Doel Nuclear Power Plant

Transition to decommissioning and local experiences



Koen Van Beveren
Site General Officer Doel NPP

ENGIE | BUNUC

Non-confidential
ENGIE Classification

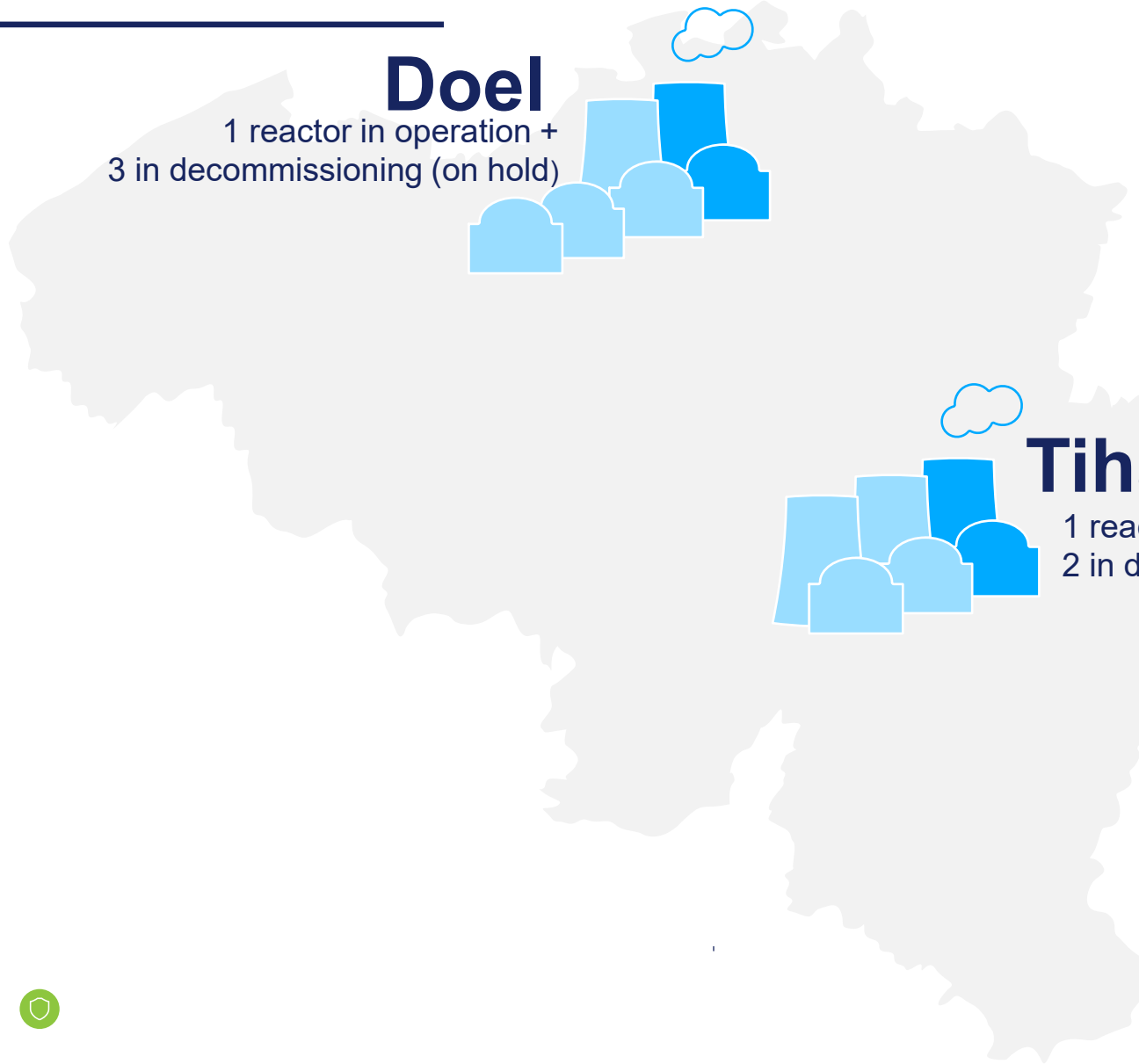
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01

Introduction to Nuclear Power in Belgium

The Belgian nuclear power plants



Doel

1 reactor in operation +
3 in decommissioning (on hold)

Tihange

1 reactor in operation +
2 in decommissioning (on hold)

Evolution of Role of Nuclear Energy in Belgian Energy Policy

- Until the end of 2021 it was the Belgian government's intention, in line with the 2003 nuclear exit law, **to close all 7 nuclear power plants by the end of 2025.**

- 2022 marked the start of the **war in Ukraine,** with known consequences for global energy markets.

