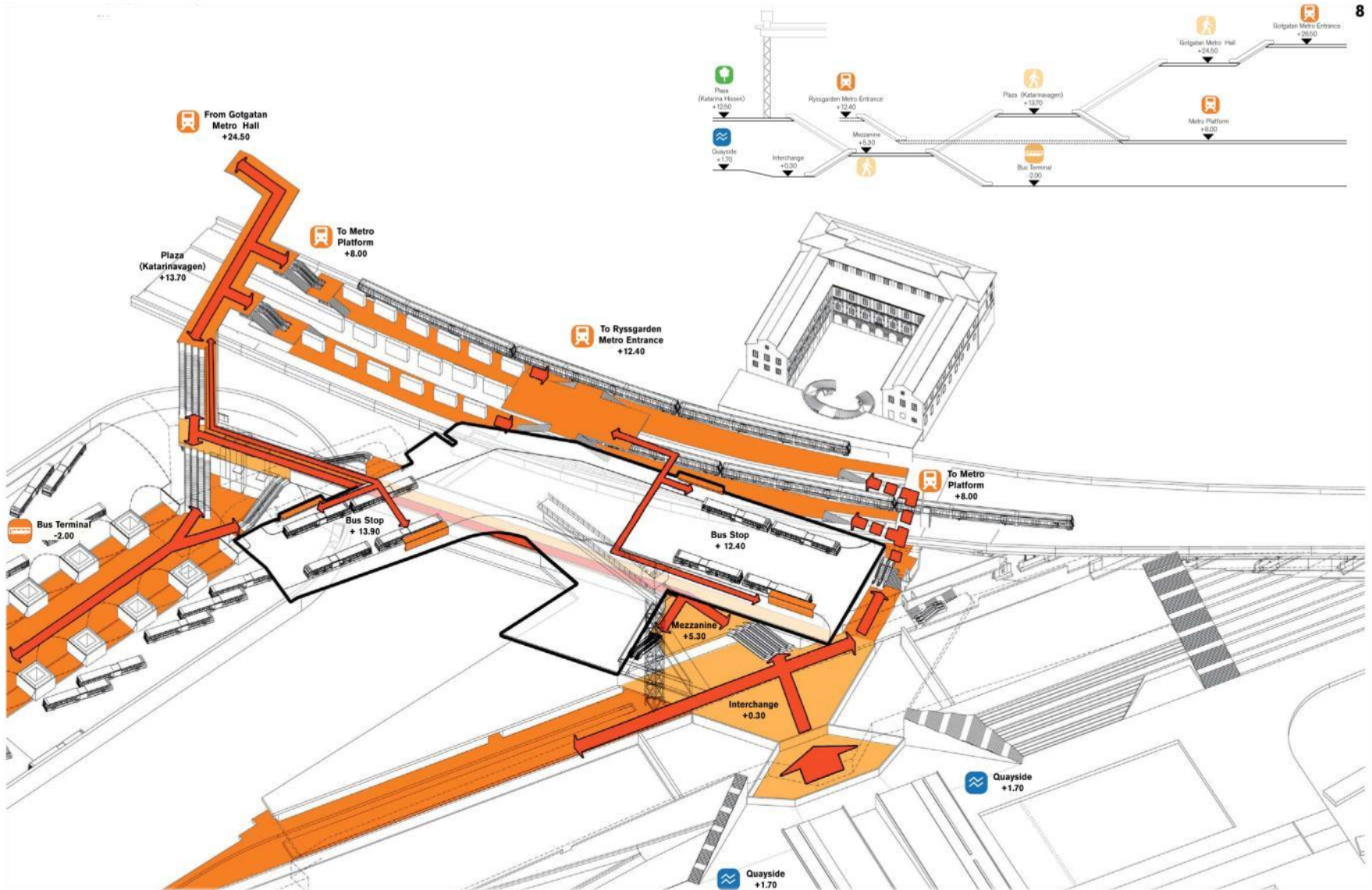


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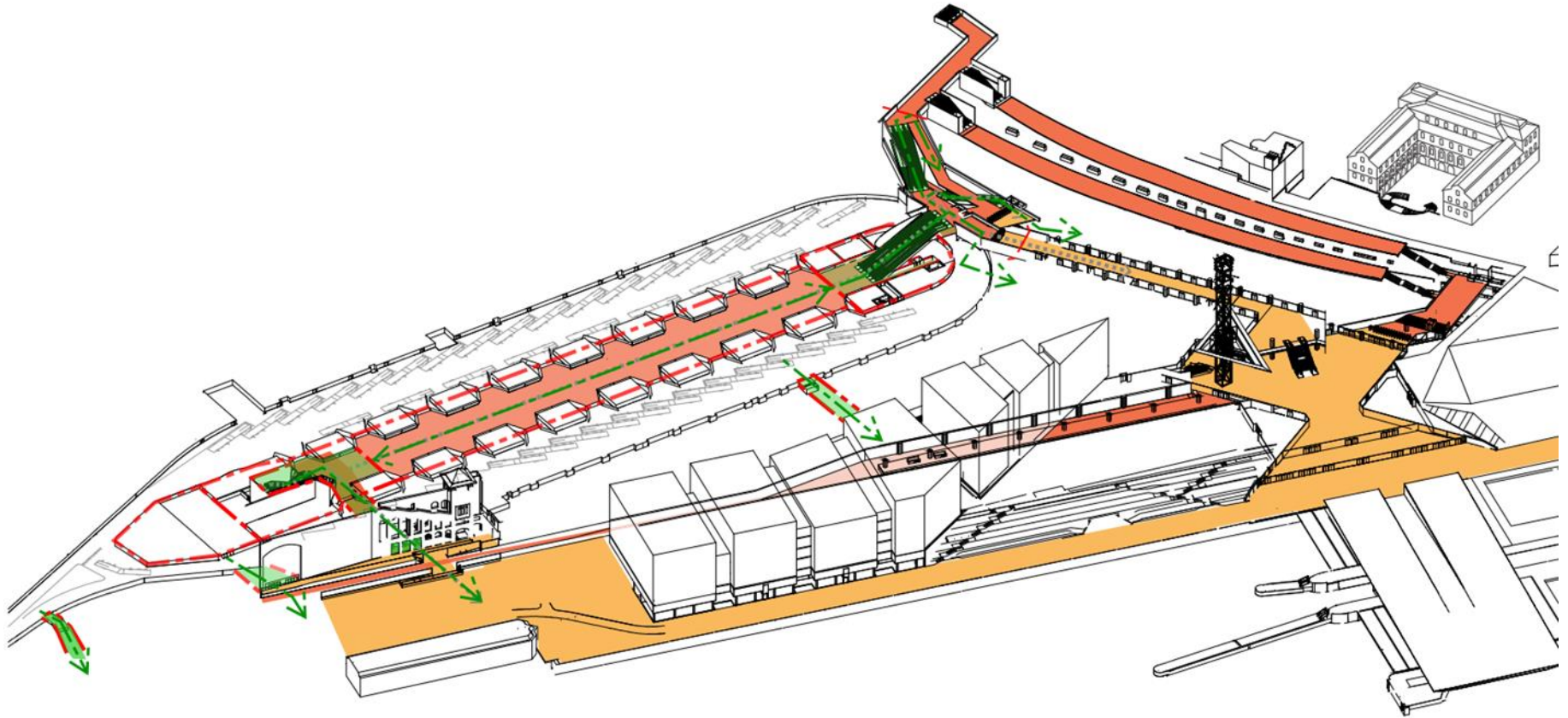












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# General Fire Safety strategies

- Fire partitioning between the separate parts.
- Evacuation separate for each part, and with respect to human behaviour.
- Performance based design. Risk analyses, fire and smoke simulation, evacuation simulation .
- Integrated evacuation and informationsystem.

