



The subsurface:

Legal aspects

# Ownership of land

- Owner has exclusive right on a certain piece of land
- This includes the space above and under the surface



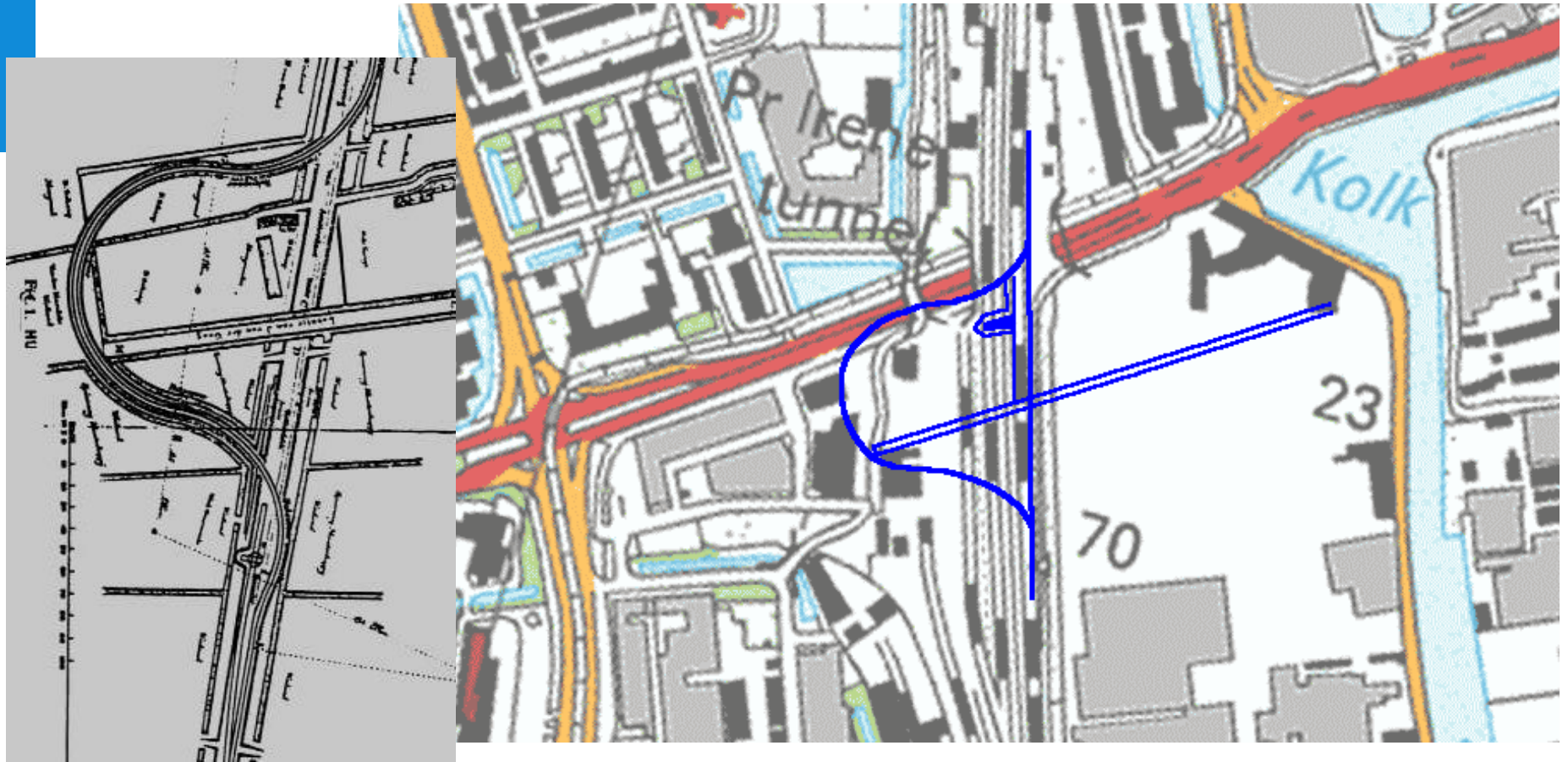
# What if the owner does not want to cooperate?



