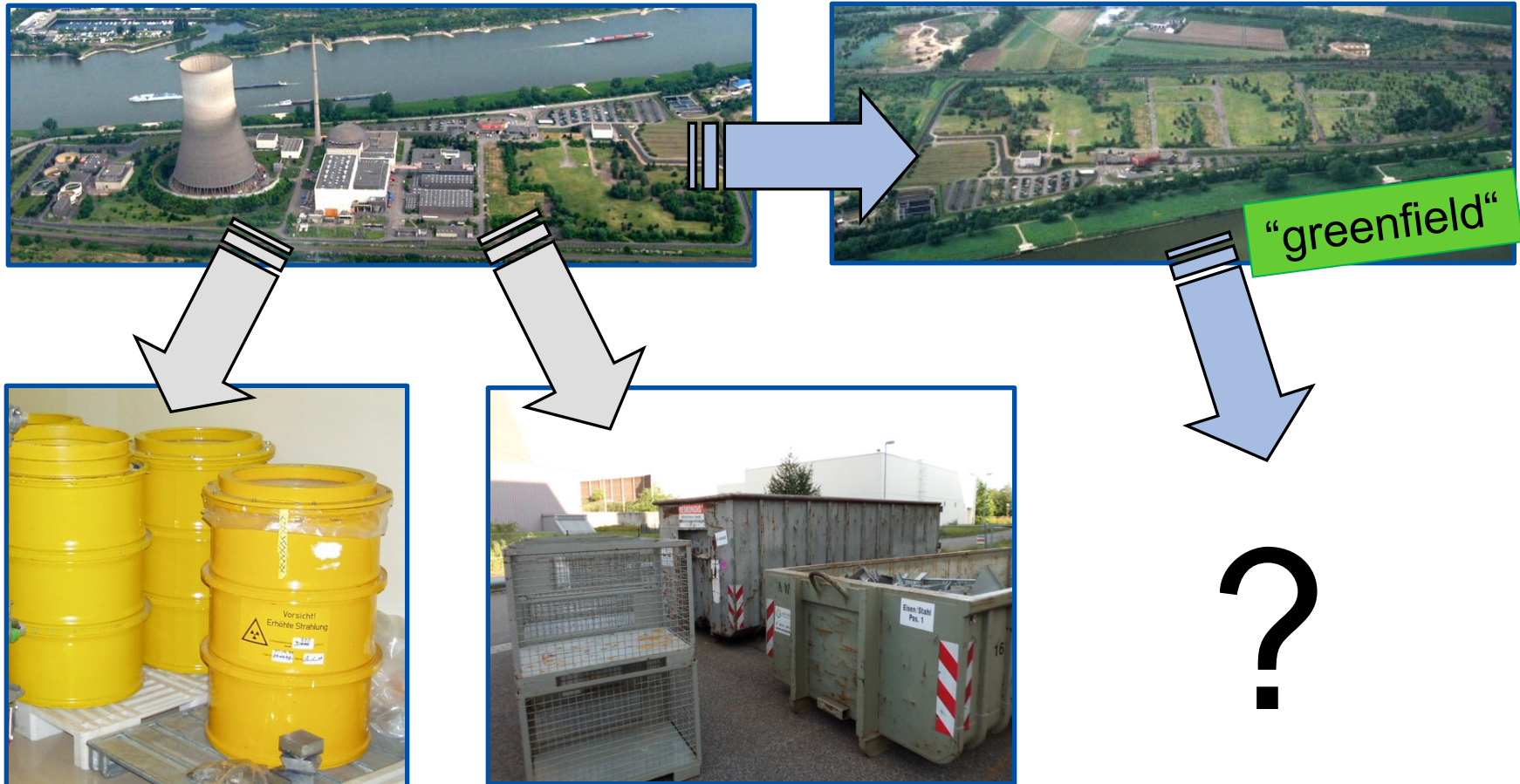


Second Life of a Nuclear Site- Experiences and Lessons Learned

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Plant Manager

VORWEG GEHEN

What is Decommissioning?



From power plant to ...?



Today



Next steps



Necessary?

The Project

- > Start of the decommissioning: Summer 2004
 - > Adapt the remaining service operations
 - > Dismantling
 - > Release of not necessary sites
- > Current work: Dismantling of the primary circuit and additional dismantling tasks
- > Target:
 - to start dismantling of the steam generators in the near future
 - to reach greenfield in the second half of the next decade
- > The Mülheim-Kärlich project was planned in alignment with the availability of the German final repository for low level and intermediate level waste “Schacht Konrad”

