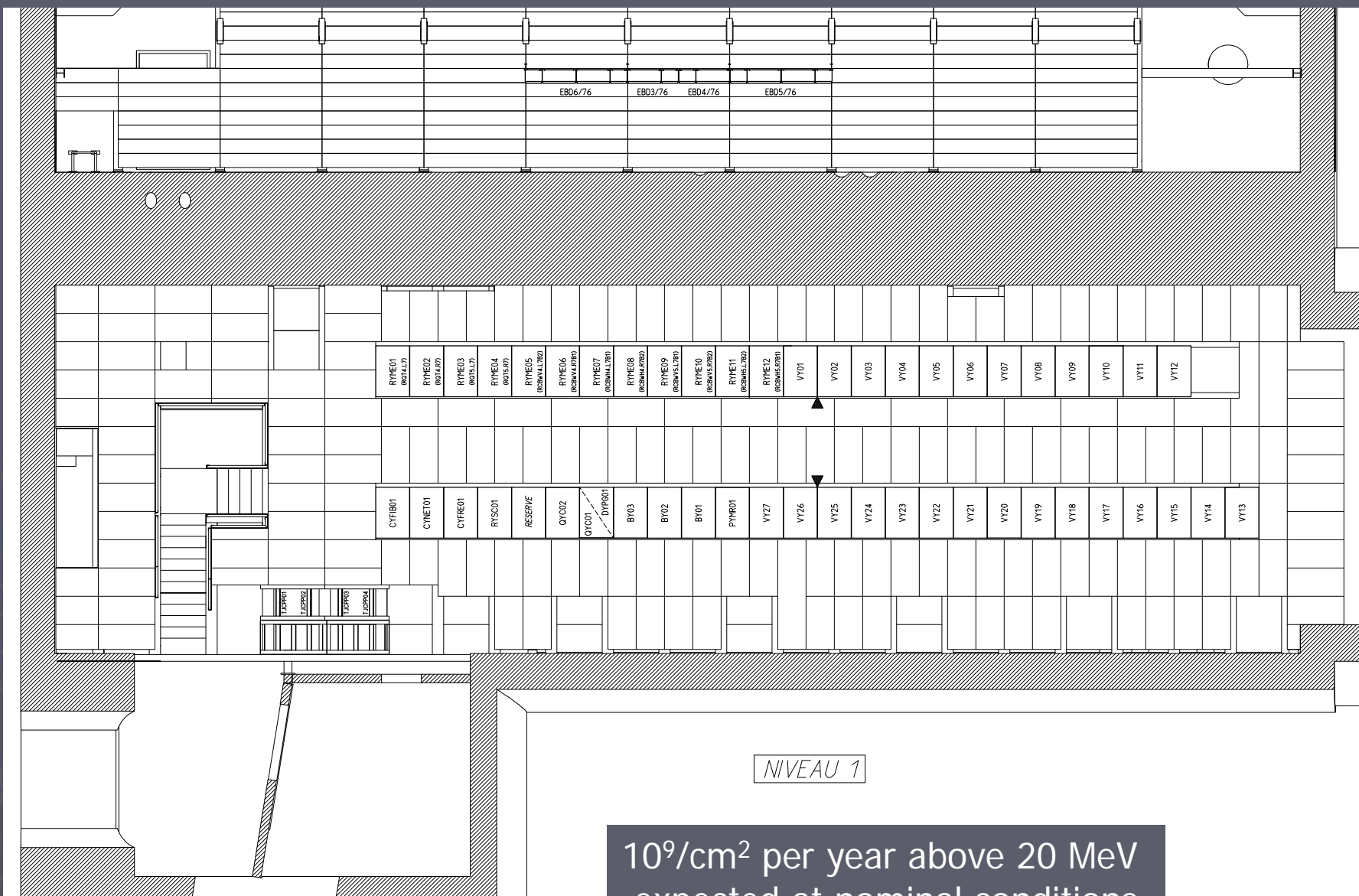


Work foreseen in UJ-TZ76

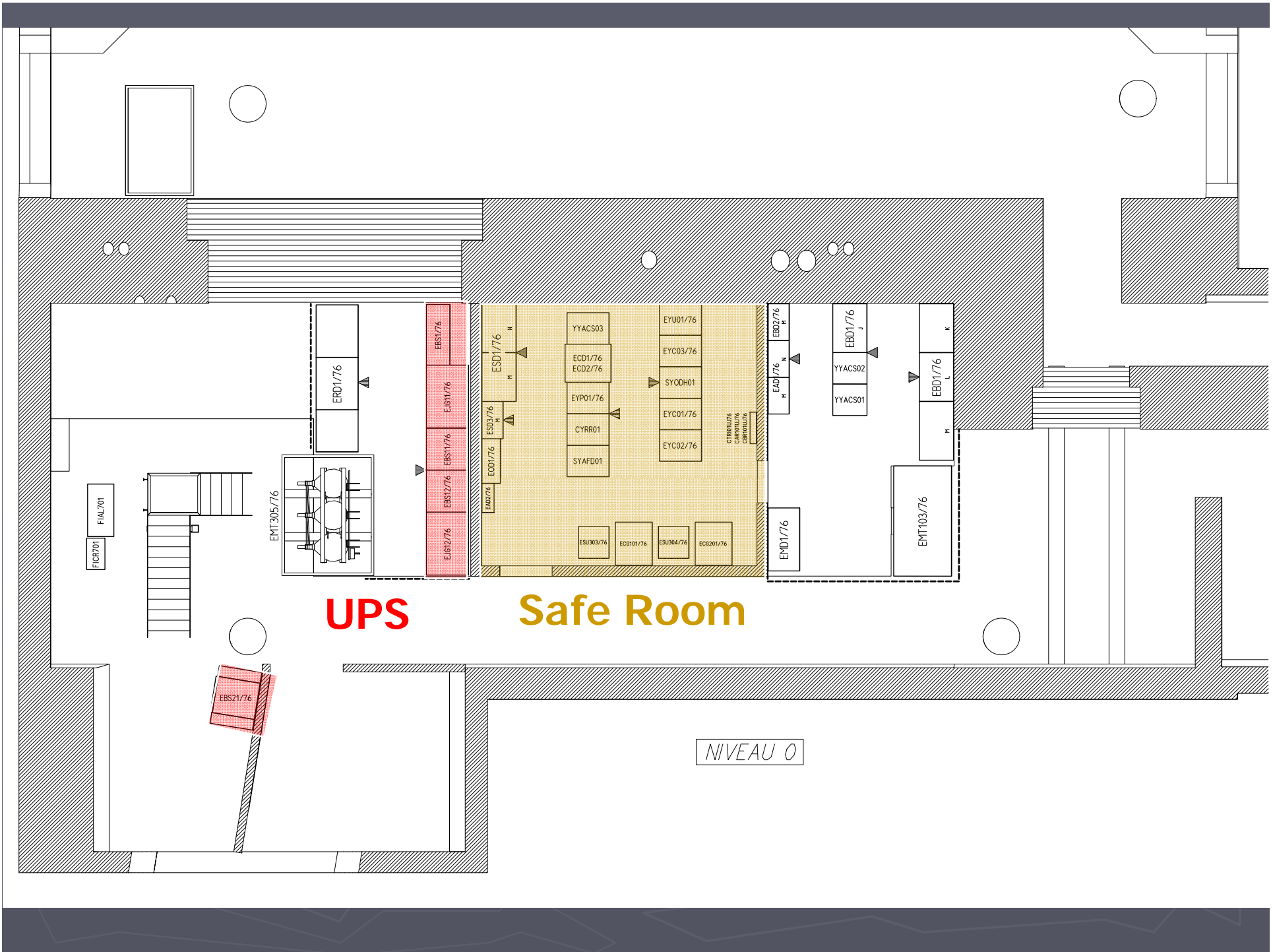


NIVEAU 1

10⁹/cm² per year above 20 MeV
expected at nominal conditions

Most equipments are SEE sensitive

- ▶ Power converter (12 racks): standard commercial devices with no particular radiation tolerance specifications.
- ▶ Vacuum monitoring system (27 racks): contain standard PLC and I/O units that are known to be sensitive to SEE.
- ▶ RAMSES system (1 rack): contain standard PLCs - Misbehaviour would not affect the running of the LHC.
- ▶ Beam Position Monitor (1 rack): electronics has been designed to be radiation tolerant.
- ▶ Bunch to Bunch Beam Loss Monitor (1 rack): VME crate that is SEE sensitive – not yet in place.
- ▶ BTV system (1 rack): VME crate - only runs in the “inject and dump” mode at 450 GeV
- ▶ Remote cryogenics valve controller (1 ½ rack): PLCs and remote I/O - Misbehaviour probably means loss of the cryo-maintain conditions.
- ▶ Control equipment (1 rack): remote reset control, Fip repeaters and timing system.



UPS

Safe Room

NIVEAU 0

Critical equipments in UJ76 lower level

- ▶ UPS: standard commercial units, probably large cross section to SEE.

- **Loss of EL power means loss of quench protection (no firing of the heaters) during the ramp-down of the magnets.**