# Het “Kromme lijntje” (1847) (the Curve at Delft)



# The trick of Ir. Conrad



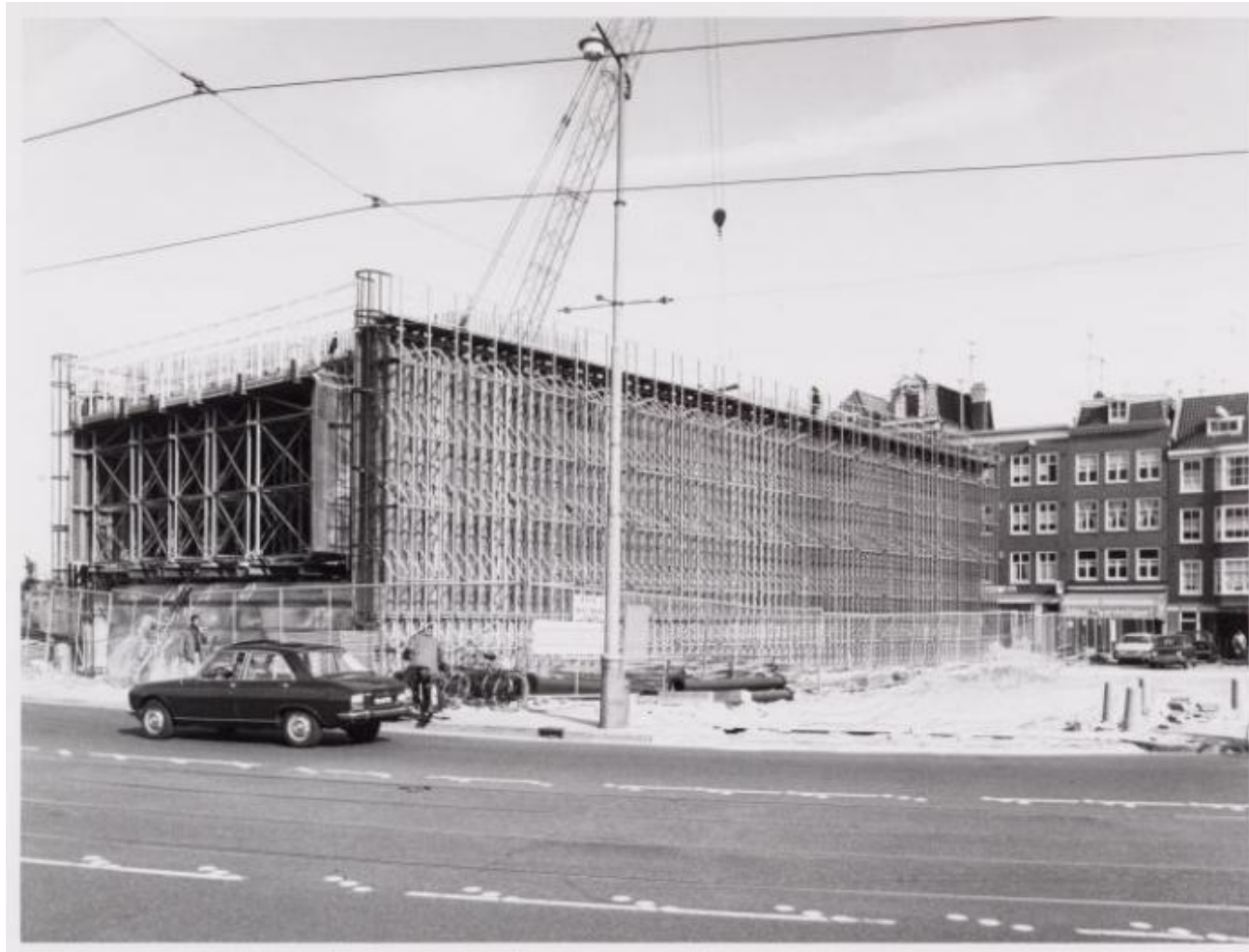
# Subsurface: the solution?



