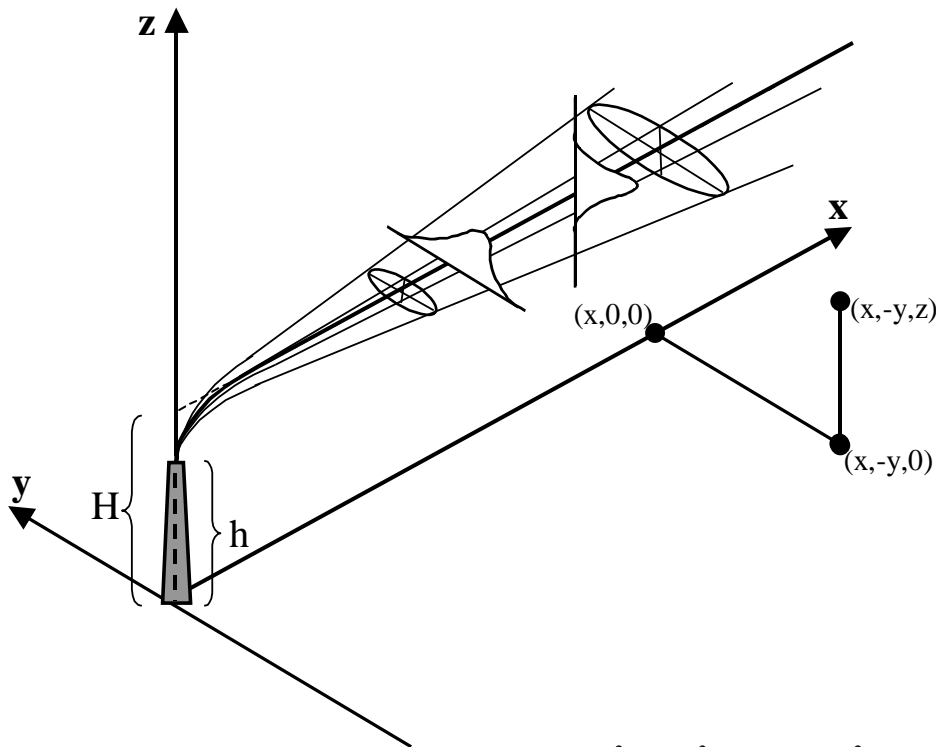


C. Vandecasteele (FANC) - H. Neef (ADCC/DGCC) - D. Degueudre (Bel V)

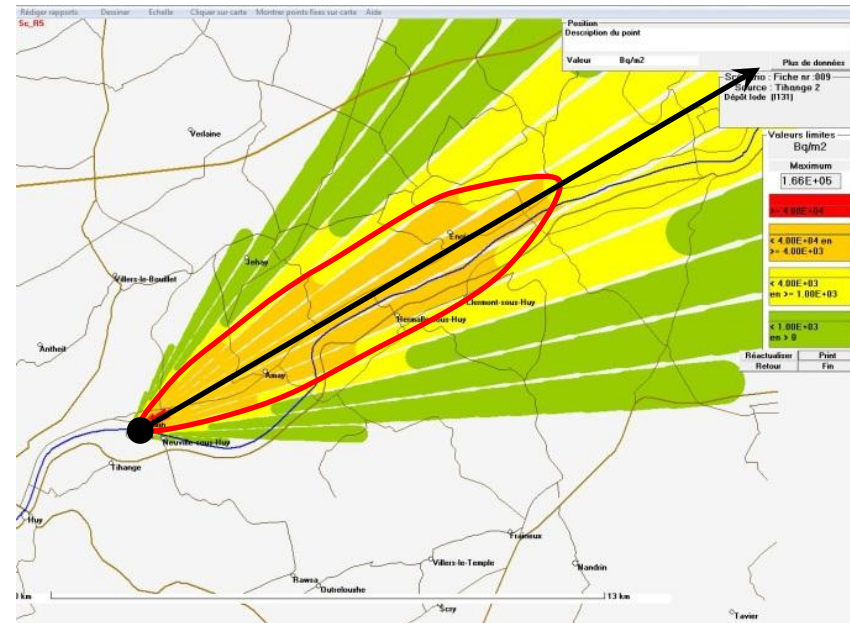
Translation of the emergency planning zone to an intervention zone: a multidisciplinary approach improving common understanding and implementation of protective actions

Introduction - Risk evaluation process : step 1

- Models are used for assessing the risk from a (potential) release :