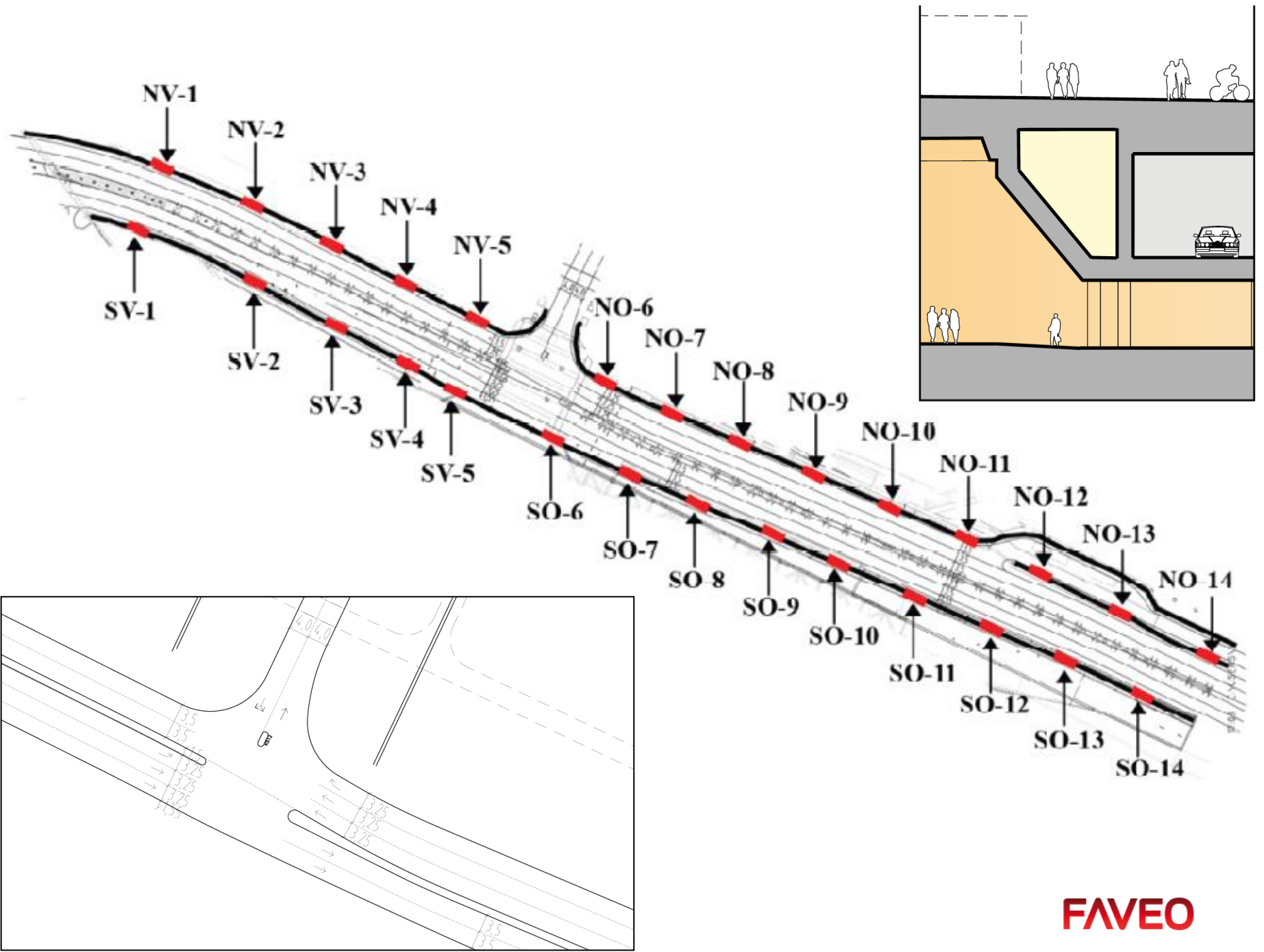
# Shopping centre

- Two-level traditional shopping mall **xxxx** sqm with an atrium. Located under ground and connecting to metro, commuter train and bus terminal.
- One separate entrance. People are expected to mainly enter from and exit to transport facilities.



