

The New Cross-City rail Link in Zurich, Switzerland



Giuliano Montanaro, CEO
alius consulting GmbH
Zürich, Switzerland

Rail Conference

alius consulting



Summary

1. Main Information's about the Swiss Federal Railways and the Swiss Rail Network
2. The new Zurich Cross-City link: the aim of the project and global overview
3. The construction of the two new 2 bridges
4. The main station area and the construction of the new underground station
5. The new tunnel between the main station and Oerlikon
6. The very complicate section near Oerlikon
7. Conclusion

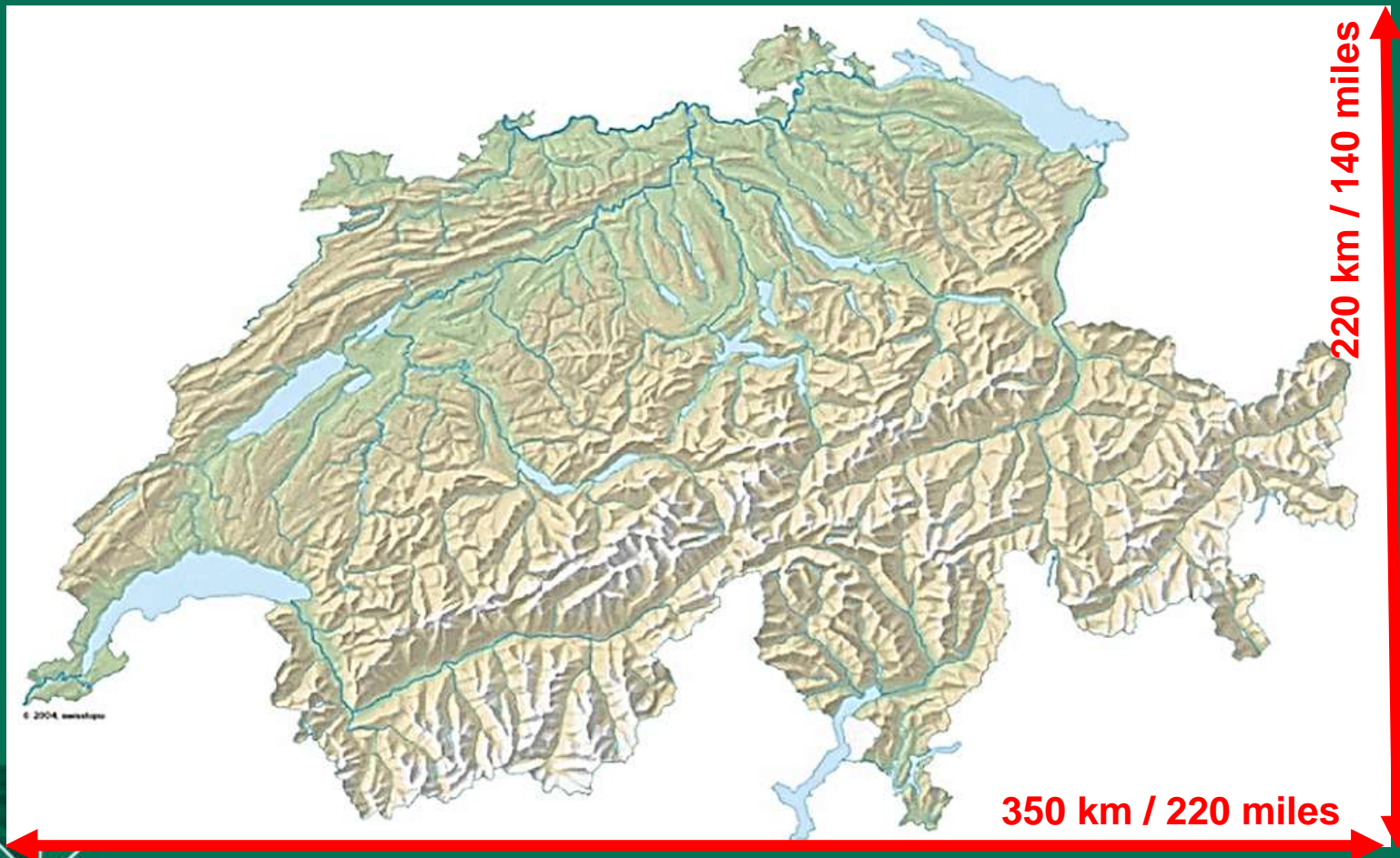
1. Some main information's about the railway system in Switzerland

Switzerland: a small country in the heart of Europe.



1. Some main information's about the railway system in Switzerland

A small Confederation full of mountains and with 4 languages...



1. Some main information's about the railway system in Switzerland

But with a very dense railway network ...



1. Some main information's about the railway system in Switzerland

... that is the most densely used in term of train traffic and one the most frequented in term of passengers in the world!

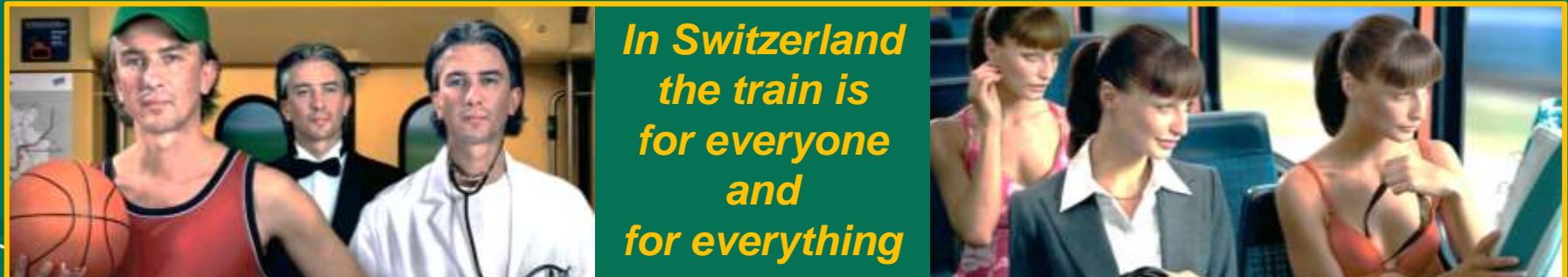
❑ Freight modal share for rail: ~ 45%

position 5 in the world with the USA and European champion

❑ Passenger modal share for rail: ~ 17%

position 2 in the world after Japan and European champion

❑ Passenger-km travelled per year and per inhabitant:
~ 2'200 position 1 in the world ahead Japan



1. Some main information's about the railway system in Switzerland



Zurich main station, one of the busiest rail station in Europe, with more than 450'000 passengers and 1'500 trains each day



The Gotthard rail tunnel, the longest rail tunnel in the world (57 km)

1. Some main information's about the railway system in Switzerland



2. The aim of the project of the new Zurich Cross - City Link

The traffic is very dense, the Swiss peoples are world champions in using the train and in the future the demand will continue to grow. How to increase the capacity of the network ?

1. Upgrade of the existing Infrastructure and new constructions (lines, nodes, stations, ...)
2. Innovation and new technologies (signaling system, adaptive and automatic drive, ...)
3. Process, organization and production

→ The New Cross-City Tunnel across Zurich!



