Republic of Serbia
Ministry of Environmental Protection
Department for Major Chemical Accident Protection

Interventions to spatial plans regarding industrial safety measures for planned future developments in areas with hazardous industrial facilities

Sub-regional workshop on land-use planning and industrial safety for Eastern Europe and the Caucasus
Chisinau, Republic of Moldova
22-24 May 2019

Legal framework

Republic of Serbia is the Party to

- Convention on the Transboundary Effects of Industrial Accidents
- Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention) and
- Protocol on Strategic Environmental Assessment (SEA)
- Amendments to ESPOO Convention, Decision II/14 and Decision III/7, ratified 2016

EU legislation – partially transposed

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU
- Directive 2001/42/EC if the European Parliament and of the Councilof 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment
- Seveso III Directive (2012/18/EU of 4 July 2012) on the control of major-accident hazards involving dangerous substance

Legal framework

- Integration of industrial accidents safety considerations into the land use planning is done via SEA, EIA or separate assessment of industrial accidents safety.

General obligations

- The competent authority responsible for plan and programme preparation cannot continue further procedure of adoption of plans or programmes without having obtained the approval from the competent environmental protection authority for the strategic assessment report.
- Law on Environmental Protection defines that planning authority must take into account data, measures and conditions of prevention of major chemical accidents when developing spatial plans.
- LEP prescribes that spatial and urban plans shall ensure measures and conditions of environmental protection and in particular: defining areas to maintain appropriate distances between hazardous activities and residential areas, public areas and areas of particular sensitivity or interest for protection of human life and health and the environment.

Overview of structure of influenced spatial plans

- In past 4 years many spatial plans have been made or revised.
- Seveso competent authority officially influenced more then 140 spatial plans.
- Influenced spatial plans where made for areas of development with existing hazardous activities or for areas of development with no hazardous activity.

- Interventions where made to:
  - Regional spatial plans (11),
  - Spatial plans for areas of special purpose (66)
    - For major infrastructure projects
    - For environmental protection areas
  - Plans of general regulation (23)
  - Plans of detail regulation (42)

Overview of structure of influenced spatial plans

- Spatial plans, before intervention regarding major accident hazards usually:
  - Have no information on identification of hazardous activity
  - Do not envisage any safety distances between hazardous activity and residential areas, public areas and areas of particular sensitivity
  - Have no information on types of possible effects to human life and health and the environment
  - Do not envisage any measures and conditions for mitigation of effects of major accident hazards
- Out of total number of influenced spatial plans about 20% had hazardous activity in its borders and measures and conditions of environmental protection where proscribed.
- Some spatial plans could have possible effects to human life and health and the environment from hazardous activity outside the borders of plan and measures and warnings for emergency planning and environmental protection were given.
- On all other influenced spatial plans „educational approach“ was used.

Process

- After receiving request for information and measures regarding hazardous activity and major accident hazards, first step is to inform planning authority if hazardous activity exists in borders or near the borders of spatial plan.
- If there are no hazardous activities in borders or near the borders of spatial plan, and for any future constructions of such hazardous activities, “Educational approach” is used.
- If there are existing hazardous activities in borders or near the borders of spatial plan, planning authority is informed of their location and tier.
- For lower tier hazardous activities, 1.000 meters from its borders is named as vulnerable zone, that zone is used for planning emergency evacuation and it is advised against construction of non-industrial objects and areas.
- For upper tier hazardous activities modelled effects of major accidents, for every possible type of effect on that complex are used, using endpoints of effects proscribed by Rulebook.
- Ban of construction of non-industrial objects and areas is issued for all 50% casualties zones or IDLH zones.

Process

- Also, if industrial objects are planned in 50% casualties zones or IDLH zones, personal safety equipment and general protection measures from Safety Data Sheets of every hazardous substance on hazardous activity site, are proscribed as mandatory for all possible industrial investors in that zone (for their personal and visitors).
- Other injury zones (1st degree burns, 0,1IDLH etc.) are most often used as vulnerable zone for planning emergency evacuation.
- Sometimes but, since it is not proscribed by law, not always, planning authorities return their draft outputs with interventions regarding industrial safety measures for additional comments and additional information.