# New road tunnel

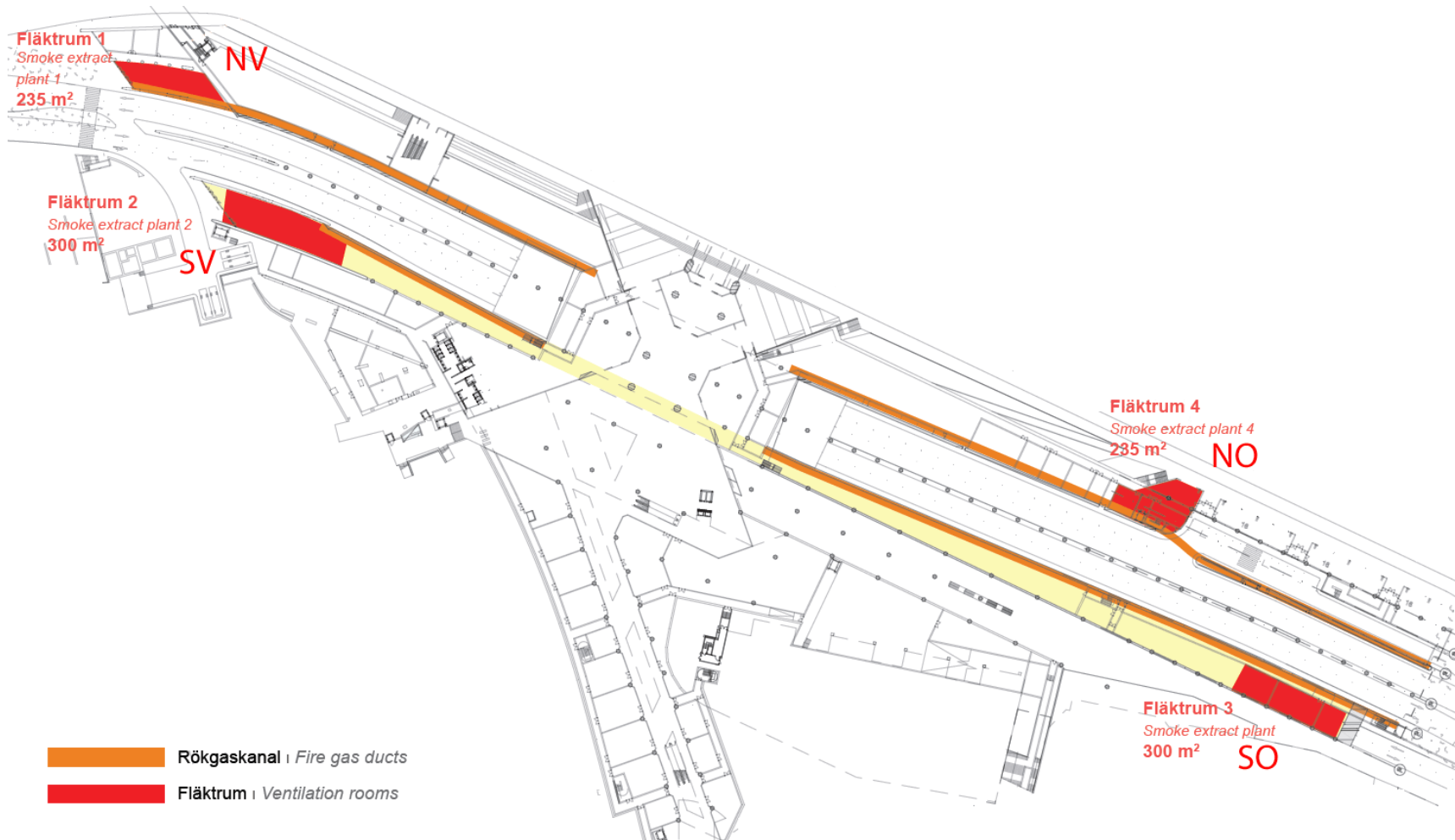
- 400 meter bi-directional, with two lanes in each direction.
- Three way crossing in the middle of the tunnel.
- Allowed height for vehicles 4,2 m.
- Semi - transversal smoke ventilation for 23 MW fire.
- Emergency exits appr every 30 m
- Deluge sprinklersystem



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# Smoke ventilation – Stadsgårdsleden road tunnel