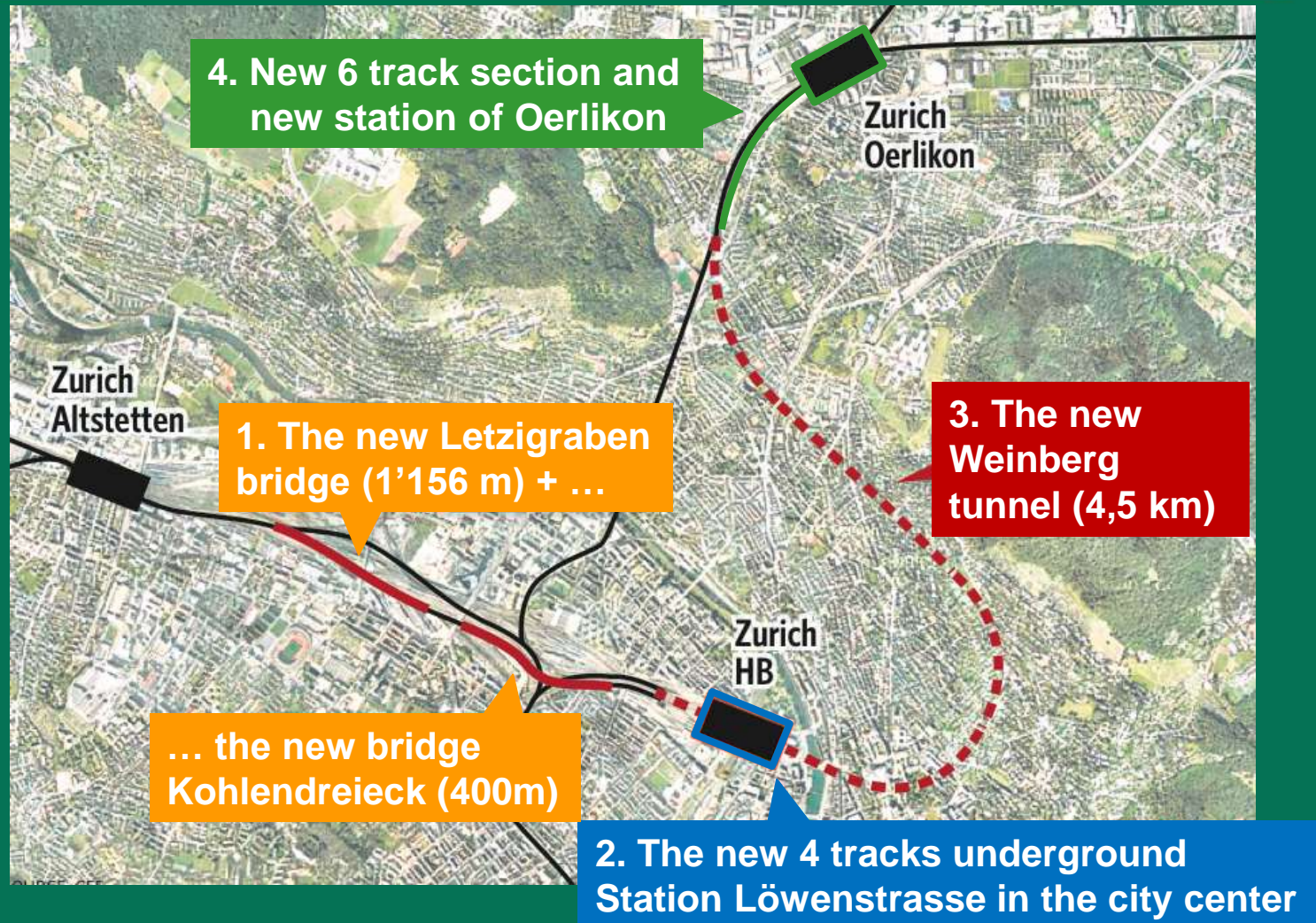
2. The new Zurich Cross-City link: the aim of the project

- ❑ Remove the bottlenecks of the rail network in the Zurich area.
 - ❑ Allow a the development of suburban and long distance rail traffic
 - ❑ Renounce definitely the doubling of existing line Zurich Main Station - Wipkingen - Oerlikon
 - ❑ Abandon the provisional auxiliary suburban station (track 51 - 54) in service since 2005
 - ❑ Enable a large real estate development on former shunting area close to the main station (the „Europe- Allee“)
- A very complex and challenging “urban project”, with a lot of very difficult technical sections**

2. The new Zurich Cross-City Link: Global overview : four main sections

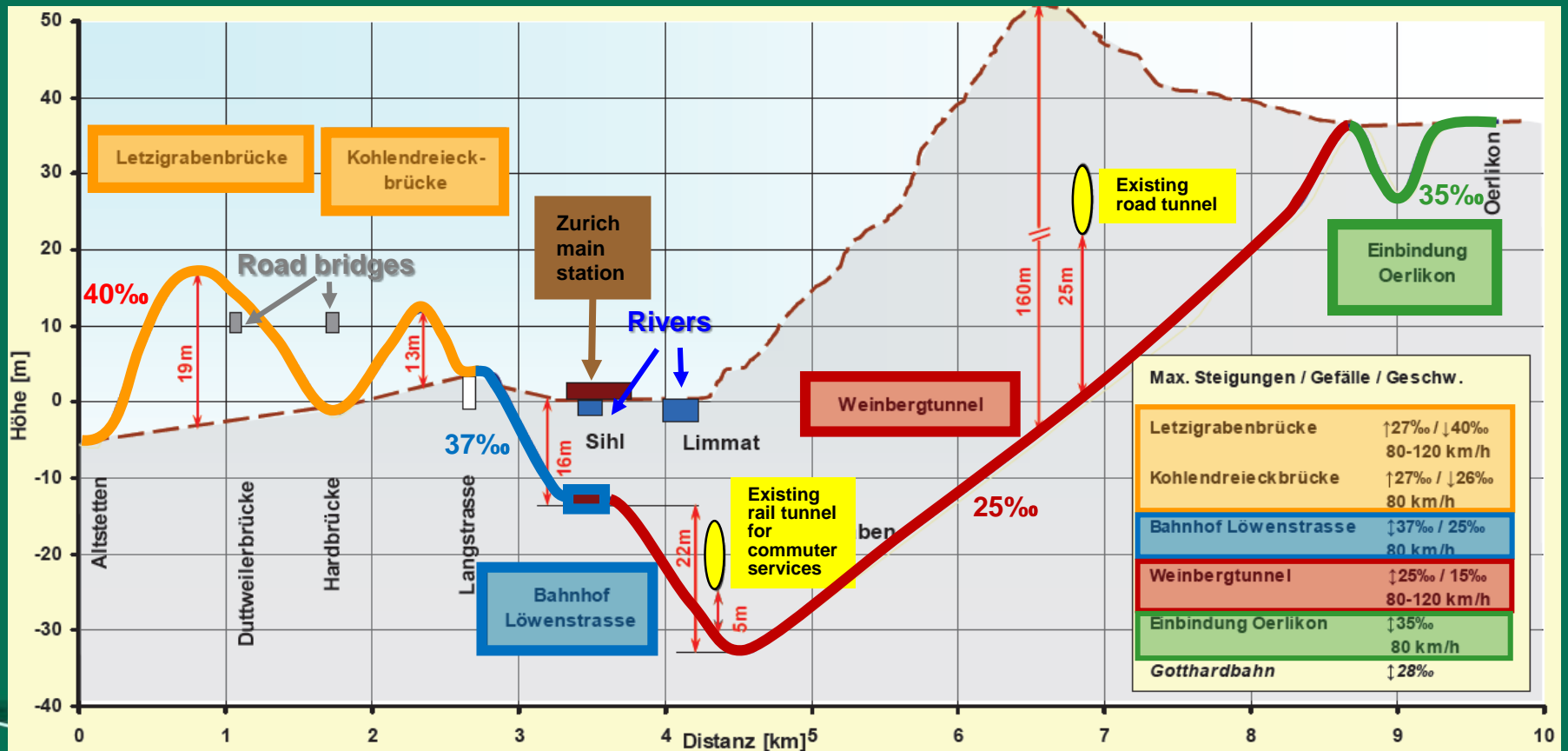
The four major sections of the project

Total cost:
2 billions of Swiss Francs (=dollars)