- Therefore, to help ensure Belgium’s energy security, the government opted to **extend the Doel 4 and Tihange 3 nuclear power plants by 10 years**.

- After intensive talks and several interim agreements, **on 14 March 2025, following the European Commission’s approval, ENGIE and the Belgian government closed the agreement** covering the 10-year extension of the Tihange 3 and Doel 4 nuclear reactors and the transfer of responsibility related to nuclear waste.

- Doel 4 and Tihange 3 restarted in **November 2025 (for 5 months)** to supply electricity to the country during winter 2025-2026, and then went into it first of three LTO outages



A major political reversal over two decades

Belgium moves from a legally phase-out to renewed nuclear optionality

2003

Nuclear phase-out law sets the direction towards closure.

2022

War in Ukraine. Energy security of supply concerns trigger the decision to extend Doel 4 & Tihange 3.

2023

Phoenix-agreements establish the 10-year LTO-framework & waste management.

2025

2 LTO units restart for operation until 2035.

April 2026

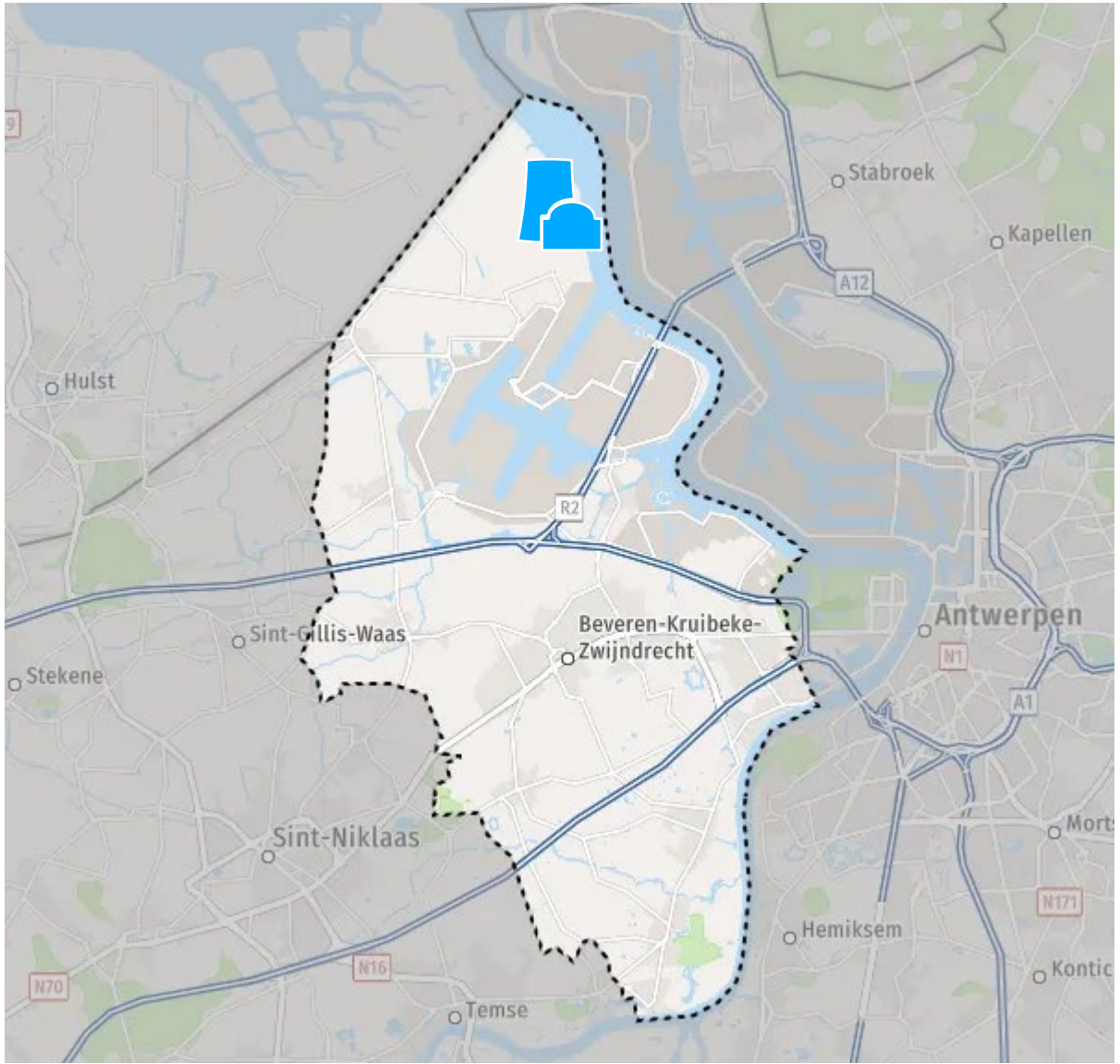
Project Aurora opens exclusive talks on a potential State acquisition of nuclear activities. DECOM projects ‘on hold’