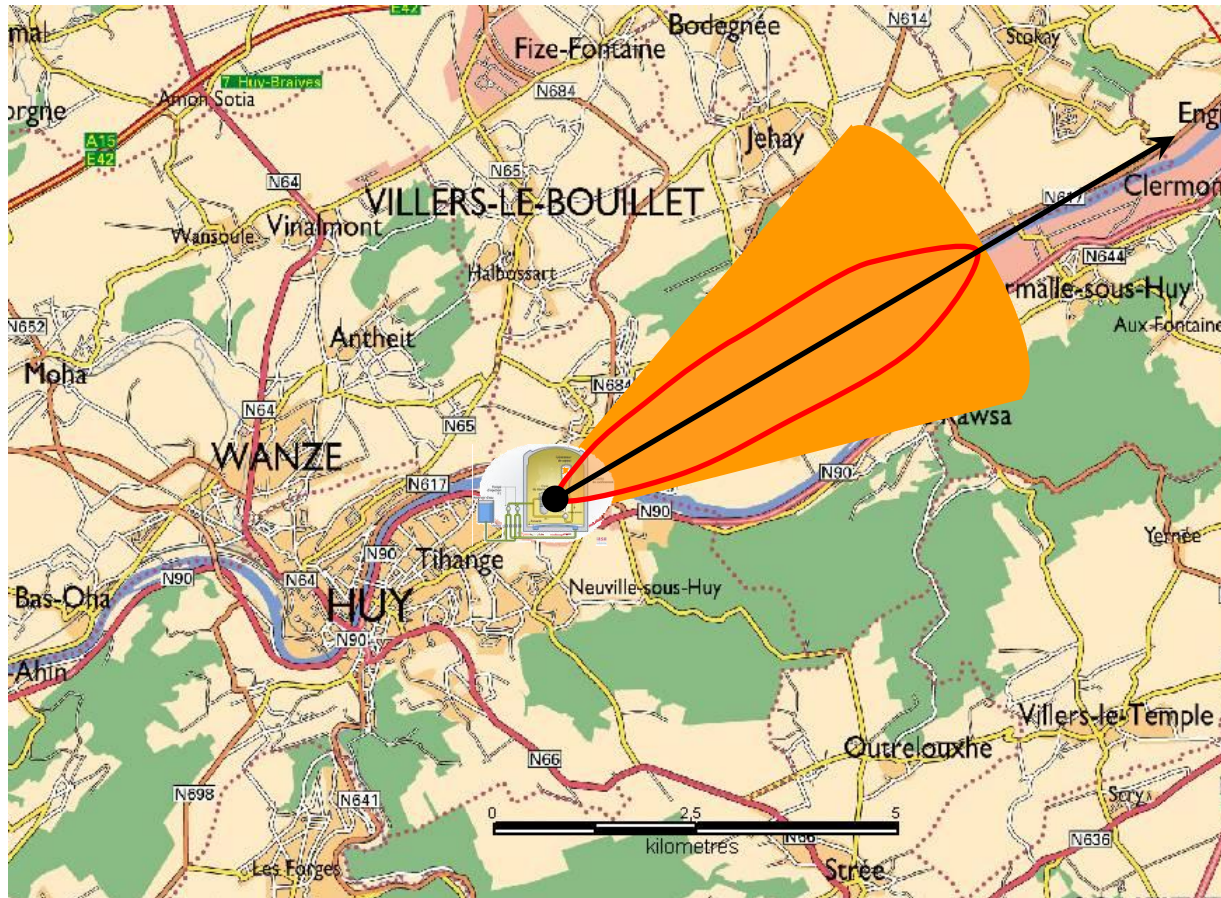


$$C_{(x,y,z)} \approx \frac{Q}{(2\pi)^{3/2} \sigma_x \sigma_y \sigma_z} \exp\left[-\frac{1}{2} \left\{ \frac{(x - \bar{u}t)^2}{\sigma_x^2} + \frac{y^2}{\sigma_y^2} + \frac{(z-H)^2}{\sigma_z^2} \right\}\right]$$



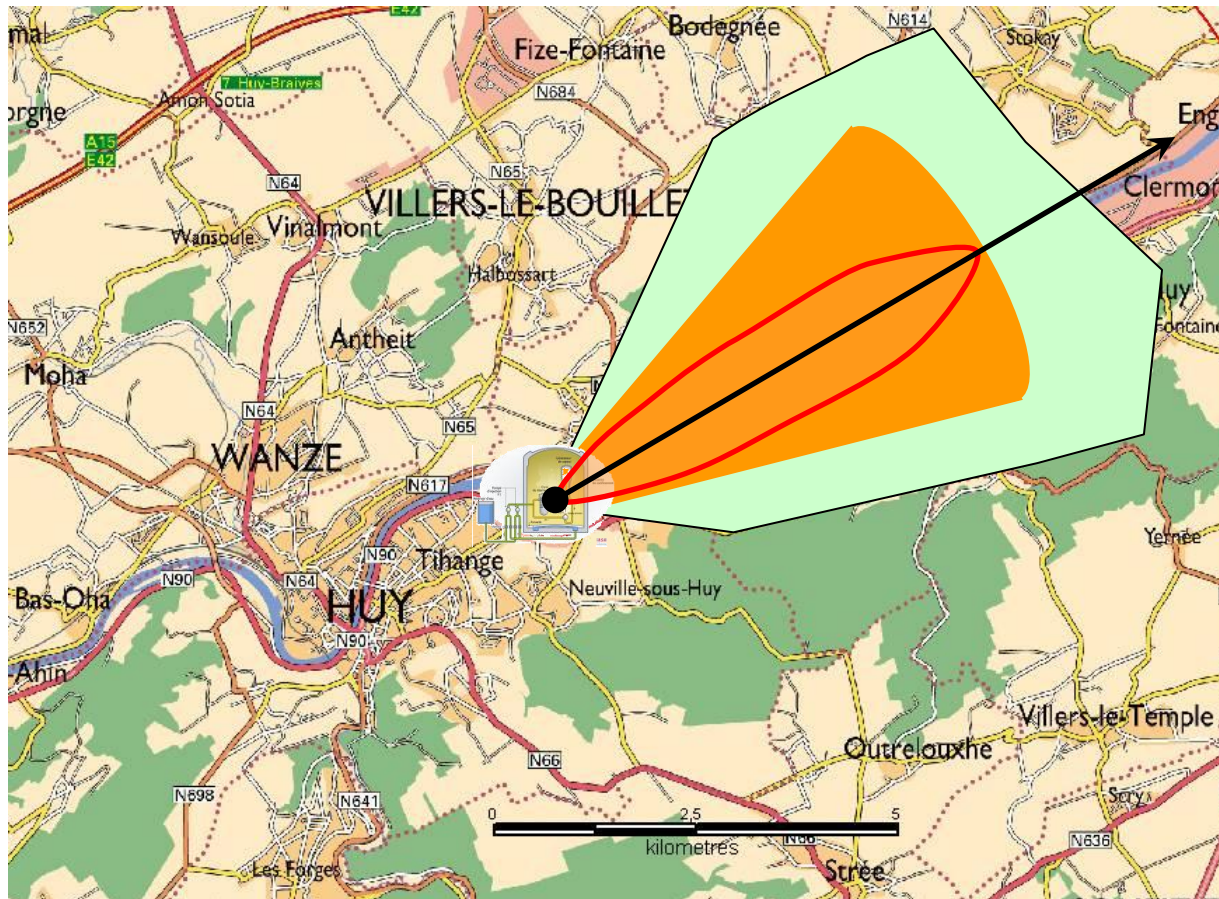
Introduction - Risk evaluation process : step 2

