



Cityhush First Dissemination seminar *Tools for creating Q-Zones*

Brussels, Nov 23, 2011

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CityHush



Presentation outline

- Objective
- Simulations
- Preliminary Conclusions

Objective: Identify boundary conditions required to obtain Q-Zones

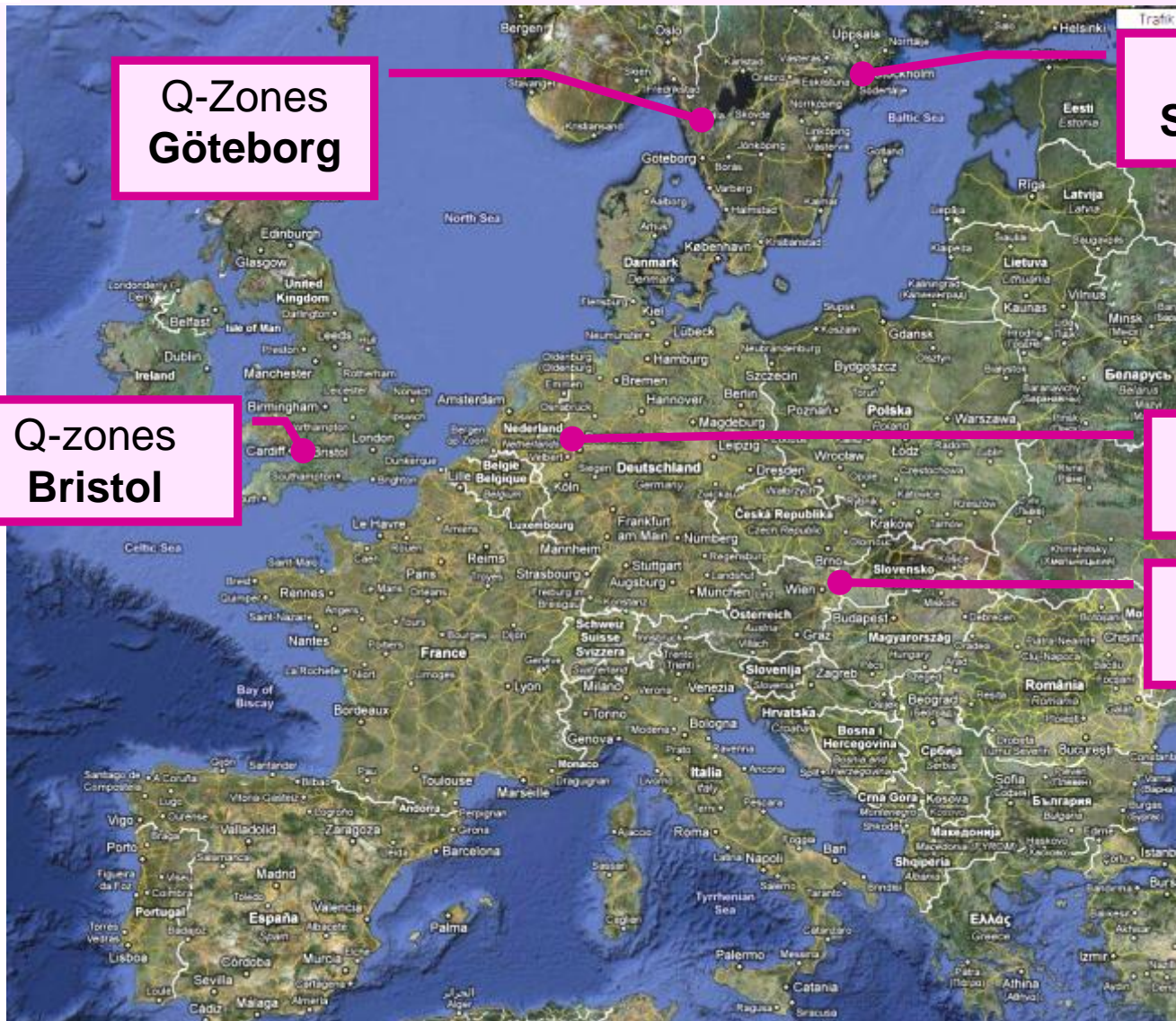
- What does it take to establish a QZ?
- How large has a QZ to be?
- Can it be enhanced with higher levels of low noise vehicles (LNV)?

- Traffic simulations varying
 - Noise fee levels
 - QZ size
 - Share of LNV inside and outside the QZ
 - Site

Initial parameter levels

- Noise fees (paid on entry and exit)
 - Ban, 0.5 Euro, 1 Euro
- Zone size
 - 2 – 3 size variants
- LNV ownership (inside/outside)
 - 1%/1%, 5%/5%, 20%/20%
 - 20%/5%, 100%/20%
- Site

