



# Mitigation planning in Dordrecht: case Thureborgh

Thematic seminar Epirus September 2011

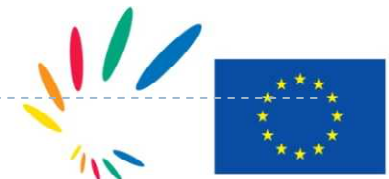




## The project

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- City in Netherlands,  $\pm$  100.000 inhabitants
  - Retirement home:
    - buy apartments
    - rent apartments
    - care and nursinghomes
  - Situated very near to railwaystation (84 meter – 200 meter):  
**safety risks!!**
  - Buildings antiquated and shortage of rooms (demand expands offer)
  - Possible solutions:  
renewal current buildings and expand on the spot  
or movement to another location
  - Town council decided to keep the retirement home on location
- ➔
1. Renew current buildings
  2. Expand with new buildings



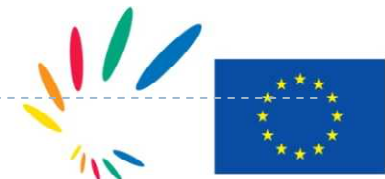




## Hazards: the transport of toxic gasses



= average of 13 tanks a day

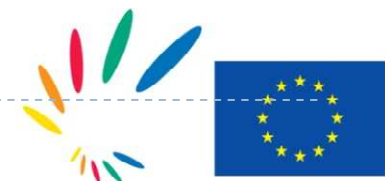




## Hazards: the transport of flammable gasses



= average of 45 tanks a day





## Hazards: the calculated 'group risk'



= group risk 11 times higher than advised maximum





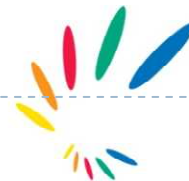
## Starting point

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No moving of the complex because:

- The safety profit in terms of risk calculations (group risk) is not significant and would create a precedent for other areas
- The district cannot do without a retirement home and no other location is available

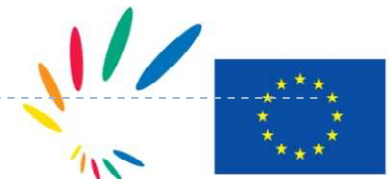
[\[1\]](#).





## Parties

1. Lead partner program of requirements safety:  
Municipality and architect
  
2. Partners:
  - municipality Dordrecht
  - housing cooperative (owns and rent homes out)
  - environmental agency
  - carecentre
  - Safety region (fire department)
  - Architect
  
3. Scope/subject:  
Area of the retirement homes



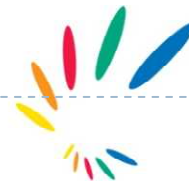




## Contents of the mitigation plan in this case

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1. Motive
2. Purpose of the mitigation plan
3. Risk sources (hazards) and scenario's
4. Safety check:
  - local risk
  - group risk
  - self reliance
  - manageability
5. Safety measures
6. Residual risk





## Proposed safety measures [1]

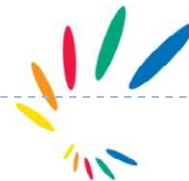
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### Probability reduction:

- National measures to decrease the probability on the railway itself (*outside the scope of this plan*)

### Exposure reduction:

- Distance between railway and new buildings
- Building with most people at greatest distance



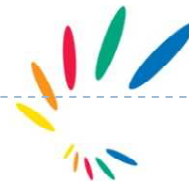


## Proposed safety measures [2]

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### Vulnerability (susceptibility) reduction

- Explosion proof windows
- In addition: fire resistant screens for windows of most vulnerable building
- Gas detection
- Air conditioning which can be shut off at one central point
- Core of buildings (staircases) built extra strong to withstand explosions and prevent secondary fires
- 120 minutes fire proof walls





## Proposed safety measures [3]

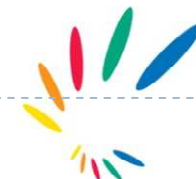
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### Crisis management

- Evacuation routes in other direction
- Additional training for internal crisis organization
- Measures to ensure accessibility
- Measures to ensure the evacuation of casualties
- Measures to water supply for fire brigade

### Self reliance

- Risk communication





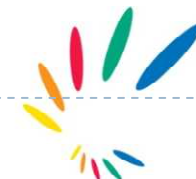
## Decision process

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Partners prepare advice

College of Major and Aldermen and town council decide!