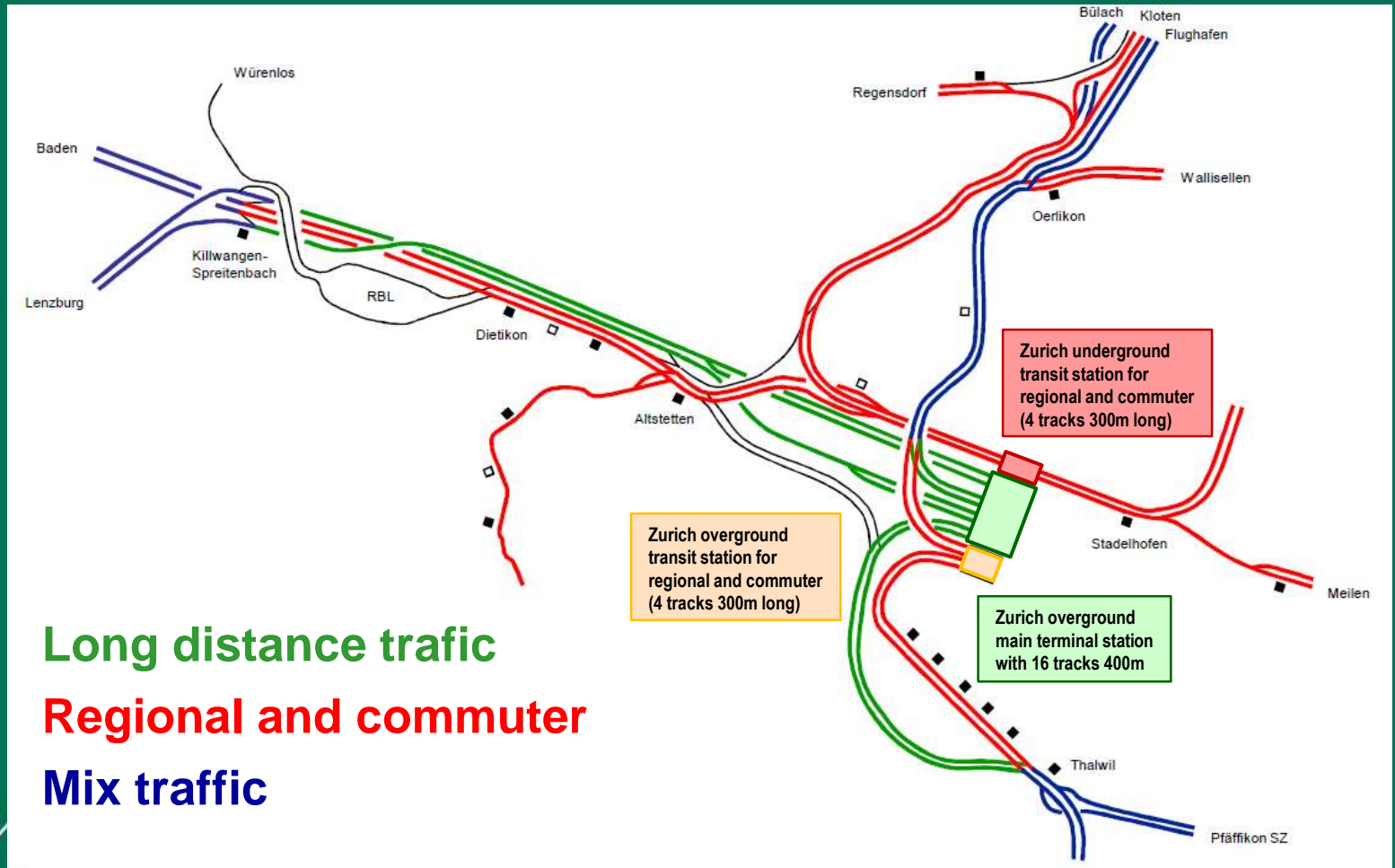
2. The new Zurich Cross-City link: an elevation profile reaching the 40‰

The new line is also named “the roller coaster” !



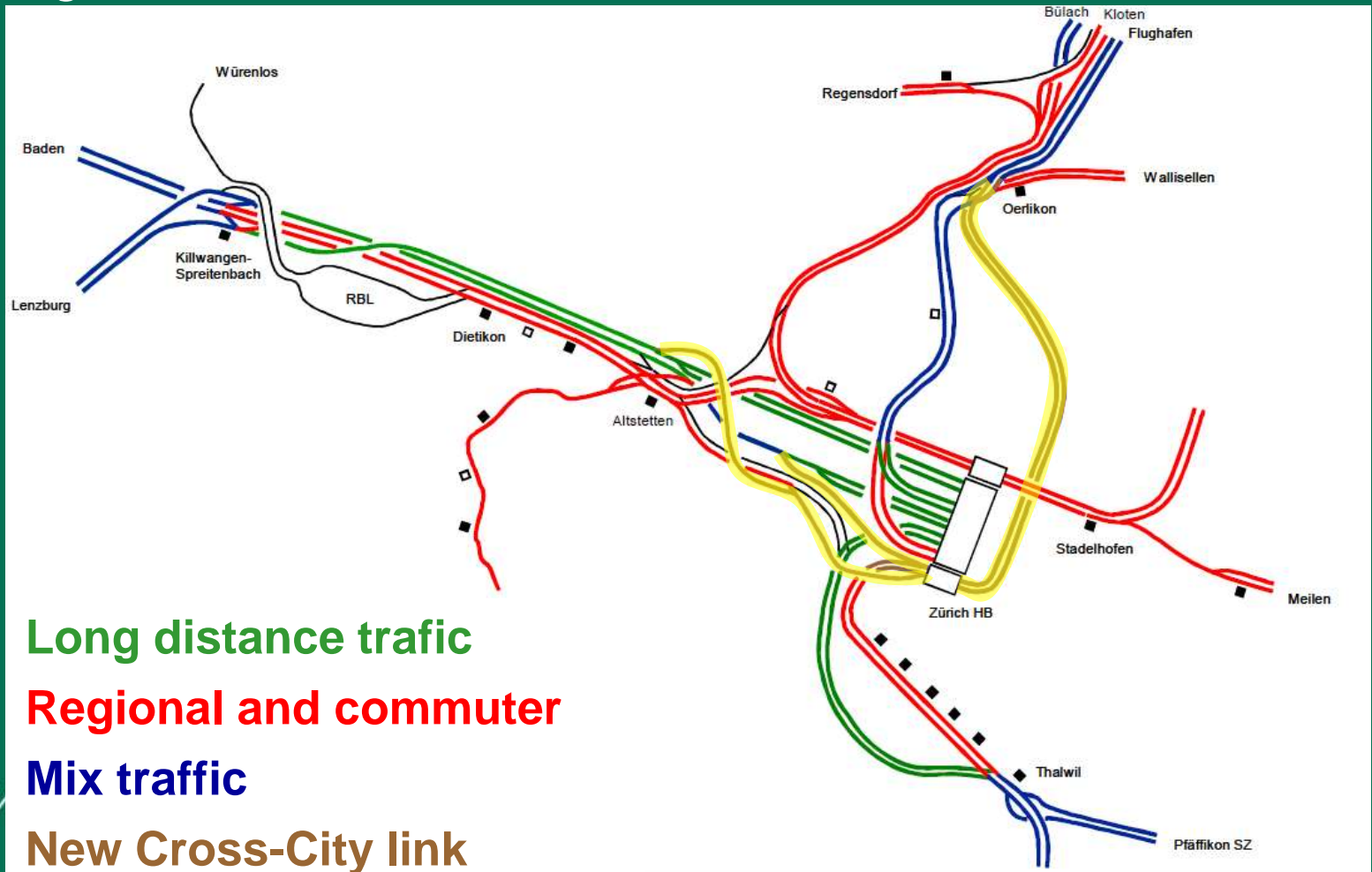
2. The new Zurich Cross-City Link: the evolution of the main track topology

Old configuration

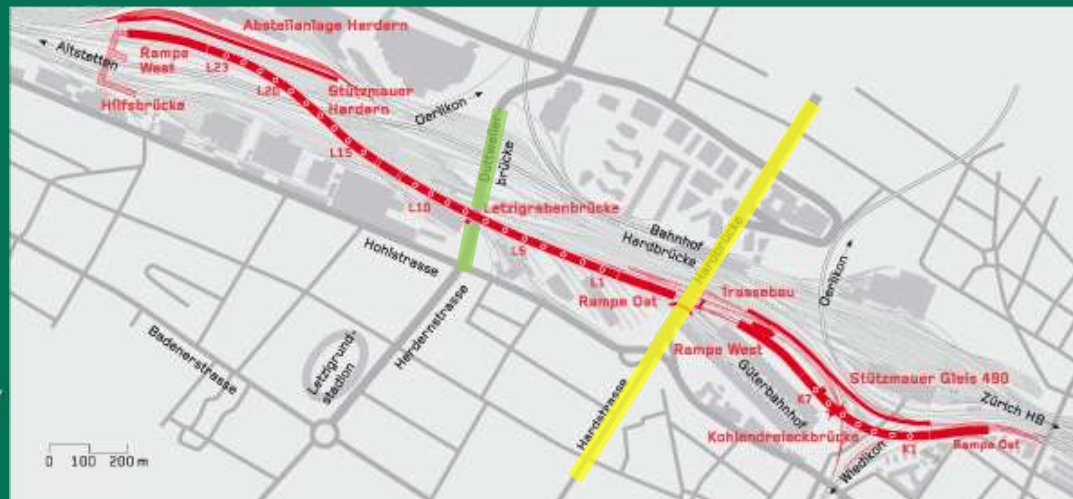


2. The new Zurich Cross-City Link: the evolution of the the main track topology

New configuration



3. The new Zurich Cross-City link – section ① the construction of the two new 2 bridges



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4. The new Zurich Cross-City link – section 2

General view of the main station area

The Zurich Central Station is located in the very heart of the city.

