ANDRA update

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ANDRA -CTO

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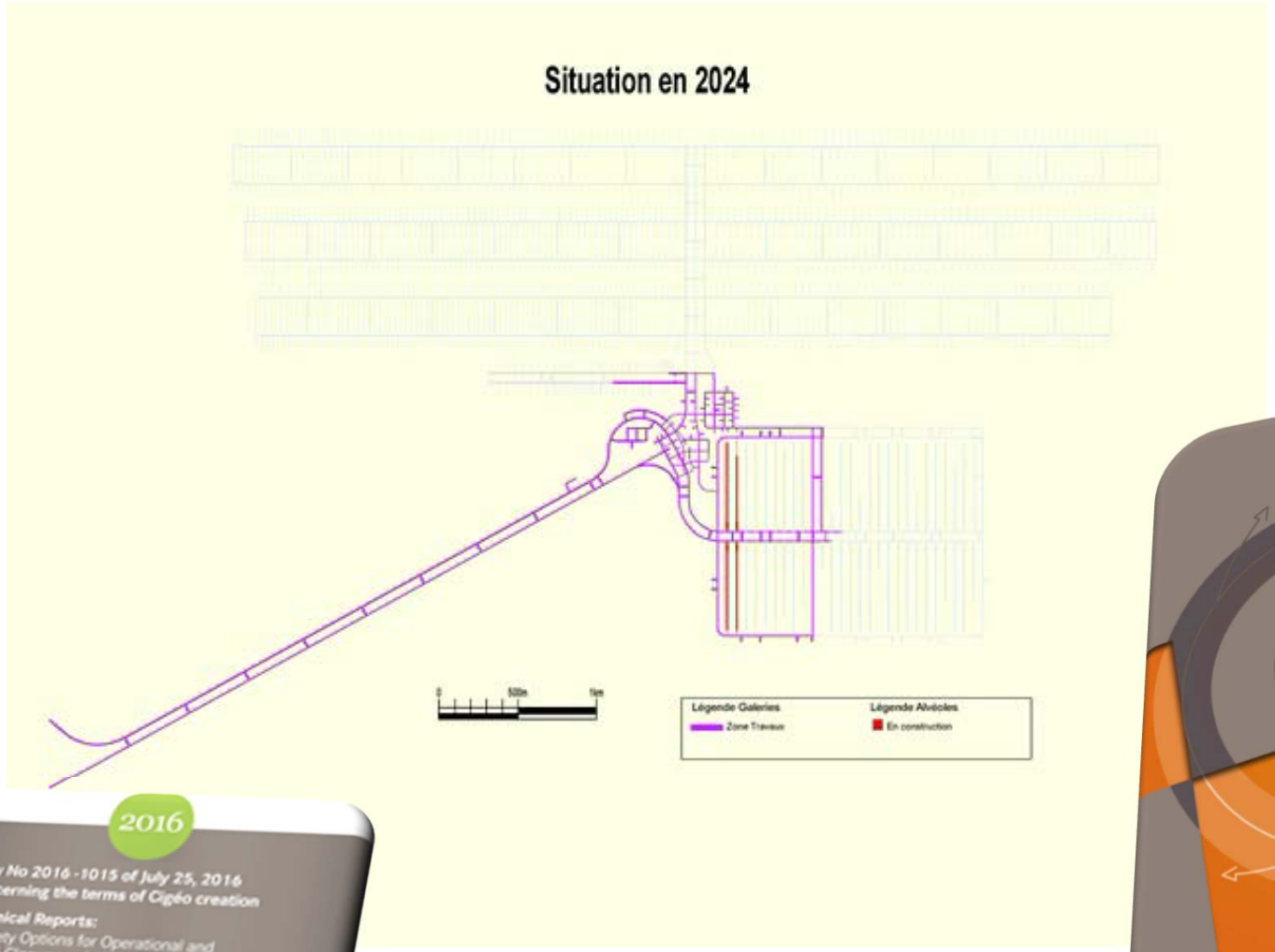
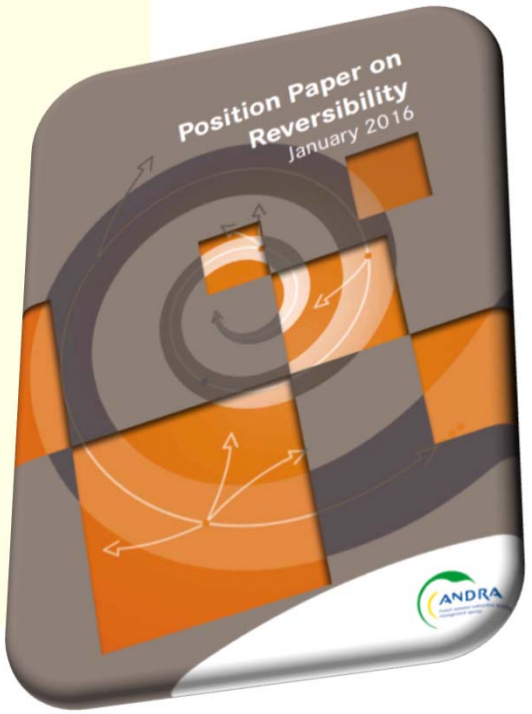
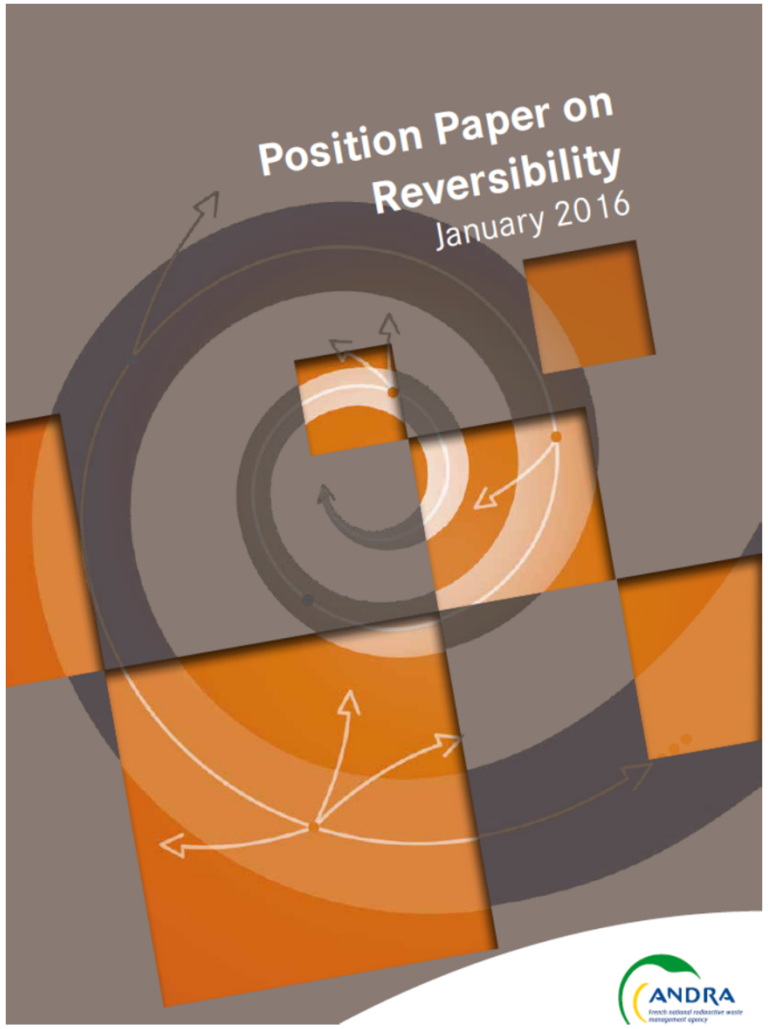
2016: the Position Paper on Reversibility



