EUROPEAN
COMMISSION

Brussels, 19.11.2025
C(2025) 7748 final

COMMISSION OPINION

of 19.11.2025

on the draft permit to permanently store carbon dioxide in the Nini West area of the Danish continental shelf

(Only the Danish text is authentic)

COMMISSION OPINION

of 19.11.2025

on the draft permit to permanently store carbon dioxide in the Nini West area of the Danish continental shelf

(Only the Danish text is authentic)

1. LEGAL CONTEXT

Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 ('Directive 2009/31/EC') establishes a legal framework for the environmentally safe geological storage of CO_2 to contribute to the fight against climate change.

Directive 2009/31/EC covers CO_2 storage in geological formations in the Union during the entire lifetime of storage sites and harmonises the requirements for selecting and operating CO_2 storage sites. Chapter 3 of Directive 2009/31/EC requires the Member States to ensure that no storage site is operated without a storage permit and establishes the requirements for the national permitting process and the content of storage permits.

Article 10 of Directive 2009/31/EC establishes an additional safeguard to ensure that storage permits are in line with Directive 2009/31/EC through the dialogue between the Member State concerned and the European Commission ('the Commission'). In this respect, Article 10 of Directive 2009/31/EC requires the Member States to inform the Commission of all draft storage permits and to provide all material taken into consideration for the adoption of the draft decision to award the storage permit.

Article 10 of Directive 2009/31/EC provides for the Commission to issue a non-binding opinion within four months after receipt of a draft storage permit ('draft permit'). Where the Commission issues a non-binding opinion, the competent authority is expected to take the utmost account of it when adopting the final storage permit. Where the competent authority decides to depart from the Commission's opinion, Article 10(2) of Directive 2009/31/EC requires the competent authority to state the reasons.

The Competent Authority for issuing the storage permit is the Danish Energy Agency (Energistyrelsen, 'the Competent Authority').

2. PROJECT AND PERMITTING PROCESS

2.1. APPLICATION FOR A STORAGE PERMIT

In February 2023, INEOS E&P A/S ('INEOS') ('the Applicant')[1], Wintershall Dea, and Nordsøfonden were granted an exploration permit under Directive 2009/31/EC for the Siri Canyon area. The Siri Canyon area encompasses the Nini West depleted oil field.

---

1 INEOS E&P A/S, is a company registered in Denmark, has its registered address at Teknikerbyen 5, 1st floor, 2830 Virum, Denmark and is registered under CVR-No. 73 34 96 13. INEOS E&P's sole legal owner is INEOS UK E&P Holdings

In February 2024, INEOS submitted an application to the Competent Authority for a permit for the permanent storage of CO_2 in the Nini West depleted oil field (CO_2 storage site). Following the request of the Competent Authority, the Applicant updated the Application in July, August, September, and October 2024.

The Applicant indicates that the Nini West storage site is Phase 3 of Project Greensand, also known as 'Project Greensand Future'.

2.2. PROJECT DESCRIPTION

The CO_2 storage concept proposed by the Applicant for Phase 3 of Project Greensand comprises the transport, by dedicated ship, of CO_2 sourced from biogas facilities onshore Denmark and its injection into the storage site. A total of 2.4 million tonnes of CO_2 is proposed to be injected over an 8-year period, starting in 2026, and permanently stored in the Nini West storage site.

The Nini West CO_2 storage site and storage complex include the following elements:

- The primary Nini West CO_2 storage reservoirs, which are formed by Frigg Formation sandstones. The 12-30 metre thick, fine grained Frigg sandstone is of Eocene age with a high content of glauconite. It is one of several high-porosity, high-permeability sandstone formations deposited during the Palaeocene/Eocene period in the Siri Canyon area by turbidite flows in a deep-marine environment guided by local topography. Average porosity, permeability and net sand content are 37%, 800 millidarcy and 97% respectively. The secondary storage reservoir is comprised of thin sandy/siltstones of the Lark Formation approximately 340 metres above the primary storage unit.
- The primary seal is formed by the approximately 340 metres thick claystone sequence of Eocene to Oligocene age, Horda and Lark Formations, which overlies the Frigg sandstone sequence and extends to the first porous and permeable layer within the Lark Formation (a secondary storage formation). The secondary seal is located immediately above this, has a thickness of 550 metres and belongs to the Middle to Upper Lark Formation. The bottom and side seals consist of Balder Formation and Horda Formation, respectively. These formations are regionally widespread and extend far beyond the storage complex area.
- The trap is a combination of a stratigraphic and a structural closure. The top of the structure is at 1,710 metres True Vertical Depth Sub Sea (TVDSS) and the original free water level is at 1,764 metres TVDSS.
- The current pressure in the primary storage reservoir is 215 bar compared to a 185 bar (1,708 metres TVDSS) initial pressure. The pressure change is due to water injection into the NA-5 well to support oil production in Nini West. Water injection has now ceased.
- The NA-5 and NA-3B wells.