Test site choice



Test site choice

3 Inner city areas chosen

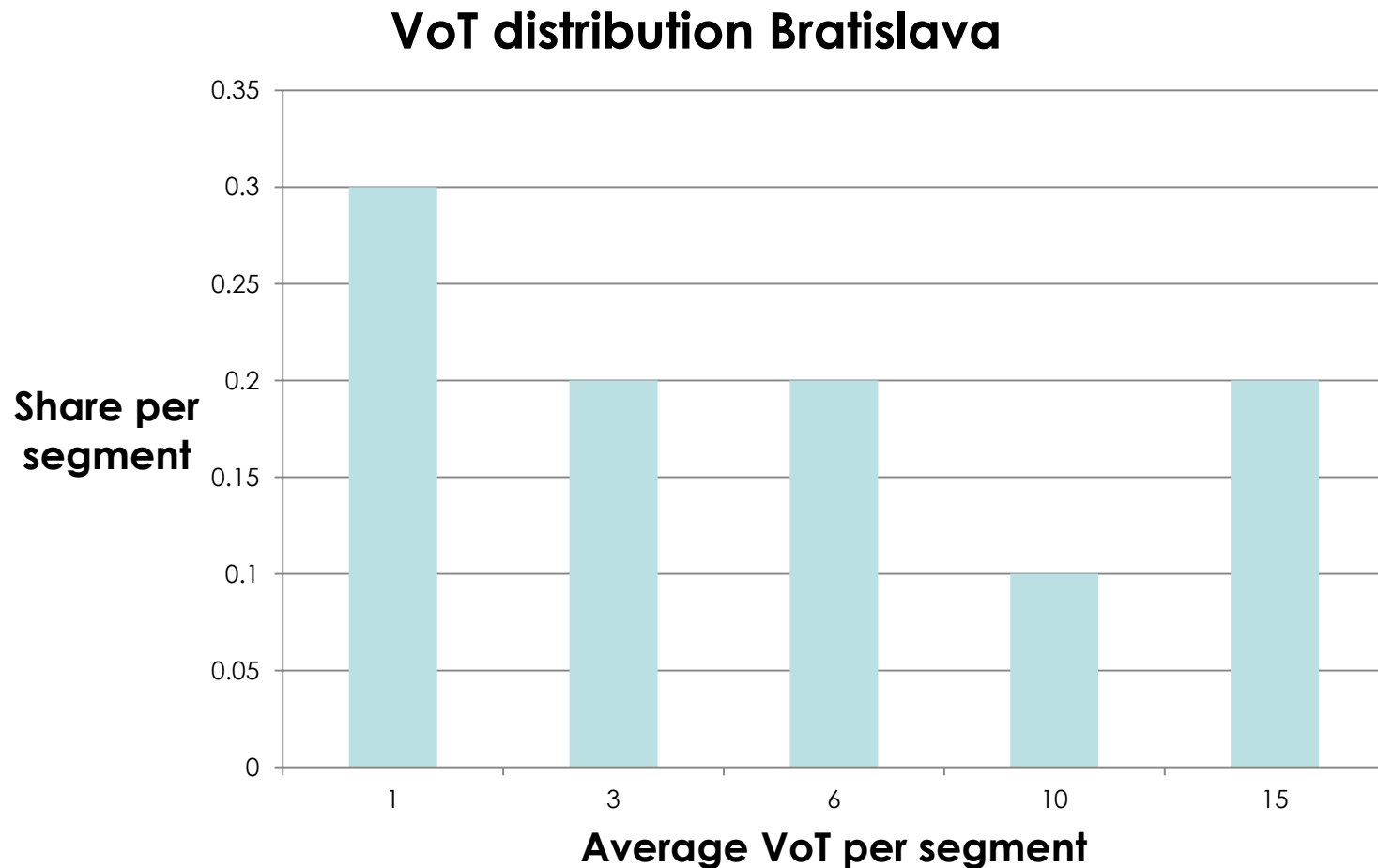
- ▲ Higher potential
- ▲ Larger traffic redistribution effects

Traffic Simulation

- Simulation of
 - Route choice
 - (Destination choice)
 - (Mode choice)
- Resulting in link flows/speeds
- Using available traffic simulation model databases
 - Regard to distribution of value of time

VoT distribution needed

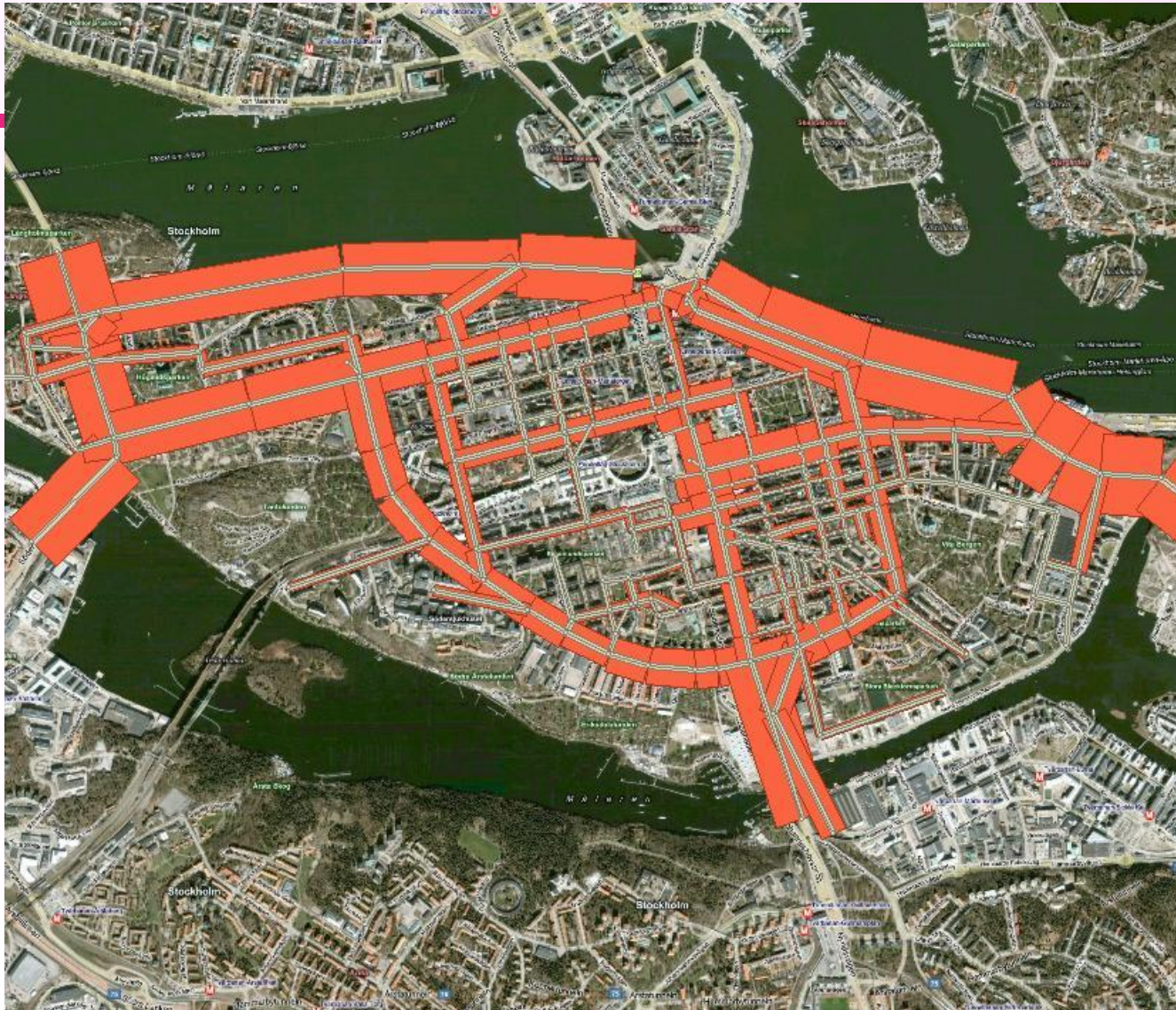
- Segment where behavior can be expected to depend on fee