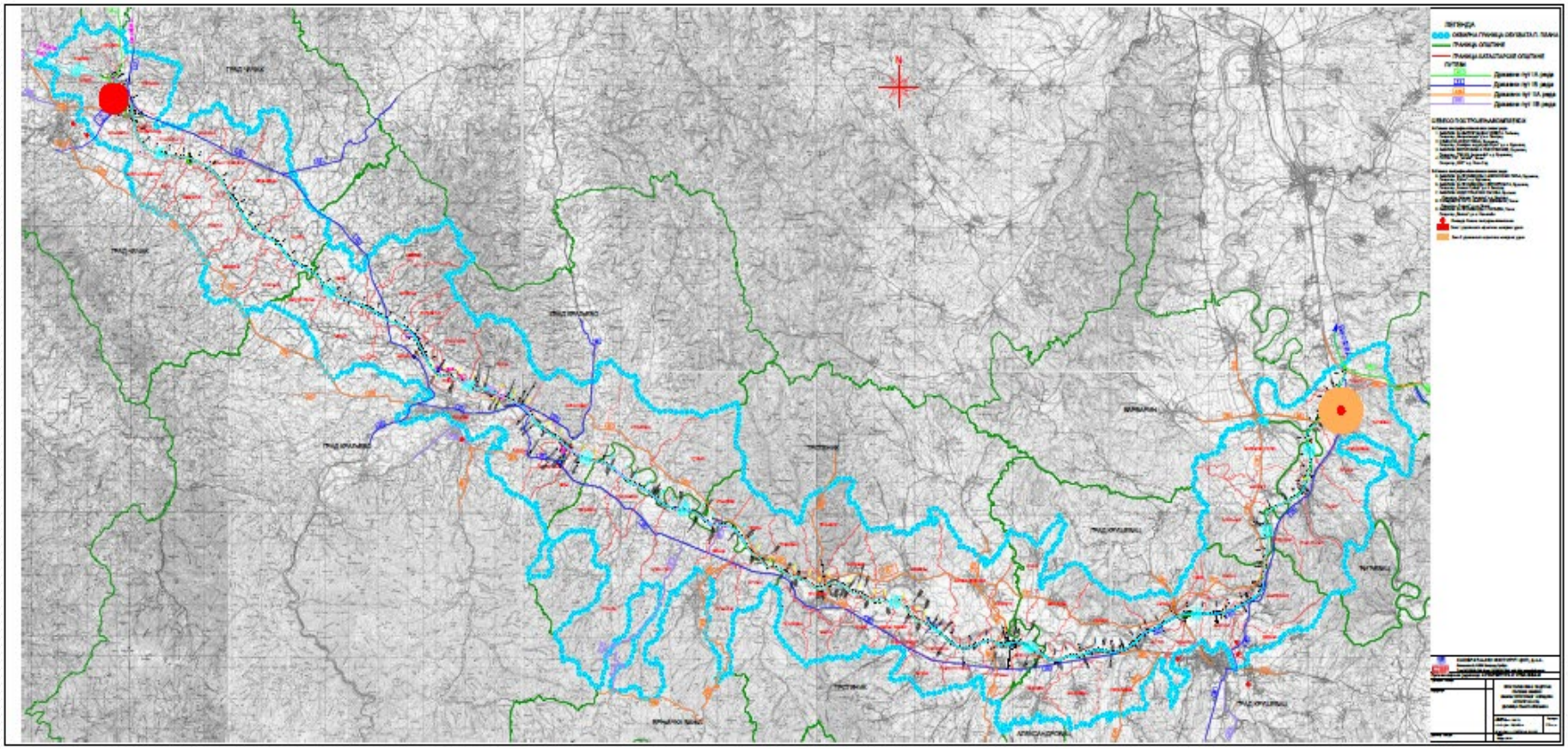
“Educational approach”