# Amsterdam metro line (1970's)



# Amsterdam: Caisson Waterloooplein





# “No metrotubes, but houses”



# Amsterdam Nieuwmarkt Riots (1975)



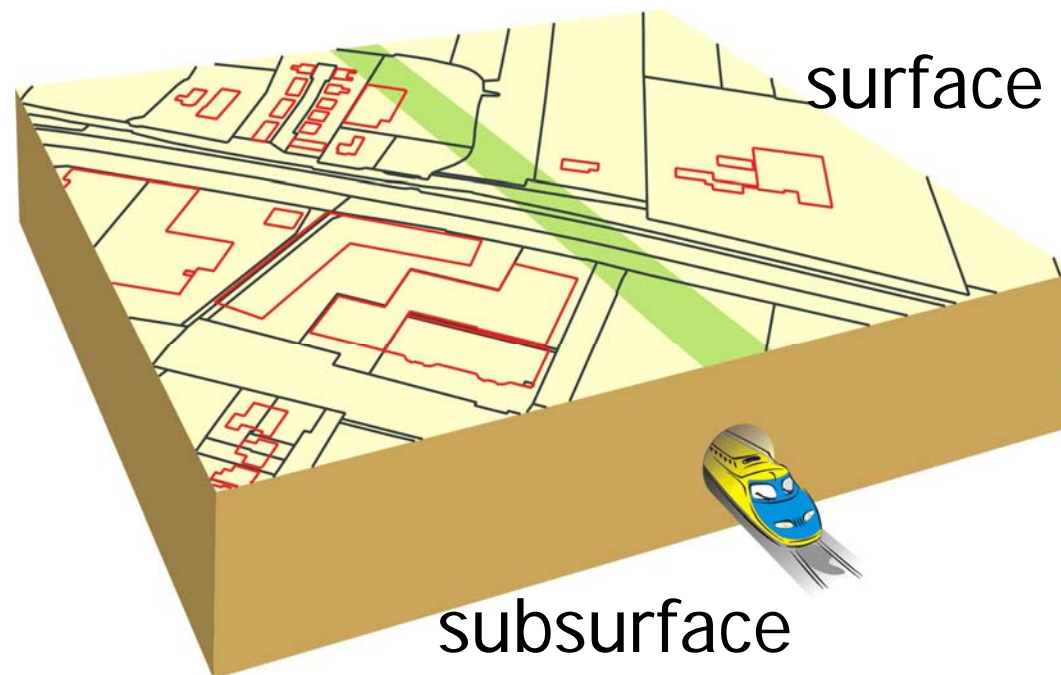
# Amsterdam Eastline opened 1980



# Legal aspects: agenda

- Surface and subsurface: interrelated
  - Rights of the land owner
  - (Subsurface) planning
  - Example of a contract between land owner and tunnel owner
- ⇒ Basics according to Dutch, German and Swiss law

# Two spheres?



# We can hide things, but...



# Depth of ownership of land unlimited?



# Mining

- Traditional an area that is regulated by law
- In order to promote and regulate mining by a system of permits
- Rights of the land owner are restricted
- Specific legislation: in general not applicable for other subsurface activities





# Switzerland

- Land ownership is restricted in 3D
- Limit = Interest of the land owner
- Space under this line is not the ownership of land owner
- State governed (“public domain”)

# Germany and the Netherlands

- Exclusive right of the land ownership is restricted in 3D
- Practical Limit = Interest of the land owner



# Interest of the land (surface) owner

- “Abwehrinteressen” : interest of the land owner to protect his rights in the land
- “Beherrschungsinteressen”: interest of the land owner to use the space under the surface of his land himself

# Abwehrinteressen

- Risk of damages, nuisance (vibrations, sound)
- Not a far-fetched risk

# Beherrschungsinteressen

- Depends of
  - Financial possibilities
  - Technical possibilities
  - Legal possibilitiesof the (actual) land owner



# Possibilities to use the land: legal boundaries

- Rules given by the government: spatial planning
- Tool: **land use plan**
- E.g. agricultural use, high rise buildings

# Relative importance of this rule

- “Test” doesn’t “freeze” the rights of the land owner in future
- Relative limited depth of tunnel

# A tale of two cities









# London Underground



# London: some facts and figures

- London Underground:  
Subsurface lines and deep level lines



# London: some facts and figures (II)

## Maximum depths below ground level

- Sub-surface cut & cover lines: East London Line, Wapping 18.29m
- Deep-level tube lines: Northern Line, Hampstead 67.4m