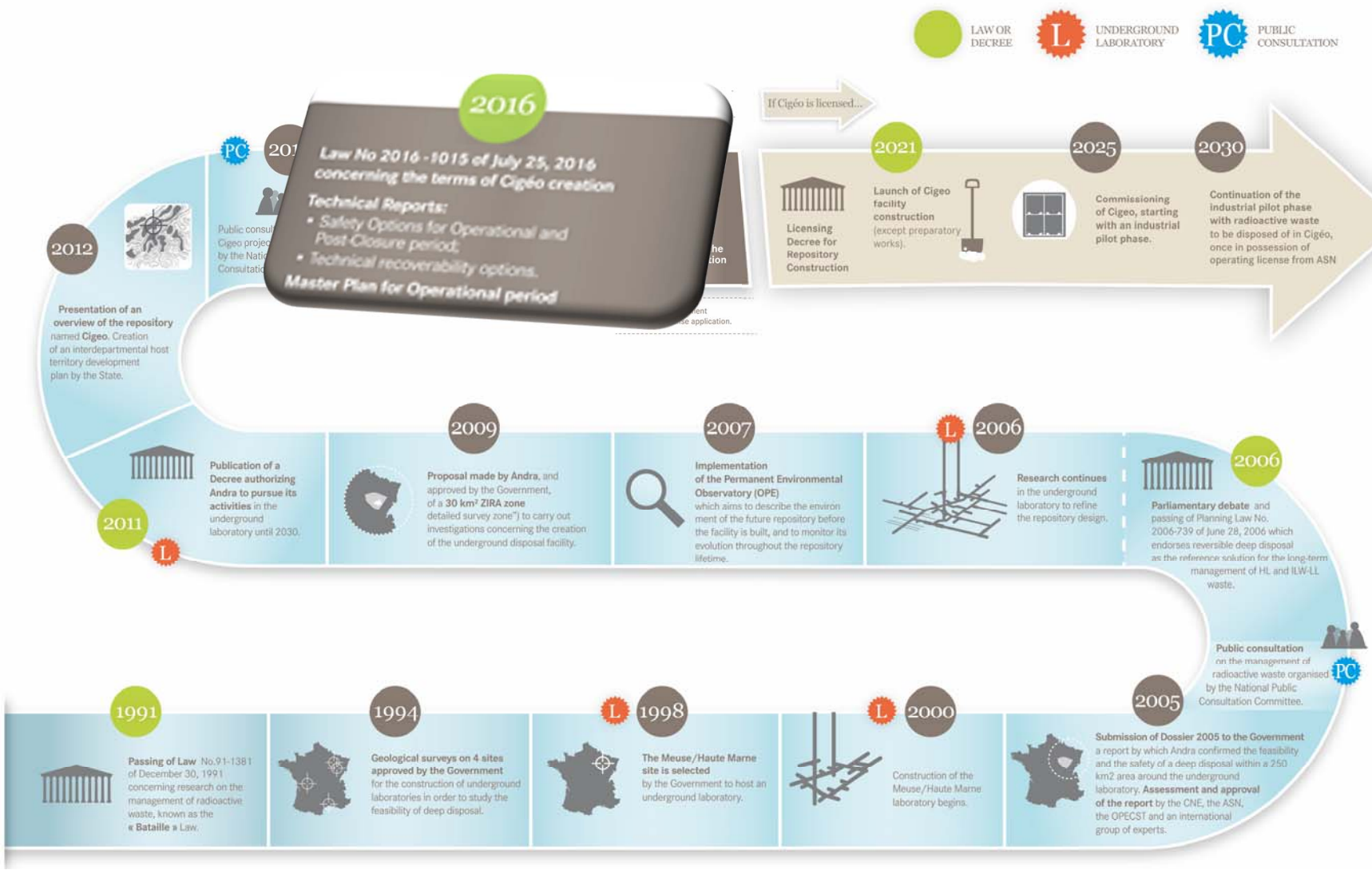


Reversibility



http://www.andra.fr/download/andra-international-en/document/577va.pdf

2016: Reversibility Law and the 2015 files



2016: the Safety Option files

2016

Law No 2016 - 1015 of July 25, 2016
concerning the terms of Cigéo creation

Technical Reports:

- *Safety Options for Operational and Post-Closure period,*
- *Technical recoverability options.*