- Based on the trace, defining the sector at risk:



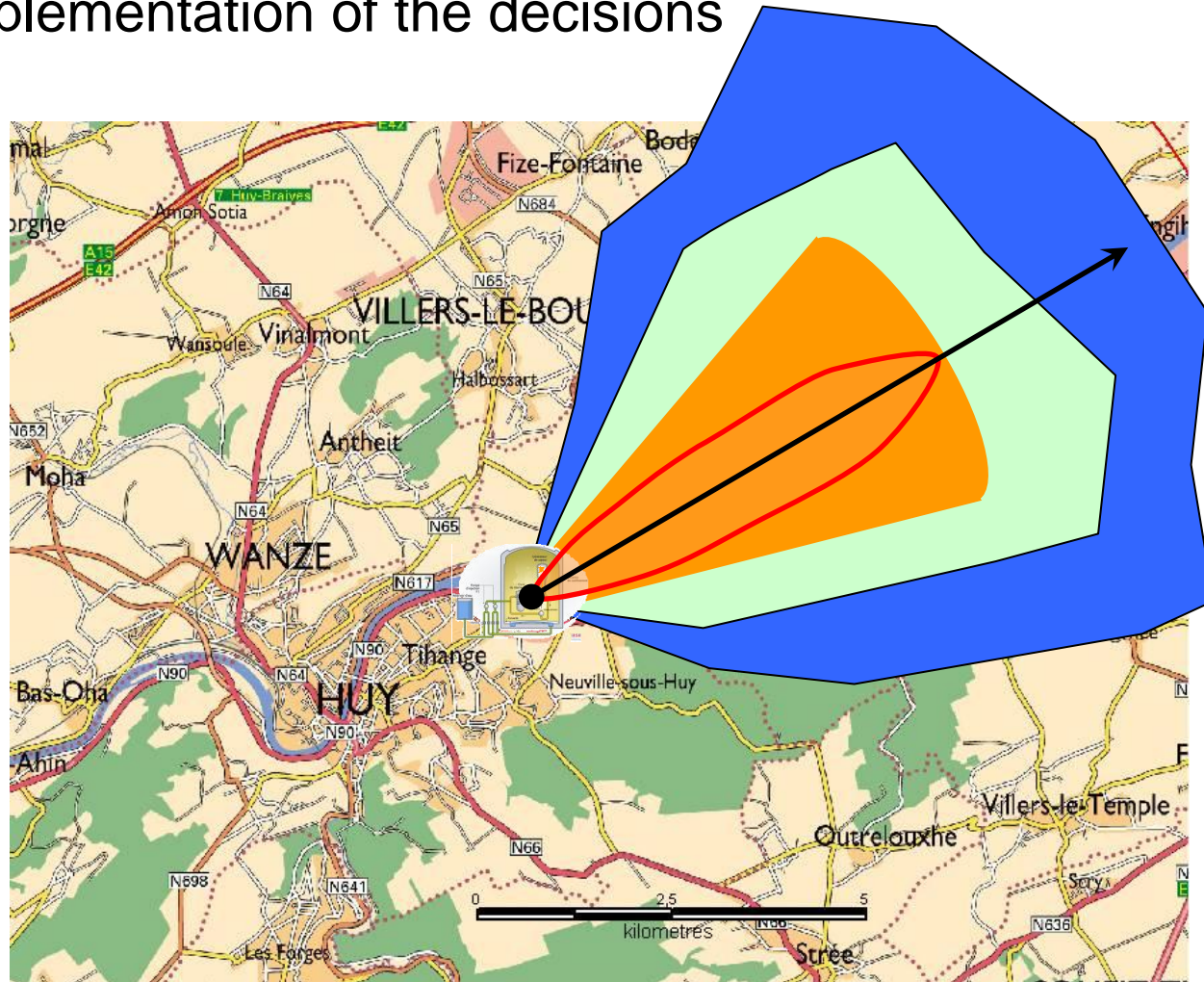
Introduction - Risk evaluation process : step 3

- Based on the evaluation and proposal, deciding the sector where protective action should be implemented:



Introduction - Risk evaluation process : step 4

- Field implementation of the decisions

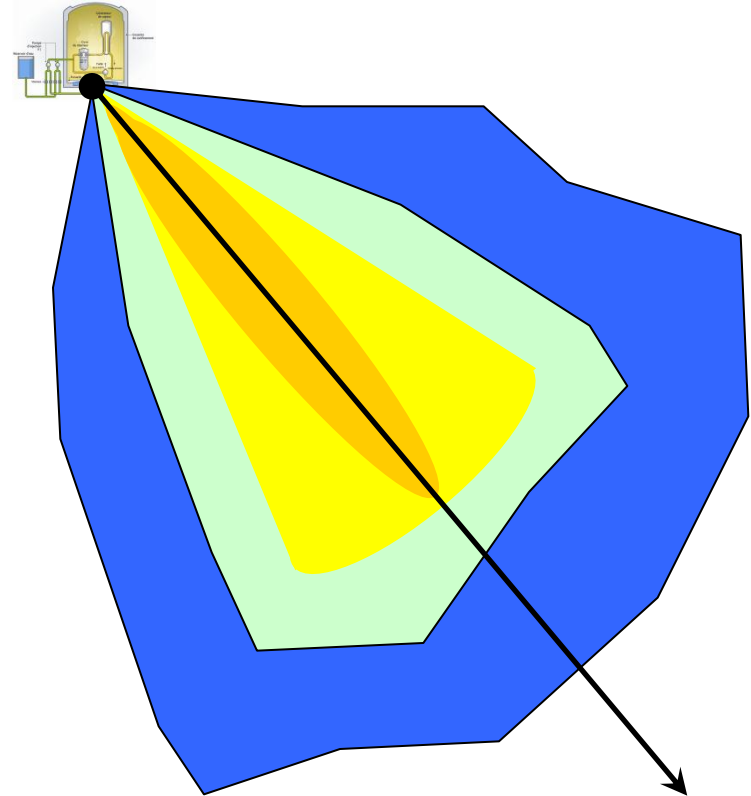


Introduction - Lessons from exercises

The process

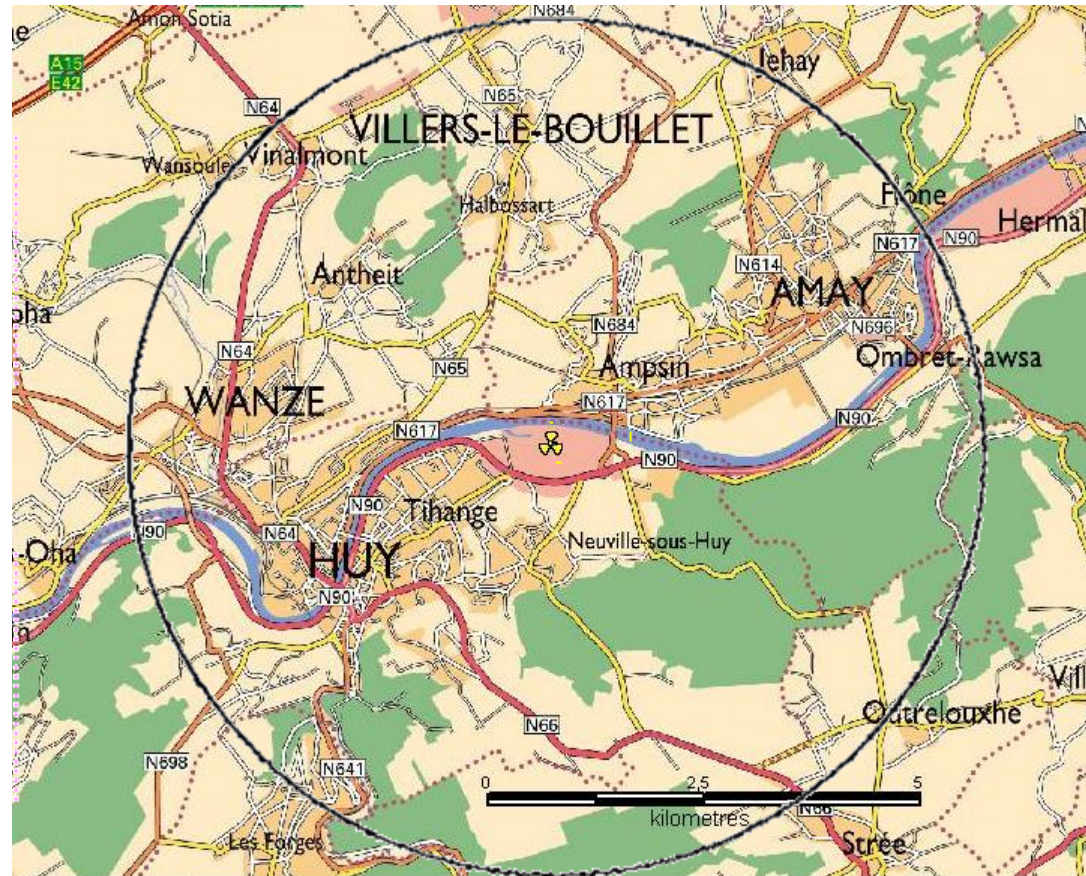
- from the proposal by the experts,
- through the decision making,
- to the implementation on the field,

can lead to an ***unjustified excess of conservatism in the response***



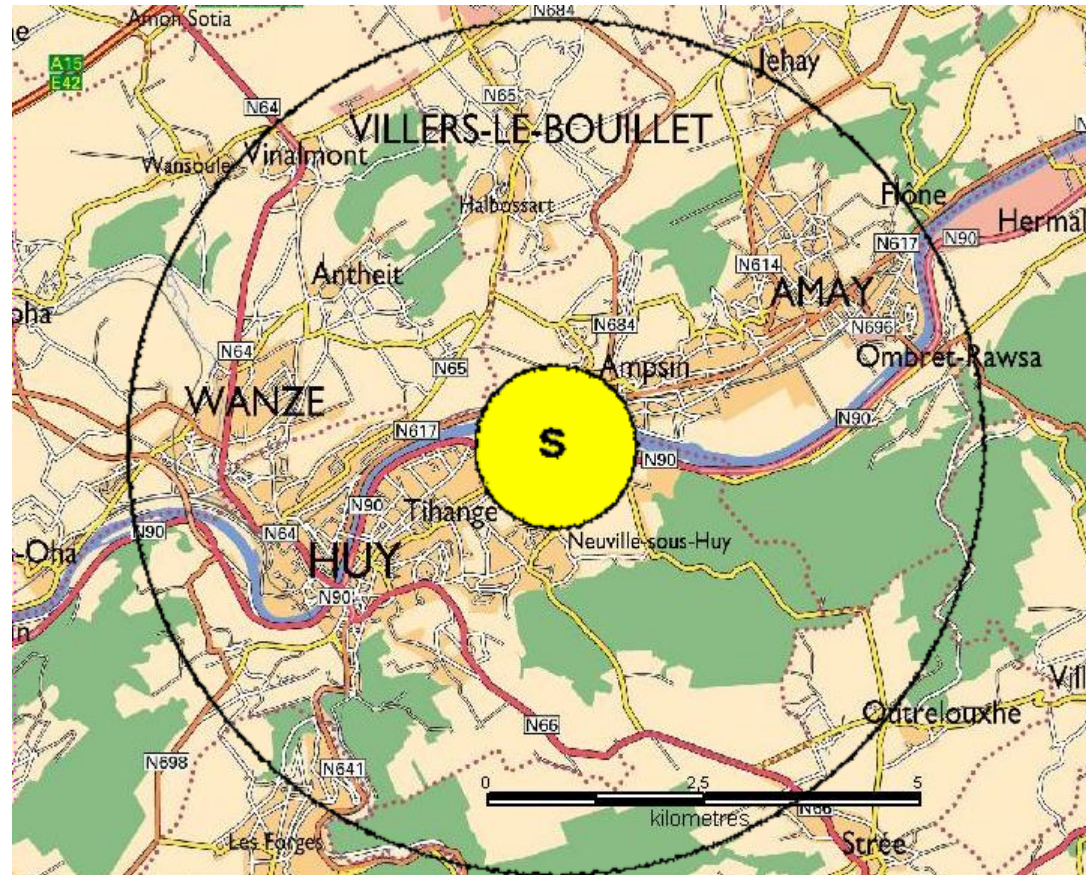
A possible solution for the operationalization of EPZ