## Average depths below ground level

- Sub-surface cut & cover lines 7.3m
- Deep level tube lines 24.4m

# London “Metropolitan” (1860-1880)



# London: the Tube (1895 onwards)

- To avoid problems with
  - (old) foundations
  - deep vaults (e.g. Bank of England)
  - claims for compensation

the tube follows often the street pattern of London

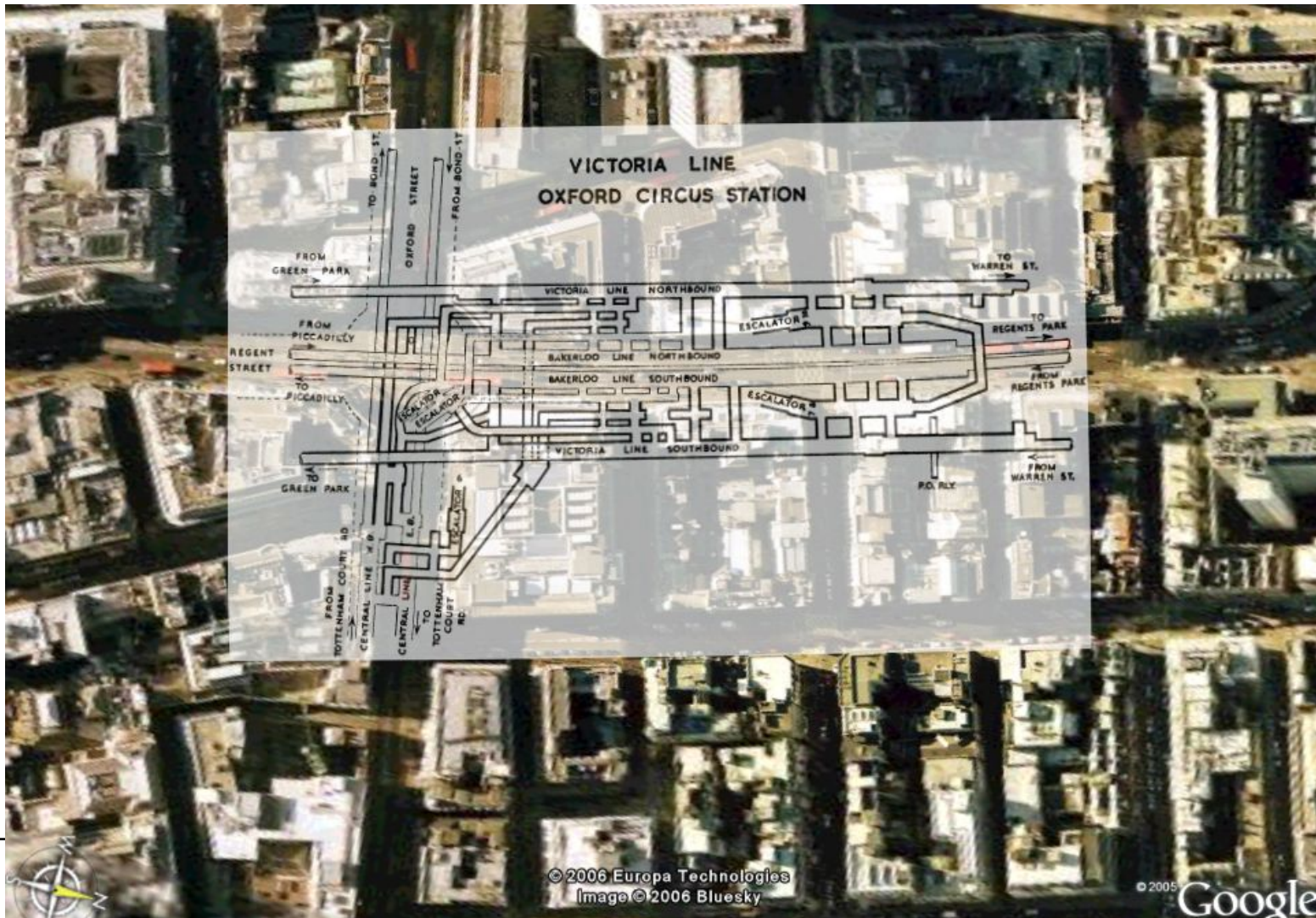