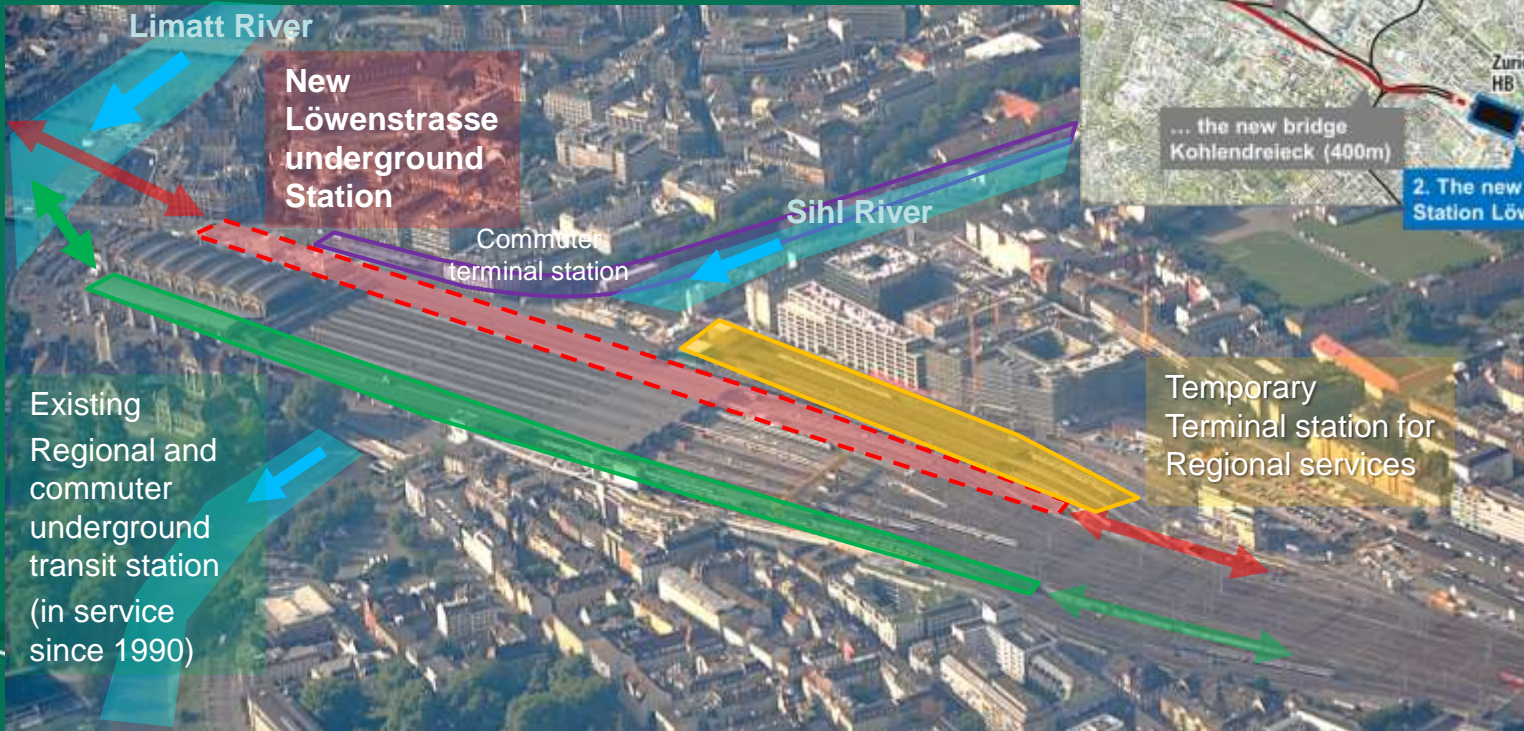


4. The new Zurich Cross-City link – section 2

General view of the main station area

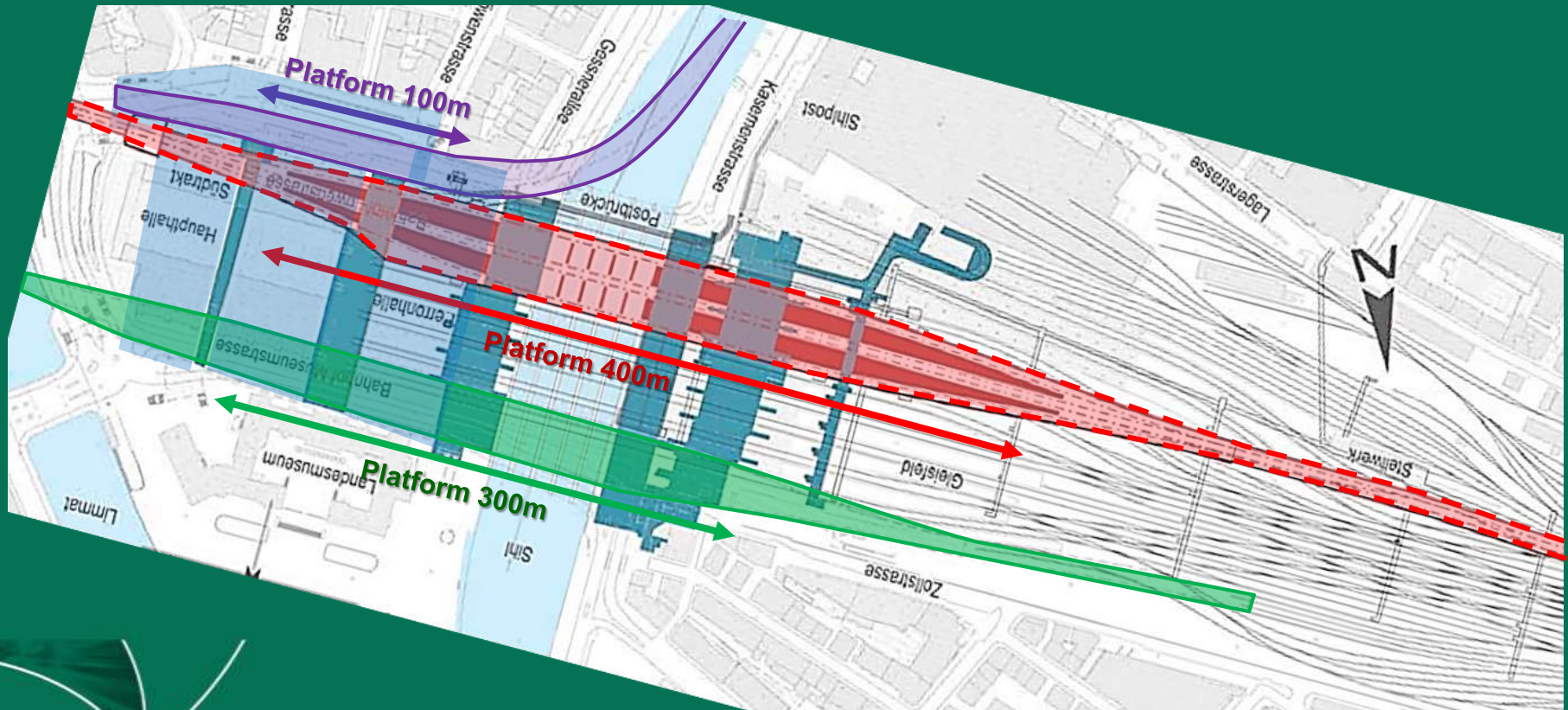
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The Station is in the heart of the city and near the additional infrastructures for the rail network there is also a very important urban development project.



