# Apply for a Band 1 marine licence

## Project description

| Project name |
| --- |
| QUEST (Quantification, characterisation, source and fate of past and present carbon storage in offshore sediments for effective marine management) |

| Please provide a brief description of the proposed project, including location. |
| --- |
| The QUEST Project is a 4-year research project funded by the Irish Marine Institute. For this survey, the Project Partners propose to use the Marine Institute R.V. Tom Crean (ship details are summarized sections below) to acquire and deliver new offshore seabed mapping and sediment sampling data and knowledge. The primary objective of this survey is to gather data on the seafloor geology within the upper 5 meters below the seabed. This information will be crucial in assessing the Blue Carbon potential of certain areas to coincide with Marine Spatial Planning processes and Marine Protected Area designation. A suite of mapping instruments will be used in this geophysical reconnaissance survey. This includes multibeam and sub bottom profiler, and the deployment of a Shipek grab sampler, Reineck box corer and vibrocorer. In addition, a Unisense MiniChamber Lander System will be deployed on the seafloor for a period of hours (~4) to measure environmental condition data. These will provide appropriate datasets for the various requirements for assessment of Blue Carbon potential. This survey proposes the deployment of the equipment mentioned above and collection of sediment samples from within the UK EEZ area highlighted in Figure 1 in attached documents. Further details of activities and GPS coordinates are provided in method statement sections below. |

| Does the activity have an estimated project cost for marine works over £1 million? If yes, the activity is no longer eligible for a band 1 application and a band 3 application will be required. |
| --- |
| No |

## Applicant details

To whom the licence will be issued. This must be a legal entity such as an individual, registered company/ charity or public body.

| | |
|---|---|
| **Title** | Dr |
| **Full name** | Mark Coughlan |
| **Company or trading name** | University College Dublin |
| **Company Registration Number (if applicable)** | n/a |
| **Name of contact or individual (if different)** | n/a |
| **Position in company** | Principal Investigator (Survey Senior Scientist) & Assistant Professor |
| **Address (provide registered company address if applicable)** | University College Dublin, Belfield, Dublin 4, Ireland<br>-<br>- |
| **Postcode** | D04 V1W8 |
| **Telephone number** | 00 353 17162331 |
| **Email address** | mark.coughlan@ucd.ie |

## Details of agent, contractor, vehicles and/or vessels used to carry out works

Does the applicant wish to be included in all correspondence?

Yes

Will the works require the use of vessels?

Yes

Will the works require the use of any vehicles?

No

## Proposed project details

Licensable period

Determination of applications will be based on the works taking place during these dates. Please ensure you have included an adequate contingency period. If works are not completed by the requested licence expiry date you may be required to submit a new application. Including a contingency period within your original application does not impact on the licence fee.

| | |
|---|---|
| **Start date (DD/MM/YYYY)** | 01/11/2024 |
| **Requested licence expiry date (DD/MM/YYYY)** | 31/10/25 |

Please detail the location of the proposed project.

This should be either Ordnance Survey National Grid Reference (i.e. SN 12345 67890) or Latitude and Longitude in decimal degrees to 4 decimal places (i.e. Lat 52.1234 Long -4.1234), defining the extent of the project. Please specify which coordinate system has been used and if using GIS co-ordinates, specify which projection has been used.

The EPSG Geodetic Parameter Dataset (1985) ( EPSG:27700 OSGB36/British National Grid) projection was used to define the sampling area extent with the following Decimal Degrees (dd) latitude and longitude coordinates representing the scope of area for licence application ( see Figure 1 in attached map) :

| Latitude (dd) | Longitude (dd) |
|---|---|
| 51.0005 | -6.0317 |
| 51.0027 | -6.7992 |
| 51.1665 | -6.7982 |
| 51.1664 | -6.9399 |
| 51.3307 | -6.6943 |
| 51.3303 | -6.5494 |
| 51.4963 | - 6.5480 |
| 51.4995 | -6.2966 |
| 51.5585 | -6.2916 |
| 51.5569 | - 6.0443 |

## Method statement

Are the works within a sensitive area or one of the following activities: boreholes, replacement piles or beach management?

No

## Method statement

Please give a brief method statement outlining the proposed project

We propose to carry out survey work between 26/11/2024 - 04/12/2024 and 10/12/2024 -15/12/2024 onboard the RV Tom Crean with 24 hour operations, where possible, to maximise ship-time use. The main activities and equipment include:
• Day grab and coring equipment for sediment sampling;
• Deployment of Unisense MiniChamber Lander System;
• Hull-mounted multibeam echosounder (MBES), sub-bottom profiler and acoustic Doppler current profiler acquisition;

A Primary Study Areas ( high-priority) for characterising soft sediments, quantifying carbon stock levels, assessing anthropogenic impacts on sediments has been identified from existing data

26/11/2024
● Mobilise in Cork

27/11/2024 – 03/12/2024
● Leave Port, to the first Primary Study Area south of Ireland.
● we propose a day schedule of deployment of the Unisense MiniChamber Lander System coupled with sediment sampling at targeted locations within the Primary Study Area. The deployment of the Unisense MiniLander System is expected to take approximately 4 hours at each site.
● We propose a night schedule of acquiring geophysical data at targeted locations. Starting in the evening this would include;
▪ Perform SVP dip at site and undertake MMO activity
▪ Regional and detailed MBES and pinger survey across the site, as dictated by site conditions (8 hours approximately overnight).

