Request for comments- MARA application- Allód hydrogen storage project – MI

Jonathan White, Hans Gerritsen, Christina O'Donnell – Marine Institute – Version 1 – 17th January, 2025

Summary

The request is for considerations on a Maritime Usage Licence application made to MARA to undertake a sub-seafloor geophysical survey of an area of 150 km^2 in the Celtic sea. The area is does coincide with commercial fishing activities and proximate to some species spawning and nursery grounds. The timing of activities is not stipulated clearly enough to asses if survey activities would coincide with fishing activities in the area. While the impact of sub-seafloor geophysical survey on marine biota, including fish, has not been sufficiently researched to fully quantify impacts on all biota, there is evidence of a range of permanent, non-permanent physical and behavioural impacts. These are related to the power out-puts of the geophysical survey techniques used. The direct impact, in terms of displacement of fish and biota, may be expected to be minor, however cannot be quantified. The survey area does come in close proximity to the Labadie, Jones & Cockburn *Nephrops* fishing grounds (Functional Unit 20-21), however from the information provided it's exact proximity/overlap cannot be evaluated.

Background

DAFM received correspondence regarding the application for a Maritime usage licence Ref: MUL240005 and associated documentation for development of a hydrogen storage project:

MUL240005 - MARA - The Maritime Regulator

The request was made for any observations regarding these documents.

A single request to cover all Marine Divisions, and any comments should include the whole of seafood sector, and we request your advice/observations.

The request was for return of observations by COB 6th of January. Following realisation of an erroneous e-mail address this was subsequently extended to 17th January.

Response/Observations

The proposal was submitted by Galetech energy Developments based in cavan, announcing a proposed Allód hydrogen storage project, on the 7th October, 2024. The proposal is to develop a subsea hydrogen storage facility, located approximately 1,000 metres below the seabed, in the Celtic Sea, approximately 80km to 90km off the south coast of Ireland. Estimates are that the work would create up to 300 jobs during the construction phase.

An application has been made to the Maritime Area Regulatory Authority (MARA) for a Maritime Usage Licence (MUL; MUL240005) to undertaking marine geophysical site investigations, to analyse the suitability of the location for this project. Information on the licences can be found: https://www.maritimeregulator.ie/applications/mul240005/

The geophysical investigation is intended to assess the extent and internal character of halite rock beneath the seabed:

"…looking to undertake 2D and 3D surveys. 2D geophysical site investigation activities will enable Allód to understand the conditions of the shallower bedrock beneath the seabed and the conditions of the seabed surface itself for locating future hydrogen storage project infrastructure. 3D seismic surveys offer a detailed, volumetric image of the geological formations at depth, including the shape and size of the subsurface features that is critical for accurate resource assessment and development planning.

A 7-year duration, multi-usage licence is being sought. Estimated survey duration is 20 days, commencing summer 2025.

A Fisheries Liaison Officer has been engaging with local communities, stakeholders and in particular the fisheries and seafood sector.

The focused survey area covers 150 km^2 (15,000 ha), with survey operations expected to cover an estimated 1,481 km^2 (148,100 ha). Water depths in the survey area are reported as being between approximately 70 and 150m.

Reports submitted to support this application:

- Assessment of Impact on the Maritime Usage (AIMU) Report
- Supporting information for screening for Appropriate Assessment (SISAA) Report
- Risk Assessment for Annex IV Species (RAAIVS) Report
- Natura Impact Statement (NIS)

Fisheries impacts

The MUL240005 application contains some basic information on the overlap between the licence area and fisheries. There appears to be some overlap with beam trawl; bottom trawl and seine activity. Without access to the coordinates of the licence area, the Marine Institute cannot quantify the amount of overlap. The activity for which a licence is sought is geophysical and seismic surveys. The direct impact (in terms of displacement) may be expected to be minor however cannot be quantified.

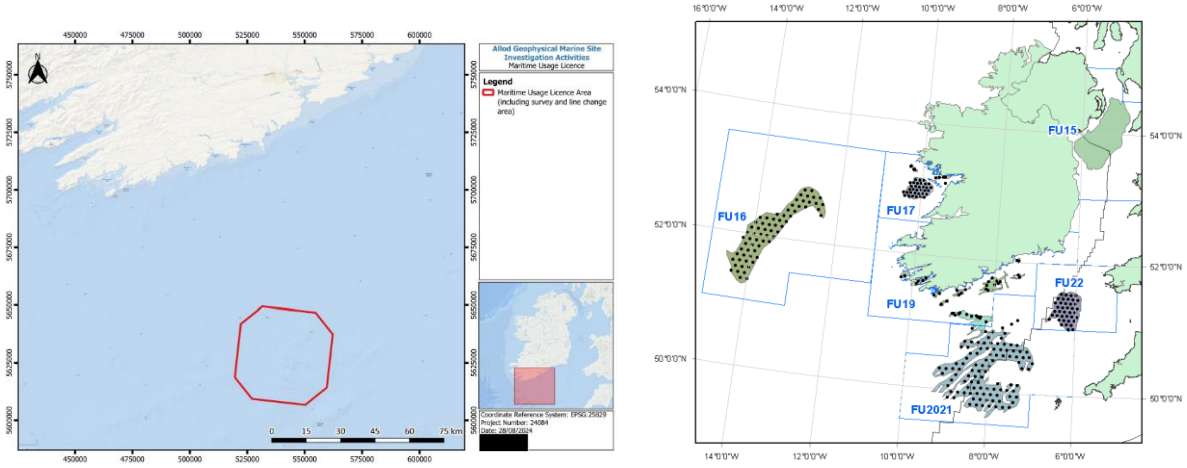
The application also contains maps of overlap between the licence area and spawning grounds of some commercial species. An overlap is indicated for haddock, hake, horse mackerel, megrim, and white-bellied anglerfish. The size of the application area is relatively small compared to the area in which these species spawn. No overlap with herring spawning beds was identified.