# Clapham South





# Oxford Circus





# Importance of good spatial planning

- Control of use of surface and subsurface

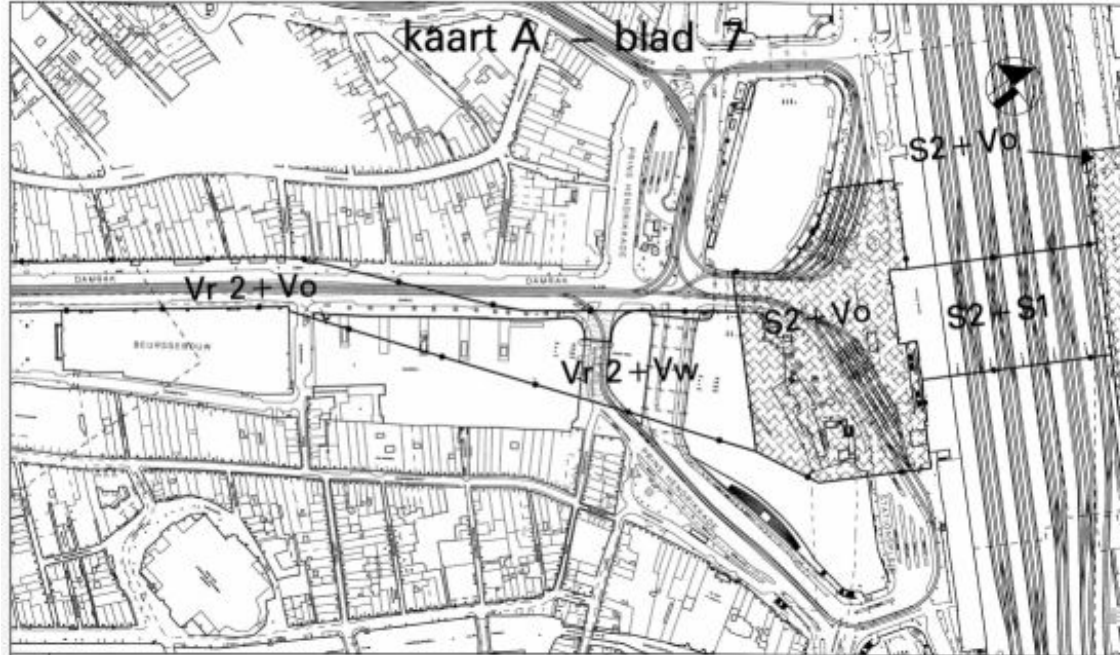
# Spatial planning plan

- 2D: Rotterdam

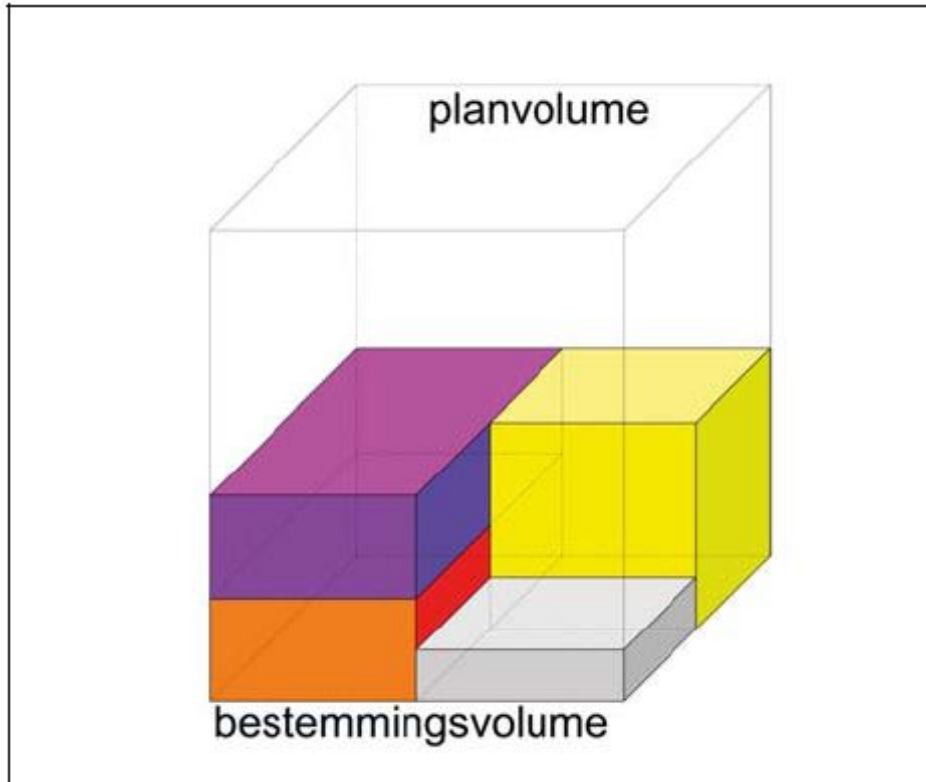


# Spatial planning plan

- Multi layer: Amsterdam



# The future? Planning in 3D?





Maatschappelijke doeleinden (museum)