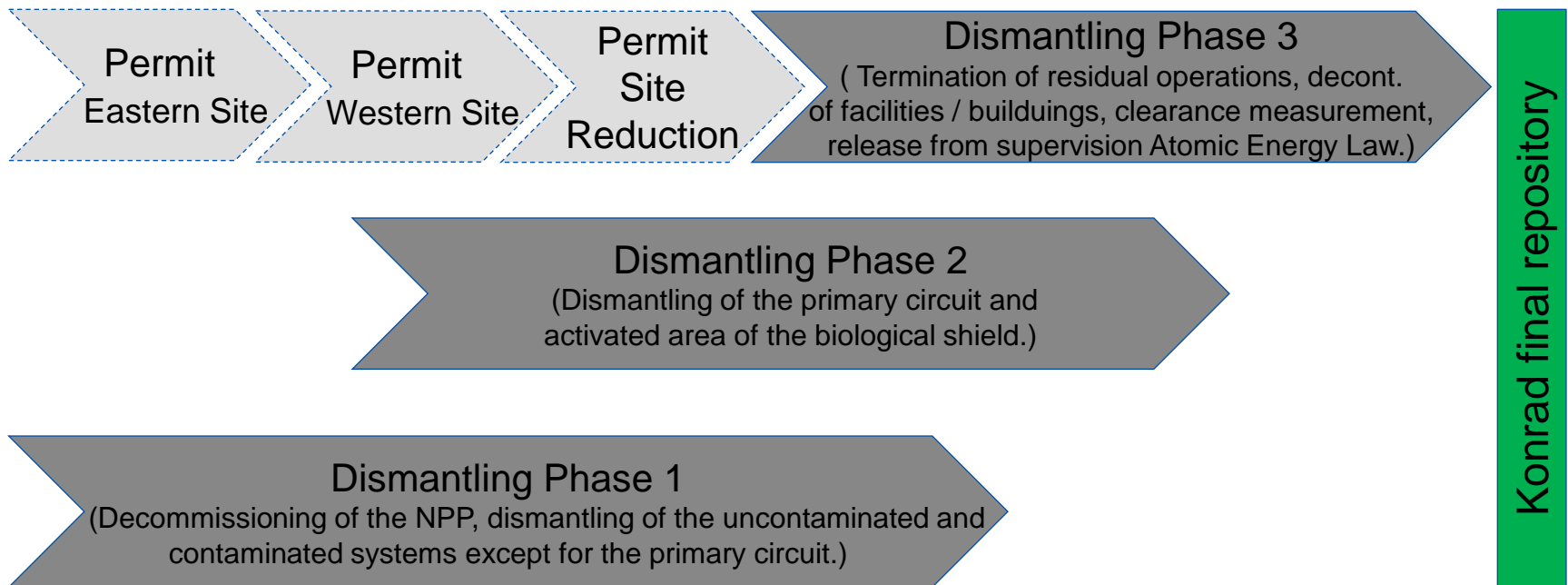
Key figures of the decommissioning project



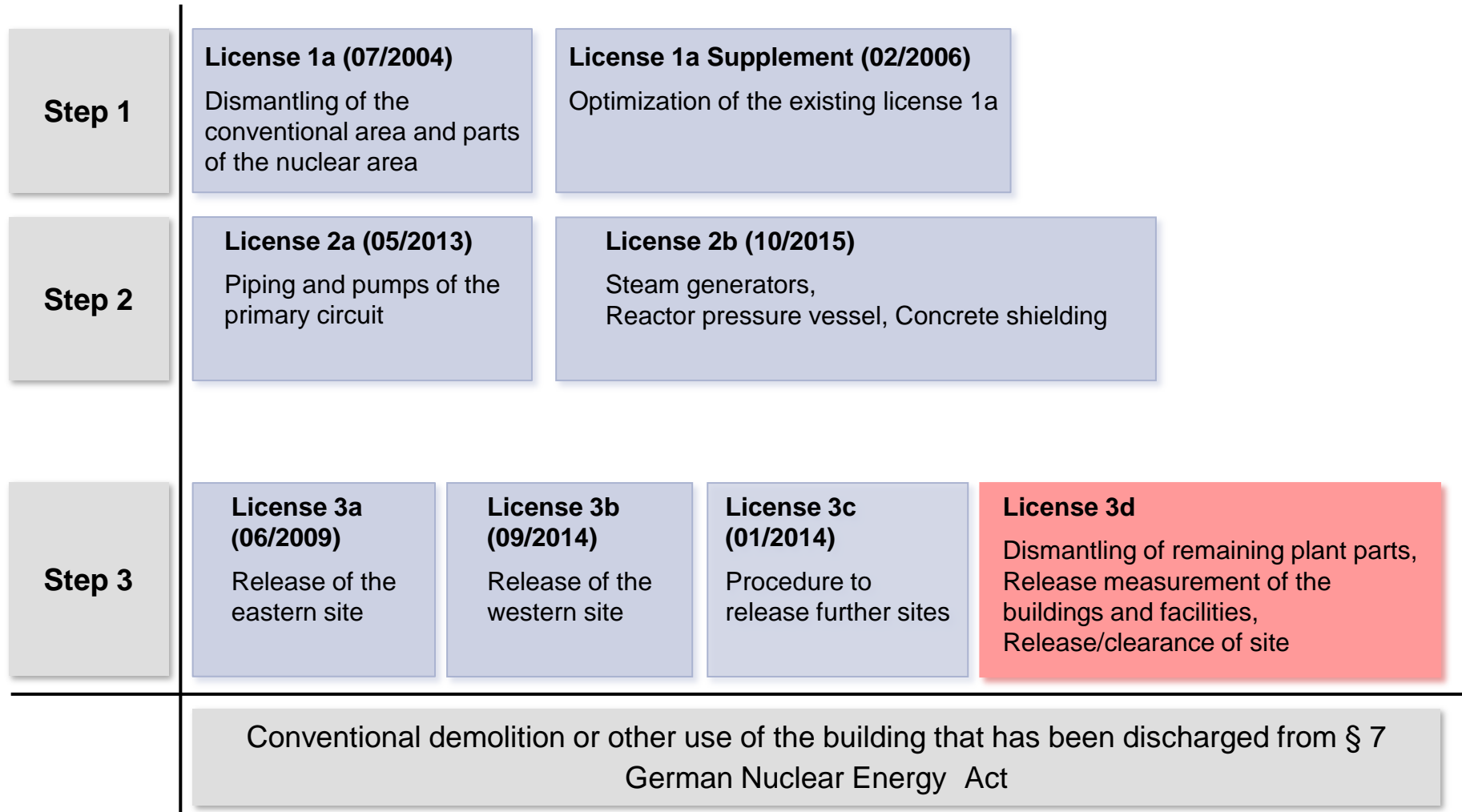
- > PWR with 1300 MW gross capacity manufactured by BBC/BBR
- > Start of power generation: 01.08.1987; disconnection: 09.09.1988
- > Start of the decommissioning: Summer 2004
 - > Adapt the remaining service operations
 - > Dismantling
 - > Release of not necessary sites
- > Today:
 - > Only the large components and a few supporting systems remain to be dismantled in the RCA
 - > Operating systems are reduced, optimized and concentrated around the RCA

