



# The CNGS Target Area Dismantling Project: Status and Timeline

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AWAKE collaboration Meeting 4-6/10/2023

# Outline

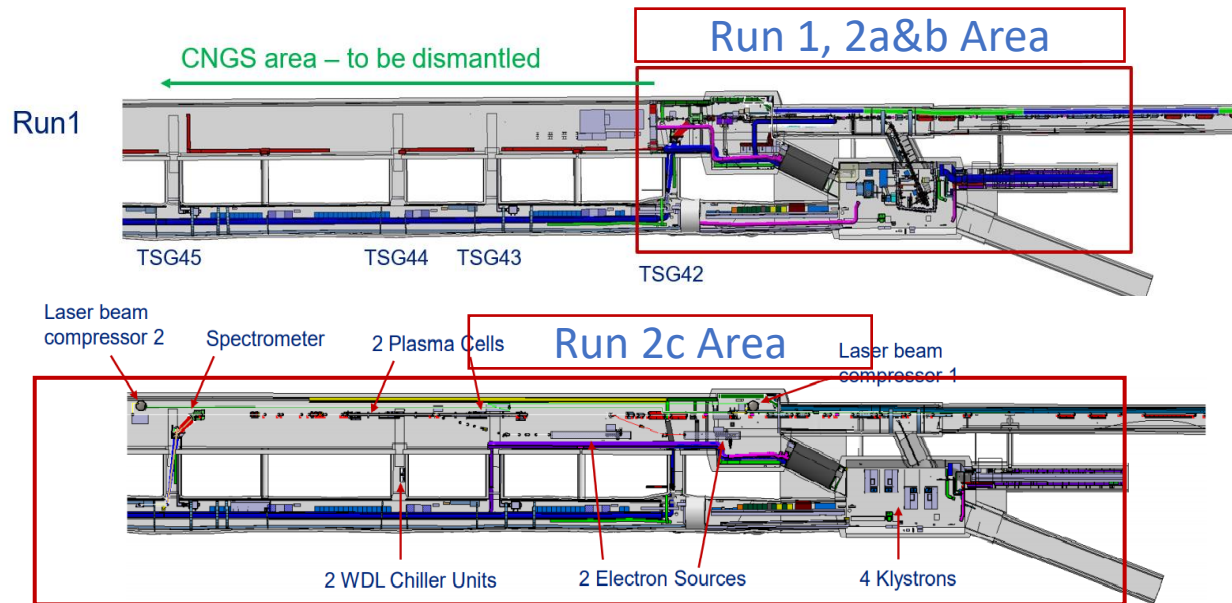
- CNGS dismantling introduction
  - Why now?
  - What?
- Planning & link with AWAKE
- Project structure & link with AWAKE
- New surface building BS4
- Summary



# CNGS Target Area Dismantling: Why now?

## AWAKE Run 2:

- Demonstrate the possibility to use the AWAKE scheme for high-energy physics applications in the mid-term future  
→ phased approach: 2a, 2b, 2c, 2d etc.
- AWAKE Run 2c and 2d require a longitudinal **extension of the AWAKE facility of 60-80 meters**.



AWAKE facility, with separation wall to CNGS target area on the left

There is no other such location at CERN that also has its **own SPS proton extraction line and proton beam dump**.

→ The **dismantling of the CNGS target area** is a **prerequisite for AWAKE Run 2c & 2d**

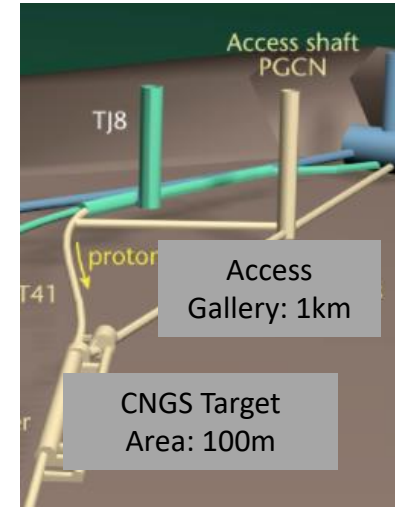
# CNGS Target Area: What?