- Splitting EPZ into blocks (like a jigsaw puzzle)



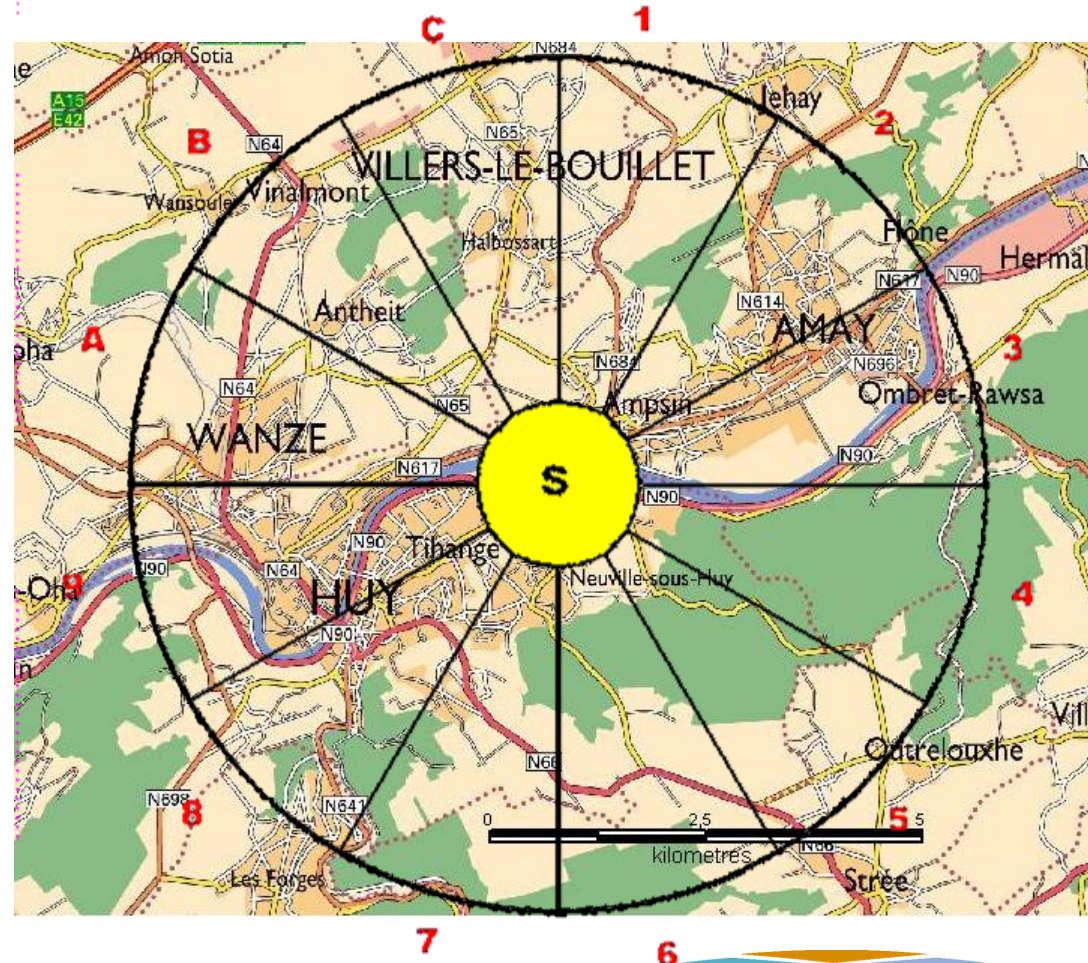
A possible solution for the operationalization of EPZ