For fast acceptance en decision:  
information en consultation of members of town council and their peergroups during the process helps!

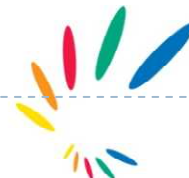




## Discussion on this case

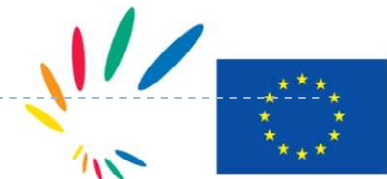
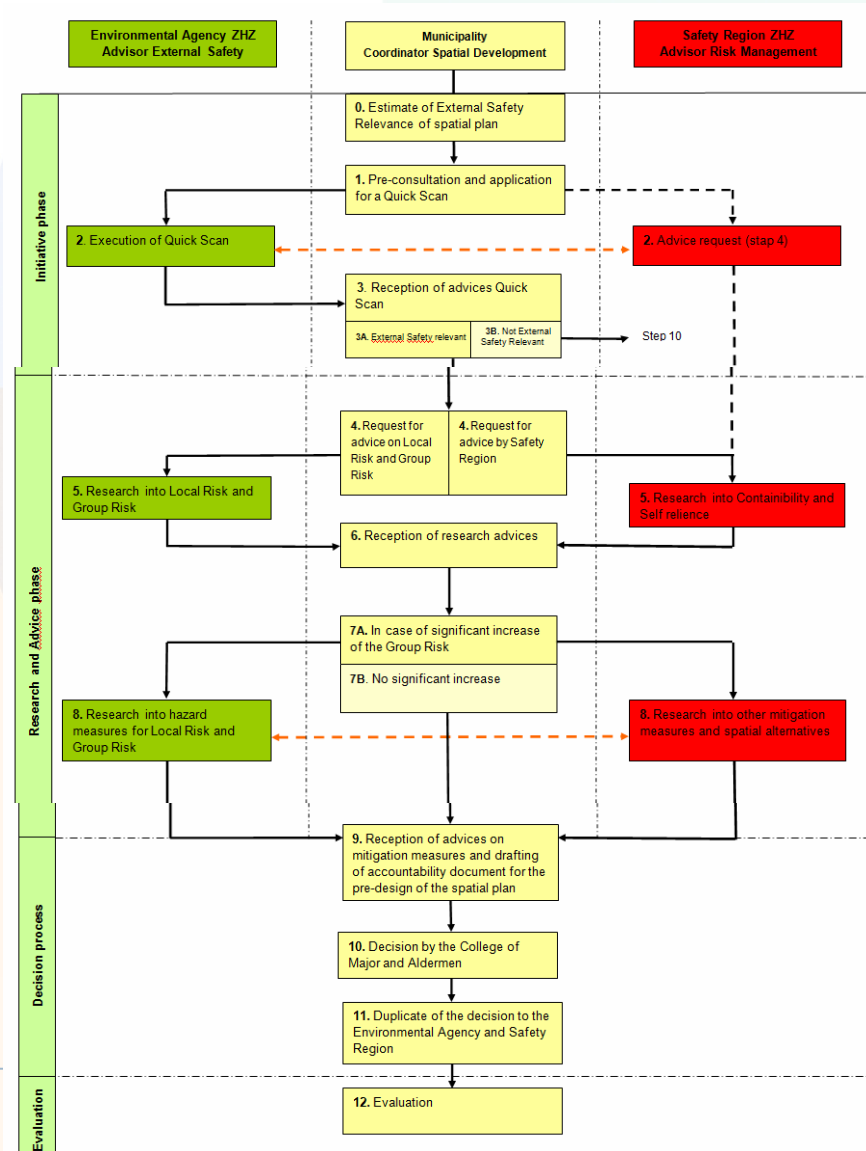
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1. Which scenarios were taken into account?
  - All hazard (like flooding)? No, in this case only haz.subs.
  - All scenarios related to railway? No, in this case only explosions taken into account and not toxic!
2. All impact? In this case focus on casualties, other kinds of impact (like economic) not taken into account
3. Cost-benefit analysis? Safety measures versus moving of the complex
4. Current versus future transport movements
5. Reliability of national calculations