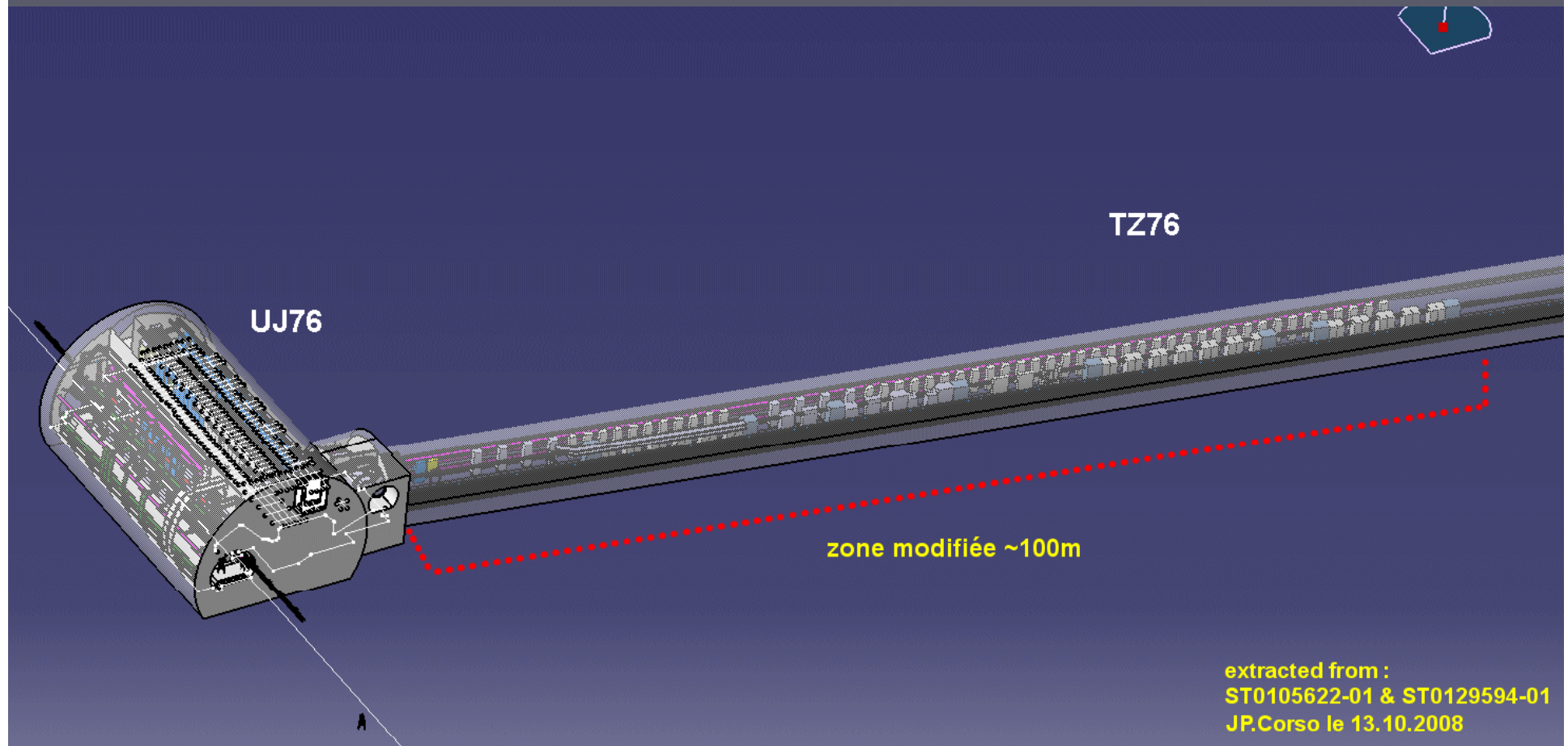
- ▶ Safe Room: contains secured 48V system for the emergency lightning in case of fire (2h autonomy).

It also contains the electrical monitoring system and safety devices (ODH, Fire detection, AUG, Access).

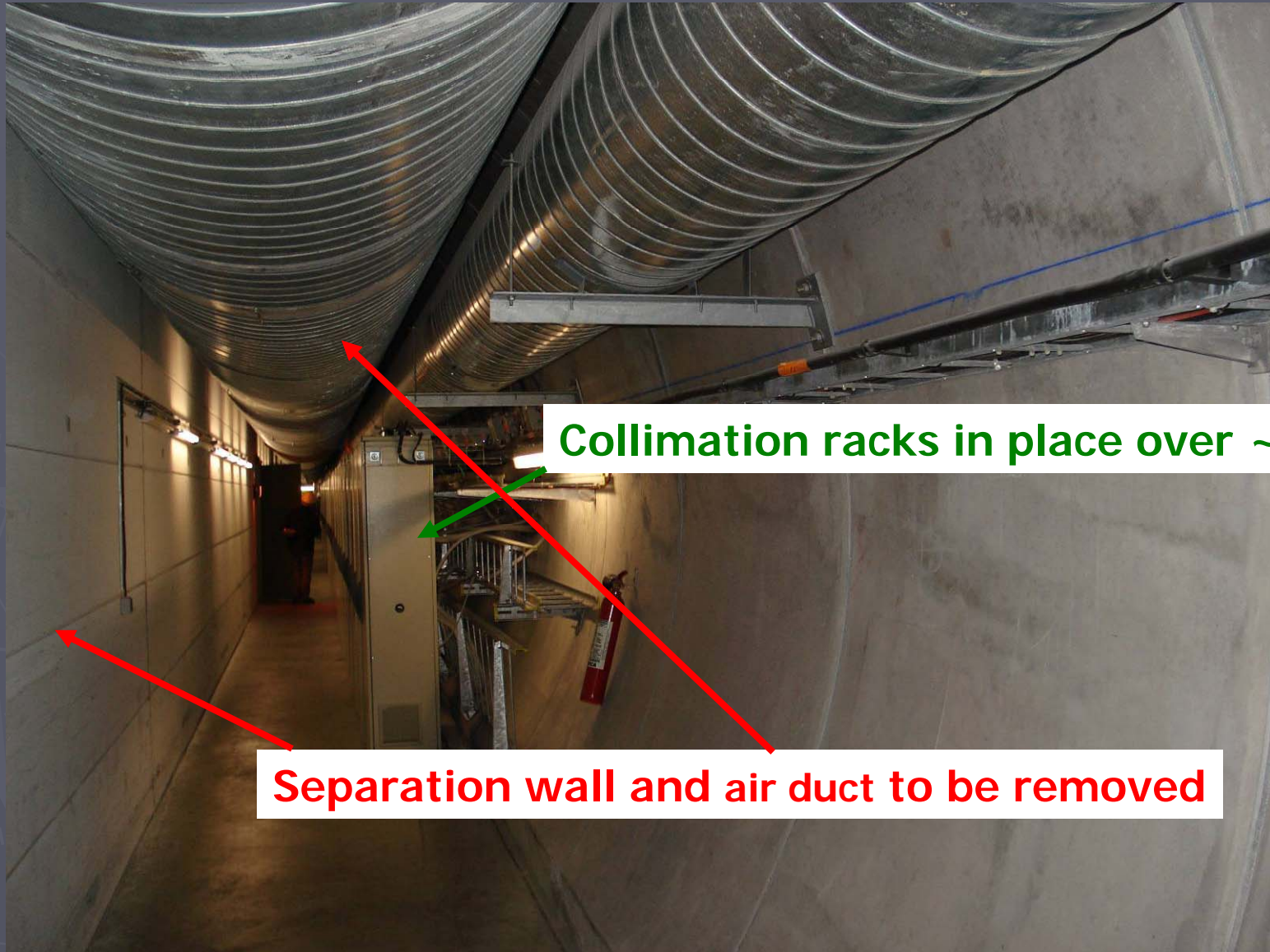
EL considers that these systems must stay grouped ...