Limited a company incorporated in the United Kingdom with company number SC200459 ("INEOS UK E&P"). INEOS E&P and INEOS UK E&P are indirectly controlled by a holding company within the INEOS Group, INEOS Holdings AG ("IHAG"). IHAG is a company incorporated in Switzerland, has its registered office at Avenue des Uttins 3, Rolle 1180, Switzerland, and registered under company number CHE-115.604.963. As security for certain liabilities assumed by INEOS E&P A/S in relation to the Iris licence C2023/01, IHAG has provided the Danish Energy Agency with a guarantee in the model form stipulated by the Danish Energy Agency.

- The injection facilities and associated above-ground facilities on the Nini West platform, up to and including the wellheads.

The geographical area to which the storage complex and storage site application applies is clearly specified and displayed in the Application. The draft permit clearly specifies the geographical co-ordinates of the storage complex.

The NA-5 well was used for the Greensand pilot Project (Phase 2 of Project Greensand), which injected a total of 4,100 tonnes of CO_2 into the Frigg sandstone reservoir, proving the feasibility of expanding the project.

The injectate will be delivered to the Nini West storage complex in tanks on modified platform support vessels and will have a CO_2 content of >95% with 0% water[2]. Since the CO_2 is from biogenic sources, it is not expected to have any SO_x or NO_x content.

The Nini West storage project would be permitted to store up to 2.4 million tonnes of CO_2 over an 8-year[3] period, starting no later than the end of 2026[4]. This equates to approximately 0.3 million tonnes of CO_2 stored per year.

The maximum pressure in the Frigg sandstone storage reservoir must not exceed 280 bar, while the tubing head pressure must not exceed 200 bar at any time, based on geomechanical assessments and well design considerations, to ensure the caprock is not fractured[5].

Monitoring of the storage complex will be undertaken using a combination of well-established technologies (pressure/temperature/flow rate sensors), 2D seismic, seabed deployed sensors for bubble detection and water chemistry analyses combined with ongoing plume migration and conformance modelling. The draft permit[6] requires the potential permit licence holder to ensure compliance with the approved monitoring programme and to update the monitoring programme in line with risk assessments and new technologies.

The draft permit requires the application of best environmental practices to reduce noise when undertaking underwater activities such as seismic data acquisition, remote vehicle operations and diving. This is to ensure minimal disturbance to nearby ecologically sensitive marine areas.

The draft permit states that the Nini West storage project cannot be initiated until a number of conditions have been met[7]. These include completion and submission to the Competent Authority of fiscal metering and allocation plans, Ready for Operations plans, and an emergency response plan. These must be submitted no later than three months prior to the start of injection.

The draft permit discusses the actions required in the event of significant irregularities. These actions may include stopping injection, additional monitoring activities or potentially revoking the storage permit and closing the storage site[8]. The draft permit includes the conditions for closure and an acceptance of the post-closure plan, stating *"that the preliminary post-closure plan is currently sufficient"*[9] and that the closure of the storage site requires that *"all conditions in the storage licence are met, including that storage of the*

---

2 Term 3a of the draft permit.
3 Draft permit – Section 2.3 Capacity and Injection Conditions.
4 Terms 2a and 2c of the draft permit.
5 Terms 2d, 2g, and 2h of the draft permit.
6 Term 6a of the draft permit.
7 Term 5 of the draft permit.
8 Term 7 of the draft permit.
9 Draft permit – Section 2.7 Preliminary post-closure plan.

maximum permitted amount of CO_2 has been achieved, that the Danish Energy Agency has received documentation, that all available information indicates that the stored CO_2 will remain completely and permanently contained, and that there is an approved post-closure plan"[10].

3. REVIEW BY THE COMMISSION

In March 2024, the Competent Authority submitted to the Commission the application for the permanent storage of CO_2 in the Nini West storage site on the Danish continental shelf. The Competent Authority submitted to the Commission several additional updates to the application in July, August, September, and October 2024.

On 9 July 2025, the Competent Authority submitted to the Commission their draft permit for the Nini West storage site.