Decommissioning phases

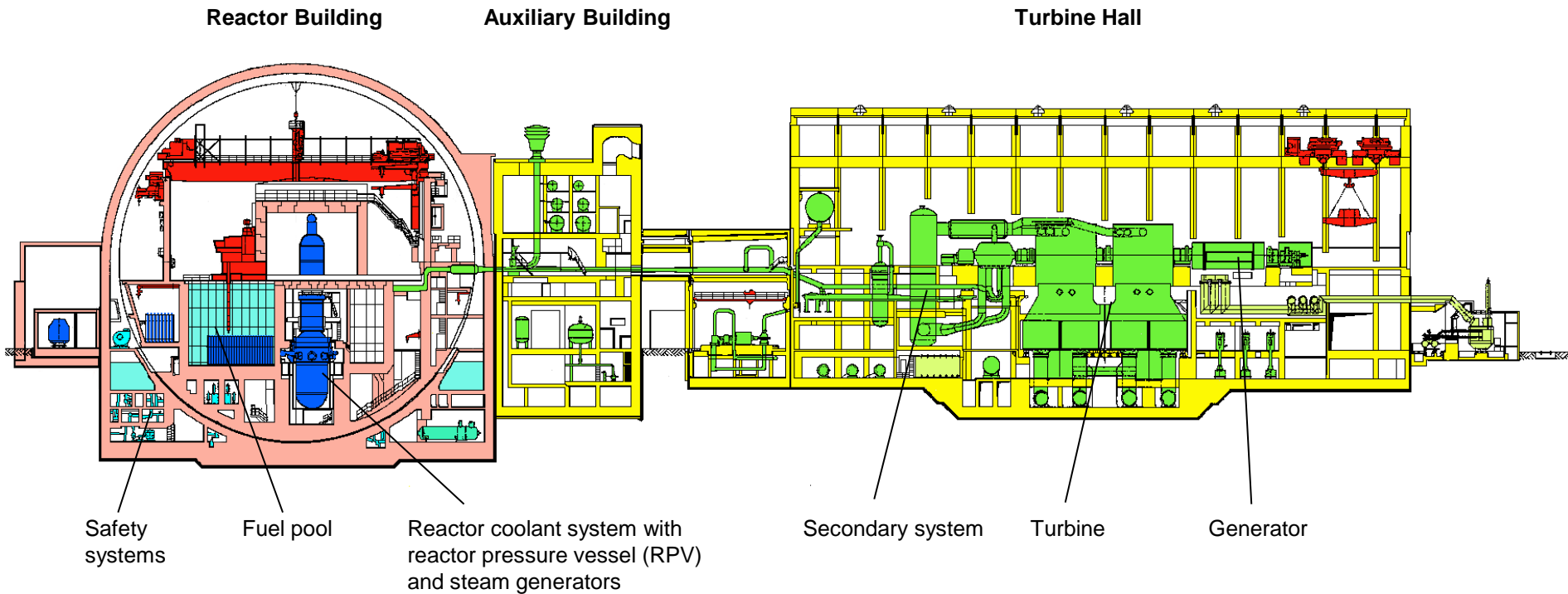
- > The Mülheim-Kärlich decommissioning project was planned in alignment with the availability of the German final repository for low and intermediate level waste “Schacht Konrad”
- > Because of the length of the time period the economic optimization of residual service operations is crucial