02

Doel Nuclear Power Plant

Doel NPP, located in Beveren-Kruibeke-Zwijndrecht

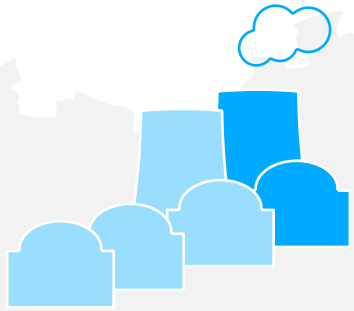


Current status 4 units



	Doel 4	Doel 3	Doel 2	Doel 1
CAPACITY	1026 MW	1006 MW	445 MW	445 MW
IN SERVICE	01/07/1985	01/10/1982	01/12/1975	15/02/1975
OUT OF SERVICE	14/10/2035	23/09/2022	01/12/2025	15/02/2025
	IN LTO	ON-HOLD DECOMMISSIONING	ON-HOLD DECOMMISSIONING	ON-HOLD DECOMMISSIONING

The nuclear power plant of Doel in figures



pressurized water reactors
1 in operation +
3 in decommissioning (on hold)

+/- 1000
nuclear professionals, and up to a few thousand external employees per year



80 hectares
surface of the Doel nuclear power plant

+/- 55 000
maintenance activities per year

+/- 14 000
tests and inspections per year



+/- 50 audits
per year

0 CO_2
emission during production of electricity



+20 years
ISO/EMAS certified

An organisation adapted to the new reality



Site General Officer
Koen VAN BEVEREN

Doel 1 Doel 2 Doel 3

Decommissioning program execution

Waste management

Central functions (HR, IT, Finance,…)

BU NUC Chief Executive Officer (CEO)



Site Technical Director
Rikkert WYCKMANS

Doel 4

Operation of LTO units

Nuclear Safety

Reliable operation

BU NUC Chief Operating Officer (COO)



Site Head Engineering
Wim VAN ROMPAY

Working closely with both SGO and STD

Execution of LTO program

BU NUC Chief Technical Officer (CTO)