Master Plan for Operational period

Act on reversibility – 11 July 2016

- Reversibility of geological disposal is defined as
  - The ability for successive generations either to continue the construction and then to operate the successive phases of a disposal, or to re-evaluate the choices defined previously and to make evolve the management options
- Validation of the Industrial Pilot Phase
- Governance of the Cigéo project
  - Further vote in the Parliament following the Industrial Pilot Phase
  - Update of the Master Plan of Operations and review every 5 years
  - Review of the implementation of the principles of reversibility every 5 years, in connection with all other regulatory reviews

The Industrial Pilot Phase defined in the 2016 Act

After licensing

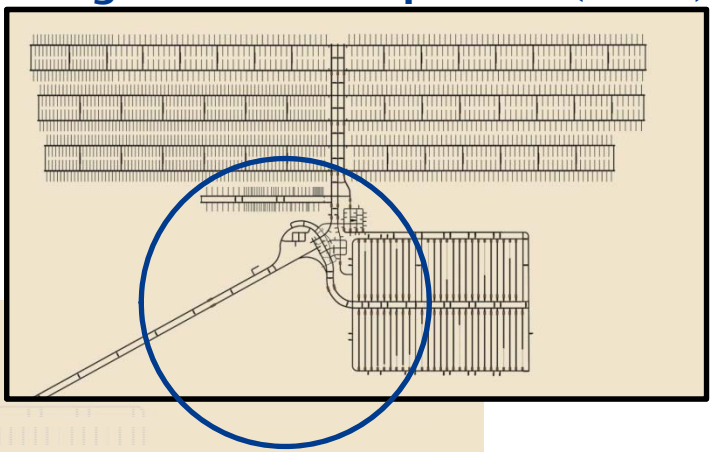
« The operation starts with an Industrial Pilot Phase to consolidate the reversibility and the demonstration of safety, including a program of field tests. All waste packages must remain easily retrievable during this phase. The pilot phase includes retrieval tests»

Foreseen process

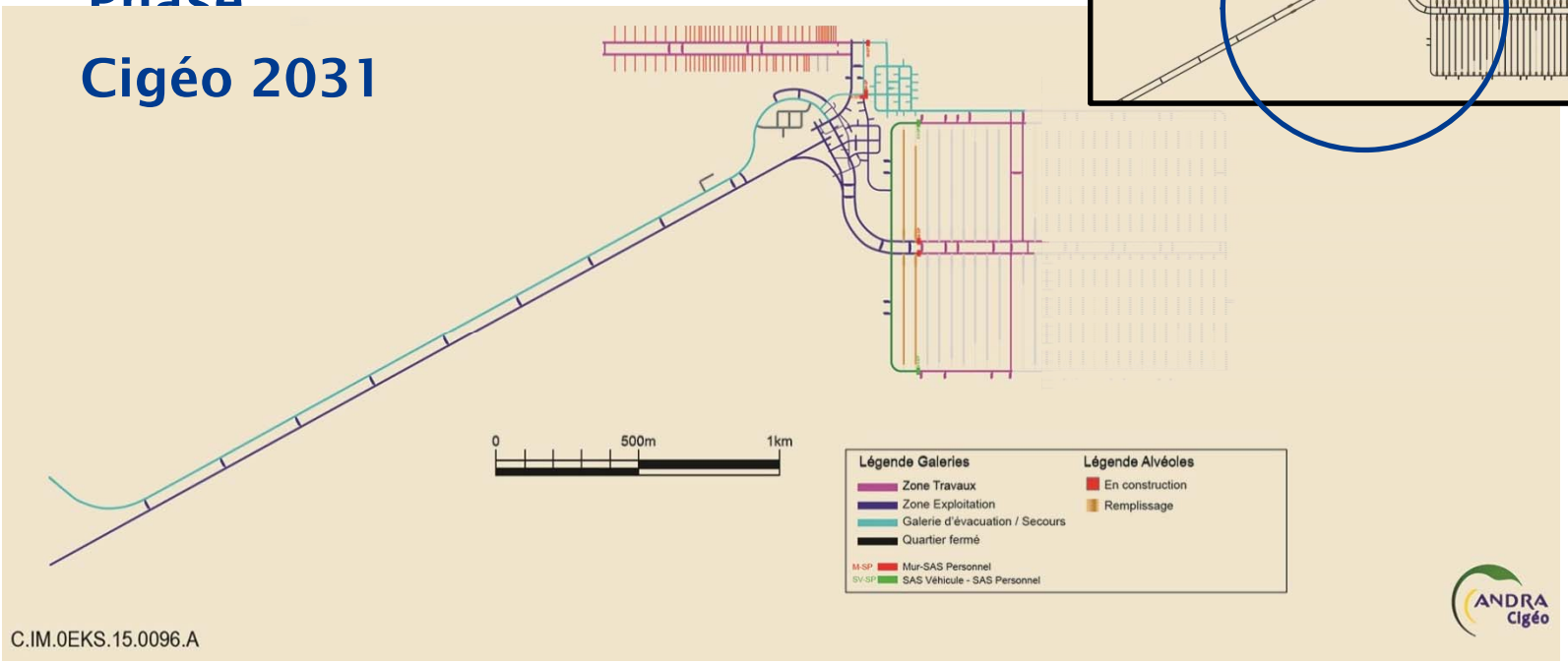
- Andra will report the results of the Industrial Pilot
- Review by the Regulator and other relevant bodies
- New Act to be submitted by the Government to the Parliament
- Issuing the license for full operation of the facility by the regulator