- Step 1: Determine a keyhole around the site



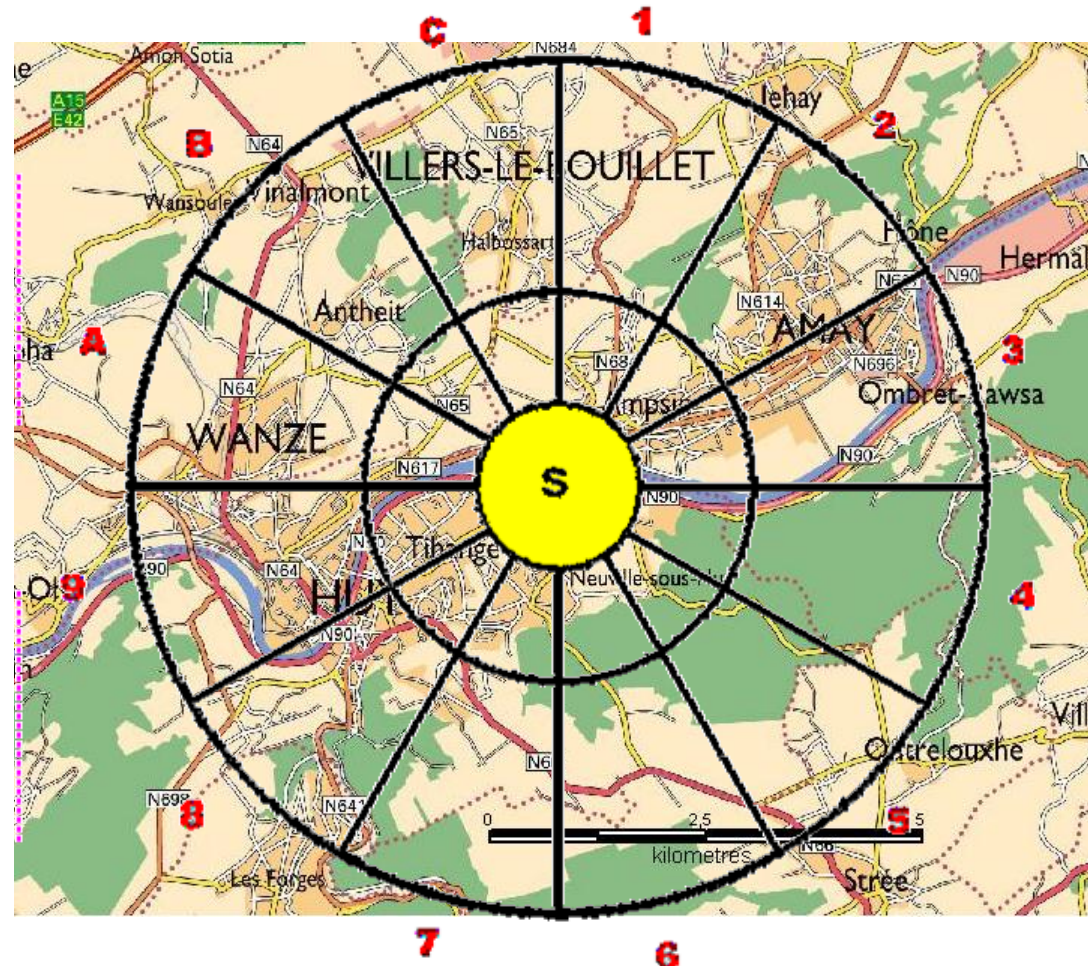
A possible solution for the operationalization of EPZ

- Determine a keyhole around the site
- Step 2: Divide the EPZ (10km for NPP's) in 30° sectors.



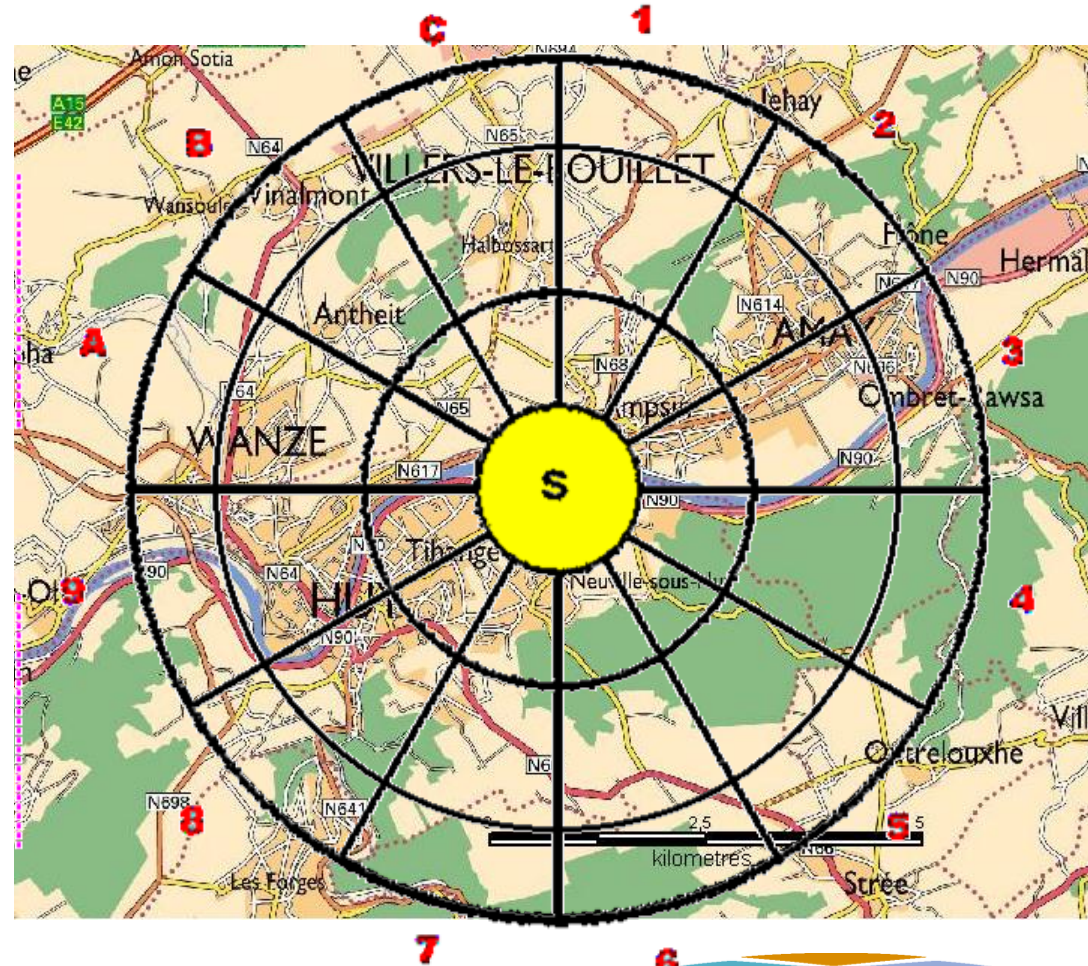
A possible solution for the operationalization of EPZ

- Determine a keyhole around the site
- Divide the EPZ (10km for NPP's) in 30° sectors.
- Step 3: From the keyhole divide the EPZ into crowns