- ▶ Transformers and LV switchboards are electro-mechanical devices not sensitive to SEE – status reading (DIRIS units) may require some attention.

Equipments relocation in TZ76



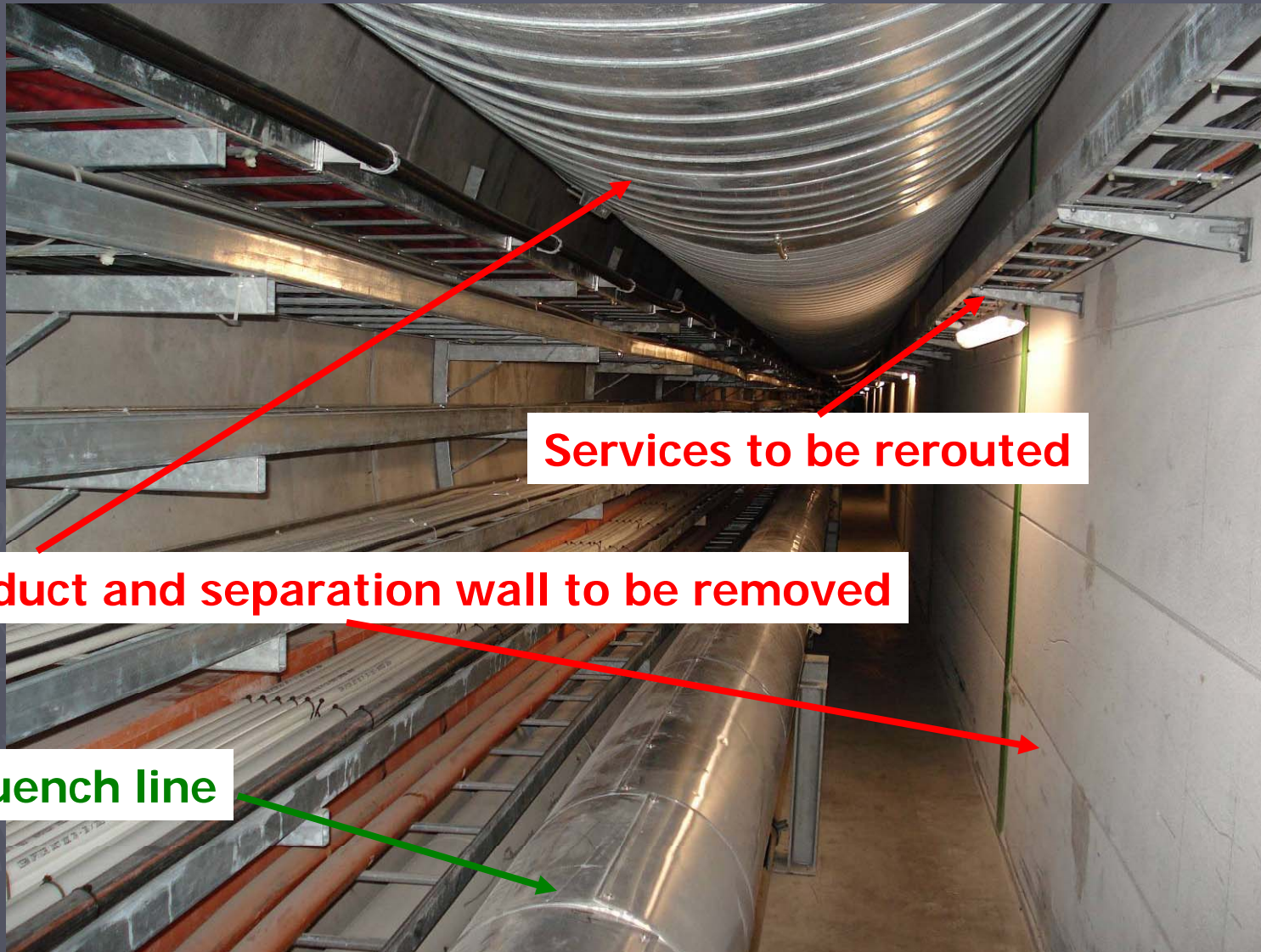
TZ76 on the passage side



Collimation racks in place over ~80m

Separation wall and air duct to be removed

TZ76 on the service side



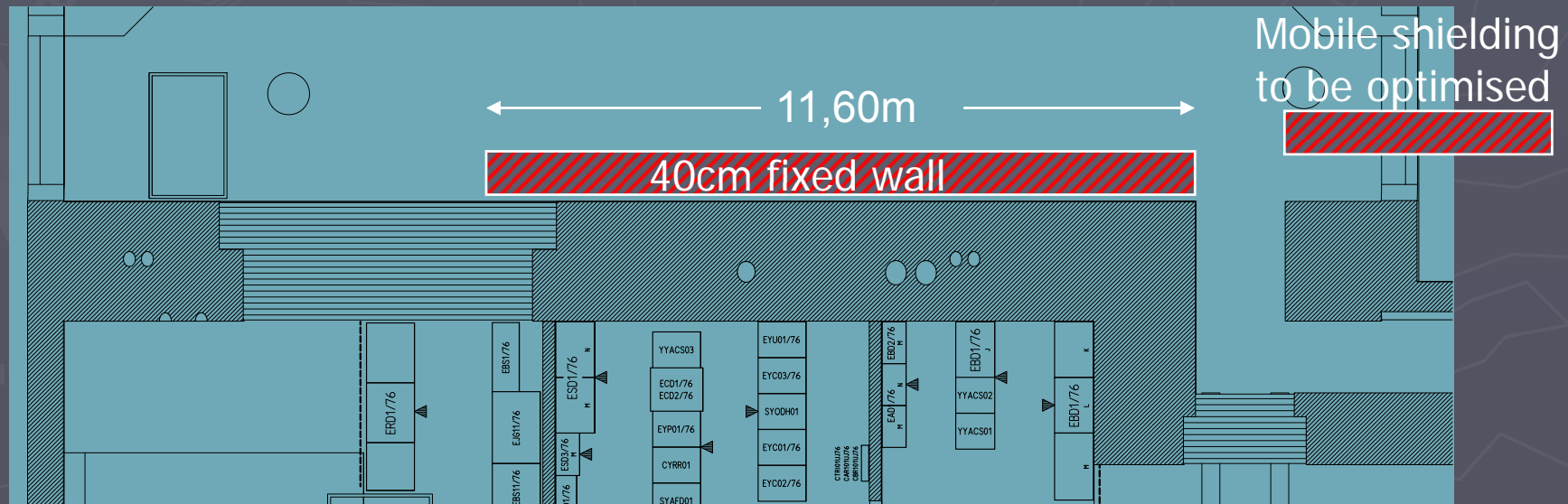
Services to be rerouted

Air duct and separation wall to be removed