- Process of implementing safety measures regarding major accident hazards in spatial plans without existing hazardous activities, or when planning the construction of such new hazardous activity, is not proscribed by law.
- CA then uses “Educational approach” when answering spatial planning information and measures requests.
- General obligations of operators are explained in detail, alongside with the warning of possible ban of operation that may be issued for new hazardous activity according to LEP, if modelled risk is not acceptable or obligations regarding drafting Safety Report and Emergency Plan, or not taking preventive measures are not met.
- Since the level of risk of accidents depends on area around the new hazardous activity and present number of people, it is always advised that planning of location of new hazardous activity should be done according to modelled effects of accidents (according to planned hazardous substance capacities on site) or the investor will have additional expenses regarding either additional risk reduction measures (if such are possible) or complete ban of operation of new hazardous activity.

Case 1 - Regional spatial plan

- Spatial plan was developed for major infrastructural corridor (new highway) in central Serbia.
- Highway is planned within territories of 8 different cities.
- Interventions to spatial plan were made in two iterations between CA for major accident prevention and CA for spatial planning.
- At first iteration, total of 9 hazardous activities were identified either in borders of spatial plan, or near its borders.
- From identified, 4 are upper tier and 5 are lower tier hazardous activities.
- All of them are known to CA for major accident prevention and all have passed the process requested by Law on environmental protection.
- At second iteration, more detailed cooperation between CA`s was in place to identify if all 9 can influence, in case of accidents, planned route of new highway.
- At the end 2 have been identified as ones with possible direct influence to planned new highway, 1 lower tier and 1 upper tier hazardous activity.