Management Team KCD

— Hierarchical link
- - Functional link



Site General Officer
Koen VAN BEVEREN



Site Technical Director
Rikkert WYCKMANS



Site Head Engineering
Wim VAN ROMPAY



Head of DECOM
Raf VERHEYDEN



Head of Operations Doel 123WAB
Koen DE KEYSER



HR Manager
Annick DECLERCQ



Communication Manager
Cynthia VAN VAERENEWYCK



Change Manager
Willem VOETS



Head of Maintenance
Bart STRUYVEN



Head of Operations Doel 4
Wim RAVESCHOT



Head of Operations Support
Xavier HUYGENS



Head of Care
Wendy DIERCKX

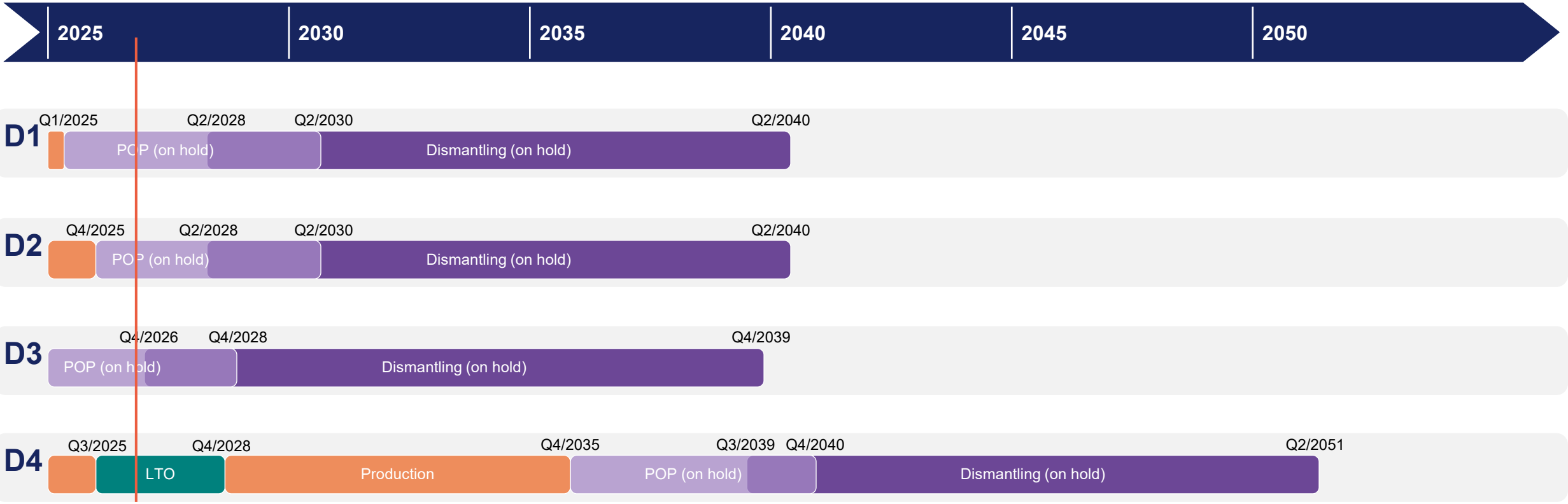


Head of Nuclear Fuel
Peter PELEMAN



Head of Continuous Improvement Management
Sven CLAESSENS

Transitioning from production to decommissioning



What has been agreed between ENGIE and the Belgian government in 2023?



1 LTO of Doel 4 and Tihange 3

- Doel 4 and Tihange 3 will be extended for 10 years, with best efforts made to restart in November 2025.
- Doel 4 and Tihange 3 are owned by a new joint venture (50% ENGIE - 50% Belgian State) called ‘BE-NUC’
- No impact on employees' working conditions
- Balanced distribution of risks and opportunities in the joint venture, including a bilateral "Contract for Difference" mechanism

Important for autonomous security of supply in Belgium



2 Clarification on nuclear waste

- ENGIE remains responsible for all decommissioning activities and the temporary storage of waste on its sites
- Transfer of responsibility for nuclear waste to the Belgian State for a fixed amount (€15 billion) paid by ENGIE:
  - Based on the estimated costs and volumes of waste
  - Including a premium, in addition to existing nuclear provisions, to cover future uncertainties

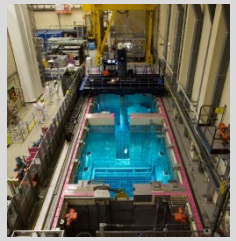
Clear visibility and sharing of risks – removal of uncertainties linked to future responsibilities for nuclear waste

Waste flows

€ 8 billion

€ 16 billion

Radioactive waste		Radioactivity		
		Low	Medium	High
Half-Life	Short	Cat A		Cat C
	Long	Cat B		



Nuclear power plant operations

Post-operational phase



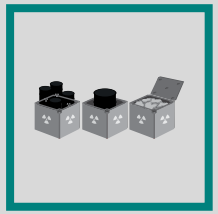
Dismantling



Spent fuel



Conventional waste



Cat A



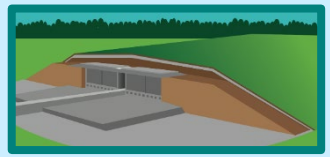
Cat B



Cat C

Temporary storage on site (SF²)

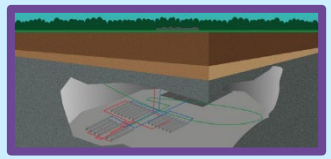




Surface storage



Temporary storage at Belgoprocess



Deep storage

Letter of Intent with the Belgian State from April 2026

On 30 April 2026, the Belgian State, ENGIE S.A., and Electrabel NV/SA announced the signing of a Letter of Intent (LOI) setting the framework for exclusive negotiations regarding the potential acquisition of all nuclear activities of ENGIE and Electrabel by the Belgian State.