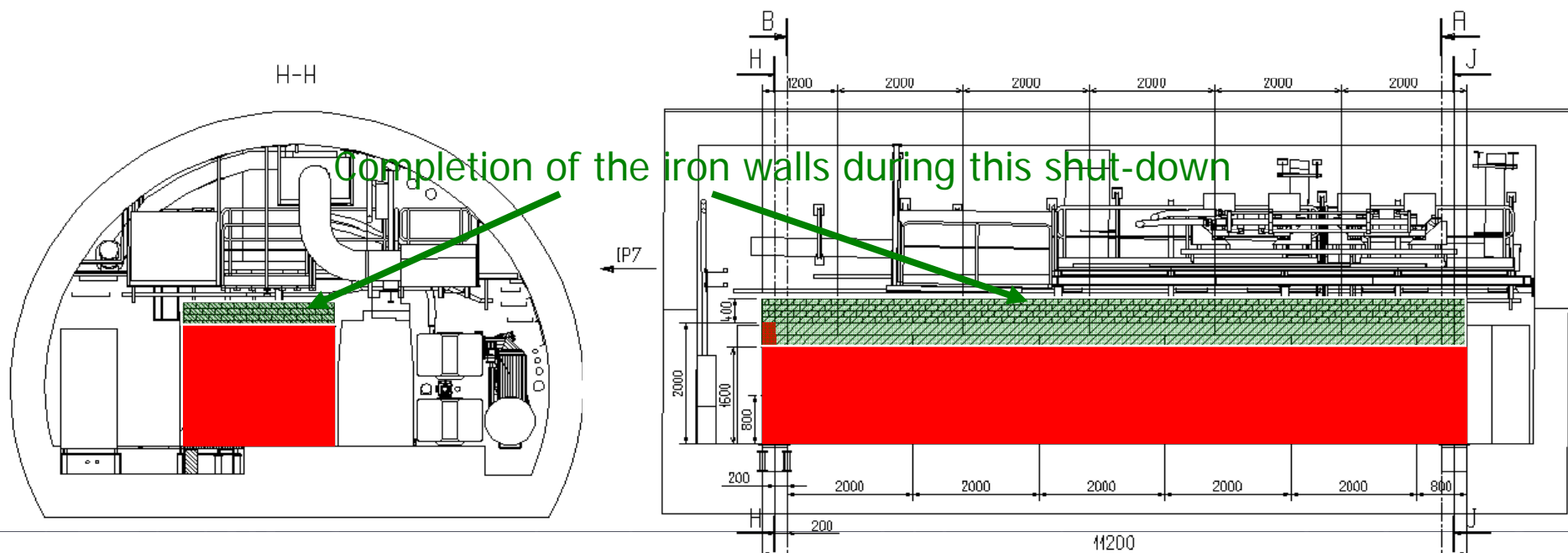
Quench line

Proposal for the 2008-09 shut down

- ▶ Prepare TZ76 area over 100m: remove air ducts, separation wall, reroute services, equip with demineralised water.
→ ~3 months
- ▶ Relocate UPS in TZ76: install UTA & CV control, cabling for UPS and move of the UPS cabinets (+tests!)
→ ~2 months
- ▶ Install local iron wall to shield the safe room: expect to gain an order of magnitude on the flux level ...