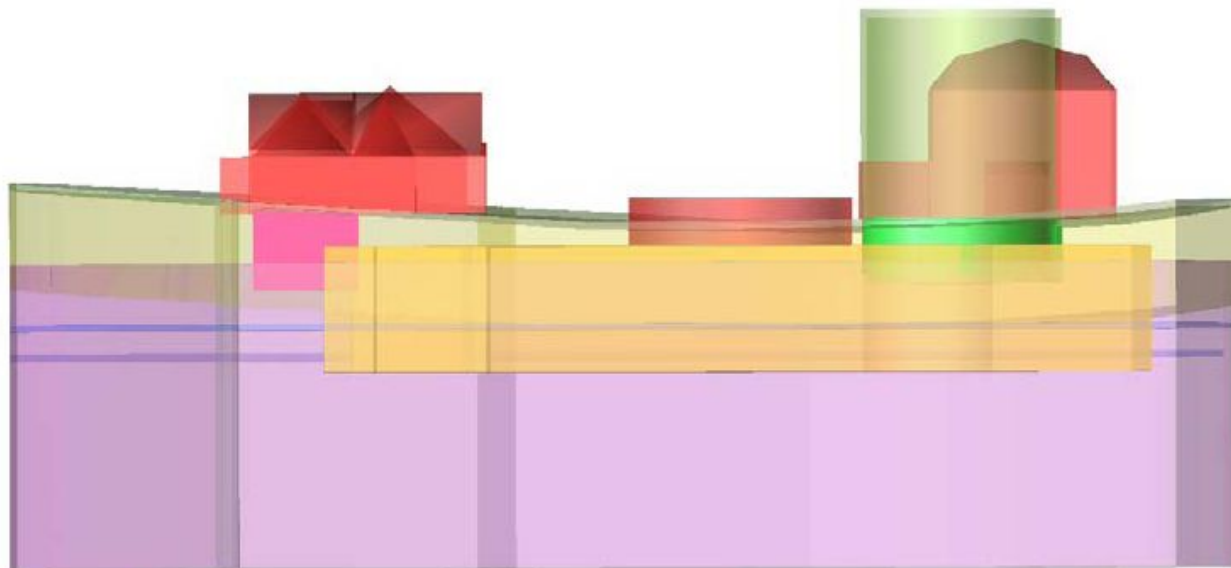


Maatschappelijke doeleinden / Park



Park

de 2d-pla



Museum (ondergrondse deel)



Museum (relatie onder- bovengrondse deel)



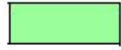
Museum (bovengrondse deel)



Archeologische waarde (dubbelbestemming)



Park met landschappelijke en cultuurhistorische waarde



Boom met monumentale waarde (dubbelbestemming)



Grondwaterniveau (aanduiding)



Kleischot (aanduiding)