Case 1 - Regional spatial plan



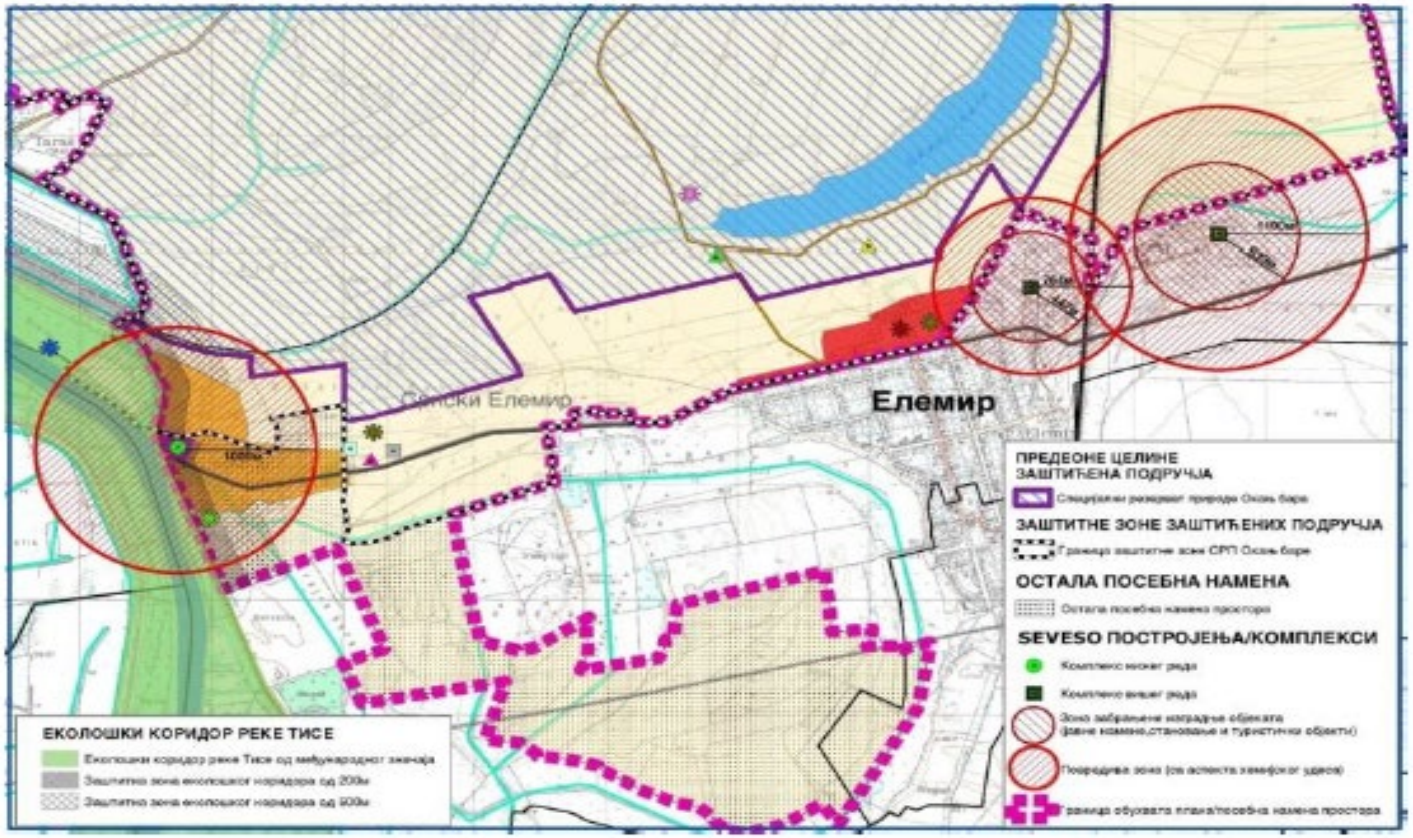
Case 1 - Regional spatial plan

- All 9 hazardous activities are noted in spatial plan.
- For those 2 with direct influence to highway it was elaborated in more detail about types of effects.
- Since both hazardous activities have dangerous substances that are hazardous to environment, for this spatial plan, accent was placed on possible effects of substances generated in case of accident (fire in this case).
- On both hazardous activities substances generated in case of fire are acute toxic and safety distances were defined according to modeled IDLH and 0,1IDLH values.
- Total of 5 measures defining areas to maintain appropriate distances between hazardous activities and residential areas, public areas and areas of particular sensitivity or interest for protection of human life and health and the environment, were issued.
- One of them proscribes that emergency planning must include stopping and evacuating all the traffic from highway in case of fire accident, for both hazardous activities.

Case 2 - Spatial plan for areas of special purpose

- Spatial plan was developed for environmental protection areas.
- It includes part of Environmental corridor of Tisa river, Special nature reserve Okanj swamp and Nature park Rusanda.
- Interventions to spatial plan were made in two iterations between CA for major accident prevention and CA for spatial planning.
- At first iteration, total of 3 hazardous activities were identified either in borders of spatial plan, or near its borders.
- From identified, 2 are upper tier and 1 is lower tier hazardous activity.
- All of them are known to CA for major accident prevention and all have passed the process requested by Law on environmental protection.
- At second iteration, more detailed cooperation between CA`s was in place to change parts of spatial plan and to proscribe measures of protection.
- Domino zone was also mentioned.
- Dock with loading station at lower tier hazardous activity at Tisa riverbank was mentioned also.

Case 2 - Spatial plan for areas of special purpose



Case 2 - Spatial plan for areas of special purpose

- All 3 hazardous activities are noted in spatial plan.
- Possible effects for spatial plan were based on primary categories of effects of present dangerous substances.
- For both upper tier est.- thermal radiation from BLEVE was noted.
- For lower tier est. - thermal radiation from fire and toxic for environment effects were noted.
- Zones of 50% lethality, 1% lethality and first degree burns were used for thermal radiation.