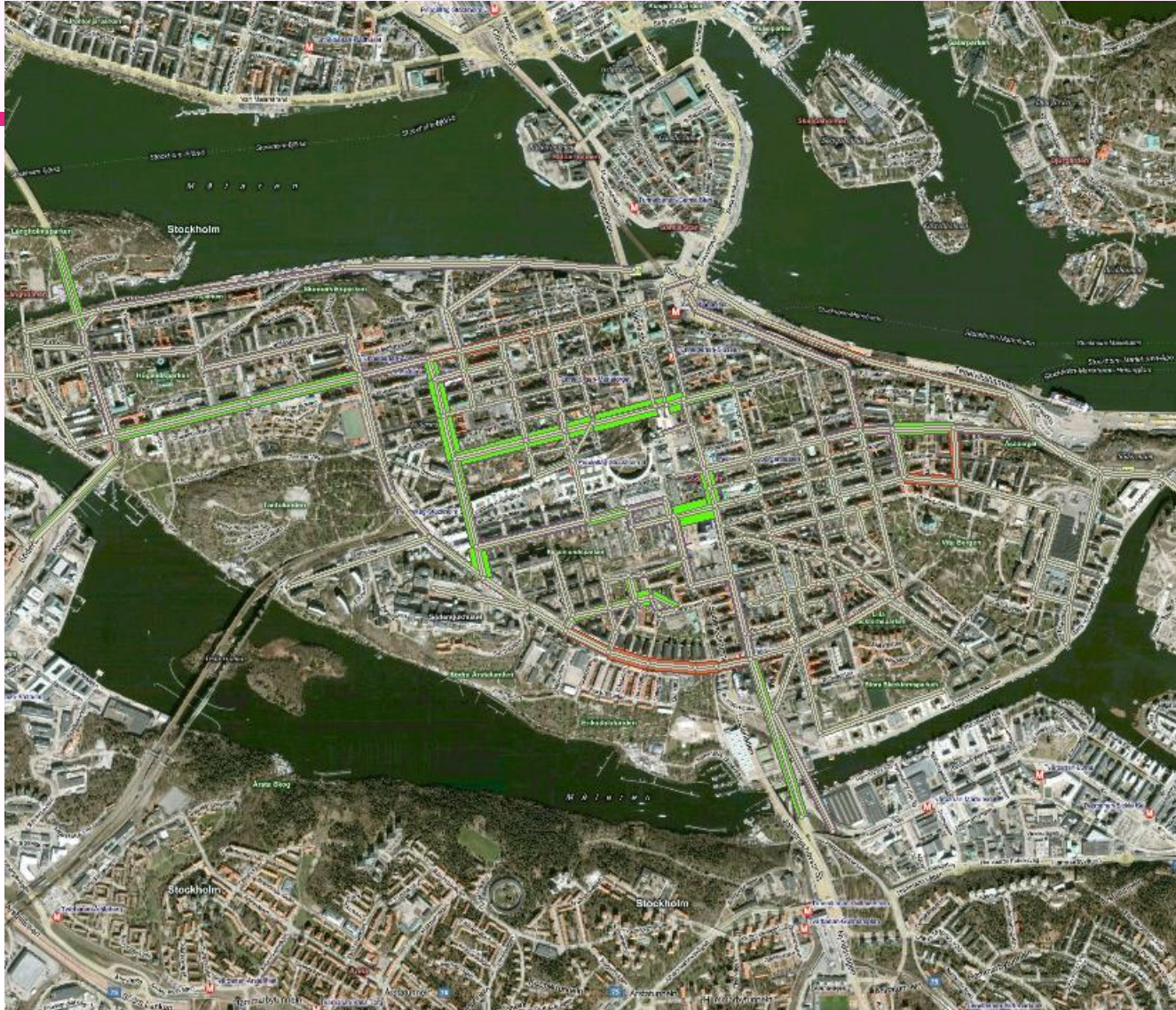
Traffic simulation - Stockholm example

- 5 VoT segments for low noise vehicles (LNV)
- 5 VoT segments for standard vehicles
- Whole Stockholm County area simulated
- Affected area noise mapped
- 16 scenarios simulated