## Area challenges:

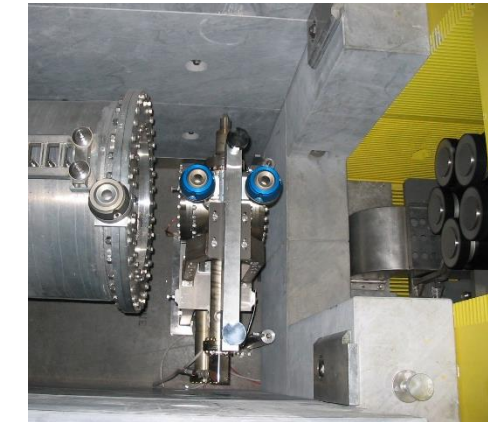
- 6% slope → wedged supports, special crane
- 1km-long tunnel and 60m-deep pit to surface
- Radiological contamination
- Significant dose rates: up to 20mSv/h

## Area content:

- ~500m<sup>3</sup> large shielding blocks (0,05-0,6 mSv/h on contact)
- A few high dose-rate elements (2-20mSV/h on contact)
  - All designed for remote handling
- 70-meter-long aluminum He-tank
- Various supports, ducts, shielding bricks, cable trays, etc.



CNGS target in shielding



Horn, TBID and target (left to right)



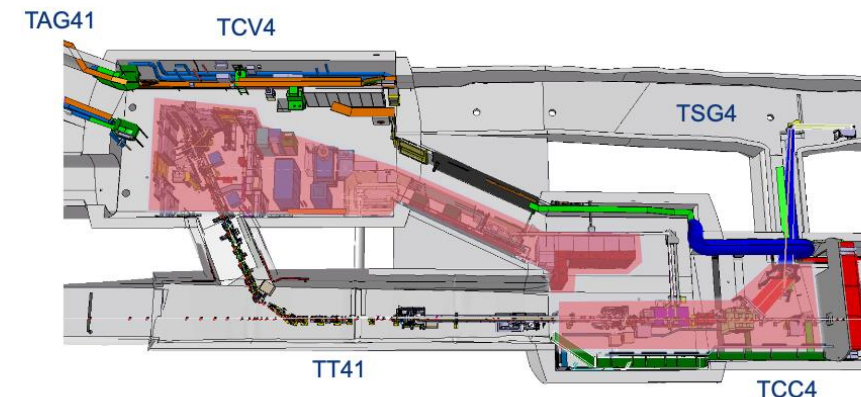
Installation of horn roof shielding

The decision to upcycle all concrete shielding blocks (~400m<sup>3</sup> out of the total) rather than declare them as waste saves 5MCHF, but we need a building to store them.

→ Total dismantling project cost estimate = 12MCHF

# Planning Dismantling and AWAKE 2b run

- **AWAKE's** request = be ready with Run 2c installation and HW commissioning when the first post-LS3 proton arrives (i.e. late 2028)
- **CERN's** request = do the dismantling before the start of LS3 activities (i.e. before 2026). This would mean no beam in AWAKE in 2024 → we apply the request "As Much As Reasonably Achievable", and do MOST of the work before 2026.
- Dismantling work duration = 3 months dismantling AWAKE, 15 months dismantling and decontaminating the target area.
- Compromise: AWAKE dismantling from 1/11/2024  
→ start decommissioning early October  
→ last 2024 proton at the end of September  
(see next slide)