Case 2 - Spatial plan for areas of special purpose

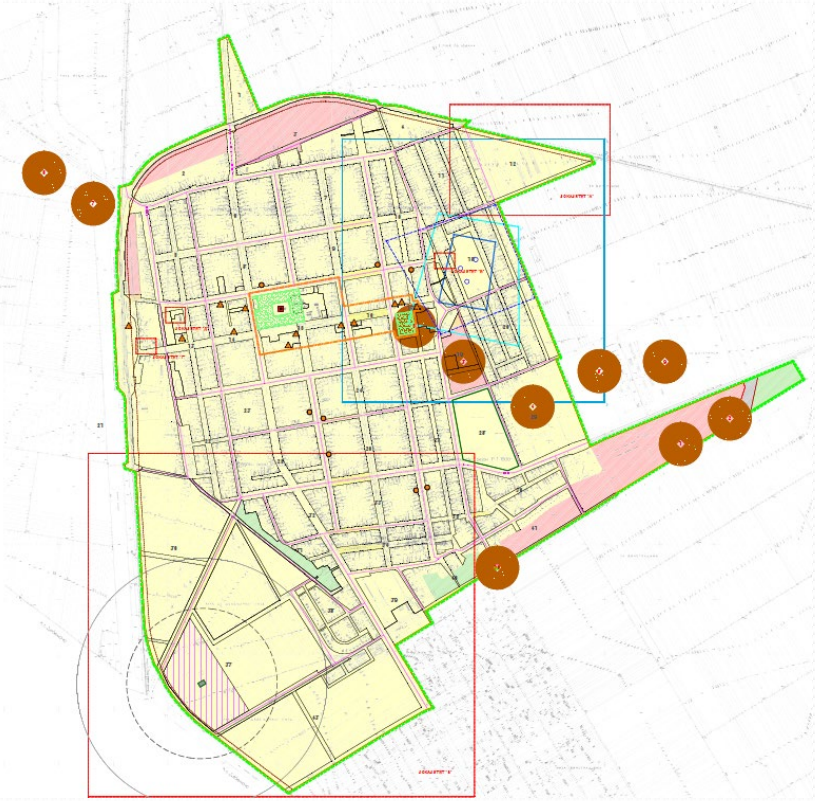
- Ban of construction of residential areas, public areas and areas of particular sensitivity was issued for zones of 50% lethality.
- Measures for emergency planning for other effect zones were given.
- Planed new zones around lower tier act. were changed from holiday housing to industrial zone.
- Operator stopped using dock with loading station at lower tier hazardous activities at Tisa riverbank and started decommissioning the dock.

Case 3 - Spatial plan for general regulation

- Spatial plan was developed by local government for small town area.
- Interventions to spatial plan were made in 3 iterations between CA for major accident prevention and CA for spatial planning.
- At first iteration, 1 hazardous activity was identified in borders of spatial plan.
- It is upper tier hazardous activity with present LPG and petroleum products.
- Process requested by Law on environmental protection for that y was ongoing.
- At second iteration, measures of protection where issued based on worst case scenario with possible BLEVE effects and thermal radiation.
- Local government identified planed new vulnerable object (nursing home) at very end of safety zone.
- At third iteration meeting with local government, spatial planers and emergency services was held.