4. The new Zurich Cross-City link – section ② The construction of the underground station

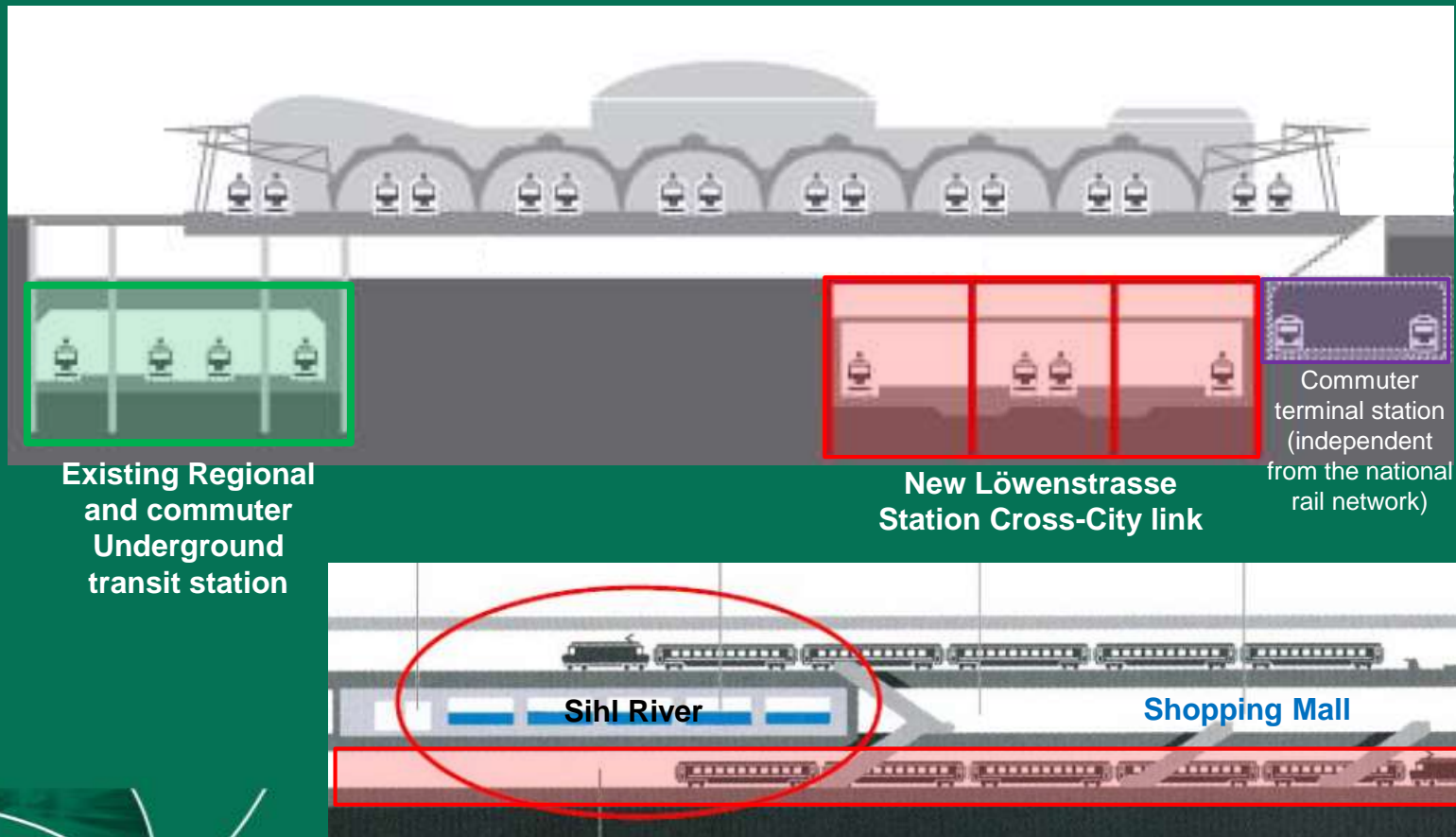
Location of the existing and new undergrounds stations as well as the passengers underground areas and shopping malls



4. The new Zurich Cross-City link – section 2

The construction of the underground station

The River Sihl across the station !



4. The new Zurich Cross-City link – section 2

The construction of the underground station



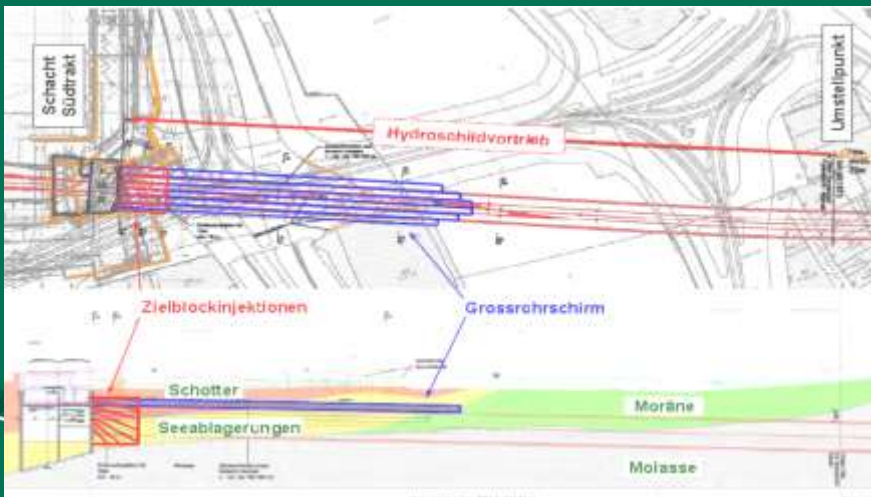
The control of
the river Sihl



4. The new Zurich Cross-City link – section 2

The construction of the underground station

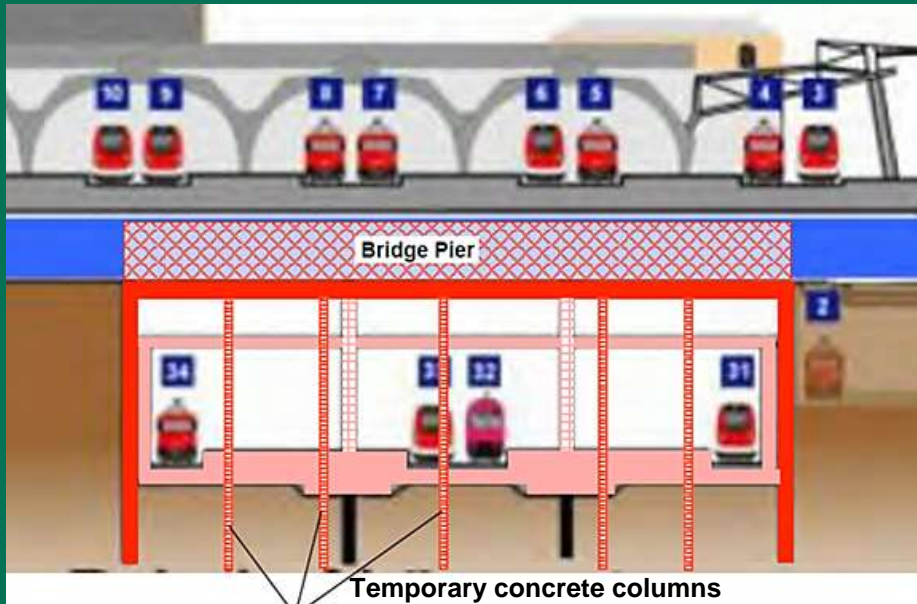
Contact point between the underground station and the tunnel



4. The new Zurich Cross-City link – section 2

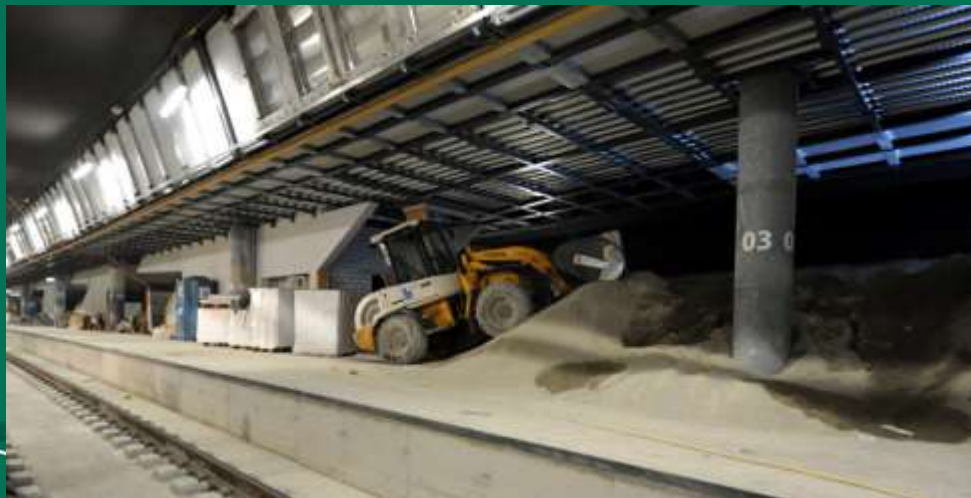
The construction of the underground station