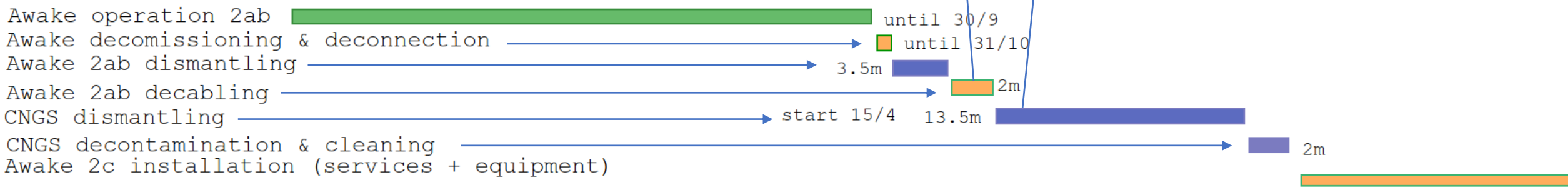
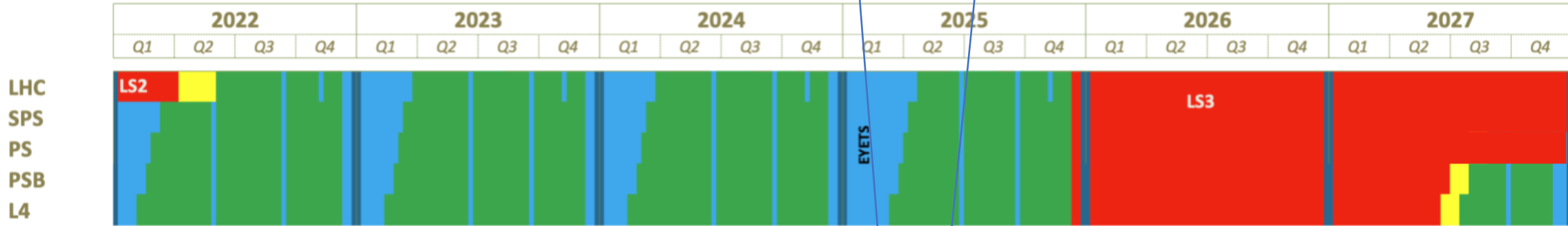


Red area = to be dismantled

# Planning

Avoid EYETS "AMARA" because of EN-EL teams' availability

Surface building ready 15/5/2025, allows 1m of preparation before breaking down the wall



Last proton 30/9/2024

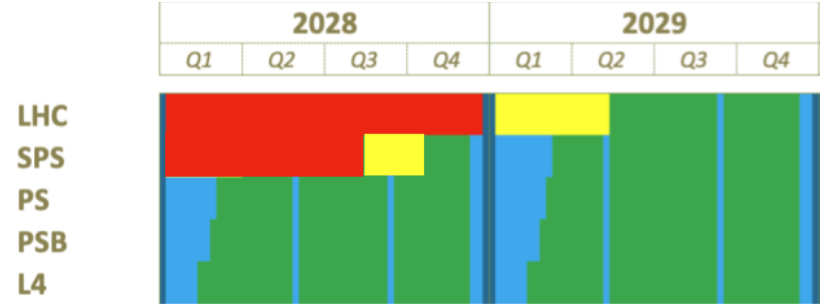
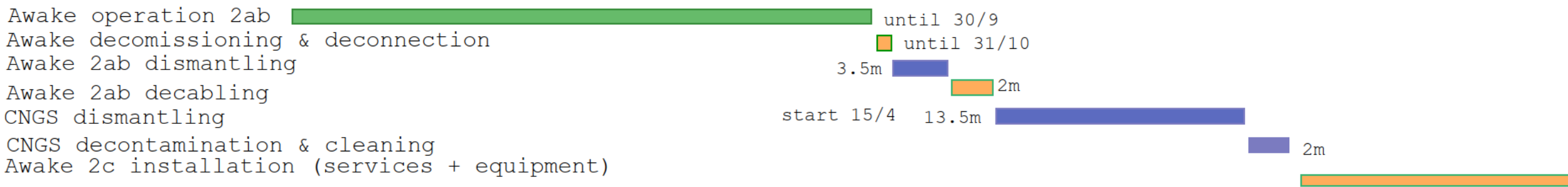
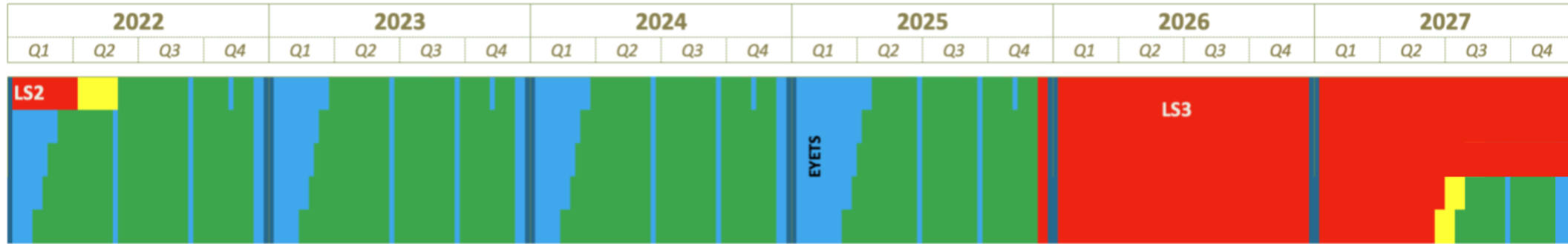
Start dismantling 1/11/2024