The draft permit, application and supporting documents provided by the Competent Authority constitute the basis for the Commission's review and for this Non-Binding Opinion ('Opinion'). The Commission has reviewed the draft permit in light of the requirements set out in Directive 2009/31/EC and prepared this Opinion.

4. OPINION

Following the review of the application, draft permit and other supporting documents, the Commission is issuing an Opinion on technical, environmental, and financial aspects of the draft permit in line with Article 10 of Directive 2009/31/EC.

4.1. Technical requirements

The Commission considers that, from a technical point of view, the Nini West storage complex is suitable for the permanent geological storage of CO_2.

The draft permit clearly specifies the geographical co-ordinates of the storage complex. However, there does not appear to be a clear and explicit delimitation of the storage site in the draft permit as required by Article 9(2) of Directive 2009/31/EC. The Commission invites the Competent Authority to update the draft permit with a description or a map of the Nini West storage site since the storage site and the storage complex have different lateral boundaries. This update will ensure compliance with Article 9(2) of Directive 2009/31/EC. The draft permit also notes that "*it is an assumption for this decision that the licence [...] is extended"*[11]. The permit needs to clearly specify the type of extension that is envisaged, time or area.

The draft permit includes the necessary requirements for the safe operation of the storage complex and site, in line with Directive 2009/31/EC.

In this respect, the Commission notes that the suitability of the storage complex and site is demonstrated by the detailed characterisation and assessment of the storage site and complex contained in the application and confirmed by the technical reports. The technical assessment provided in the application contains static, dynamic, geomechanical, and well performance modelling demonstrating that the Nini West storage site and complex is hydraulically isolated and suitable for the long-term storage of CO_2.

---

[10] Draft permit – Terms.

[11] Term 1 of the draft permit.

In addition, the maximum permissible volumes to be injected (total quantity of CO_2 authorised to be geologically stored) have been set in the draft permit at a maximum of 2.4 million tonnes of CO_2, equivalent to approximately 0.3 million tonnes per annum.

The maximum 8-year period of injection, the proposed maximum injection rates and pressures in the injection well and in the reservoir during injection established in the draft permit, are reasonable. The maximum permissible reservoir pressure allowed in the Frigg sandstone storage unit is 280 bar while the tubing head pressure in the injection well must not exceed 200 bar. These limits have been established by detailed static, dynamic and well performance modelling using a significant database of information and standard industry techniques and technologies.

The draft permit requires the CO_2 stream to consist of a minimum content of 95% CO_2 with 0% water[12]. The draft permit also requires verification of the composition of the liquid CO_2 stream, including qualitative and quantitative recording, to be conducted in the part of the supply chain for which the Applicant is responsible, which is from delivery at Port Esbjerg and transport by ship to the injection point at the Nini West storage site[13]. These requirements in relation to the CO_2 stream are in line with Article 12 of Directive 2009/31/EC.

The Commission notes that the monitoring and corrective measures plans presented by the Applicant, as well as the requirements related to their updating and approval prior to the start of the injection period contained in the draft permit, are compliant with the requirements set in Directive 2009/31/EC.

The Nini West storage site includes the NA-4/4A legacy well abandoned in 2002. This well was plugged and abandoned to standards current at the time and is now inaccessible[14]. This plug and abandonment operation was inadequate: no casing is present below the 9 5/8" shoe and the cement plug at the base of the open hole section could not be tested. No specific concerns have been identified from the available information and reservoir pressure performance to date does not suggest the well is leaking under the current operational reservoir pressures.

The Commission acknowledges that risks associated with a possible leakage through the NA-4/4A legacy well have been investigated. Modelling studies have been conducted of potential leakage paths through the micro annuli that are most likely present between the cement plug and wellbore walls. These studies suggest that, due to friction induced losses on any migrating CO_2 in these micro annuli, there is minimal risk of CO_2 moving out of the storage complex via the micro fractures around the cement plug in the NA-4/4A well. Any CO_2 that does migrate out of the storage reservoir would most likely be contained in the secondary storage reservoirs in the Lark Formation and should therefore remain within the storage complex[15].

The Commission notes that the Environmental Impact Assessment finds that *"the probability of leakage is assessed to be very low"*[16]. The Commission also notes the Competent Authority's assessment, included in the draft permit, that *"the risk of leakage from the historic well Nini-4/4A to the seabed or other surroundings is very small and thus acceptable"*[17].

12 Term 3a of the draft permit.
13 Term 3b of the draft permit.
14 Application – Predictive Maintenance Plan Nini West 2024/25.
15 Application – Greensand Future Storage Site Application – Nini West Overburden Model.
16 Application – Environmental Impact Assessment – Section 24.2: Accidental events.
17 Draft storage permit – Section 2.5: Well status and activities.