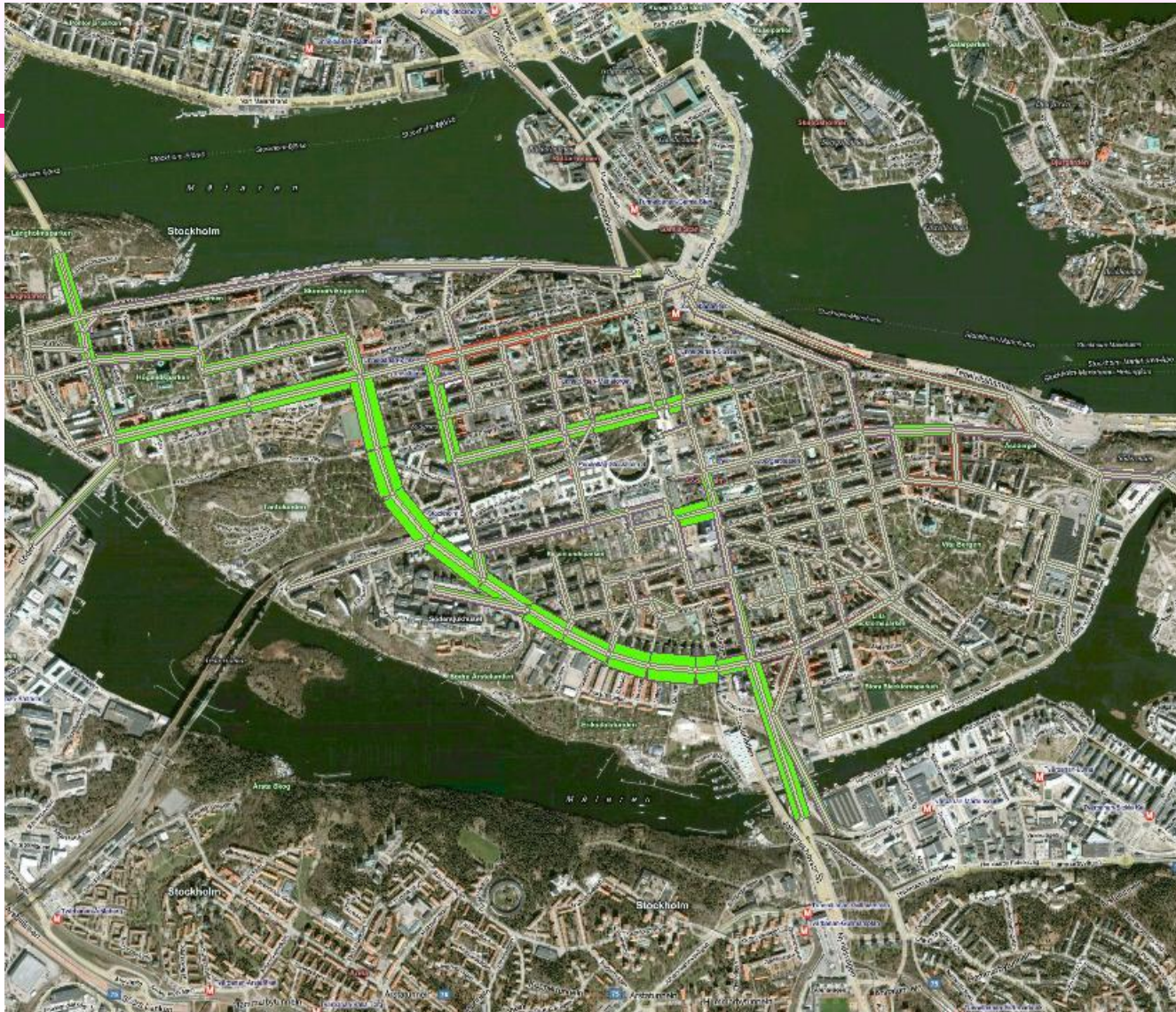
Base case traffic flows



Medium QZ banned std vehicles - change



Large zone banned standard vehicles - change