Start decabbling 15/2/2024

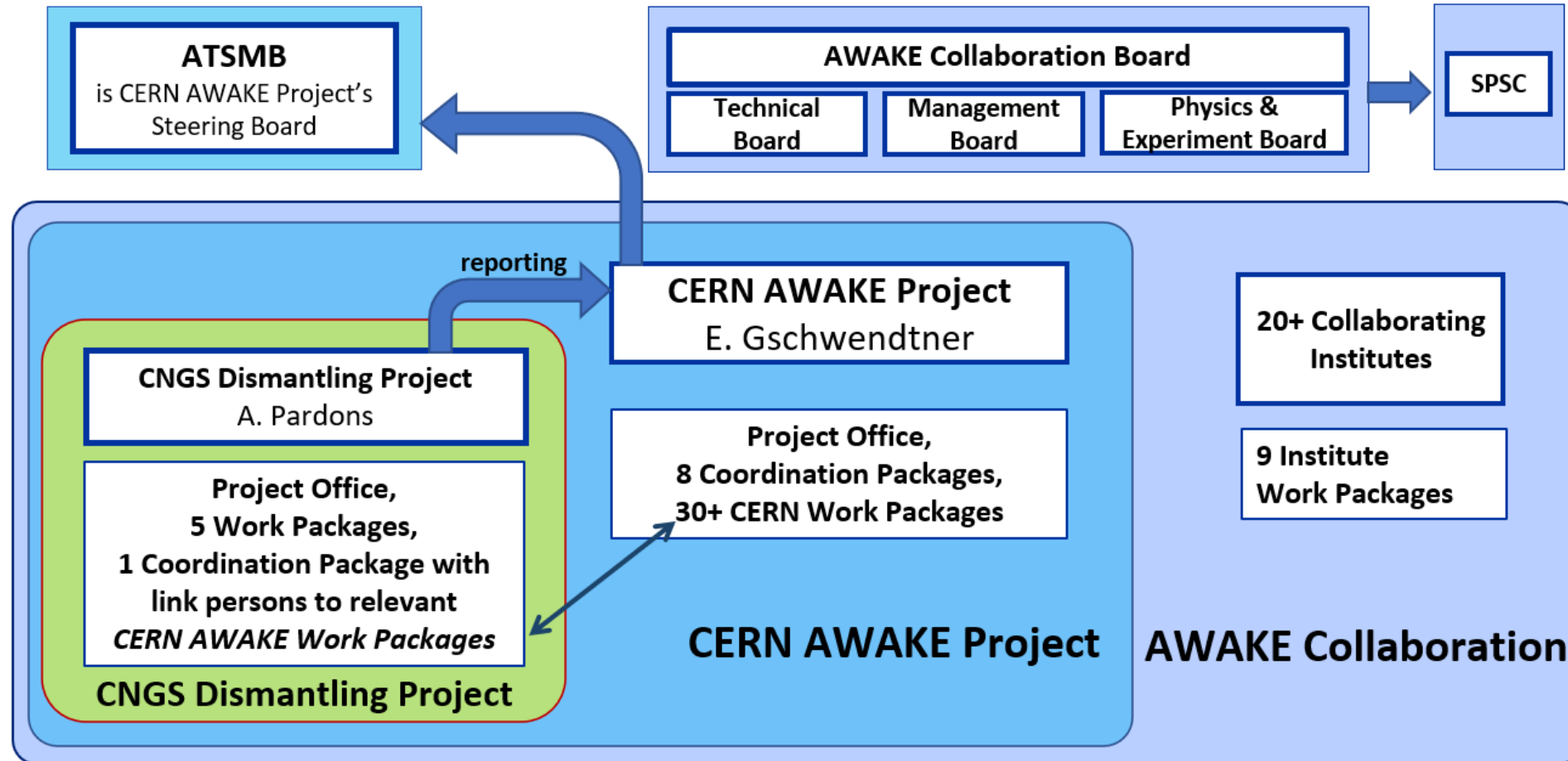
Area available to AWAKE ~Q42026