Current license situation



Facility State at the Start of Decommissioning 2004

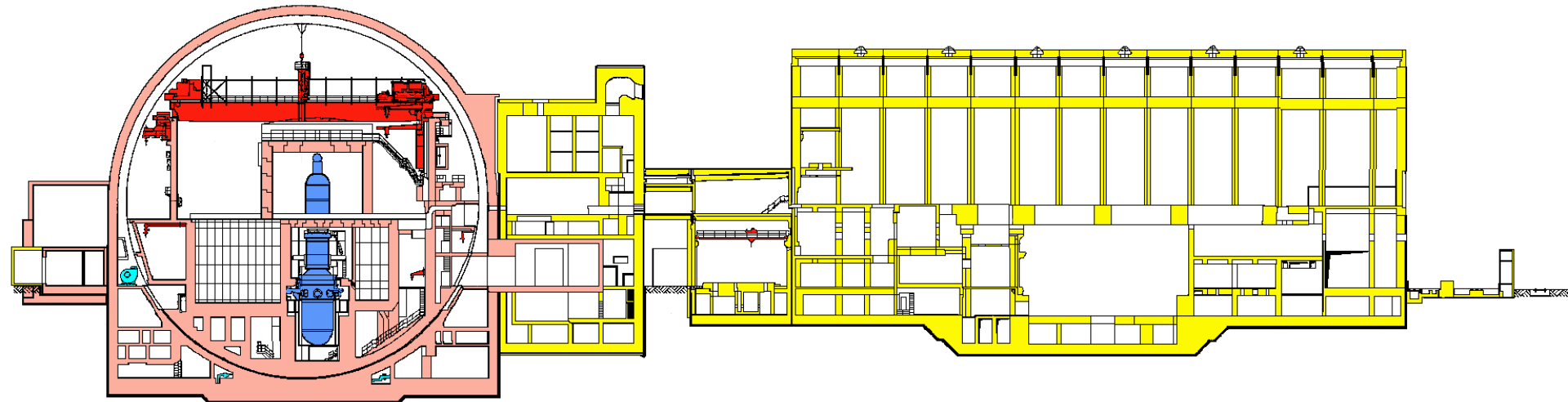


Current situation

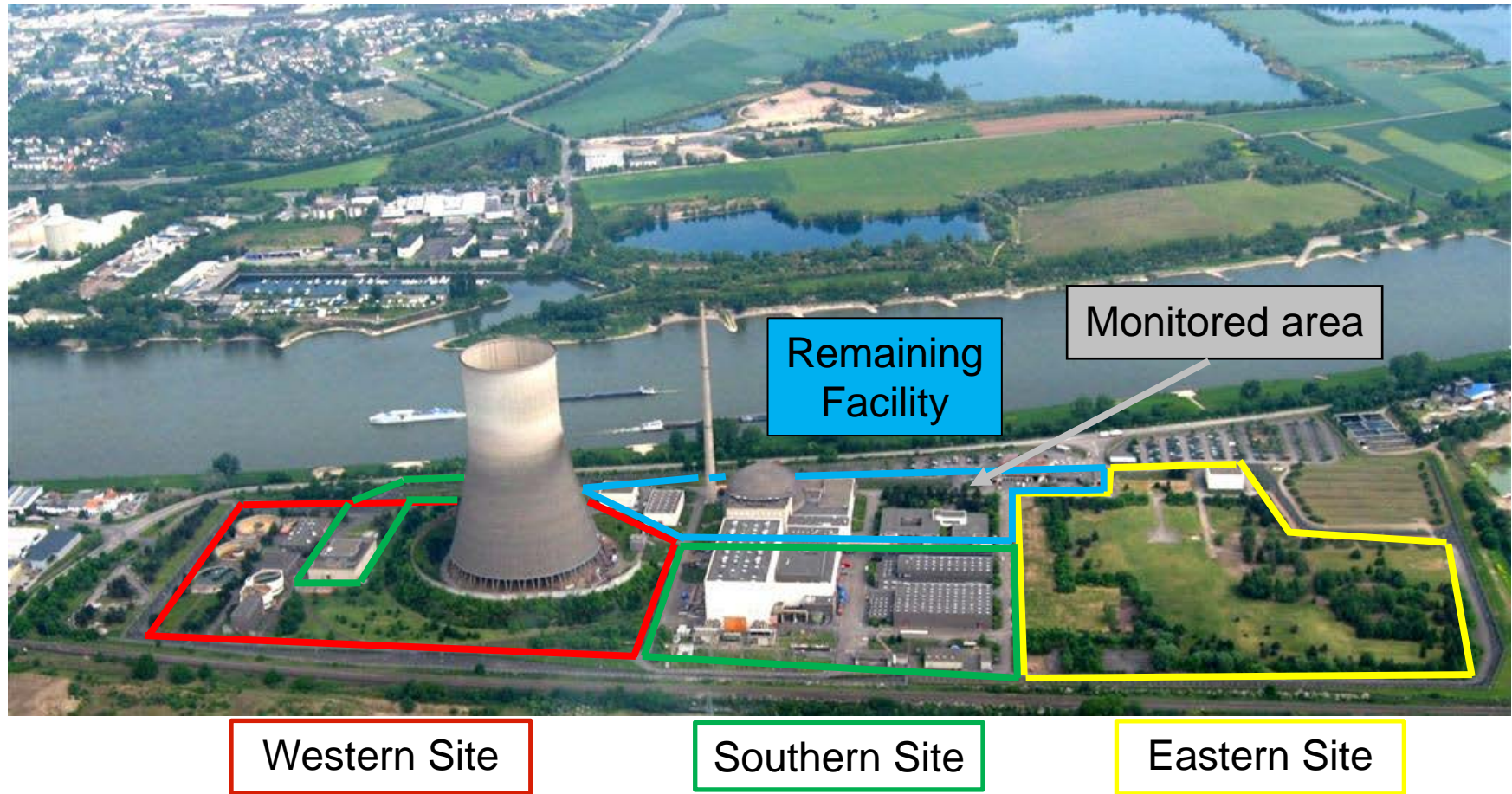
Reactor Building

Auxiliary Building

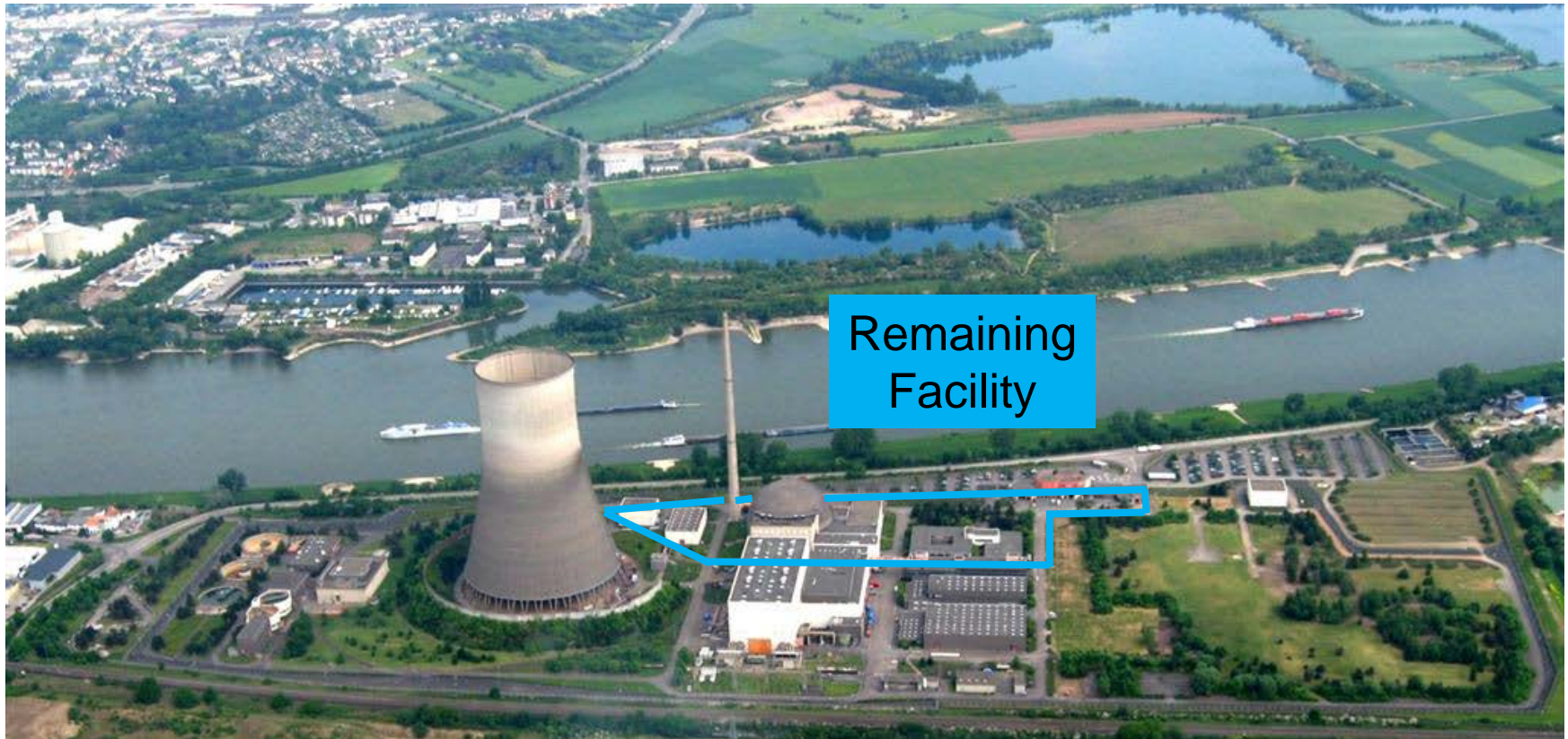
Turbine Hall



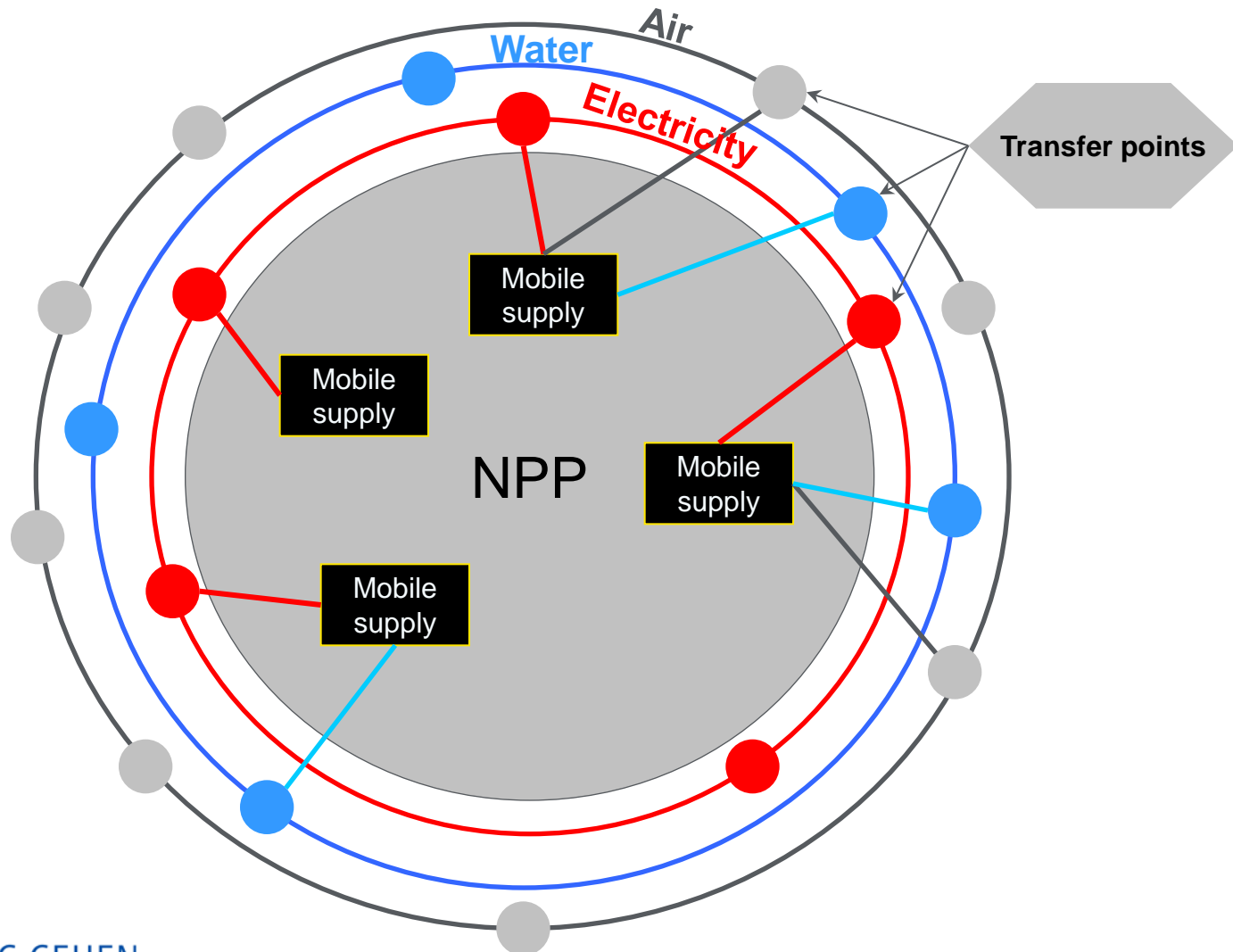
Changes in the Project



Reduce the area of the remaining facility



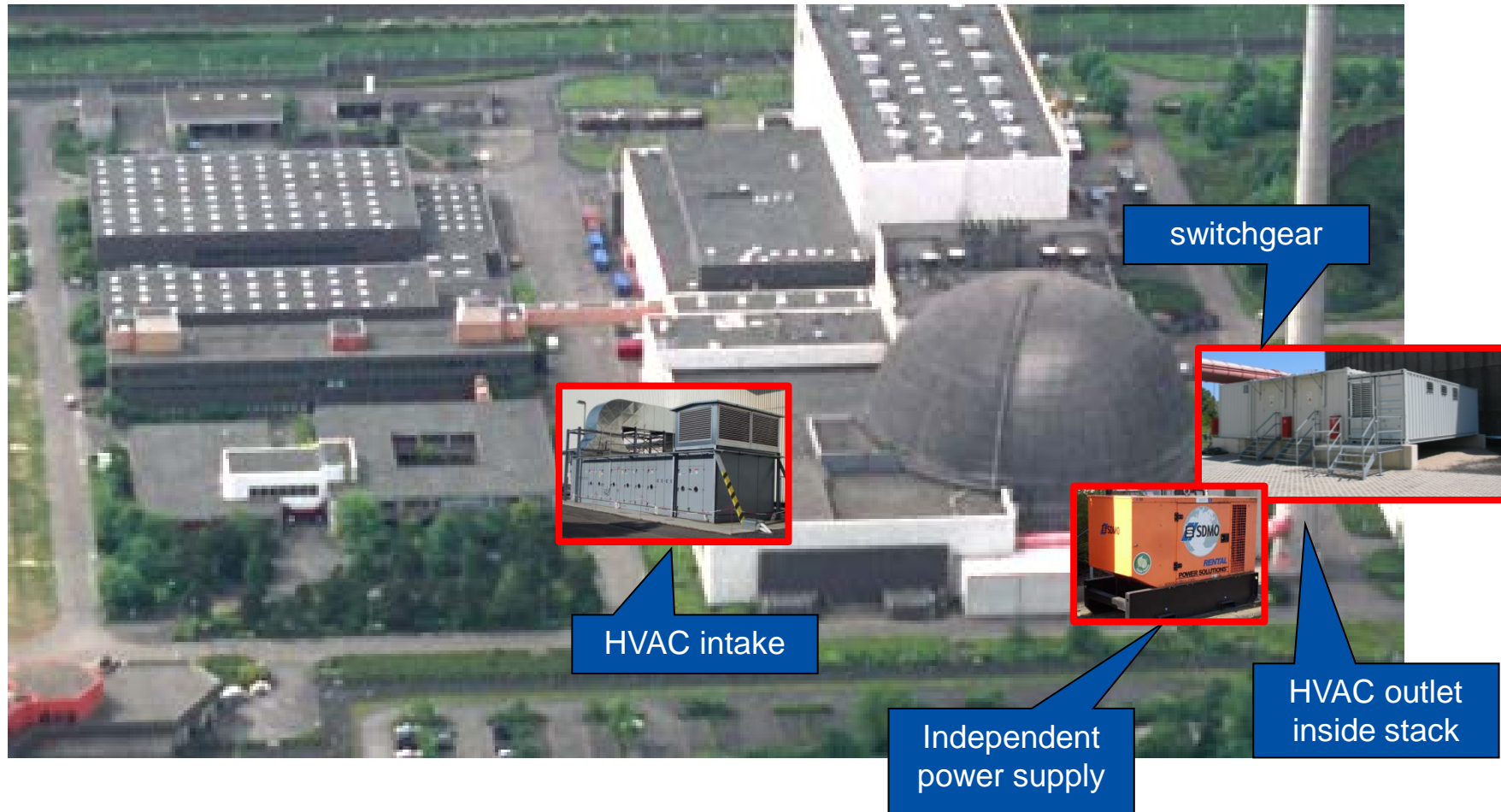
Adapt the remaining services – turn the infrastructure inside out and increase the flexibility