Construction under the existing in tracks (only 2 out of service)



4. The new Zurich Cross-City link – section 2

Preparation of the equipment's



4. The new Zurich Cross-City link – section 2

New underground station : the final result



4. The new Zurich Cross-City link – section 2

New underground station : the final result

2



4. The new Zurich Cross-City link – section 2

New underground station : the final result

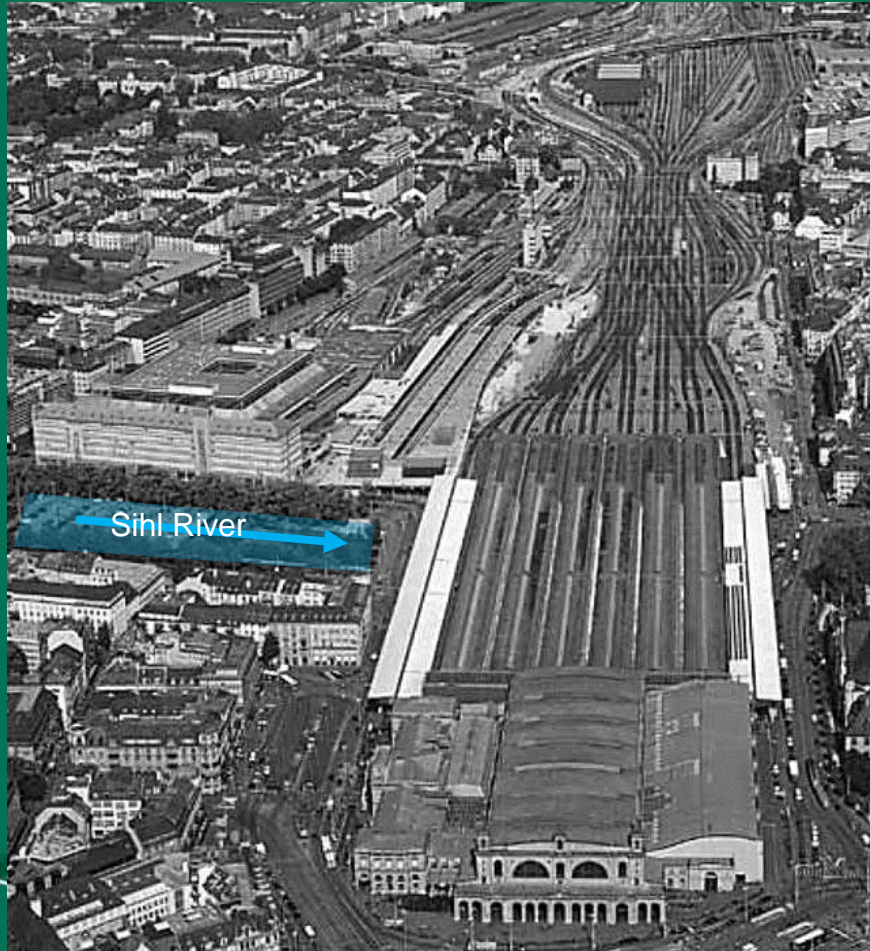


4. The new Zurich Cross-City link – section 2

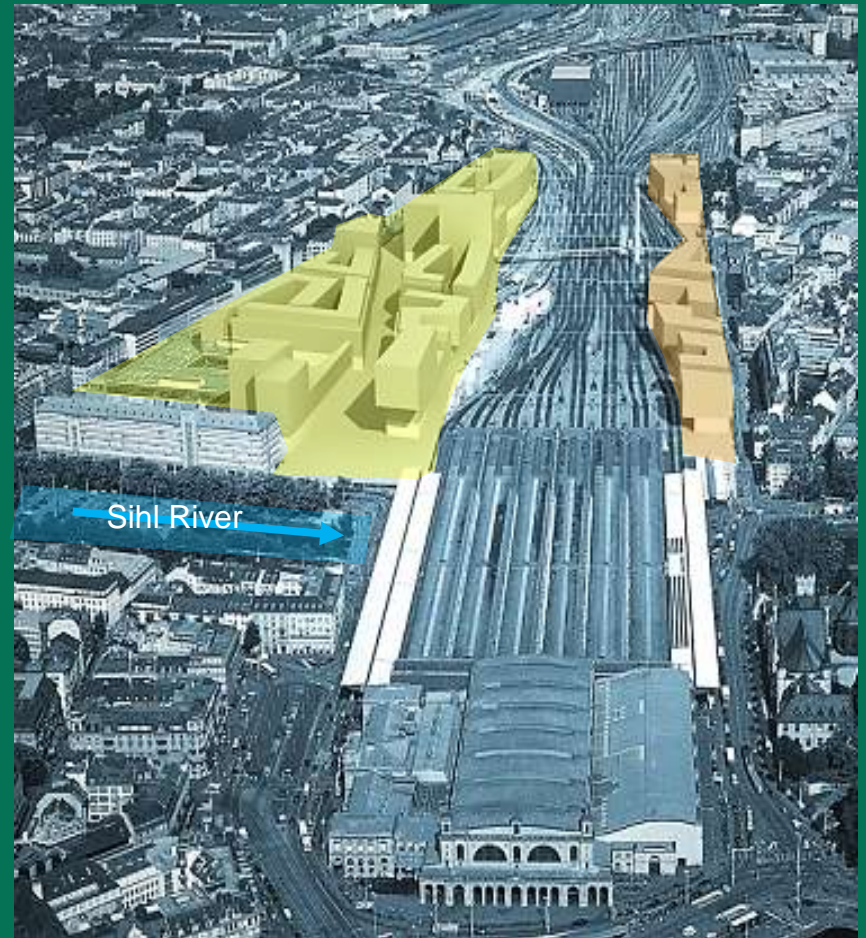
The area development: an urban project

2

In 2007...