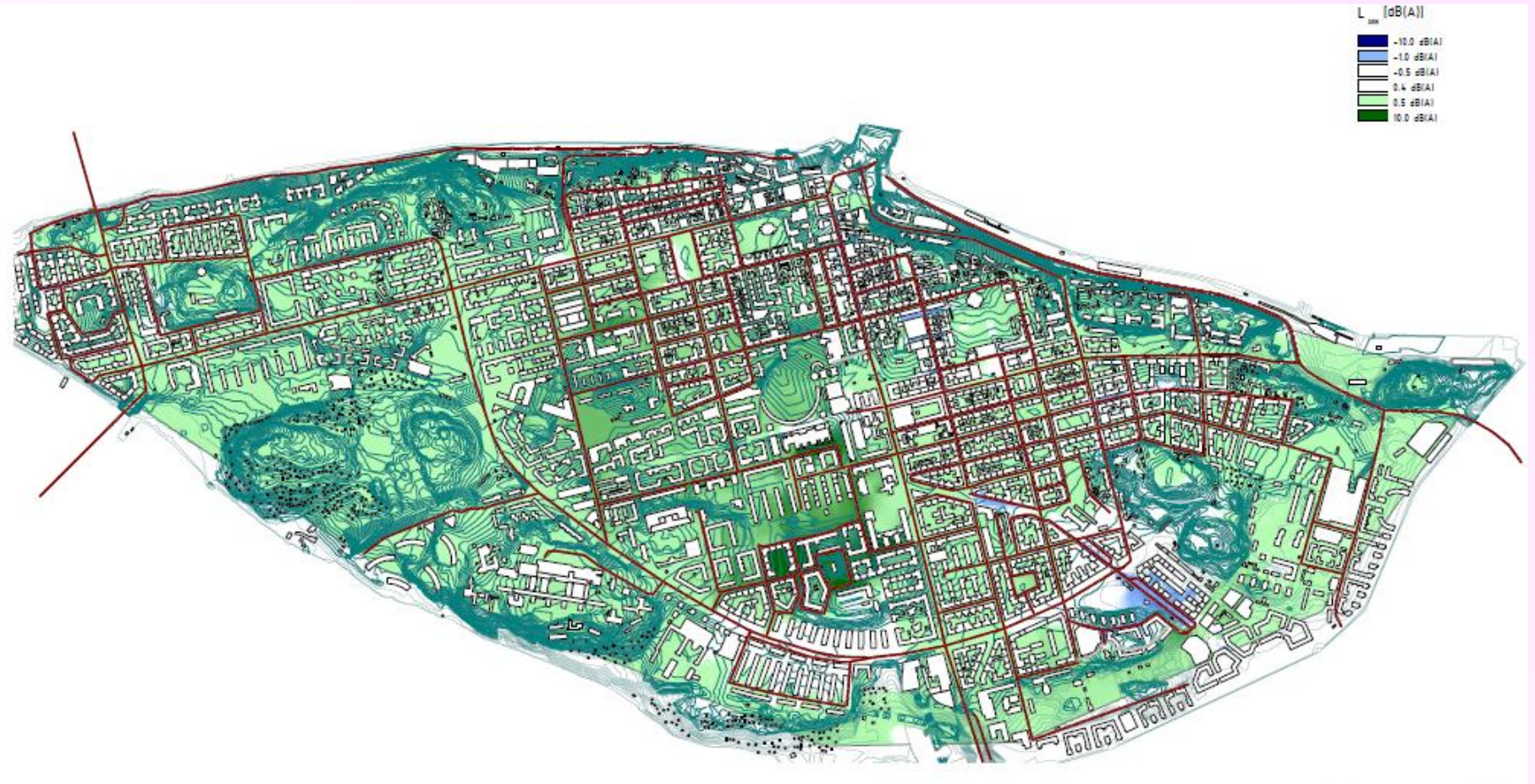
Base Case noise map



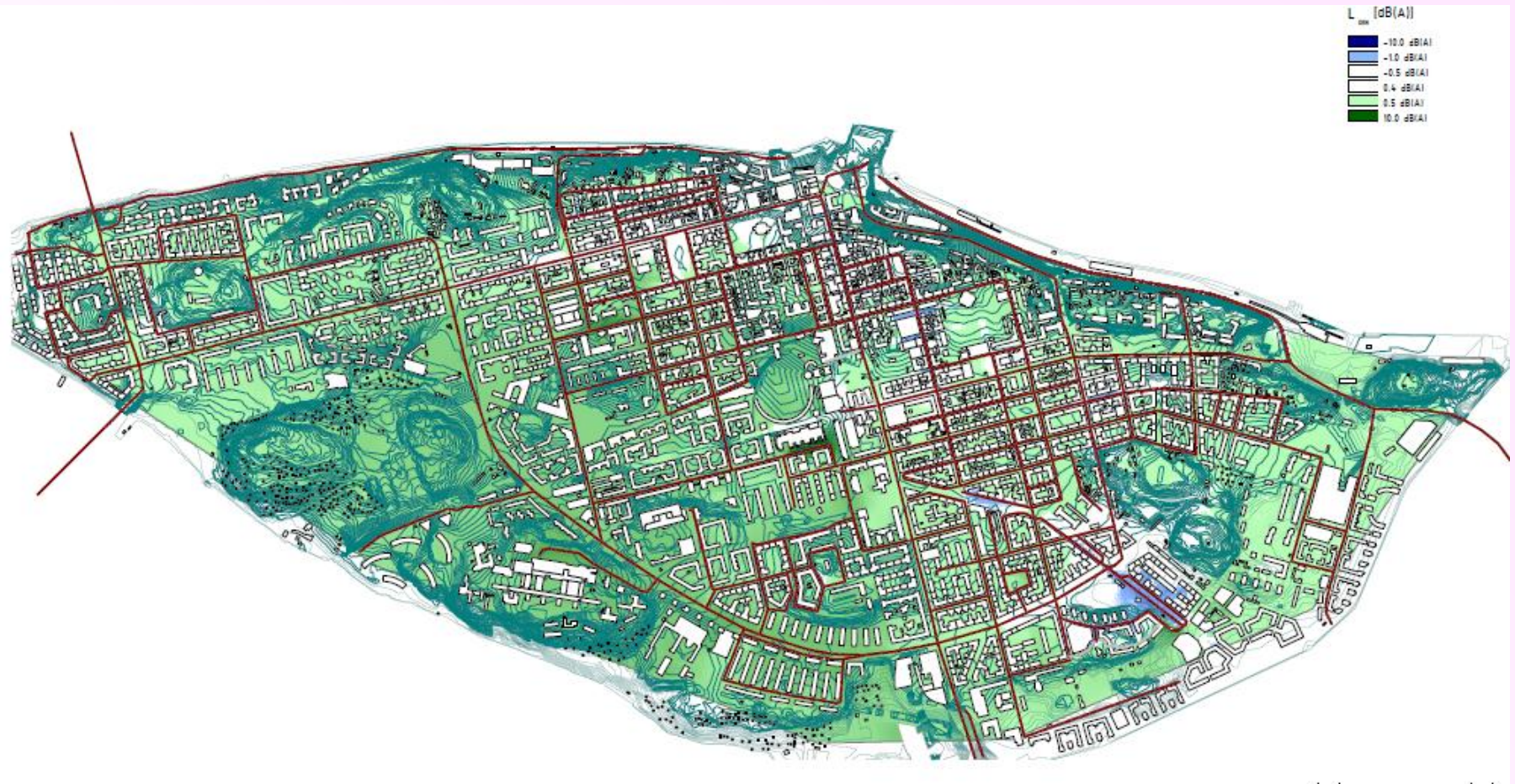
Scenario LNV only, 100% LNV ownership inside QZ, 20 % outside