The Commission further acknowledges that the amendments made to the monitoring programme and technologies to be used should ensure that any potential migration or leakage of CO_2 from or in the vicinity of the well can be detected at an early stage.

The Commission is of the view that the draft permit provisions on the closure of the storage site satisfy the requirements of Directive 2009/31/EC. The closure conditions contained in the draft permit specify that closure shall take place when 2.4 million tonnes of CO_2 are injected. The Commission notes the requirements for closure being that all conditions of the draft permit are met.

The Commission also notes that the Competent Authority may revoke the permit or close the site early in the event of leakage or the occurrence of significant irregularities.

In addition, upon cessation of injection, the preliminary post-closure plan contained in the application includes monitoring and predictive maintenance activities during the period from the end of CO_2 injection until the area is handed back to the authorities. During this period, the intention is to demonstrate that the injected CO_2 has been securely and permanently contained within the storage site and complex. Activities planned for this period include seismic data acquisition, seabed bubble detection and water column chemistry analyses, along with monitoring the injection wells until they are fully decommissioned.

4.2. Environmental requirements

CO_2 storage sites require an environmental impact assessment under Article 5 of Directive 2011/92/EU, except if they are exempted by Member States under Article 2(4) of Directive 2011/92/EU[18]. Applications for storage permits must include relevant environmental impact assessment information under Article 7(9) of Directive 2009/31/EC. The Commission notes that the Competent Authority has referred to this Environmental Impact Assessment extensively in the draft permit and confirmed its adequacy.

The Commission takes note of the conclusions of the Environmental Impact Assessment, prepared by Ramboll, that the construction, operation and closure of the storage site and necessary facilities will have no impact on human health and will have negligible consequences on plankton, benthic fauna, fish, marine mammals, seabirds, and water quality.

The Commission also notes the Competent Authority's assessment, as included in the draft permit, that there will be *"no significant impacts on the environment from the planned activities"*, provided that monitoring programme and noise abatement requirements are met. The Commission welcomes using noise abatement as best practice while undertaking underwater activities, such as acquisition of seismic data, underwater seabed and water column monitoring and diving operations.

4.3. Financial requirements

The Commission notes that the draft permit requires that the operator's parent company guarantee, as approved in the Competent Authority's decision of 21 March 2023, *"shall be maintained until it is required to be amended or supplemented"*[19]. This parent company guarantee is unlimited in time and covers *"all obligations [for the licensee] under both public and private law towards the Danish State"*, including all obligations under Directive 2009/31/EC. The Commission invites the Competent Authority to add a description of the precise terms and conditions of the financial guarantee in the draft permit.

[18] OJ L 26, 28.1.2012, p. 1.

[19] Term 10 of the draft permit.

The draft permit states that *"the guarantor of the operator INEOS E&P A/S is INEOS Holdings AG (registration number: CHR-115 604 963 (Switzerland))"* and that *"the guarantor for the participant Harbour Energy is Harbour Energy PLC (registration number: SC234781 (United Kingdom))"*. The Competent Authority states in the draft permit that the financial capacity of INEOS Holdings AG is *"satisfactory"* and that INEOS E&P A/S *"supported by the guarantee from INEOS Holdings AG, is considered to have the necessary capacity to meet the obligations of this licence"*. The draft permit also states that *"Harbour Energy PLC has the necessary capacity to act as a guarantor"* and that *"with this support, and with Harbour Energy PLC as a reference point due to ultimate ownership, Wintershall Dea International GmbH (Harbour Energy) is deemed to have the necessary financial capacity"*. Finally, the Competent Authority considers that Nordsøfonden has *"the necessary and sufficient financial capacity to meet its obligations under the licence" due to "its state ownership and the resulting financial robustness"*[20].

The Commission notes the Competent Authority's assessment in their application review that there is sufficient confidence that the operator will have the financial resources to carry out the activities under the storage permit *"based on comparing the specific financial obligations and risk profile of the licence, as defined by the project costs (...) against the overall financial strength of the commercial companies and their guarantors"*[21].

This Opinion is addressed to the Kingdom of Denmark.

Done at Brussels, 19.11.2025

For the Commission
Wopke Hoekstra
Member of the Commission

[20] Draft permit – Section 2.8: Economy and organisation / Technical and financial capacity – Financial capacity.

[21] Draft permit – Section 2.8: Economy and organisation / Technical and financial capacity – Financial capacity.