The application cites Ireland's Marine Atlas (2021) identifying nursery and spawning grounds in the survey area for fish species and associated spatial distributions shown in the maps mentioned above:

Table 1: Application area overlap with commercial fish species distribution areas

Species	Nursery Area	Spawning Area
Black Belly Angler Monk	✓	X
Cod	X	X
Haddock	X	✓
Hake	✓	X
Herring	X	X
Horse Mackerel	✓	✓
Mackerel	X	X
Megrim	✓	✓
White Belly Angler Monk	✓	X
Whiting	X	X

Fishing effort is mapped across the Celtic sea in the survey area vicinity. These do show overlap and with some incidental hot spots. What is not indicated is the known Labadie, Jones & Cockburn *Nephrops* fishing grounds (Functional Unit 20-21). This should be checked.



Left: proposed survey area. Right: *Nephrops* fishing grounds around Ireland.

Cumulative effects

The application does not mention a plan to conduct a cumulative effects assessment (CEA), nor any CEA methods or approaches. As such, the Marine Institute cannot provide an evaluation of any potential cumulative or interactive impacts or their potential significance, or assess the intended CEA approaches.

Holistic integrated assessments accounting for the full suite of pressures arising from all marine and land-based sectors/activities and surveys to support those activities, and their direct, indirect and interactive effects and potential and realised impacts at a site, regional, and ecosystem level are required to build knowledge on cumulative impacts arising from marine construction, emerging activities, and associated surveys and investigative works in order to fully assess their potential impacts on conservation and management objectives and targets for various ecosystem components.

The Marine Institute recommends that this and other such applications be evaluated in the wider context of proper marine planning and existing activities in Irish waters and the wider Celtic Sea basin specifically. Such planning should be supported by an overall State-led cumulative effects assessment

(CEA) drawing in all relevant pressures and ecosystem components (sea and land-based) from all national and international sectors affecting Irelands marine ecosystems. Additionally, monitoring for realised impacts must be carried out, with the resulting data being iteratively incorporated into future CEAs impact assessments.

The Marine Institute does not propose how this should be done, but is available for further consultation on the design and executions of such a programme of work. In the meantime, the Marine Institute recommends that a CEA is included in the proposed activities.

Generic considerations:
One of the key risks with application relates to underwater noise created by multibeam/side-scan sonar/seismics and geophysical activities like sediment coring. Underwater noise impacts commercial and non-commercial species: fish, shellfish and cetaceans and benthic life at large. Responses of animals to underwater noise vary with the distance from source, dose and response, the nature of the sound (i.e. sound pressure and particle motion) and the sensitivity of the receptor fish and shellfish species. There is a continuum of possible responses from death, physical, physiological permanent and non-permanent effects, impaired hearing, masking biologically important sounds, and behavioural responses (Hawkins & Popper, 2017). In general, there are substantial knowledge gaps regarding both the bioacoustics and the responses of animals to sounds associated with pre-construction, construction, and operations of offshore wind (OSW) energy development (Popper, 2022).

The survey would also involve “higher Energy Sound Sources” as part of the geophysical surveys which are used to generate images of the seafloor that can be used to find suitable sites for installing infrastructure, wind farm turbines and cables (Hogan et. al, 2023) and similar. These surveys differ from those used for oil and gas exploration in methods used and the noise levels produced. Because information needed for siting wind turbines is limited to the uppermost portion of the seafloor (depths below the seafloor of 100 m or less). In the United States relatively low-intensity survey alternatives are recommended (BOEM, 2007). Sub-bottom profiling systems are also recommended for wind farm siting surveys (BOEM, 2015).

The schedule of works in the application does not provide sufficient detail for the Marine Institute to evaluate if there might be an impact on commercial fisheries or not. While 20 days is envisaged, commencing summer 2025, the proposal looks for this to be open for 7 years to allow scheduling of suitable vessel(s) and around appropriate weather windows.