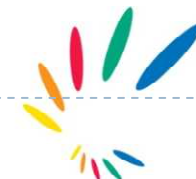
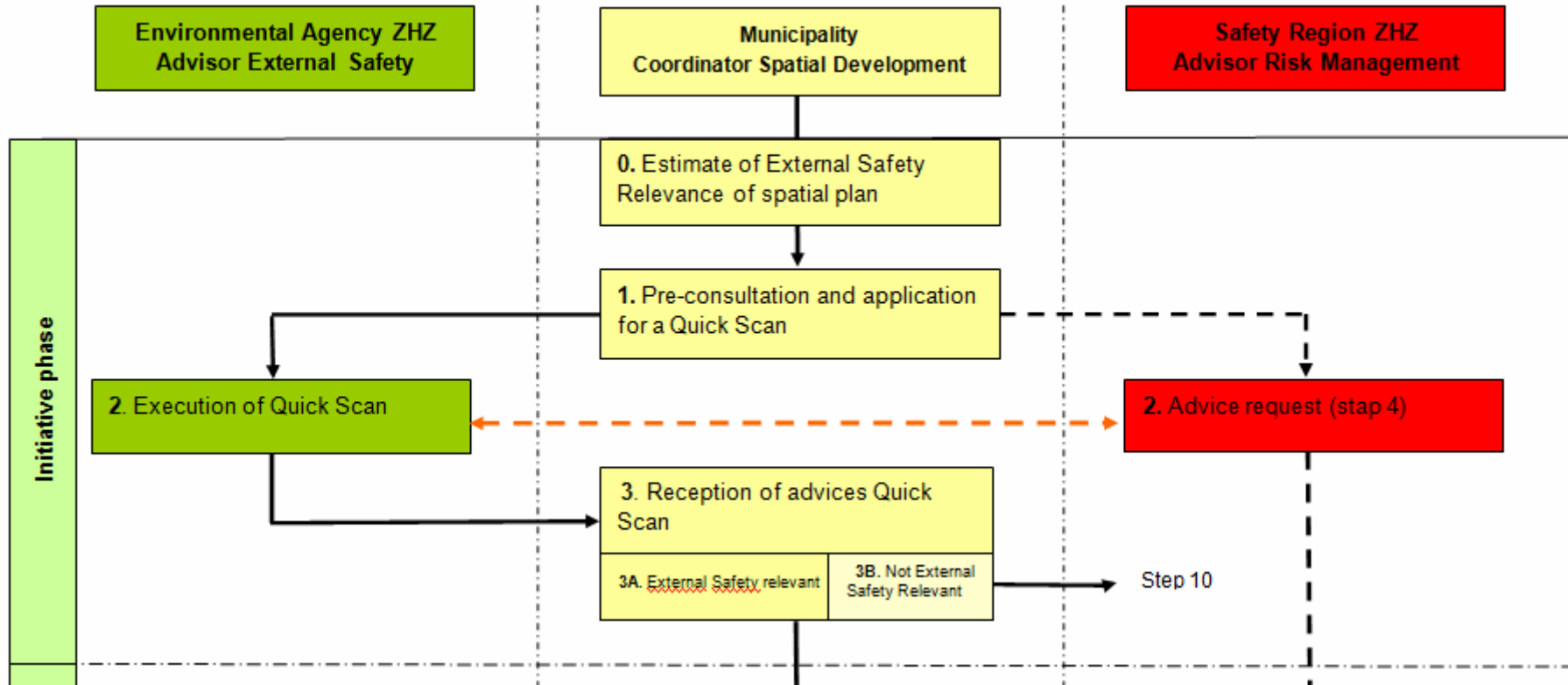
# The process: Protocol External Safety in spatial development