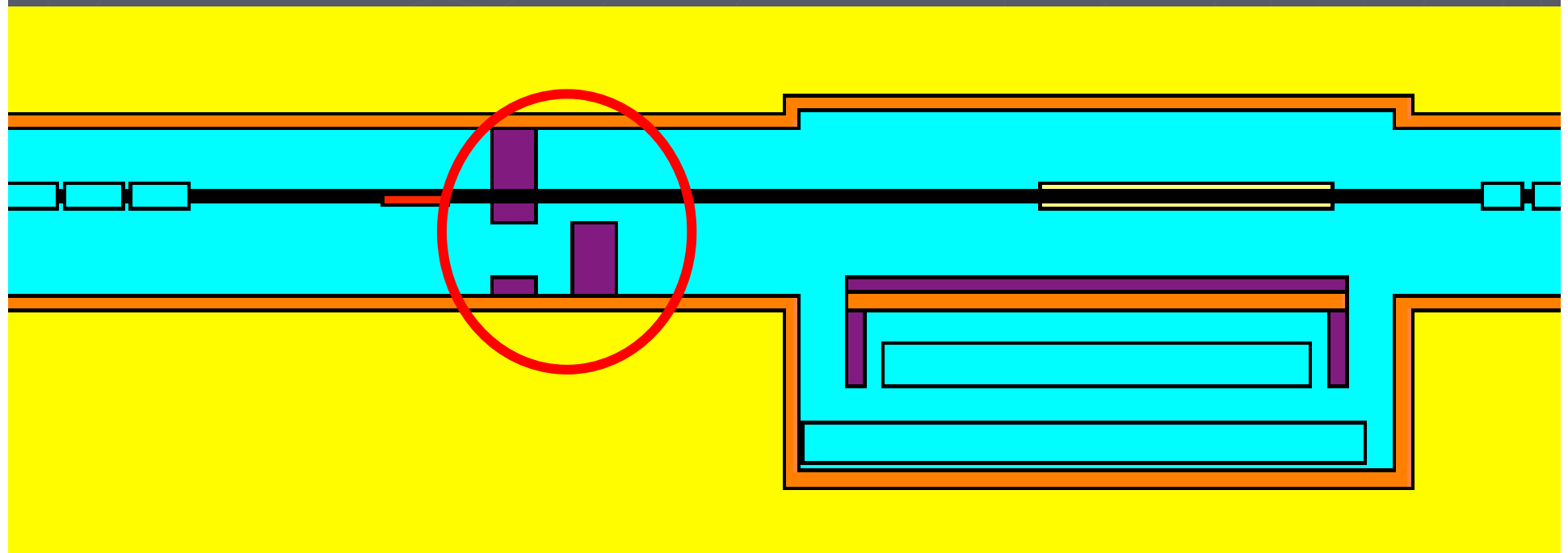
Shieldings in RR73 & RR77



Present situation in RR73&77

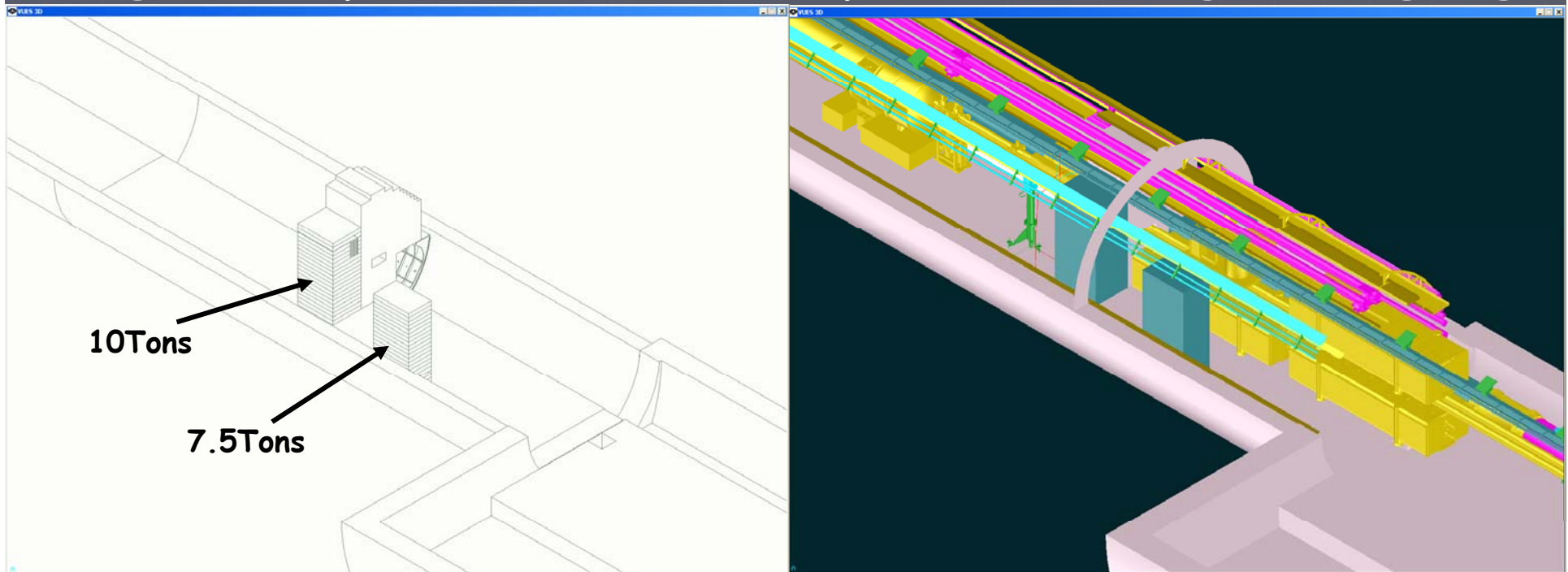
Present situation in 77 (RR73 iron available)