Industrial Pilot Phase

Cigéo after Completion (2145)



Lay out of the Underground Facility during the Industrial Pilot Phase



Industrial Pilot Phase

The Industrial Pilot Phase aims to complement URL tests in order to consolidate in real conditions:

- Safety in operating conditions
- Performances of industrial equipments
- Retrievability of waste disposal packages
- Ability to monitor facilities
- Ability to close and seal access drifts, ramps and shafts
- Technical routes for future optimization, such as
  - Potentially increased diameter of ILW disposal vaults
  - Potentially increased length of HLW disposal cells

Integration of the project Cigéo in the territory

Projects related to the development of the territory (1/2)

- Economic development
  - Support for local development in the energy sector
    - Technical needs during construction works and then during operations
    - Later works by facilitating local companies involvement in nuclear services
  - Preparing local companies to the operations
    - All works related to Cigéo
    - Nuclear works in the field of conditioning and packaging of waste

- Human capacity building
  - Training and education, partnerships with local schools
  - Continuous education
  - Promote access for local jobseekers to jobs linked to Cigéo

Projects related to the development of the territory (2/2)

- Development of the living environment and attractiveness
  - Environmental excellence of Cigéo
    - Measures to reduce impacts and compensations
    - Landscape integration and urban and environmental quality
  - Monitoring and observation of the local environment (OPE)
  - During construction works (temporary infrastructures, amenities, housing) and in the long –term (housing and services)
  - Contribute to the image of the territory (scientific showroom, promotion of industrial tourism)
- Information and consultation
  - Inform local and regional interested parties
  - Consult on specific amenities (biomass vs gas, urbanistic and environmental designs…)
  - Co-construction of the territory development contract