# Planning

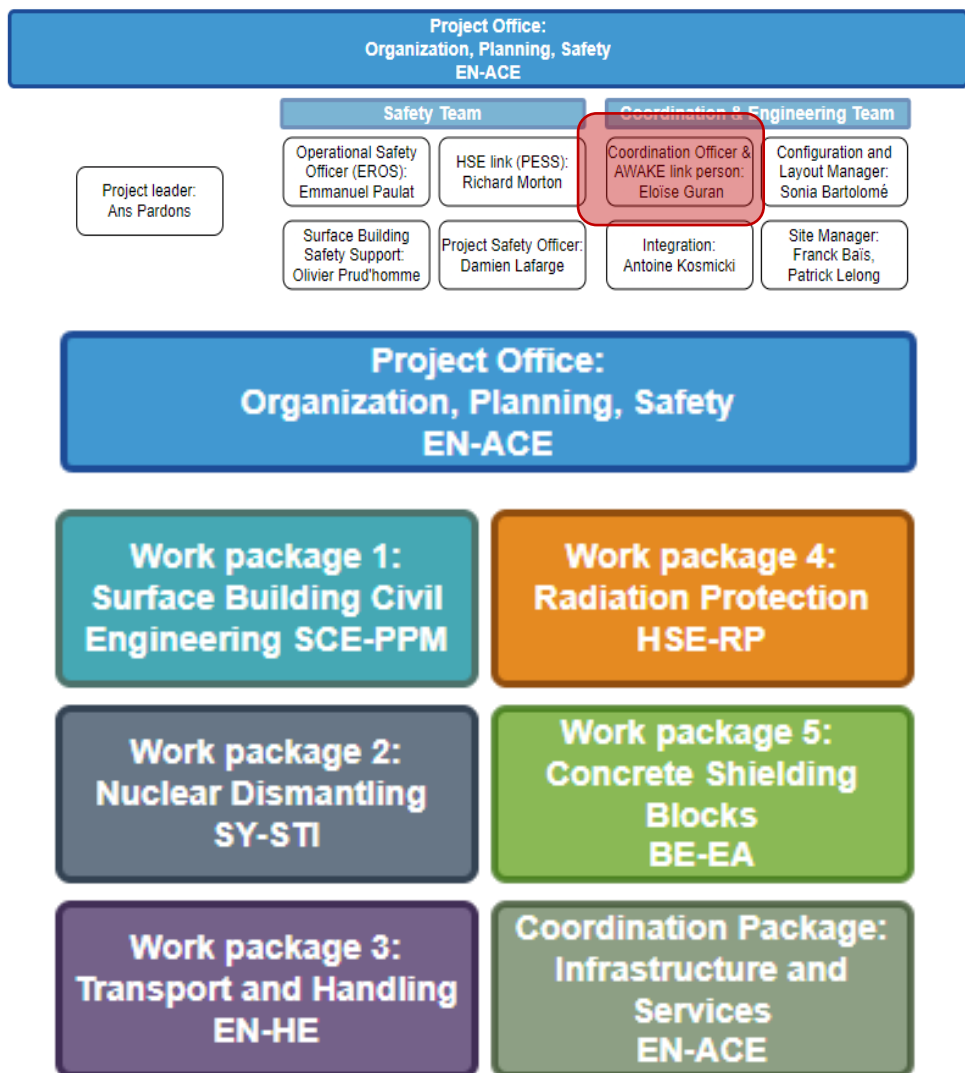


# Project structure & integration in AWAKE





# Project