# Protocol External Safety in spatial development

## *Initiative phase*

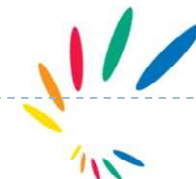
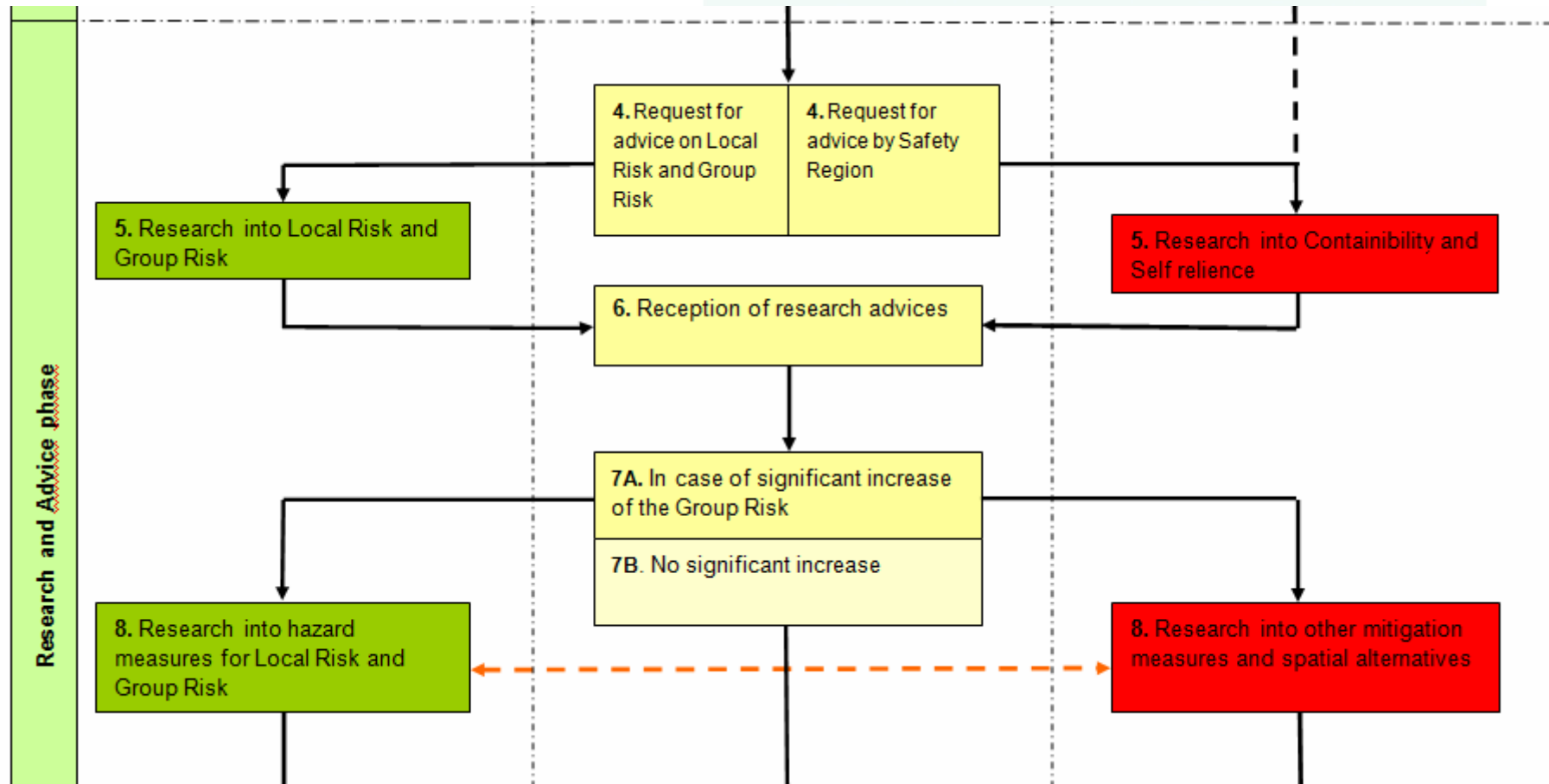