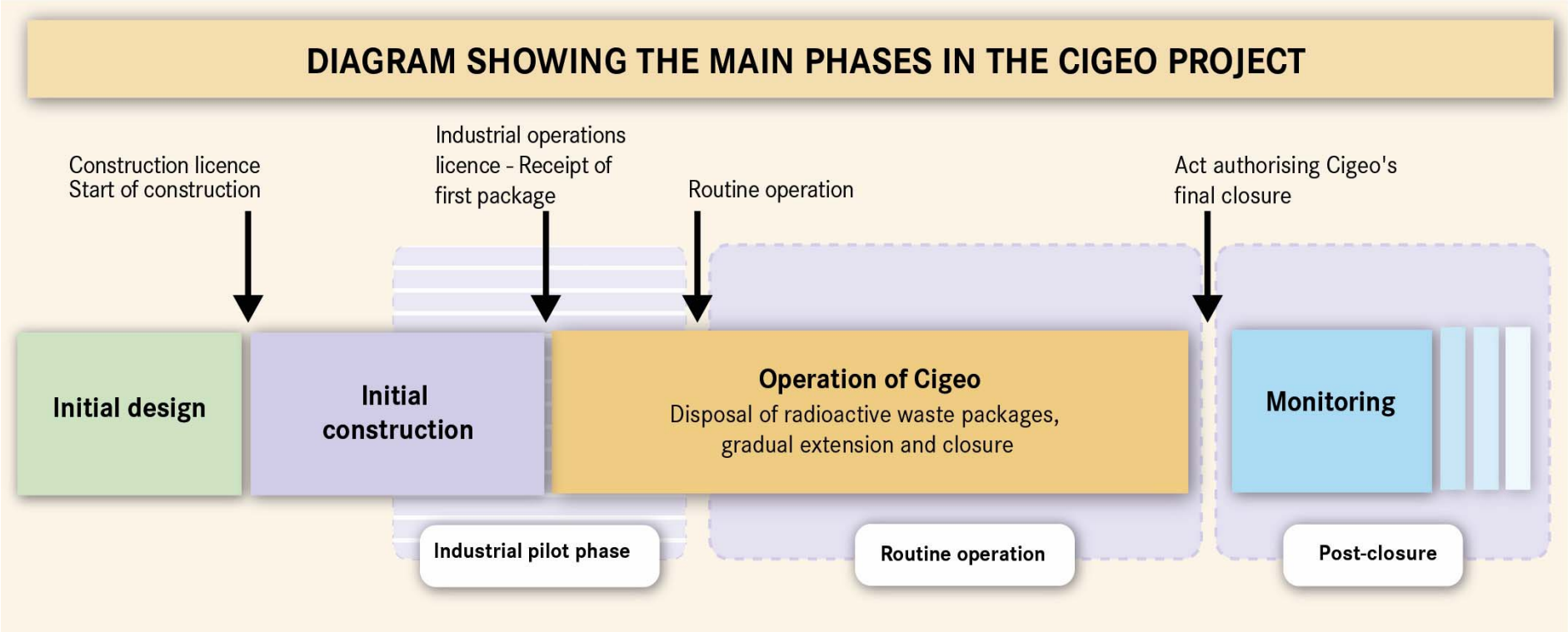
Stepwise integration of design changes and avenues of optimisation in the development of the Cigéo project

- Given the stepwise approach to deployment of the Cigeo industrial facility and continuing advances in knowledge, project development will go beyond the framework of the detailed engineering design (APD) and will be pursued over several decades.

- At the time of submitting the construction licence application (DAC), the REFERENCE DESIGN for the project will comprise:
  - (i) the robust, demonstrated solution for the first phase of construction (T1) and subsequent construction phases (TU) proposed at that time, and proposed as constructed for the T1 phase,
  - (ii) the design changes envisaged for the subsequent TU phases in light of their completion deadlines,
  - (iii) the method and the estimated schedule for their demonstration and gradual integration into Cigeo's construction.