Difference to Base Case



Difference large zone to Base Case




And ...



- ... about 70 more scenarios....
- ... all not yet analysed....

Some preliminary results



Site	Noise reduction	Approximate zone size
Bratislava	2 - 3 dB	500 x 500 m
Essen	3 - 5 dB	500 x 500 m
Stockholm	5 - 10 dB	1000 x 1000 m

Some preliminary results

➤ Fee size

- 1 Euro almost identical to ban
- 0.5 Euro gives also very high effect
 - Small fee enough for a route change

➤ LNV ownership

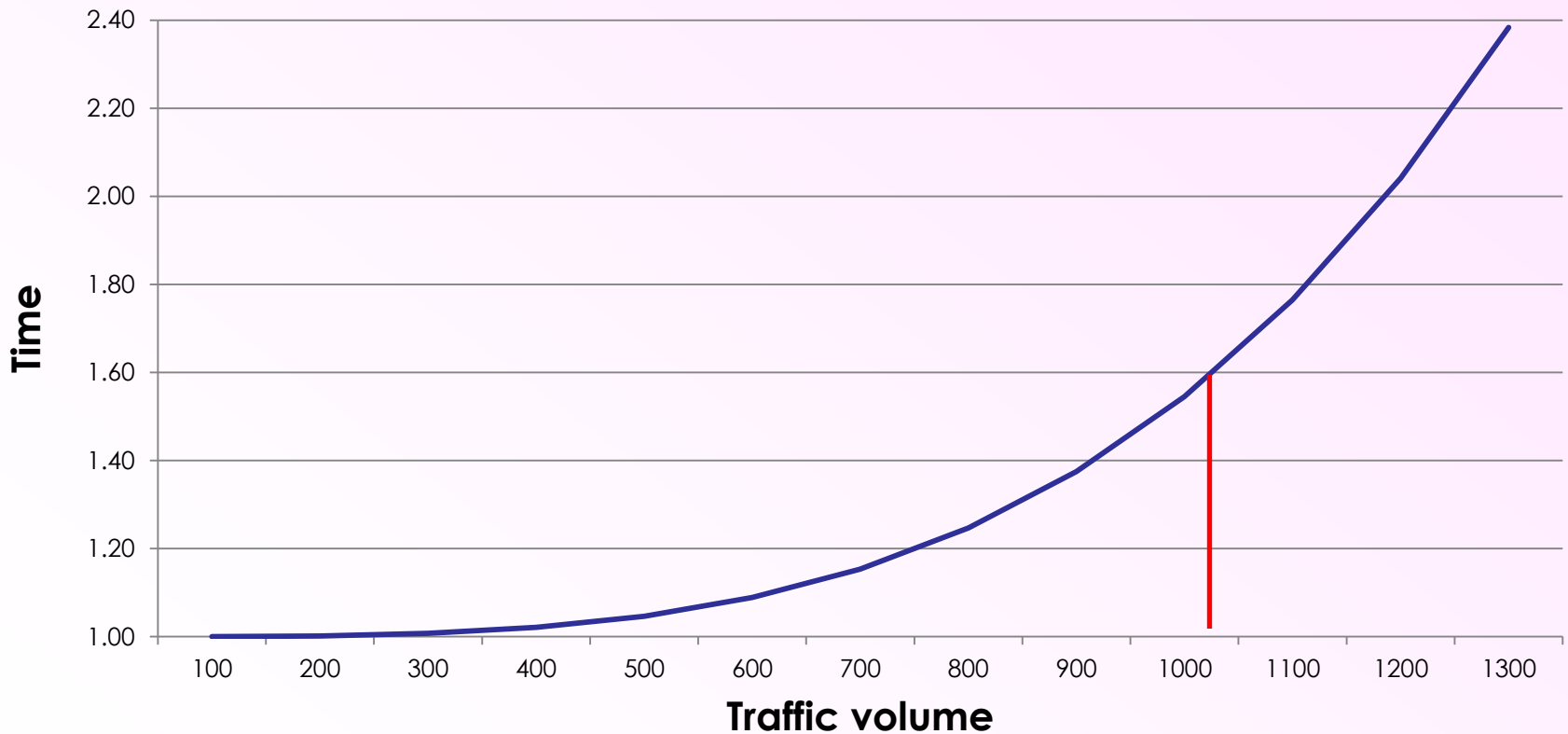
- Internal LNV ownership important

➤ Site

- Geography, history ... and **congestion**

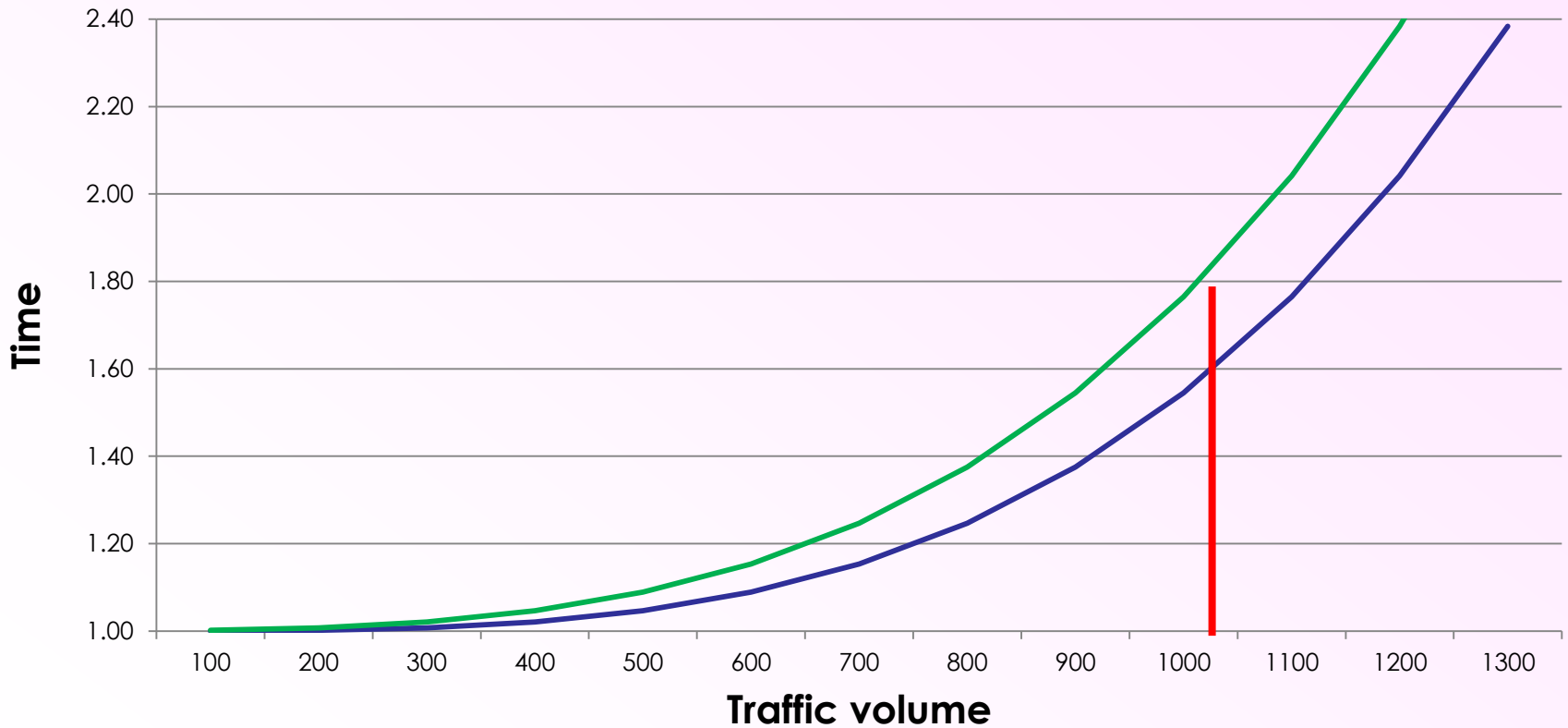
Congestion – an important issue

Congestion - traffic volume and travel time



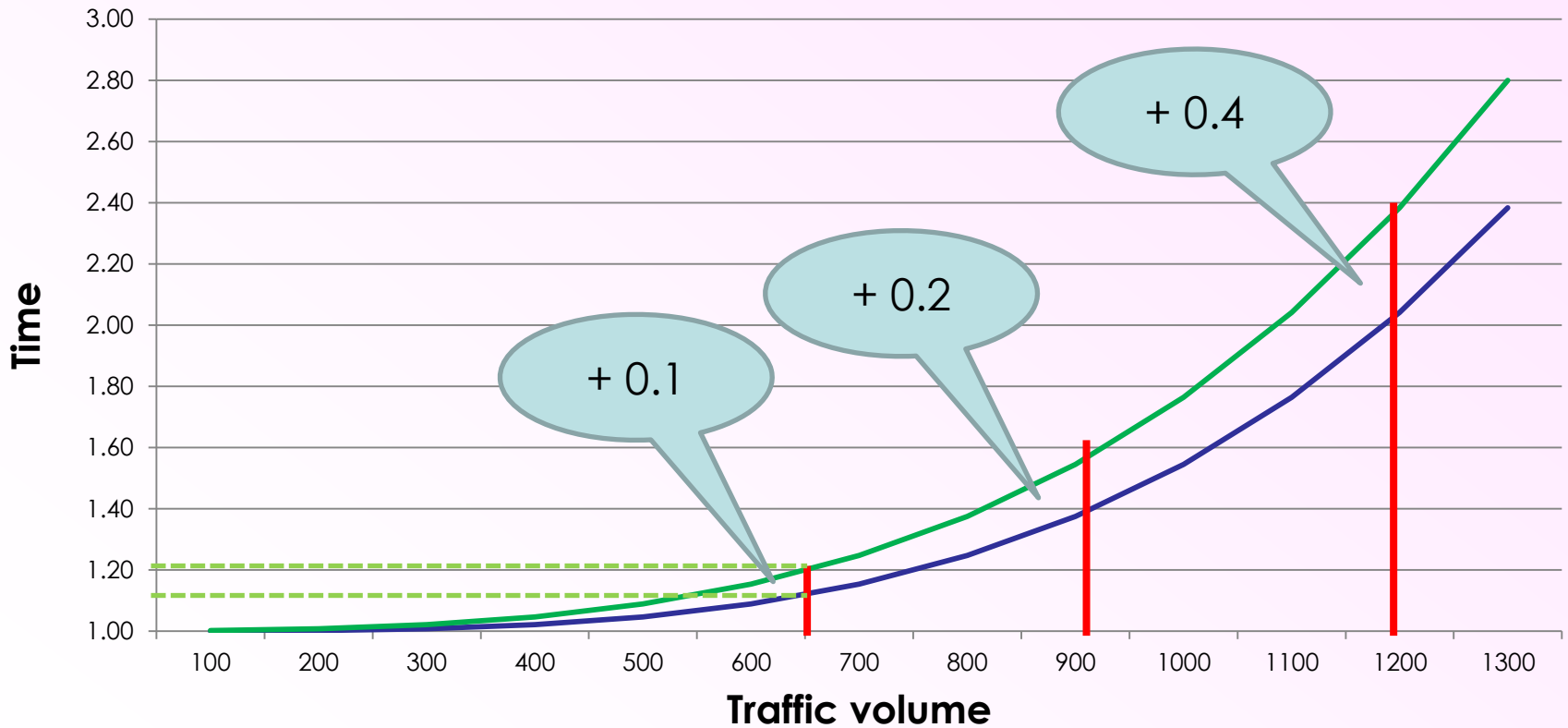
A QZ takes capacity away – congestion will increase outside the QZ