Potential scope of the transaction

1. The entire **nuclear fleet** (7 reactors)
2. All **nuclear activities** and subsidiaries active in the nuclear sector (Synatom, Belgonucleaire, BE NUC, nuclear activities of Tractebel and Laborelec)
3. All related **assets and liabilities**, including decommissioning provisions and associated financial assets
4. The **50% stake in BE NUC** (including D4 and T3)
5. **Relevant staff**



03

What have we realised in decommissioning between 2022 and de Letter of Intent?

Every unit passes through the same phases:



Decommissioning is part of the life cycle of a nuclear power plant. It includes all administrative and technical measures taken from the final shutdown decision to the release of the site for new industrial activities.



MATERIALS AND WASTE are treated on site in designated buildings.

OUR AMBITION: Maximum waste reduction and recycling of parts and materials.

Build new spent fuel building - SF²

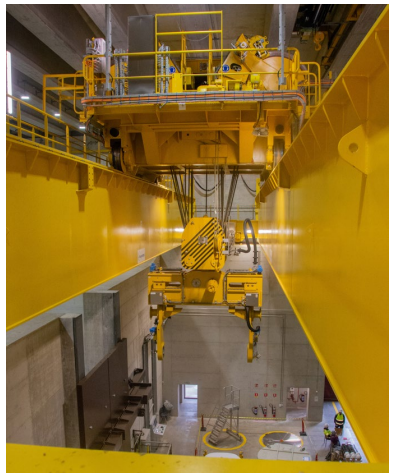


Building inaugurated
8 October 2025

14 containers from D3 loaded and placed in SF²



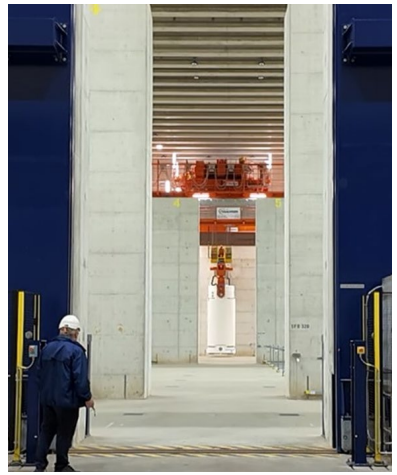








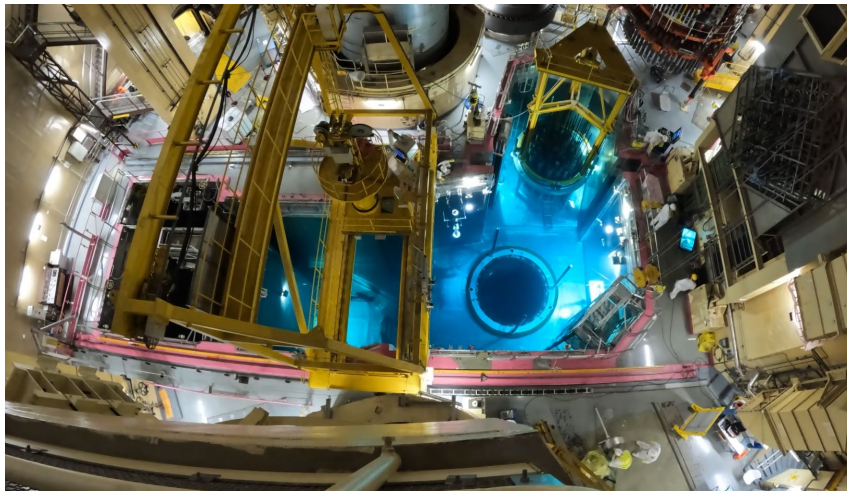


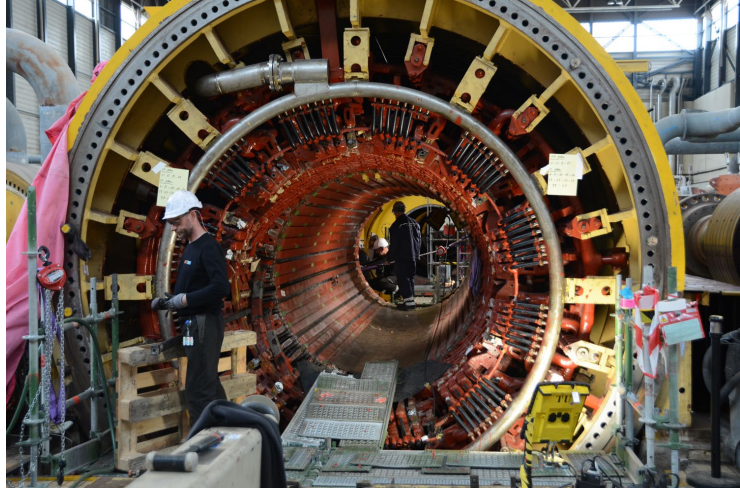


Doel 3 – in decommissioning since 2022*

* on hold as from 30th April 2026







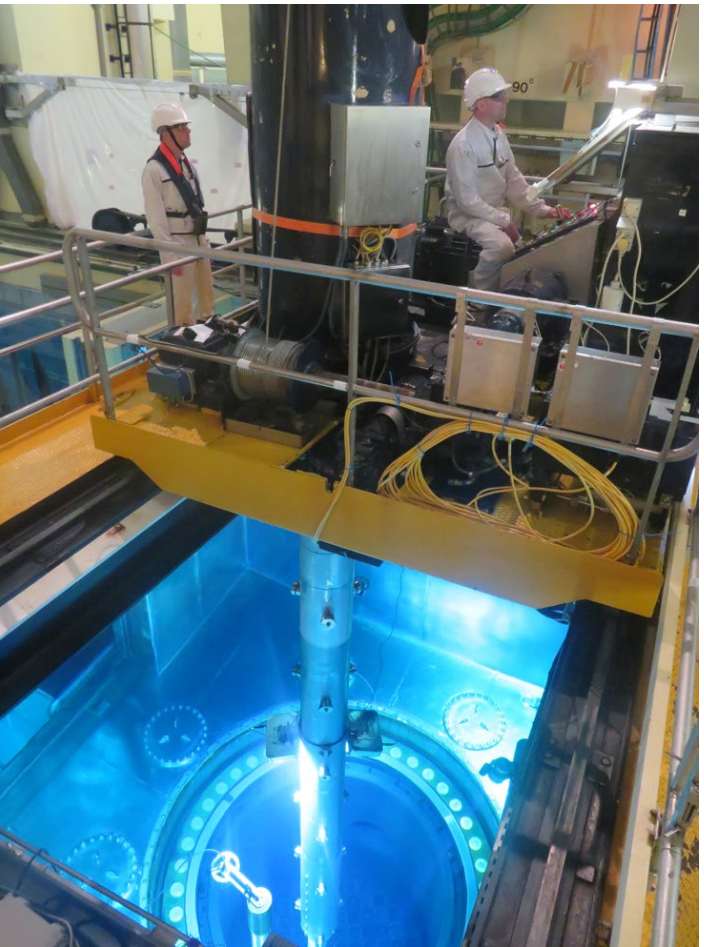






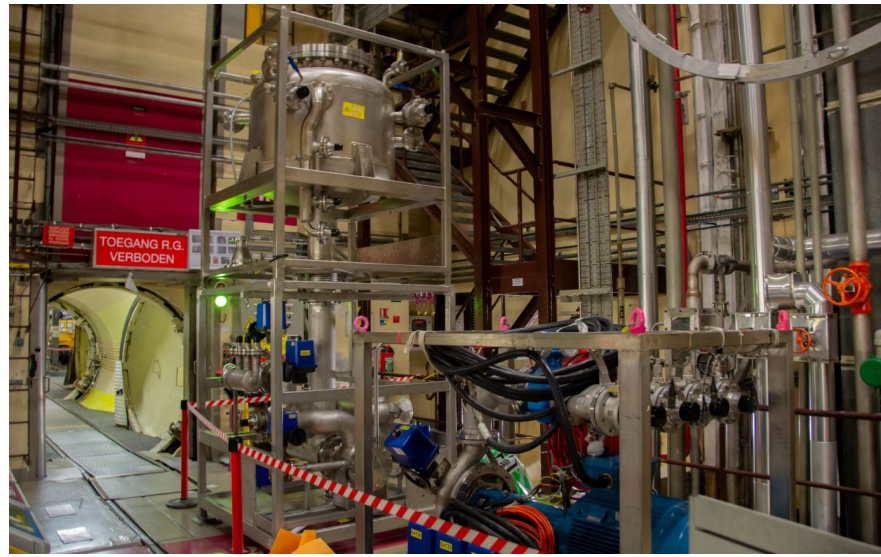
Doel 1&2 – in decommissioning since 2025*