# Case: Tunnel for High Speed Line (Amsterdam – Paris)

“Groene Hart tunnel” between  
Leiderdorp and Hazerswoude

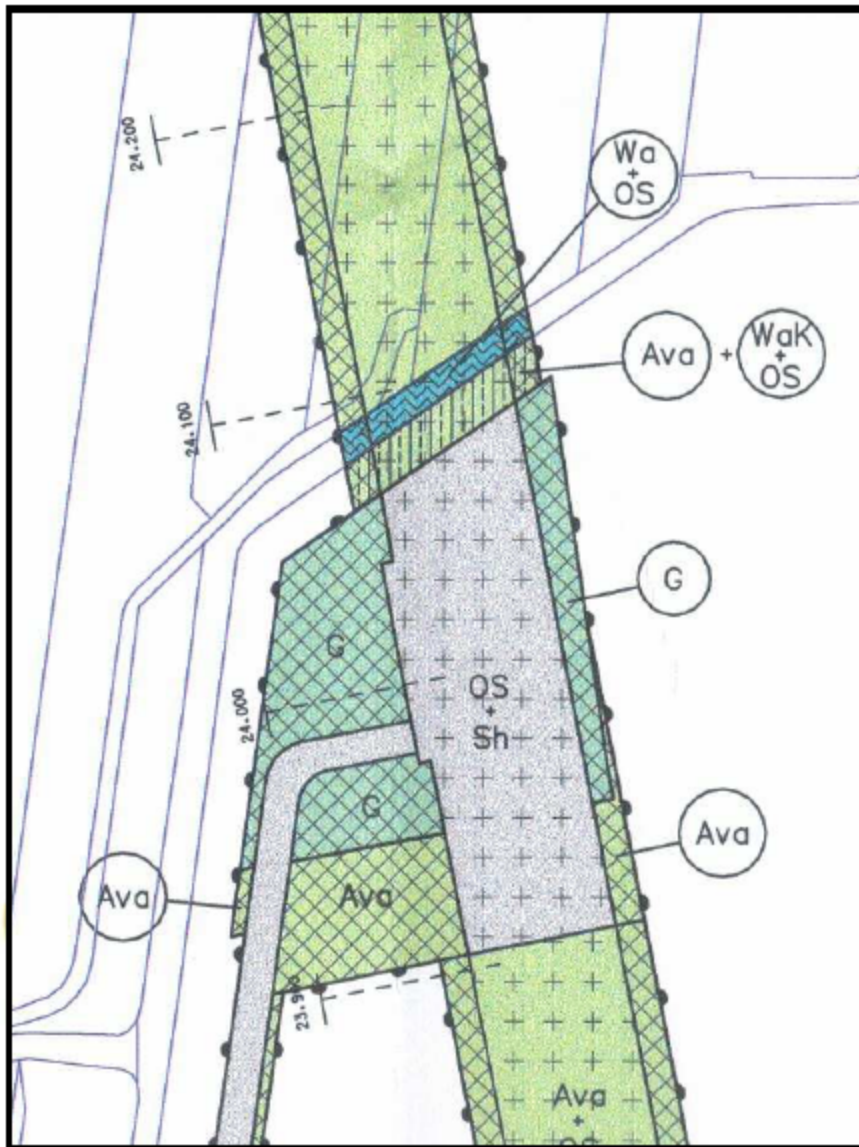


# Land use plan tunnel area

- Multi level (like example of Amsterdam)
- Subsurface: railway tunnel; emergency exits; etc
- Surface: very limited rights for land owner
  - agricultural use: crops, cattle
  - no large constructions allowed



# Land use plan HSL: example





# The relation land owner and tunnel owner

- Lease right (*opstalrecht*) established for State (constructor)
- Right to use space and construct tunnel from 15 m under the surface onwards

# Tunnel High Speed Line (II)

- Tunnel will be used as a railway
- Lease right is perpetual
- Land owner and tunnel owner can only cancel the right other than by mutual agreement
- Tunnel owner has the right to enter the land to inspect the works (during and after construction)

# Tunnel High Speed Line (III)

- Land owner is only allowed to change, remove or demolish buildings on the land, construct new buildings, or change the use of existing buildings after permission of the tunnel owner. Permission will only be given under conditions to secure the safety of the tunnel
- Damage because of the restrictions imposed by those conditions will be paid by the tunnel owner
- Tunnel owner can remove all constructions that land owner builds without permission

# Tunnel High Speed Line (IV)

- How is secured that (future) land owners are bound to those provisions?
  - easements (tunnel = dominant parcel / land = servient parcel)
  - Fine: EUR 250.000,-

# Tunnel High Speed Line: Liabilities regulated in deed

- Tunnel owner is responsible for the tunnel, the design and the construction of the tunnel
- Tunnel owner is liable for damages because of failures in the design or construction of the tunnel
- Land owner is liable for damages to the tunnel because of use of the land not in accordance of the regulations in the deed
- Damages because of nuisance by vibrations, resulting in a tort of the tunnel owner, will be compensated

# Conclusions

- Right of land owner is not unrestricted
- But limit is not “hard”
- Hopefully the legislator provides a good framework
- Importance of good (and third parties binding) contracts
- Importance of good spatial planning