structure and link with AWAKE

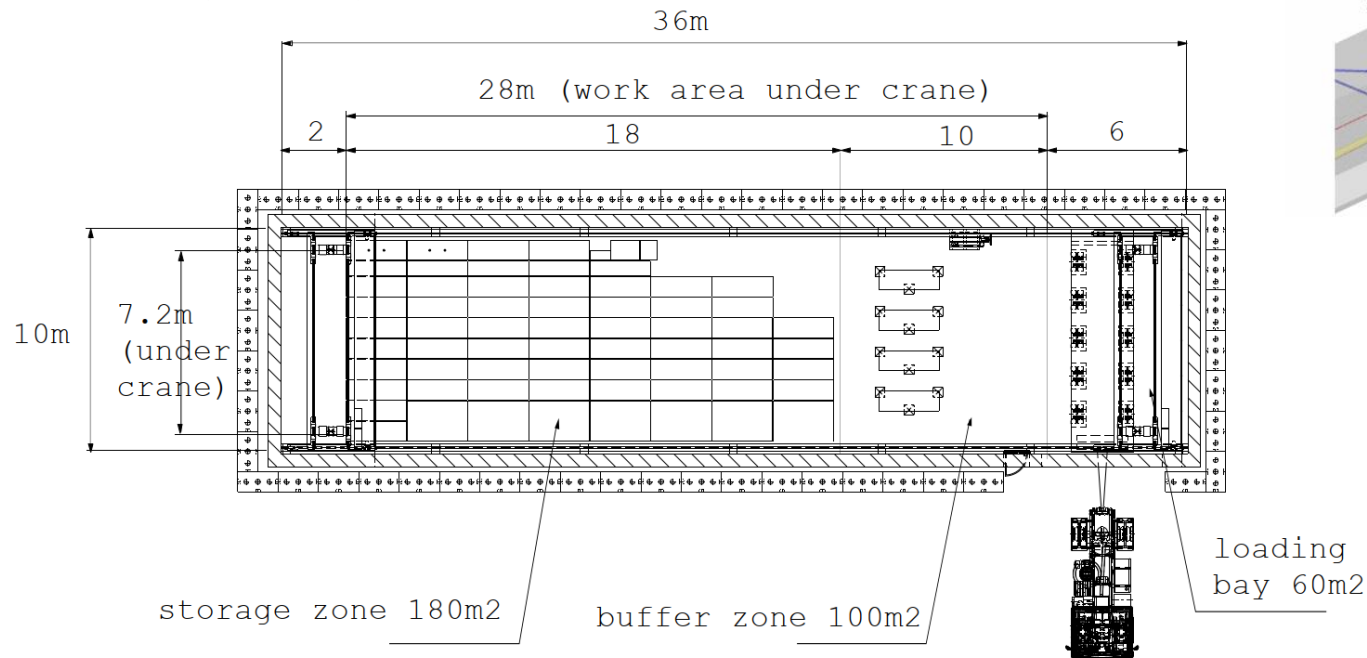
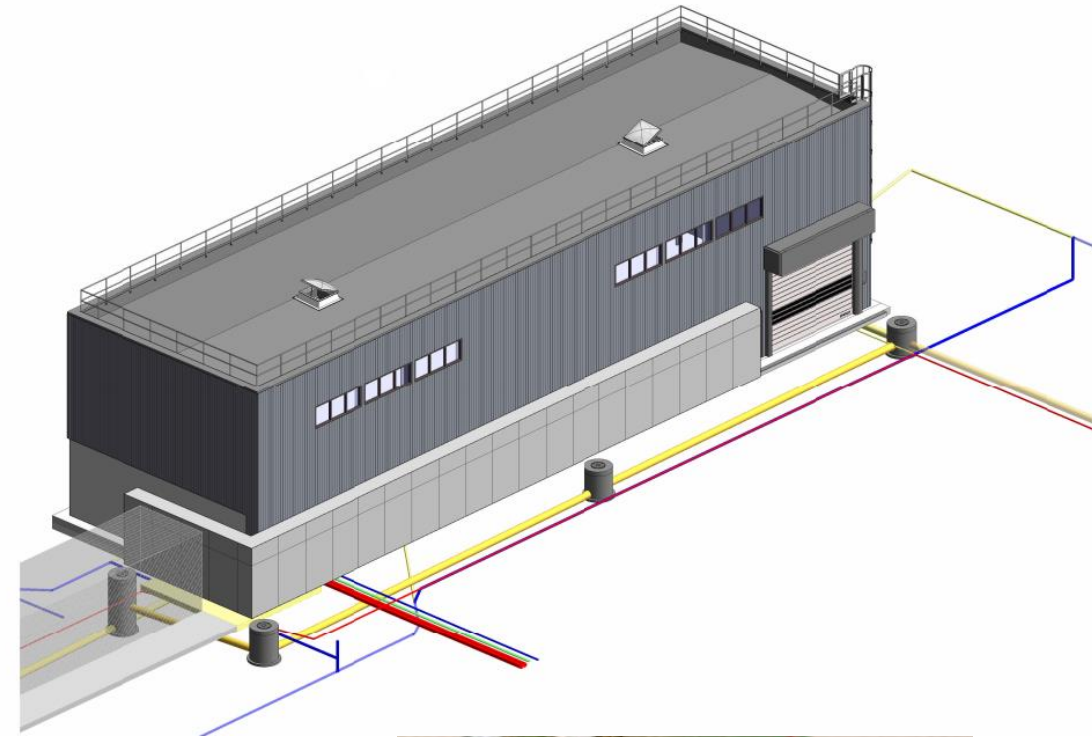