Congestion - traffic volume and travel time



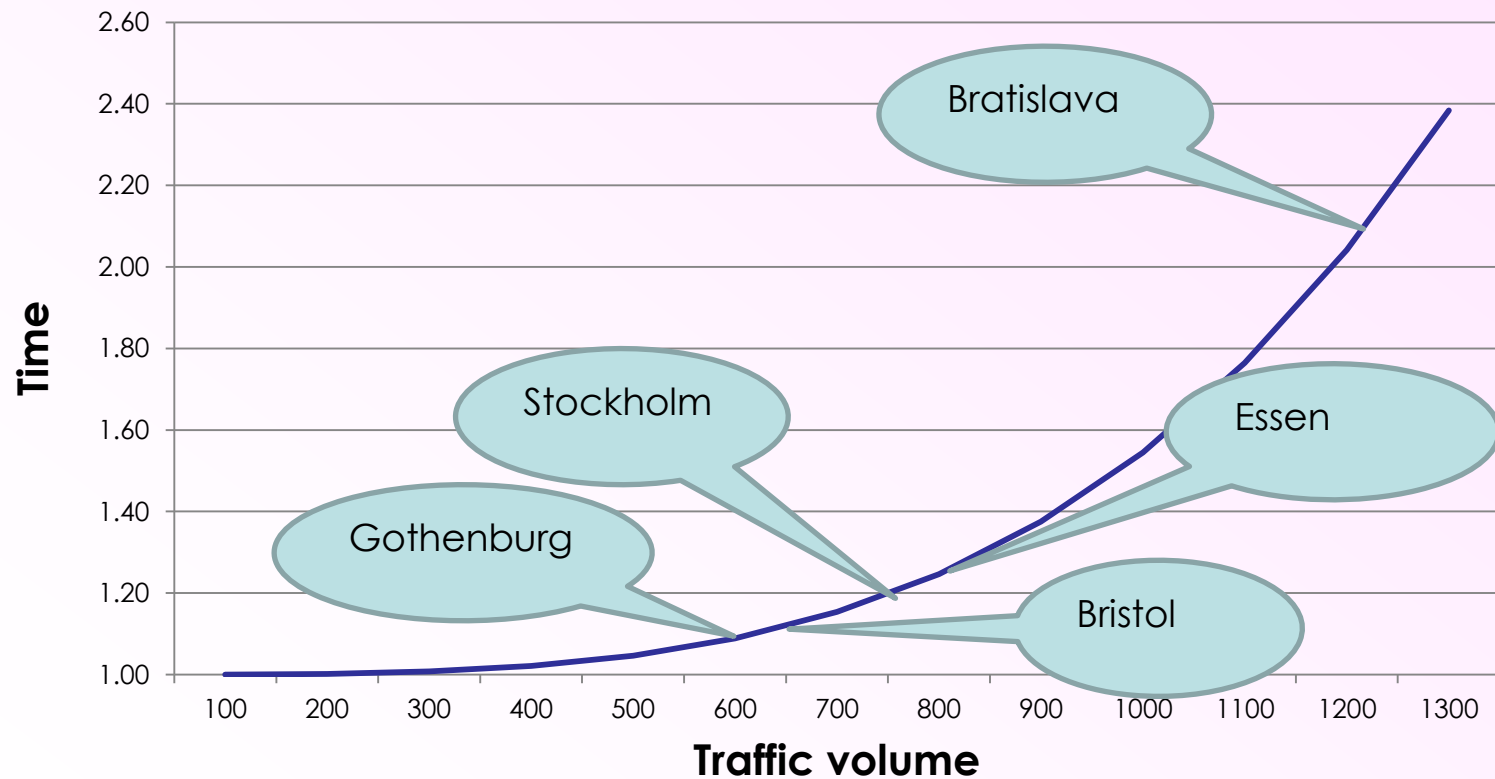
... depending on the congestion level

Congestion - traffic volume and travel time



Congestion situation important for cost effects

Congestion - traffic volume and travel time



Conditions for a QZ are (preliminary)

- Sufficient road capacity
 - otherwise too large congestion effects outside the QZ
- High level of internal LNV ownership
- Zone size large enough to avoid background noise (?)

- Also a minor fee will be efficient