* on hold as from 30th April 2026







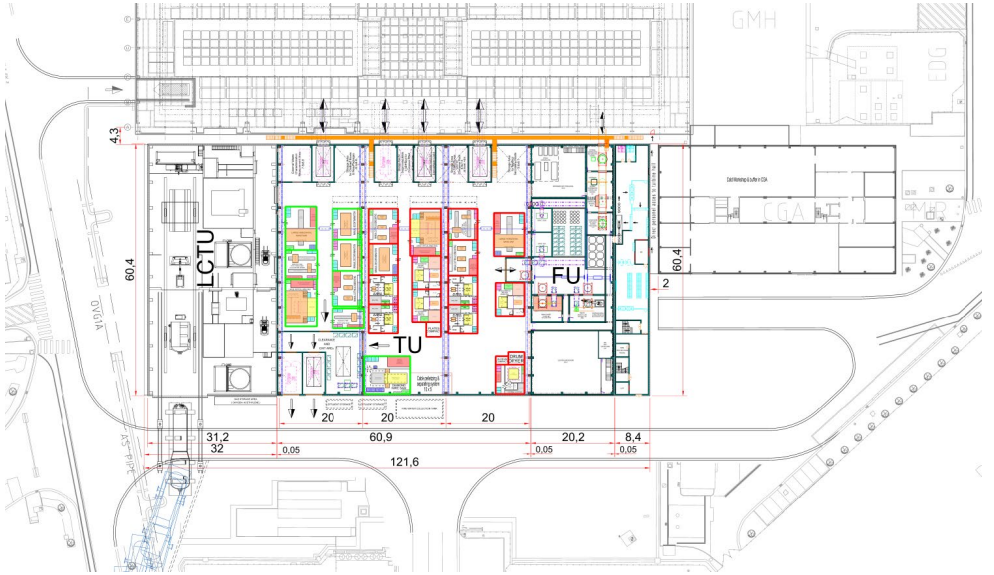






Waste Management Unit (on hold)

- During decommissioning, Electrabel is planning to provide Waste Management Units (WMU) on-site, operated in retrofitted buildings and new facilities.
- 4 core functions: **storage** (buffer storage for multiple waste streams), **processing** (material & waste treatment: cutting, size reduction, sorting), **packaging** (container filling to prepare material/waste for external treatment or final disposal) and **release** (radiological measurement & material clearance)
- **Preparatory works (on hold):** clearing of turbine hall Doel 1&2, removal of 380kV transformers in front of Doel 1&2, preparation works site entrance







04

Cooperation with local stakeholders

Licensing process

Environmental permit (Regional license)

1. Construction of Waste Management Units (WMU)
2. Demolition of cooling tower Doel 3

➔ Working closely together with BKZ (Environmental Dept)

➔ This permit has been obtained, with the undertaking that no works will be carried out during the negotiations with the Belgian State.





BEKENDMAKING BESLISSING OMGEVINGSVERGUNNING

OMV_2025029317-WVDY-KV-JC

ENGIE CC, Scheldemolenstraat haven 1800, 9130 Beveren heeft een aanvraag voor een omgevingsvergunning ingediend voor
- stedenbouwkundige handelingen
- de exploitatie van een of meerdere ingedeelde inrichtingen of activiteiten

De aanvraag heeft als adres: Scheldemolenstraat 2, 9130 Doel en kadastraal gekend als 7de afdeling, sectie A nrs. 0363 C, 0471 R 2, 0471 F 2, 0449 B, 0471 T 2, 0471 N 2, 0471 H 3, 0471 S 2, 0471 P 2, 0471 G 2, 0471 H 2, 0471 L 4, 0471 A 5, 0471 W 4, 0471 B 5, 0471 P 4, 0471 E 5, 0471 M 4, 0471 C 5, 0471 T 4, 0471 F 5, 0471 N 4, 0471 D 5, 0471 R 4, 0471 S 4, 0471 V 4, 7de afdeling, sectie B nrs. 0562 Z, 0459 B, 0562 Y, 0457 B, 0562 N 2, 0562 P 2, 0562 H 2, 0562 L 2, 0562 M 2, 0562 F 2, 0562 K 2, 0562 W.