**Eloïse Guran** is the project's **AWAKE Link person**, and she will help you prepare for

- AWAKE 2b dismantling, where you must:
  - Define the new storage space for your equipment (not in AWAKE!) or declare it as waste
  - Indicate how your equipment is transported, its special requirements, and its schedule
  - Decommission and disconnect your equipment
  - Remove all your other items or request transport
- AWAKE decabbling (part of AWAKE project), where you must
  - Identify your (disconnected) cables according to EN-EL practices

# New surface building BS4 (697)

- Needed to store the 400m<sup>3</sup> decontaminated standard concrete shielding blocks → reuse (5MCHF saved compared to waste disposal)
- Needed as a buffer zone for other items before they move to the CERN RWTC
- Building + services ~3MCHF.
- Long design, approval, procurement process



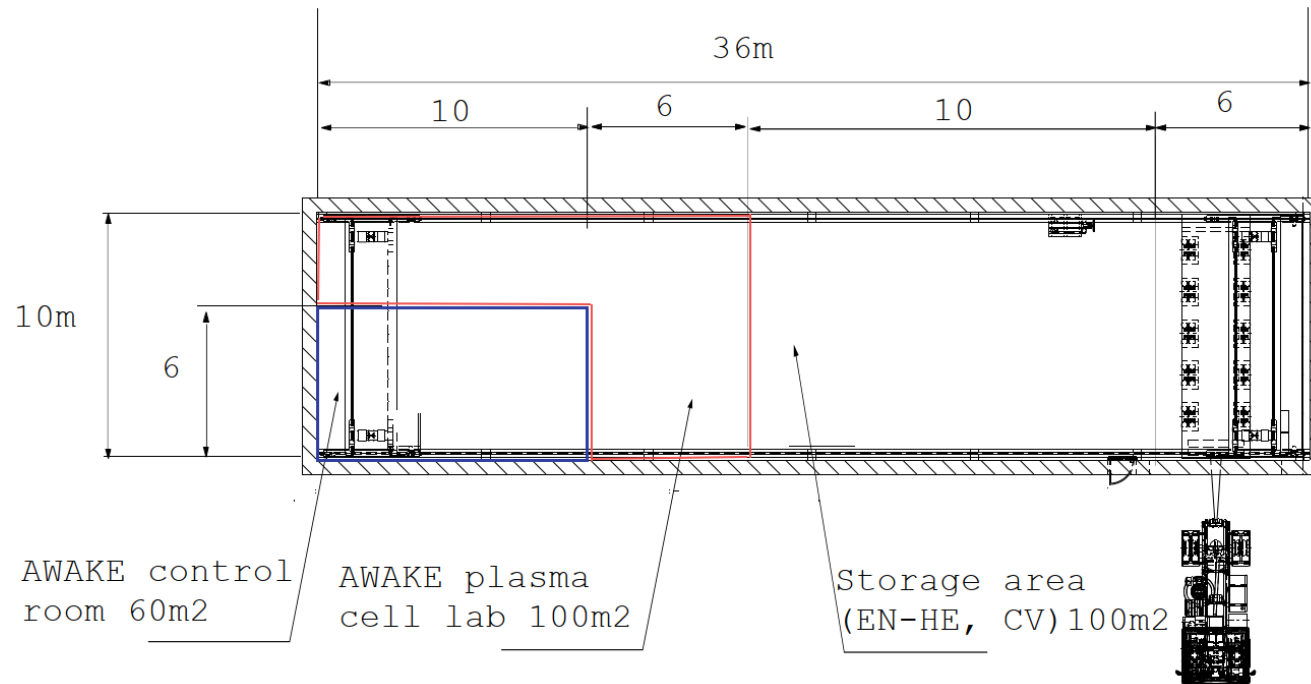
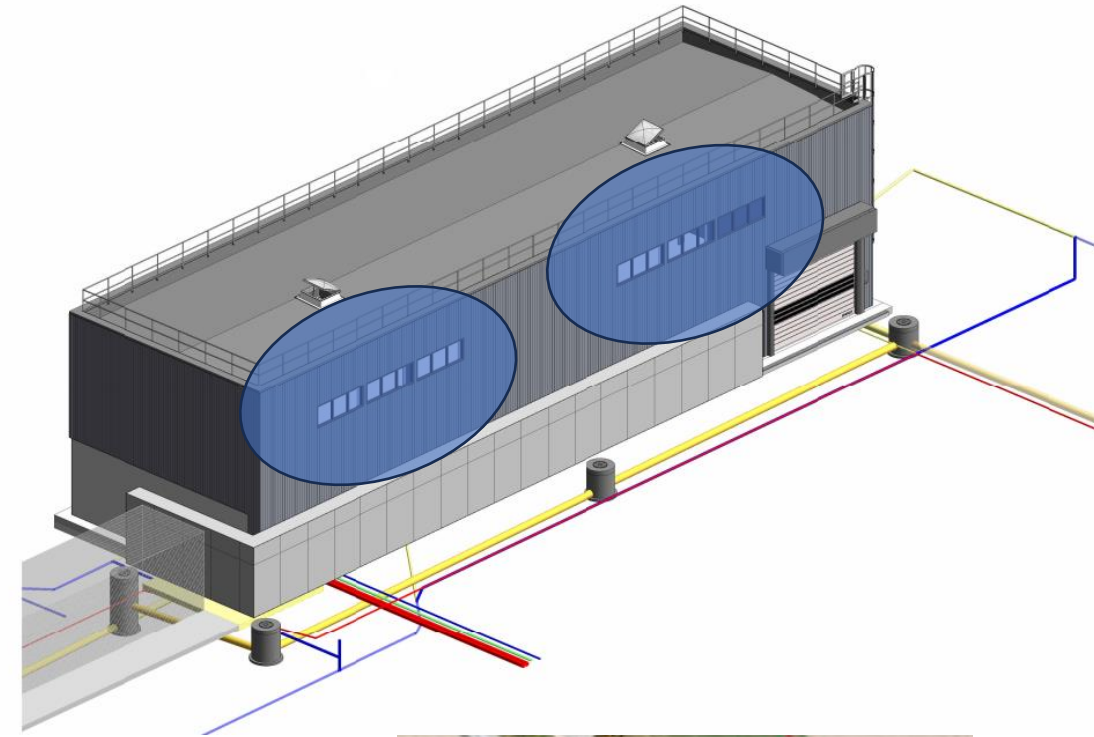
# New surface building BS4 (697)

AWAKE

Once the blocks have found a new location:

- building is empty and outer blocks can be removed,
- building can start 2<sup>nd</sup> life, e.g. as

- AWAKE control room
- AWAKE plasma lab
- Conventional storage for EN-CV, EN-HE



# Summary

- The **CNGS Target area** contains mostly big shielding blocks, but also several **complex** high-dose rate elements. There is contamination. And a 6% slope.
- The CNGS Target Area Dismantling is **essential for AWAKE**.
- **Planning** is a compromise: avoid LS3 for main dismantling works and ensure AWAKE 2c is ready after LS3 → last 2b beam in Sept. 2024
- **AWAKE link person** will help you with your tasks, which include:
  - Decommission your equipment, disconnect, prepare transport, find storage location (or declare as waste)
  - Identify cables from your equipment for the AWAKE decabling campaign
- The **surface building** is the critical path (planning) and costly, but saves us 5MCHF.
- After the dismantling project finishes, the new building can house the **AWAKE control room and plasma cell lab**. With windows!