A possible solution for the operationalization of EPZ

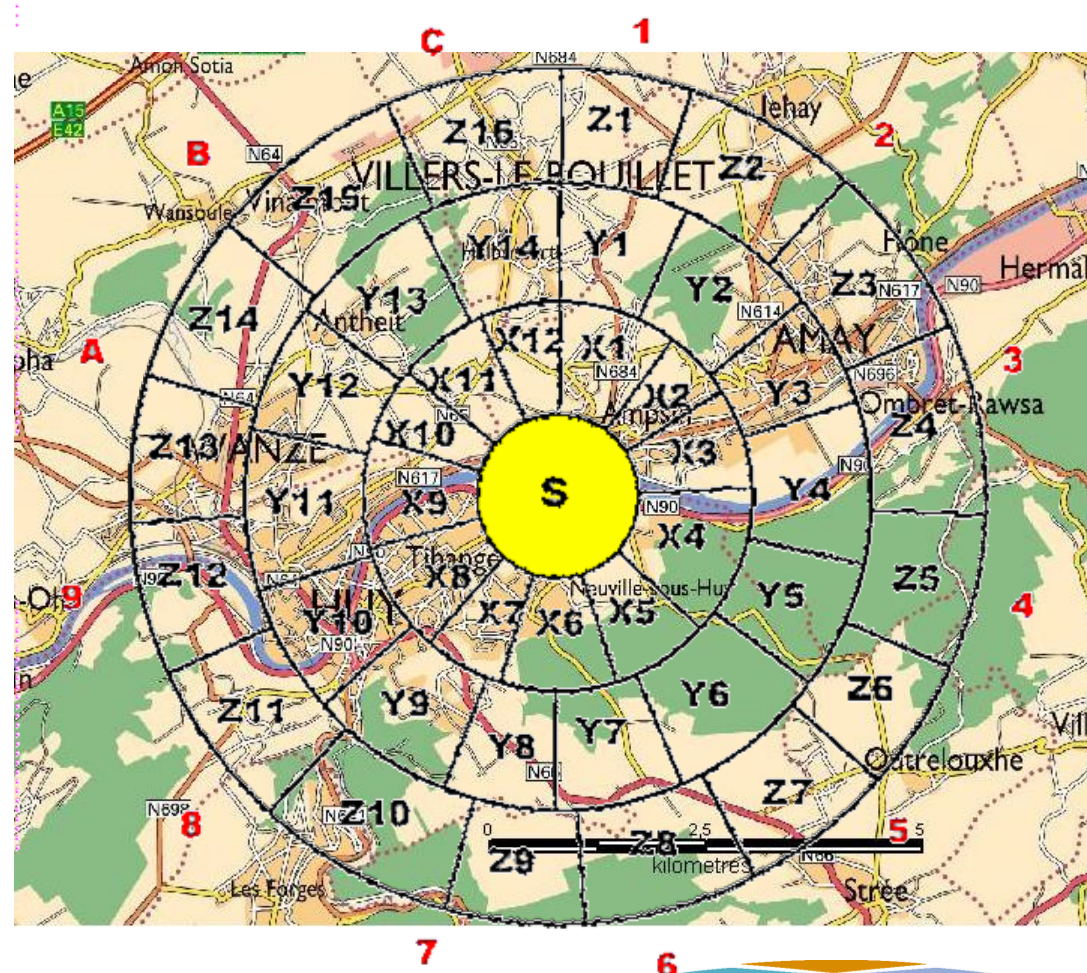
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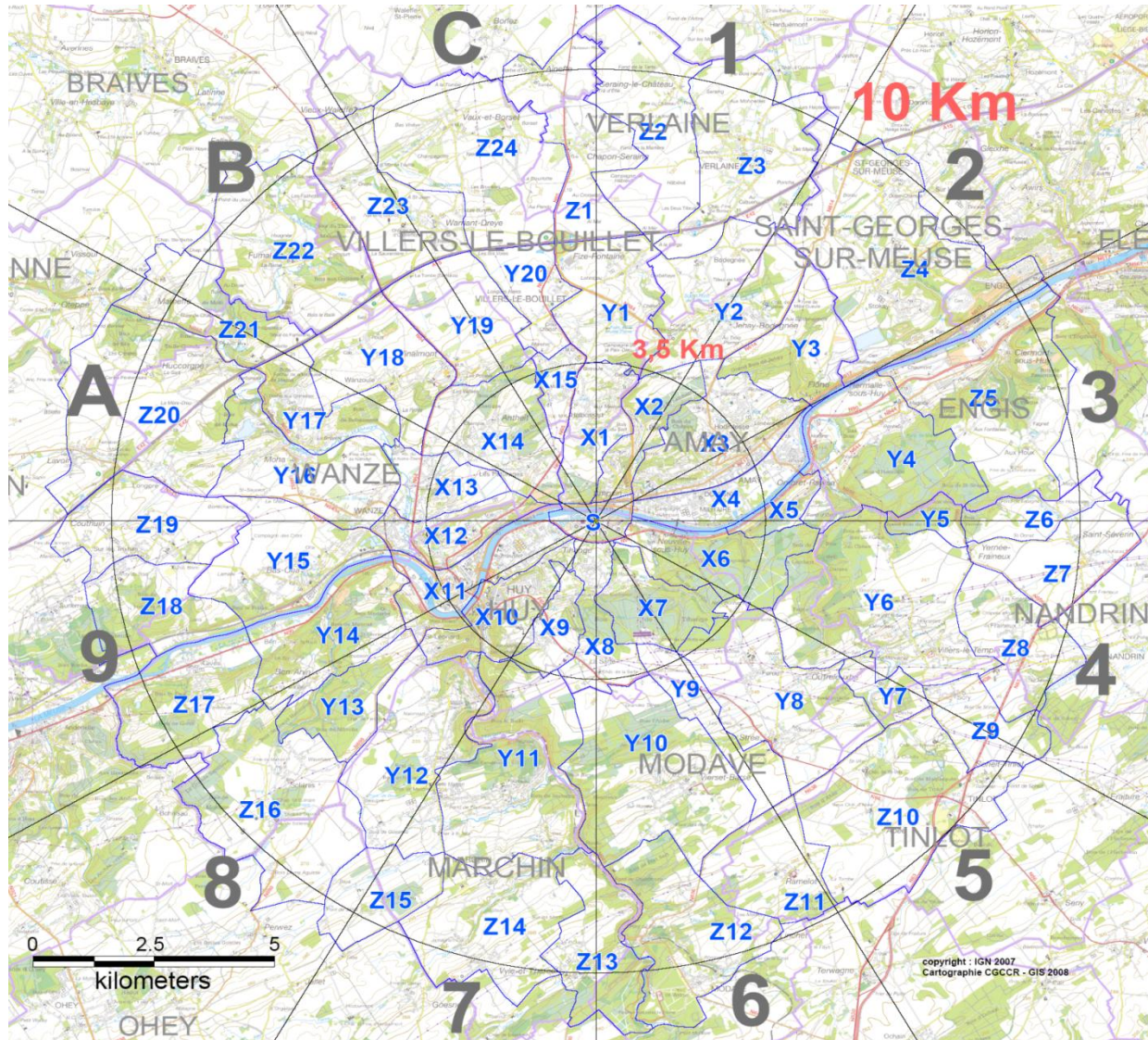
A possible solution for the operationalization of EPZ