Kort omschreven gaat het over: exploiteren en oprichten van een afvalverwerkingseenheid (WMU), slopen van Doel 3 en actualisatie door geleidelijke decommissioning van de kerncentrale

De Vlaamse overheid - Het Departement Omgeving heeft op **03-07-2026** het volgende beslist: vergunning met voorwaarden.

De beslissing ligt **van 16-07-2025 tot en met 14-08-2026** ter inzage. De beslissing kan integraal digitaal worden ingekeken via het Inzagelokot: omgevingsloketinzage.omgeving.vlaanderen.be.

U kan de beslissing ook inkijken, **na afspraak**, op het gemeentehuis Beveren-Kruibeke-Zwijndrecht, Gravenplein 8, 9120 Beveren en bij de milieudienst van Beveren-Kruibeke-Zwijndrecht, Gravendreef 5A, 9120 Beveren. U kan een afspraak maken via www.gemeentebkz.be of telefoonnummer 03 750 15 11.

BEROEPSPROCEDURE
U kan, als betrokken publiek, een beroep instellen tegen deze beslissing bij de Raad voor Vergunningsbetwistingen. Meer info vindt u op de website van de Raad voor Vergunningsbetwistingen

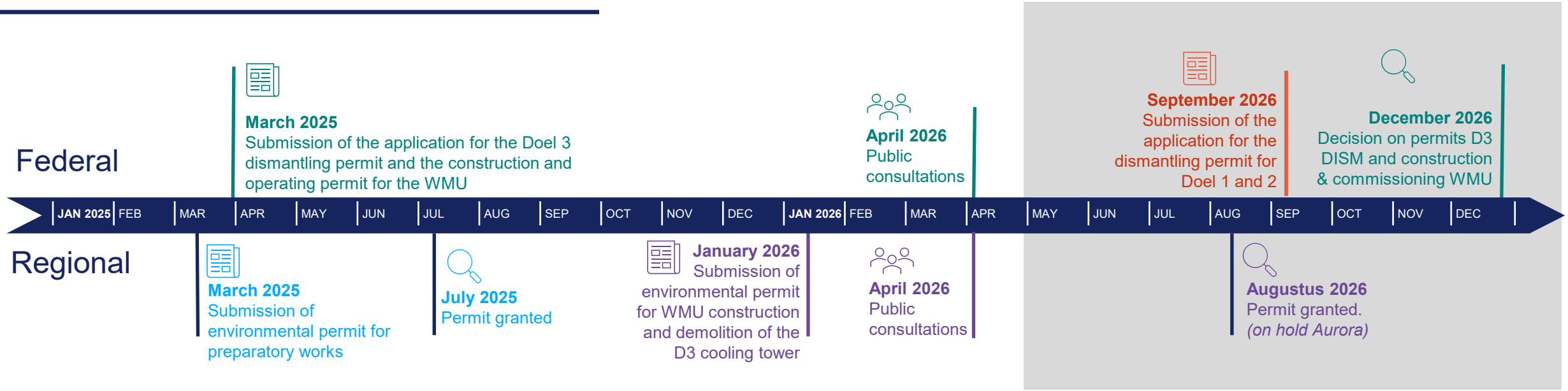
Radiological permit (Federal license)

1. Dismantling license Doel 3
2. Construction and exploitation license WMU
3. Dismantling license Doel 1&2

FANC
FEDERAAL AGENTSCHAP VOOR NUCLEAIRE CONTROLE

Licensing DECOM – 2025-2026

---------- on hold ----------



1. **Environmental permit – Preparatory works location WMU (simplified procedure)**
2. **Radiological permit – Dismantling permit for Doel 3 and construction & operating permit for the WMU**
3. **Environmental permit – Construction of the WMU and demolition of the Doel 3 cooling tower**
4. **Radiological permit – Dismantling permit for Doel 1 and 2**

Local stakeholdermanagement





Neighbourhood committee

- Gathers 3 – 4 times a year
- Consists of +/- 20 people for neighbouring municipalities, some of them active in politics, environment, …
- Receive more detailed information on challenges and projects (LTO and Decommissioning) at Doel Nuclear Power Plant

Doelbewust

- Paper magazine for our neighbours (20 km around power plant) – 2 x year
- Digital newsletter for stakeholders and interested neighbours – 4 x year



Mayors

- Build and maintain relationships with local mayors: (digital) information session, 1 to 1 meeting, visit to the plant, …


ENGIE