Case 3 - Spatial plan for general regulation

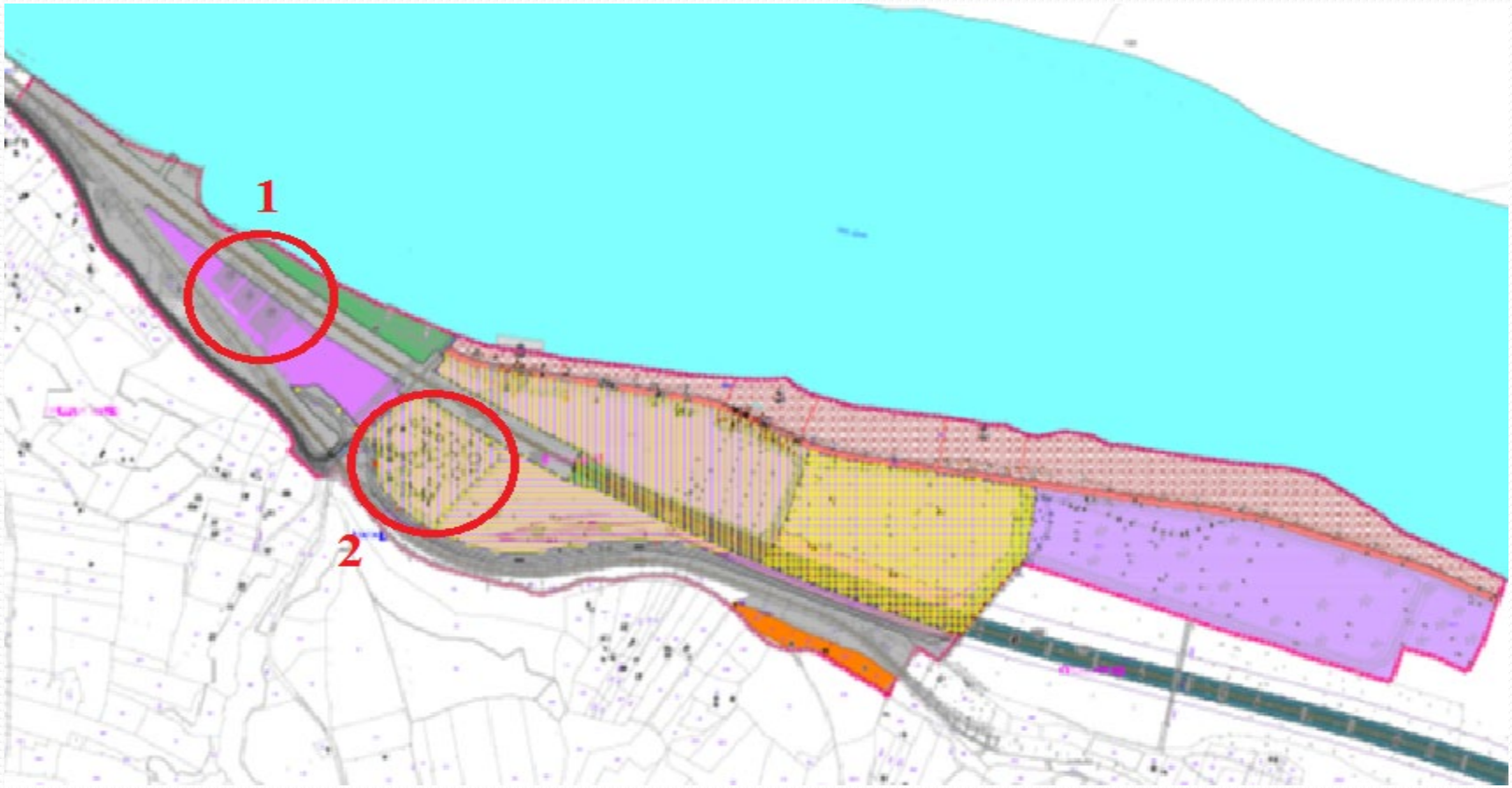
- Hazardous activity was noted in spatial plan.
- Thermal radiation from BLEVE was noted.
- Zones of 50% lethality, 1% lethality and first degree burns were used for thermal radiation.
- Ban of construction of residential areas, public areas and areas of particular sensitivity was issued for zones of 50% lethality.
- Measures for emergency planning for other effect zones were given.
- Evacuation plan for nursing home was noted as urgent to develop by emergency services.



Case 4 - Spatial plan for detail regulation

- Spatial plan was developed for enlargement of existing industrial zone.
- This local spatial plan had interference with regional spatial plan for major infrastructure corridor (new railroad route).
- Interventions to spatial plan were made in 3 iterations between CA for major accident prevention and CA for spatial planning.
- At first iteration, total of 2 hazardous activities were identified in borders of spatial plan.
- From identified, 1 is upper tier and 1 is lower tier hazardous activity with ongoing changes causing change to upper tier.
- All of them are known to CA for major accident prevention but the process requested by Law on environmental protection was ongoing.
- At second iteration, more detailed cooperation between CA`s was in place to change parts of spatial plan and to proscribe measures of protection.
- Domino zone was also mentioned.
- Collision of new regional spatial plan with upper tier location was noted.
- At third iteration meeting was held with spatial planers and investors at industrial zone.