- Determine a keyhole around the site
- Divide the EPZ (10km for NPP's) in 30° sectors.
- From the keyhole divide the EPZ into crowns

The result is a jigsaw puzzle with contiguous blocks, univocally identified, of which the borders were set by the local police based on operational criteria (controlling the access to the affected zone)



Proposed solution for the Tihange NPP' EPZ



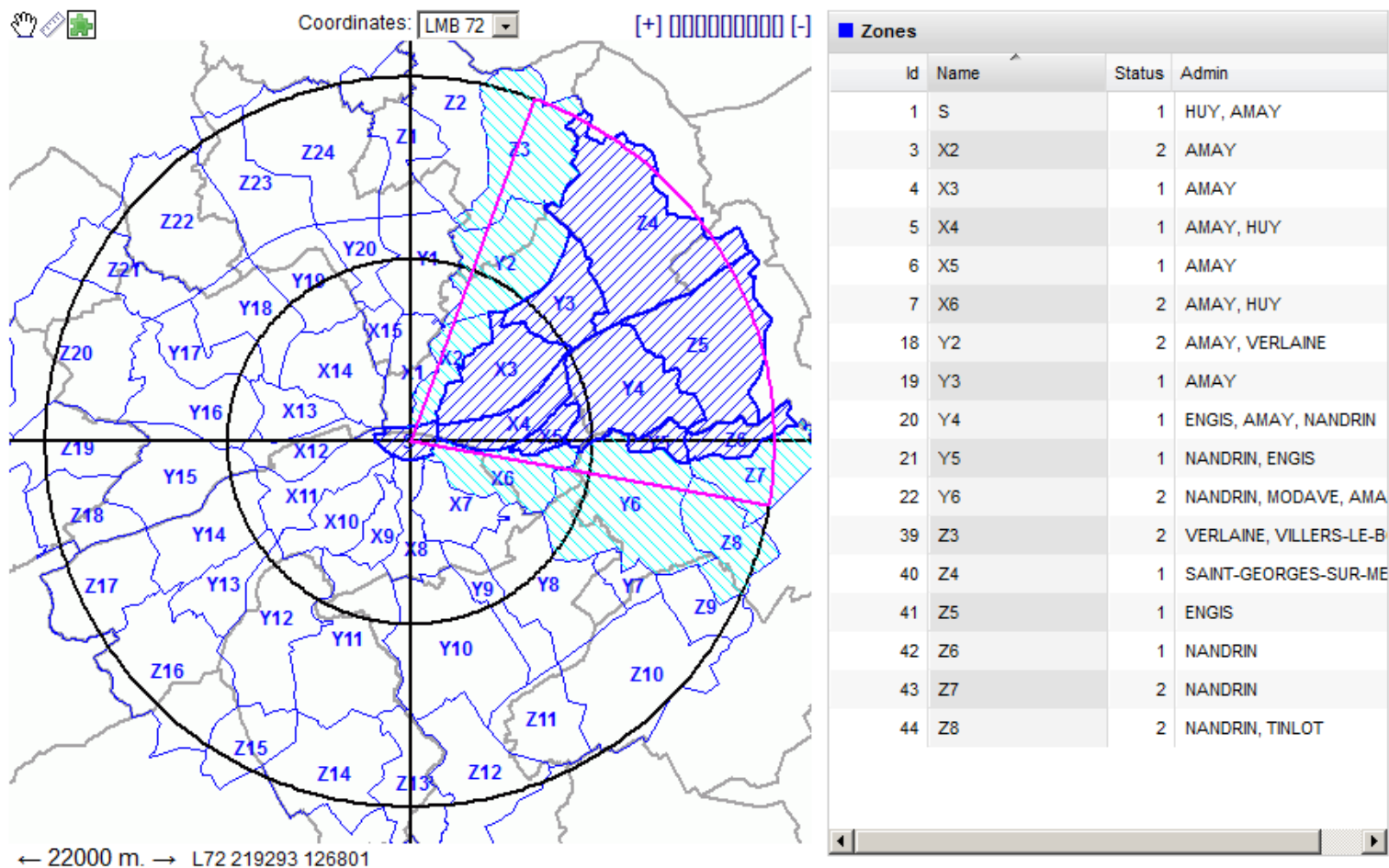
The result of the applied concept

Type : Restrictions à la consommation de (légumes dont on consomme les feuilles)

Degré d'urgence : Mettre en oeuvre pour une durée minimale de 2 semaines

Axe : 60° ± angle : 40° sur une distance entre 0 km et 10 km

En cours



Benefit of the proposed solution

- Allows developing a common and concerted approach (common understanding)
- Avoids over-conservatism at each step (justification-optimisation)
- Facilitates the communication with first responders, local authorities and the concerned population about where actions have to be taken
- The solution has been fully developed around the Tihange NPP site and successfully tested in exercises
- It is presently being extended to the other Belgian and neighbouring (Chooz) nuclear sites

Thank you for your attention

Questions ?