# Existing metro

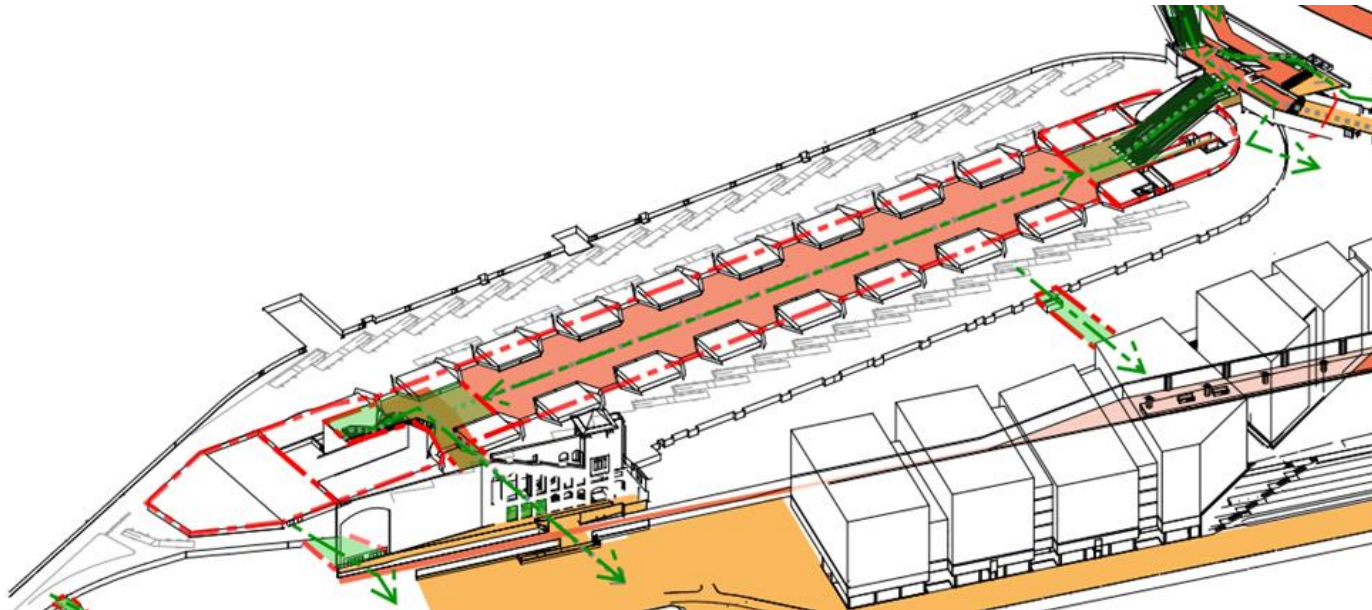
- Two platforms, and three exits.
- Emergency load 4800 passengers.
- Partly rebuild two exits and prolonged tunnel.
- Main flow direction of passengers changed.
- Upgrade of fire safety hard to combine with town planning, demand for lifts (mobility) and passengers movement (escalators).
- Emergency exit rebuilt and not used as normal exit/entrance.



# New commuter train endstation

- One platform endstation with two tracks, one exit.
- Emergency load 1200 passengers
- Only exit, for normal use, through shopping centre.
- Emergency exits not used as normal exits/entrances.
- Sprinklersystem installed.
- Smoke ventilation uses same ducts and fans as road tunnel.

# New Bus station/terminal



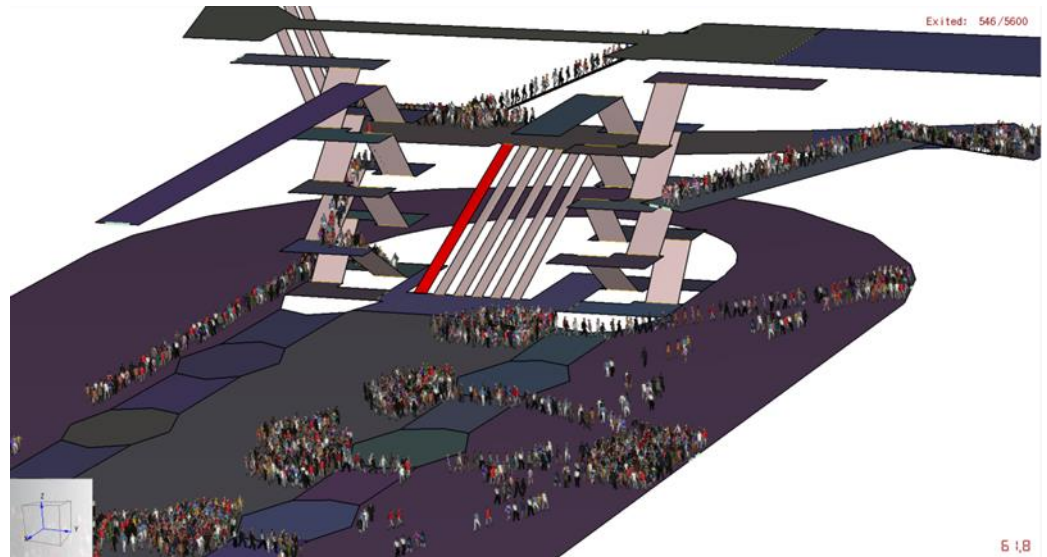
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# New Bus station/terminal

- Serves Stockholm southeast areas as endstation for exchange
- Blasted deep into the rock.
- About 50 buses at once. Just minutes between departures/arrivals.
- Waiting area emergency load 5000 passengers
- LPG/NPG-buses will be used
- Main exit in one end. Other exits probably only in emergency.
- Traffic control centre?

# New Bus station/terminal

- Gasdetection and emergency ventilation
- Sprinklersystem (Deluge?)
- Transversal smoke ventilation
- Escalators as main escapeway. Safe areas and lifts for people with reduced mobility.





STOCKHOLM

Thank you for your attention!