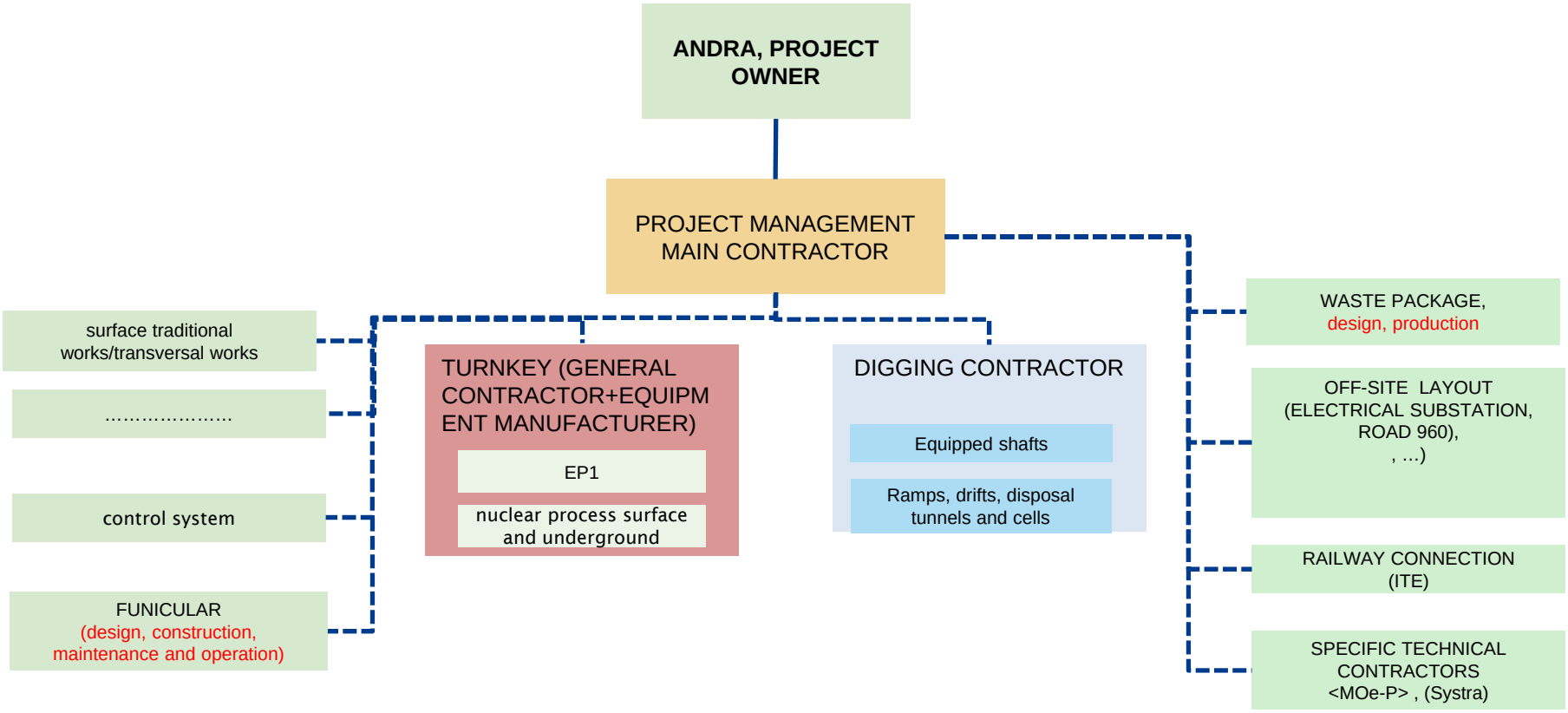
- At each stage of the project's development, progress on the studies of these various optimisations and analysis of their intersecting impacts in terms of safety and technical execution and cost challenges will be used to define which of these variants can be integrated into a proposed construction configuration and which must continue to be studied concomitantly and according to what timeline.

Cigéo Project Life Cycle



Industrial organization for the construction phase

First reflection of a preferential scenario for the industrial organization of Cigéo: new approach and new calls for tender



Allotment perimeter to be refined

Public involvement

Public involvement in future steps

- Before the license application
  - Public inquiries included in some regulatory procedures (archeology, underground investigations)
- Before granting the license
  - Specific public inquiry
  - Opinion of territorial representatives
- After commissioning of Cigéo
  - Vote in the Parliament after the Industrial Pilot Phase
  - Updates and reviews of the Master Plan of Operations throughout the life of Cigéo
  - Reviews on reversibility

At the local level

- Involve the range of local stakeholders in the major aspects of the project affecting the region
  - **Impact assessment**: consult on how to manage the impacts of the project and involve local stakeholders and members of civil society in the mitigation and compensation actions
  - **Links between sites:** involve local stakeholders in the choice of technical solutions for the connection between the two surface areas (roadway, semi-buried or overhead conveyor belt)
- Feed urban development and environmental choices related to the project
- Share experience of major worksites with the local authorities within the **Regional Workshops**
- Jointly put together the **Regional Development Contract (coordinated by the office of the Prefect**)
  - Technical workshops : water, roads, energy
  - Specific workshops : economic development, training, research and innovation…

Feb 2017 protestations