# Protocol External Safety in spatial development

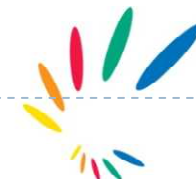
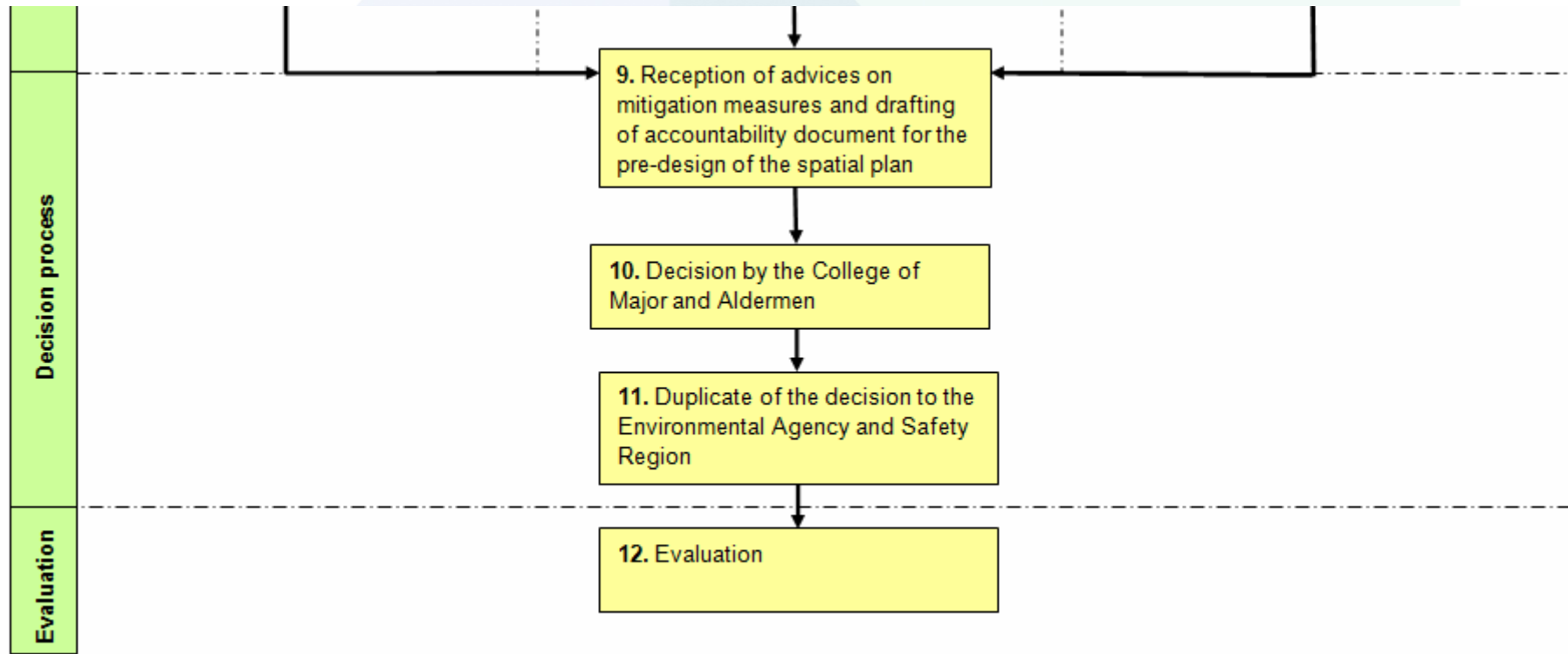
## *Research and advice phase*





# Protocol External Safety in spatial development

## *Decision process and evaluation*

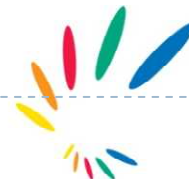




## Lessons: necessary contents of the plan

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1. Motive and purpose of the mitigation plan
2. Risk assessment
3. Goal setting:
  - a) Legal safety norms
  - b) (Political) wishes
4. Capability assessment & legal framework
5. Proposed safety measures
6. Cost-benefit analysis
7. Financing
8. Residual risk and relation with emergency plans
9. Risk communication





## Lessons: other recommendations

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- Process and contents differ for different kinds of mitigation plans
- Make safety and risk mitigation a leading interest in (political) decision processes about spatial planning
- Early consultation of partners is needed
- Get a clear assignment with clear targets, allocation of responsibilities and agreement on the process

**Don't be risky. Be RISCE!**