Chicanes in front of RR73 & RR77



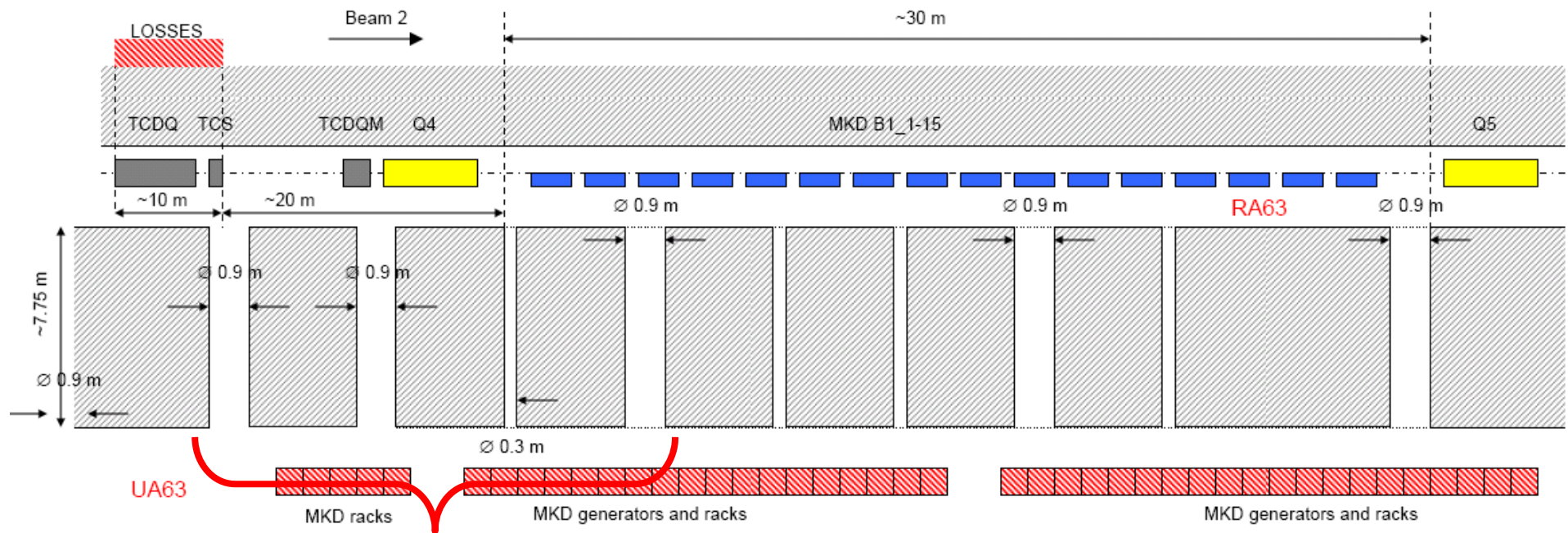
Chicanes in front of RR73 & RR77

Design and optimisation of transport & handling is on-going



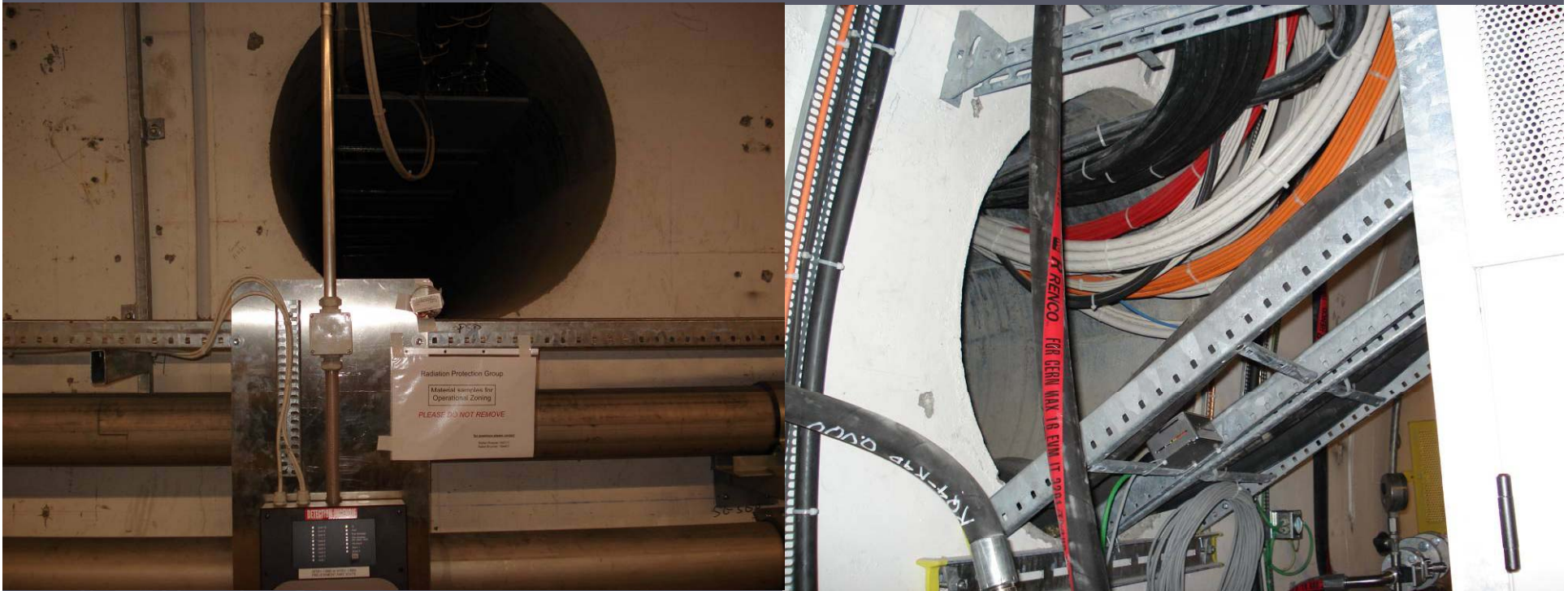
Objective: install the chicanes up to 2m high during this shut-down