Optimization of service operations – Key elements

- > Optimization of the remaining service operations is a key **success factor** for decommissioning projects and leads to cost reduction
- > Focus on the **necessary services (functionality)**, e. g.
 - > Power supply
 - > Exhaust air monitoring
- > Provide required functionality with **mobile equipment/supply** (increase flexibility), e. g.,
 - > Lighting/alarm system
 - > Switchgear/electricity distribution
- > **Supply** of dismantling areas **from outside**
- > **Goal: Minimized low-maintenance residual operations**

Adapt the remaining services – turn the infrastructure inside out and increase the flexibility

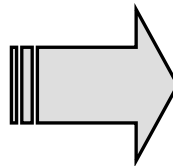


Optimization of Service Operations – Key Success Factor

- > Focus on the **necessary services (functionality)** (e. g. Power supply); provide the required functionality with **mobile equipment/supply** (increase flexibility)
- > **Supply from outside** of dismantling areas
- > **Example:**



Old switchgear ZE

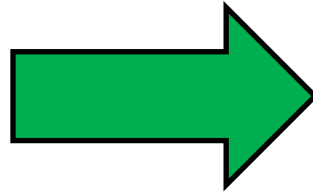


Modified switchgear

Focus on required functionality: cooling



previous



Rented chiller

- > Adapted to the dismantling progress: replace 2x 2.5 MW cooling units with small mobile cooling units where required
- > Flexible tube connection
- > Cooling agent water (rented only during summertime)
- > Save cost of operations and service