... and the 2020



4. The new Zurich Cross-City link – section 2

The area development: an urban project

2



4. The new Zurich Cross-City link – section 2

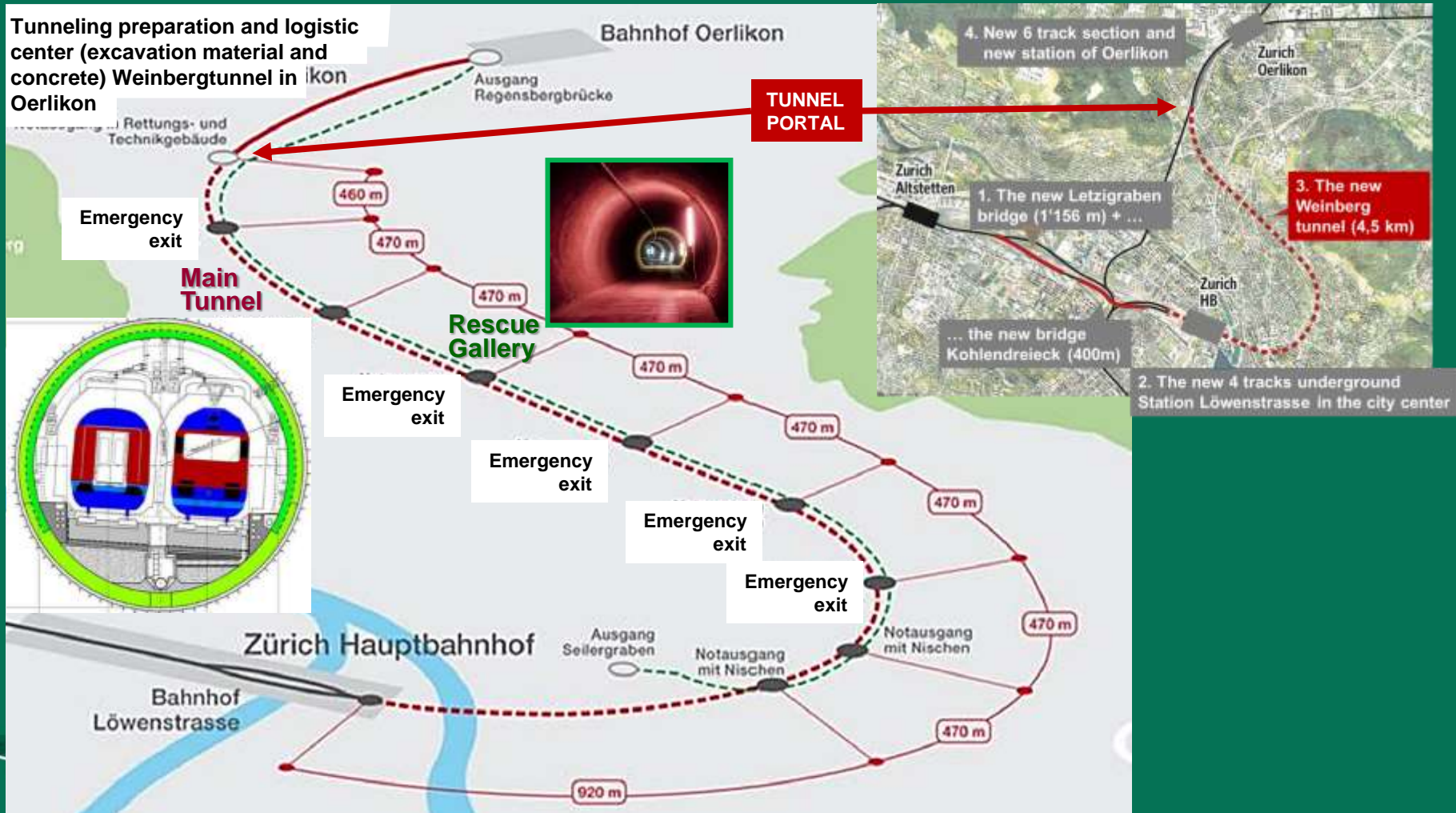
The area development: an urban project

2



5. The new Zurich Cross-City link – section the new Weinbergtunnel (~ 5km)

3



5. The new Zurich Cross-City link – section **3** the new Weinberggtunnel (~ 5km)

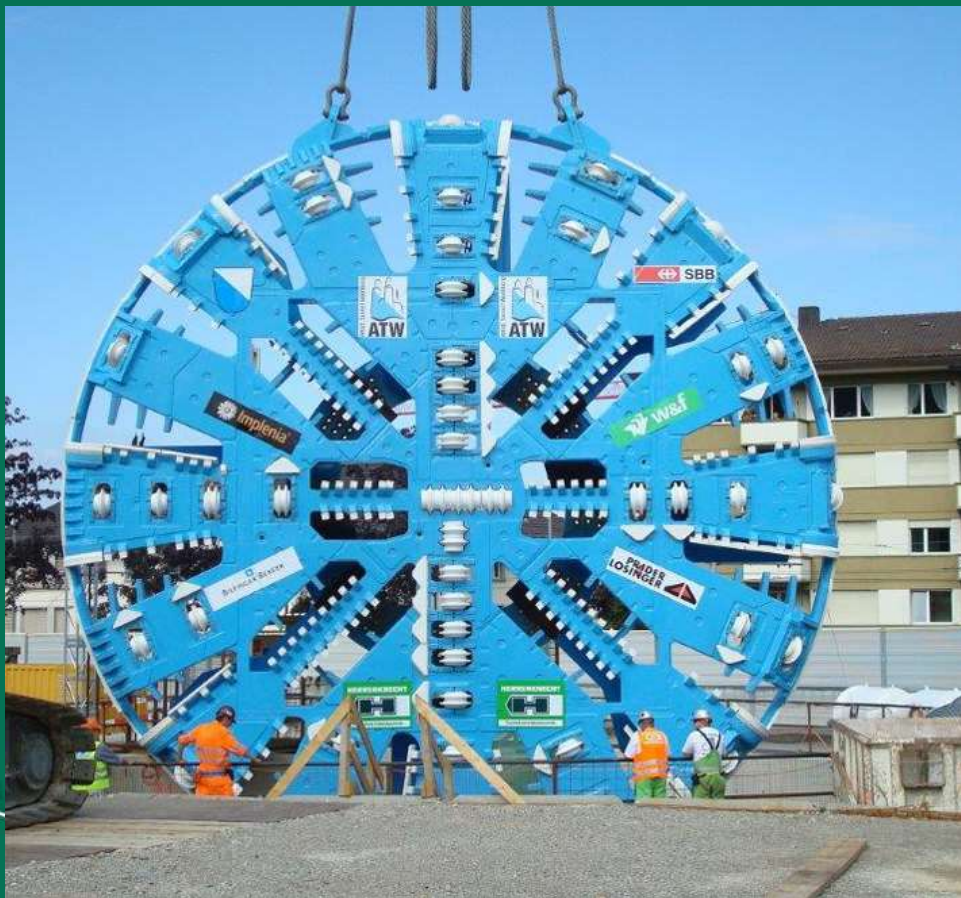
Preparation of the tunnel boring machine



Prefabricated
concrete
arch's

5. The new Zurich Cross-City link – section 3 the new Weinbergtunnel (~ 5km)

Preparation of the tunnel boring machine



5. The new Zurich Cross-City link – section 3 the new Weinberggtunnel (~ 5km)

3



5. The new Zurich Cross-City link – section 3 the new Weinberggtunnel (~ 5km)

Technical equipment's and junction in
the new underground station

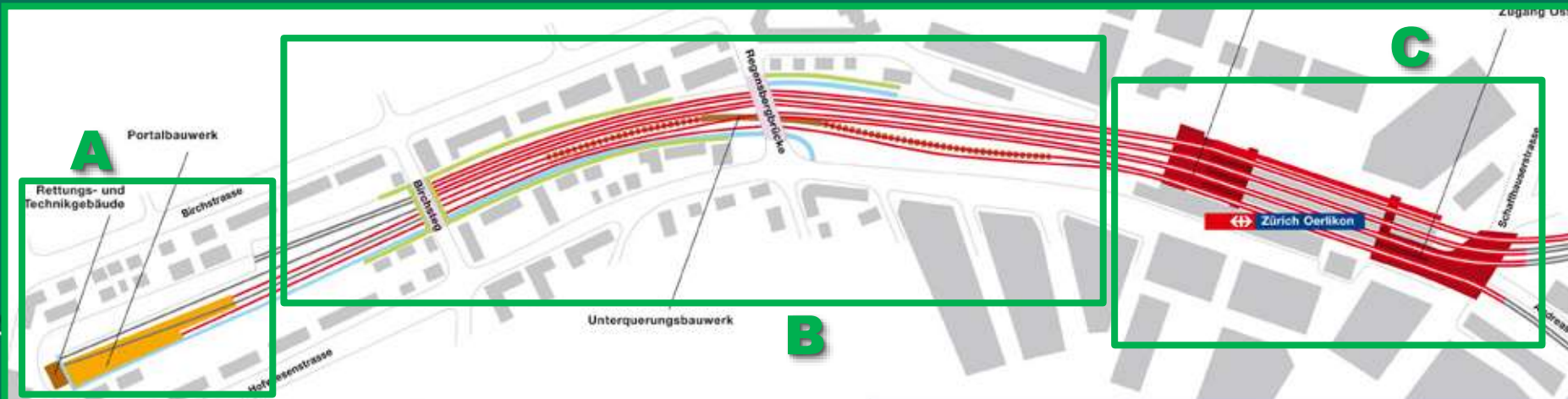


6. The new Zurich Cross-City link – section 4

Six track section and new station of Oerlikon

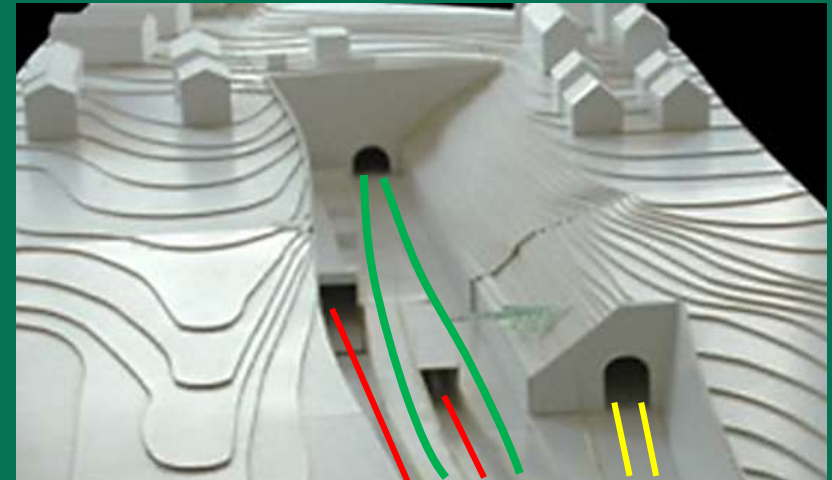
This very complicate section is composed of 3 parts:

- A. The entry in the new tunnel
- B. The new 6 track section
- C. The new station of Oerlikon, extended from 6 to 8 tracks

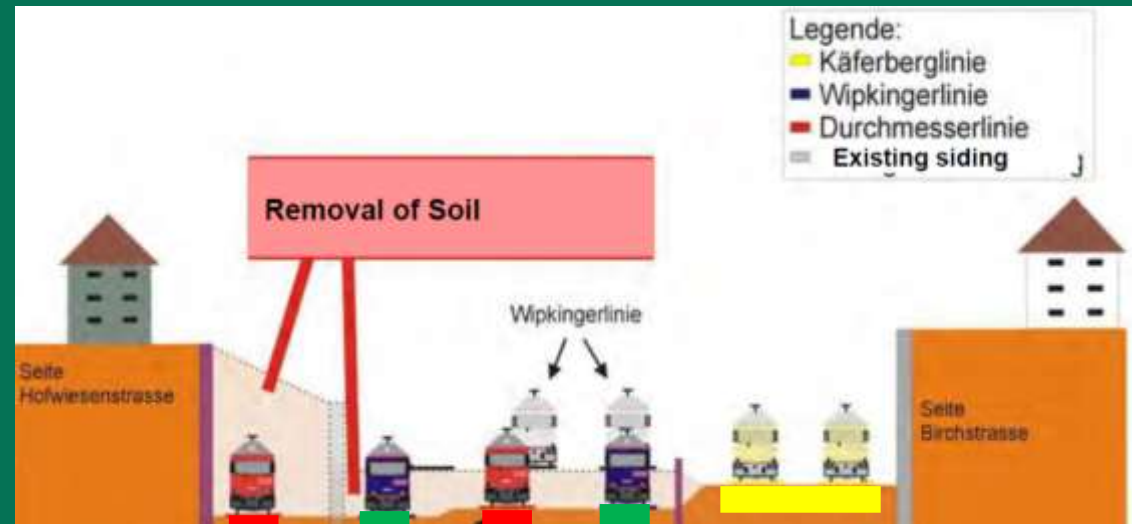


6. The new Zurich Cross-City link – section 4

The entry in the new tunnel



Very complex integration of the new tracks



6. The new Zurich Cross-City link – section 4

The entry in the new tunnel

Before....

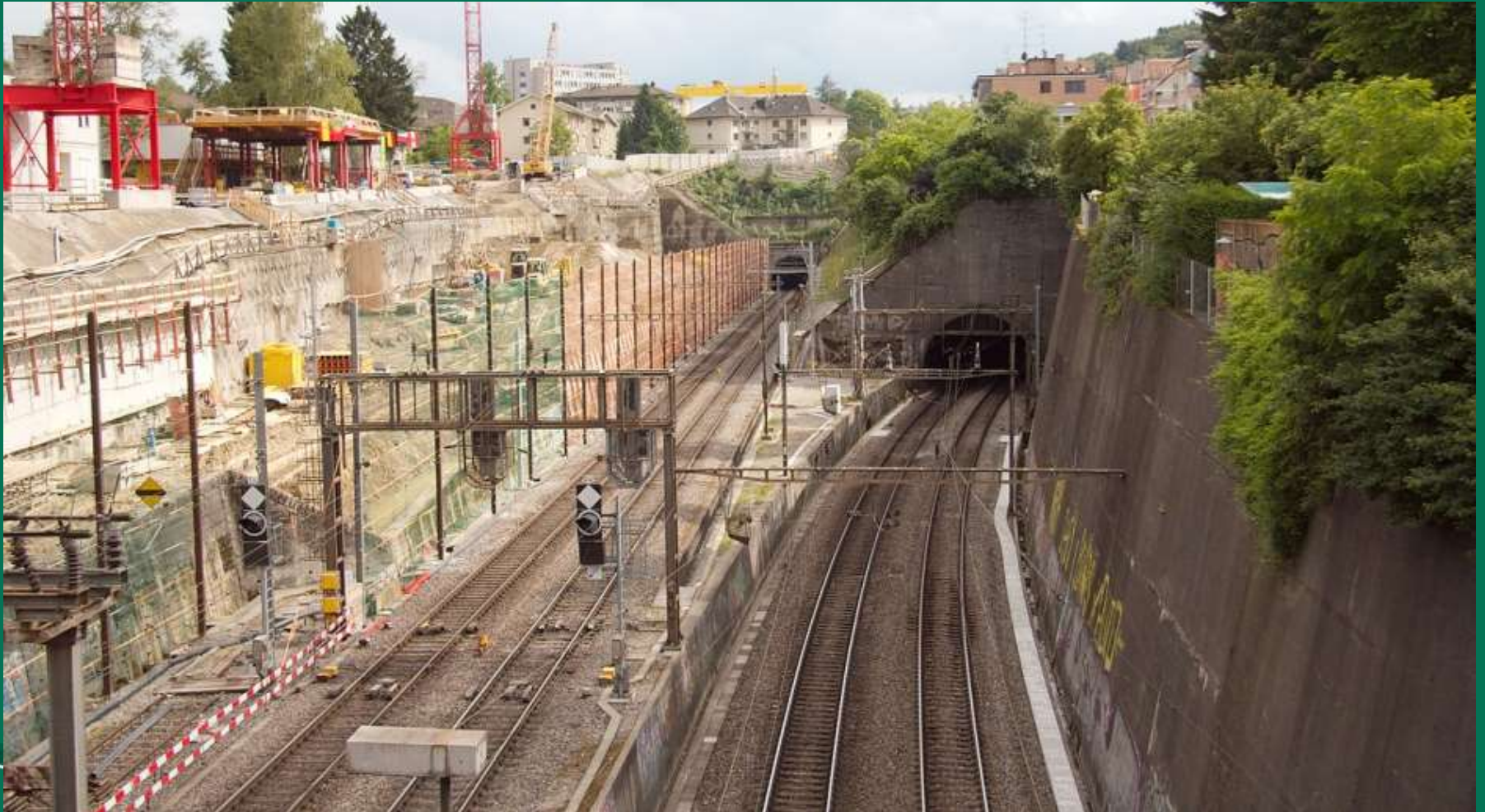


and after !



6. The new Zurich Cross-City link – section 4

The entry in the new tunnel



6. The new Zurich Cross-City link – section 4

The entry in the new tunnel



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The entry in the new tunnel



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The entry in the new tunnel



6. The new Zurich Cross-City link – section 4

The entry in the new tunnel



6. The new Zurich Cross-City link – section 4

The 6 track between the tunnel and Oerlikon



6. The new Zurich Cross-City link – section 4

The 6 track between the tunnel and Oerlikon



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The 6 track between the tunnel and Oerlikon



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The 6 track between the tunnel and Oerlikon

Cableway to work in the middle of the tracks in operation !



6. The new Zurich Cross-City link – section 4

The 6 track between the tunnel and Oerlikon



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The 6 track between the tunnel and Oerlikon



6. The new Zurich Cross-City link – section 4

The new station of Oerlikon: from 6 to 8 tracks



6. The new Zurich Cross-City link – section 4

The new station of Oerlikon

4



6. The new Zurich Cross-City link – section 4

The new station of Oerlikon



The New Cross-City Tunnel in Zurich, Switzerland

Thank you very much



Giuliano Montanaro, CEO
alius consulting GmbH
Zürich, Switzerland