Case 4 - Spatial plan for detail regulation



1 – upper tier hazardous activity
2 – lower tier hazardous activity

Case 4 - Spatial plan for detail regulation

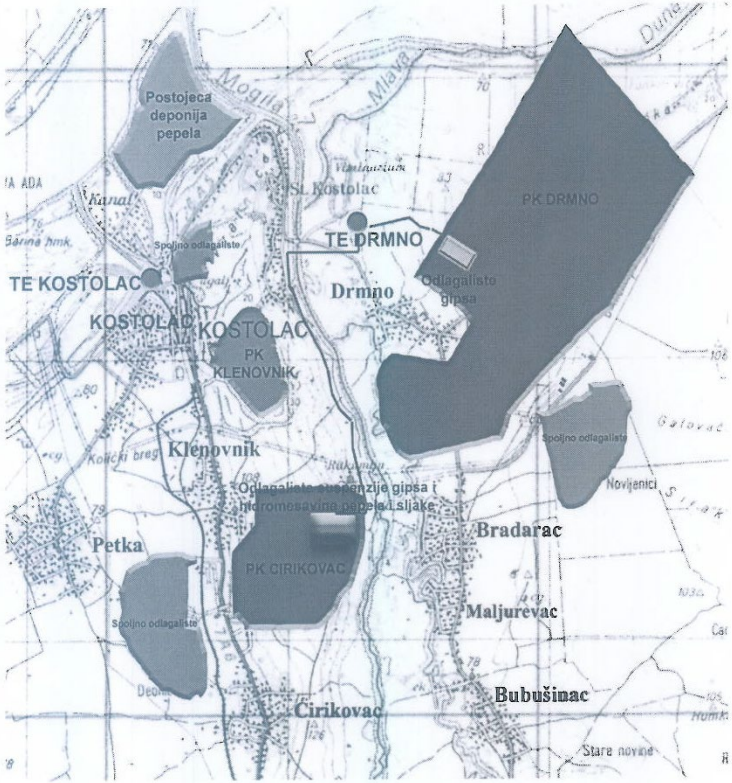
- Due to severe lack of preventive measures, presence of ammonium nitrate based fertilizer and planed railroad bridge over upper tier est. CA for major accident prevention issued ban of operation to this hazardous activity.
- Operator did not complain and has removed dangerous substance from this location.
- It was advised against modifications of lower tier hazardous activity, but due to gaps in legislation operator may continue investing.
- Lower tier hazardous activity operator was informed that ban of operation may be issued after investment was completed, prior to start of operation of than upper tier hazardous activity.
- Local government was advised to plan different activities at this location.
- Further development of this spatial plan was stopped.
- Construction of new railroad route according to regional plan is ongoing and has reached the location of this spatial plan for detail regulation.

Case 5 – Considerations of transboundary effects of industrial accidents

- Consultations in ESPOO Convention process were held with Republic of Romania for modifications at upper tier hazardous activity in 2017.
- Consultations referred to planed construction of a new block at existing thermal power plant.
- Consultations took place at Oravica, Caras-Severin region on August 31st 2017.
- Hazardous activity is situated at more than 15km from border (for air pollution), and 4km from Danube river (with possible water connection to Danube).

Case 5 – Considerations of transboundary effects of industrial accidents

- Hazardous activity is known to CA for major accident prevention and has passed the process requested by Law on environmental protection.
- Due to dangerous substances present at site and modeling of worst case scenarios, transboundary effects were noted as not possible.
- Failure of air filters of existing blocks was also modeled.
- Heavy crude oil present at site can not reach Danube river since it is situated in a tank with concrete bund and no connection to river flow.



Future steps needed

- Gaps in transposition of Seveso directive have been noted.
- New Law on control of major accidents involving dangerous substances is being drafted.
- Among other, it`s aim is to fully transpose relevant spatial planning requirements which will remove current legal obstacles in cooperation between spatial planning and industrial safety.
- Joint efforts must be made with relevant spatial planning authorities for continuous improvement of knowledge of relevant stakeholders regarding cooperation between spatial planning and industrial safety.
- Awareness raising campaign is being planned through the new National policy dialogue for industrial safety.
- All stakeholders are planned for participation to this National policy dialogue.

THANK YOU FOR YOUR ATTENTION!

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