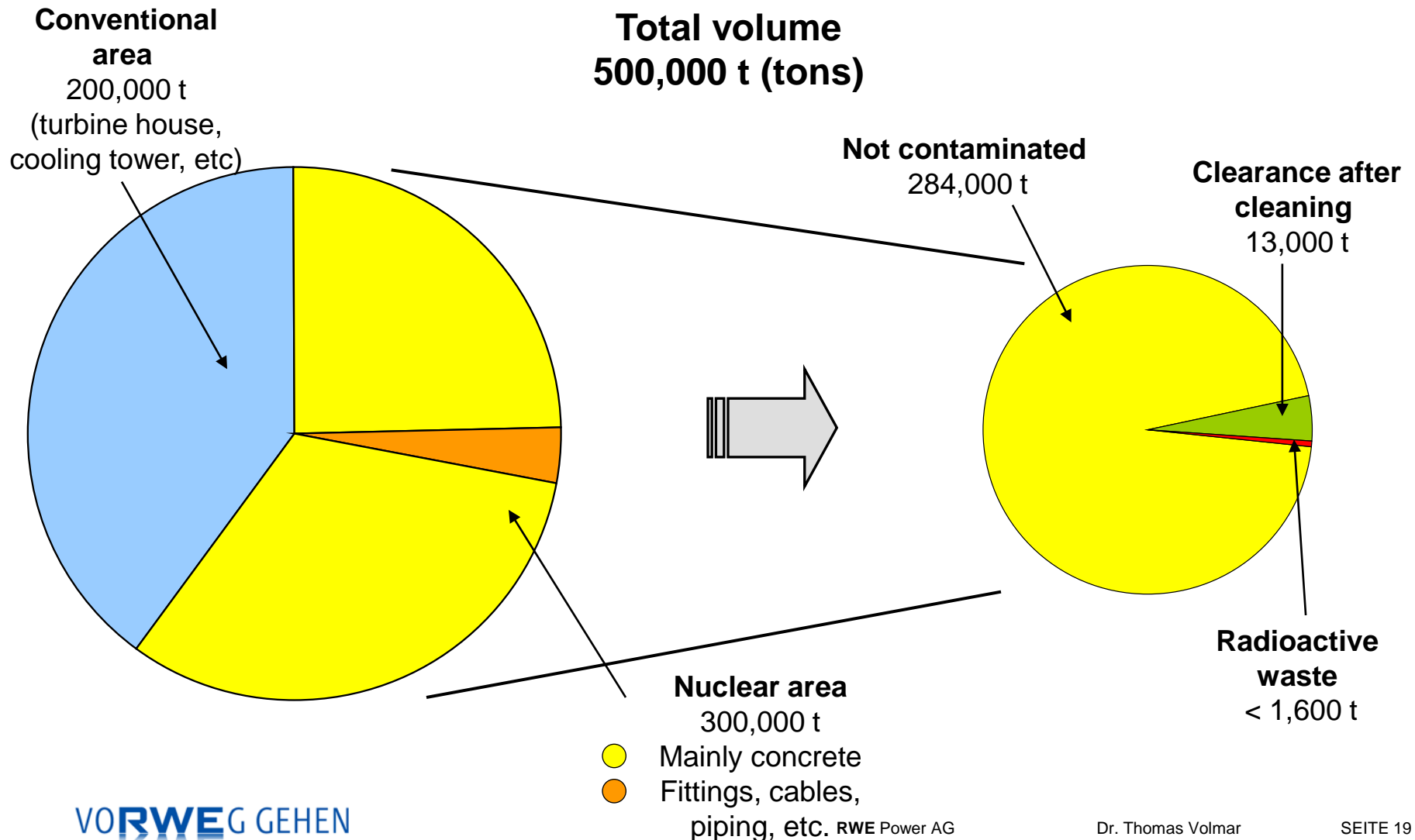
Re-use of the plant area is an important project driver

- > Early re-use of the plant area can accelerate the decommissioning project success
- > Costs for the service operations can significantly be reduced by reducing the number of buildings and area
- > Plant area can be sold and generates revenues
- > New use of the plant area is beneficial for local community, e.g. regarding employment

Thank you very much for
your attention and let's
collectively be:

VORWEG GEHEN

Quantities of dismantling waste: Waste management and transports



Important Facts

Mülheim-Kärlich Plant



Shareholder	RWE Power
Type of reactor	Pressurized Water reactor
Capacity (gross/net)	1.302 MW / 1.219 MW
Manufacturer	BBC/BBR (Westinghouse)
First synchronisation	14.03.1986
Start of power operating	01.08.1987
Production (gross)	11,3 billion kWh
Disconnection	09.09.1988 (after only 405 days)
Making the application for shut down and beginning of the dismantling	12.06.2001
First permission for shut down and beginning of the dismantling	16.07.2004