Ducts at Point 6



Need to fill these ducts with ~1m of iron to protect the dump kicker generation

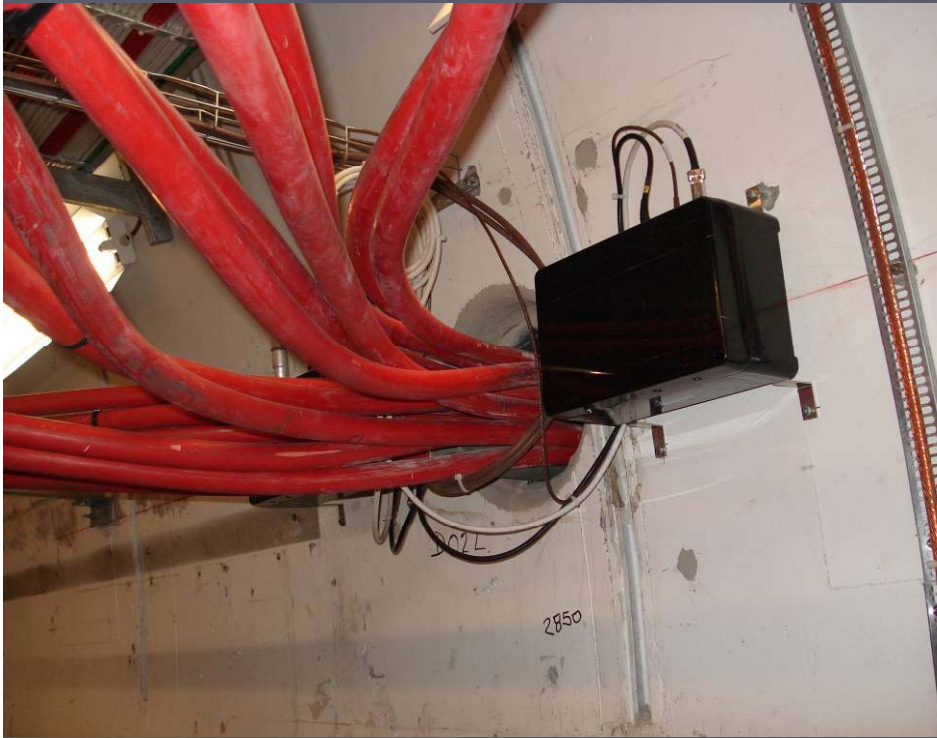
Ducts at Point 6



Easy to fill

Nightmare !
Water cooled cables...

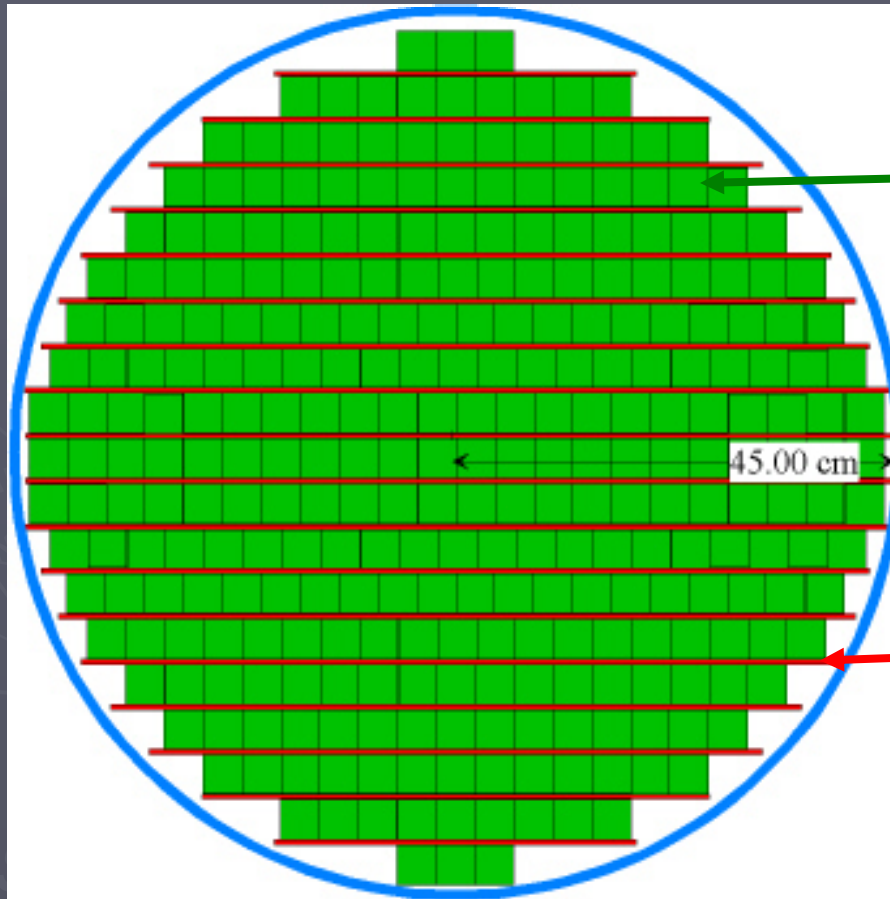
Ducts at Point 6



Not much left to fill !

Easy to fill

Filling the ducts with iron



Iron rods 4cmx4cmx1m

~4 Tons per duct

Iron plates 5mm thick

Filling factor = 86%