04/12/2024
● Transit home to Cork
● De-mobilise in Cork.

10/12/2024
● Mobilise in Cork

11/12/2024 – 14/12/2024
● Leave Port, to the first Primary Study Area south of Ireland.
● we propose a day schedule of deployment of the Unisense MiniChamber Lander System coupled with sediment sampling at targeted locations within the Primary Study Area. The deployment of the Unisense MiniLander System is expected to take approximately 4 hours at each site.
● We propose a night schedule of acquiring geophysical data at targeted locations. Starting in the evening this would include;
▪ Perform SVP dip at site and undertake MMO activity
▪ Regional and detailed MBES and pinger survey across the site, as dictated by site conditions (8 hours approximately overnight).

14/12/2024
● Transit home to Cork
● De-mobilise in Cork.

Equipment:
● MBES
We propose using the EM2040 Multi-beam echosounder onboard the RV Tom Crean as it offers high-quality MBES data.

● Sub-bottom Profiler
We propose using the Knudsen 3260, with Coda acquisition, onboard the RV Tom Crean

● Sampling
We propose using the existing box corer, vibrocorer, gravity corer and day grab sampling equipment available from the Marine Institute

● Unisense MiniChamber Lander System
We will utilise the Unisense MiniChamber Lander System available from the Agri-Food and Biosciences Institute. The Unisense shallow water instruments can be deployed to up to 300 meters depth and can stay deployed for up to a month, depending on the temporal resolution of measurements. The instruments are controlled online via cables from a PC on a ship or run by an autonomous program until retrieved. The MiniChamber Lander is a lightweight unit for shallow water benthic chamber measurement of multiple parameters, including shallow water sediment chamber studies and measurements for O2, H2, N2O, NO, pH, H2S and Redox.

● Acoustic Doppler Current Profiler
We propose to use the RDI Teledyne 4 Pinnacle ADCP that is drop keel mounted. This unit measures the absolute speed of water currents with sound waves (Doppler effect) at multiple depths within the water column. It emits acoustic pings at 45 kHz and can profile up to 1000 m water depth.

## Please state the measures to be taken to minimise risk to the marine environment

Joint Nature Conservation Committee (JNCC) provides guidance to manage the risk to marine mammals from man-made sound sources in UK waters. This document provides guidance and mitigation measures to address key potential sources of anthropogenic sound that may impact negatively on marine mammals in UK waters. The guidance set out ivy JNCC will be fully implemented to minimise risk to the marine environment.

During sampling, all appropriate protocols according the sampling technique will be implemented to minimise risk to the marine environment. The equipment we are using is standard, certified sampling equipment.

| Please state the measures to be taken to prevent undue interference to others |
| --- |
| The vessel is equipped with state-of-the-art comms allowing contact with all other vessels in the area. During operations we will liaise with relevant parties to prevent undue interference to others. All operations will be carried out in accordance with safe operating practices regarding MMO procedures and cognisant of fishing gear. |

| Please state the measures to be taken to maintain navigational safety, including marking and lighting of works |
| --- |
| A marine notice to mariners will be issued prior to the survey detailing the location and timing of all activities. The vessel will display appropriate lights and signals. Where equipment is deployed at the seafloor, appropriate marker buoys with winky lights and radar reflectors will be attached, marking it's position. Whilst equipment is deployed at the seabed, the vessel will maintain an appropriate distance to maintain a watch. |

## Band 1 method statement template

Please provide a brief summary of the application including location of the works (coordinates - lat/long, decimal degrees). For activities that cover a large area please provide coordinates of the approximate extent of works.

In support of the QUEST Project, Project Partners UCD and DCU are planning a Seabed Mapping and Sediment Sampling Survey to take place between November 2024 and December 2025, with provisional dates of 26/11/2024 - 04/12/2024 and 10/12/2024 -15/12/2024. The survey data collected by this initial and future survey works will provide information on the upper 5 m of sub-surface geology and seafloor conditions, to characterise and assess marine areas for Blue Carbon potential, and help inform future policy-making with regards the same. A suite of mapping instruments will be used in this geophysical reconnaissance survey. This includes multibeam, acoustic Doppler current profiler and sub bottom profiler, and the deployment of a Shipek grab sampler, Reineck box corer, multicorer and vibrocorer. In addition, a Unisense MiniChamber Lander System will be deployed on the seafloor for a period of hours (~4) to measure environmental condition data. These will provide appropriate datasets for the various requirements for assessment of Blue Carbon potential. The Irish multi-purpose marine research vessel, the RV Tom Crean, will be used for the proposed surveys (Figure 2). The RV Tom Crean was commissioned in 2022 and was designed as a silent research vessel, in order to meet the stringent criteria of the ICES 209 noise standard for fisheries research.
A total of 20 sites have been identified for seabed sediment sampling in the proposed study area as described by the coordinates below( see attached document for map). The sampling strategy will involve the use of a vibrocorer, a multicorer, a Box-core and grab samples ( see details below).

| | Latitude | Longitude |
|---|---|---|
| 1 | 51.2110 | -6.1337 |
| 2 | 51.2311 | -6.2288 |
| 3 | 51.2728 | -6.2566 |
| 4 | 51.0493 | -6.3334 |
| 5 | 51.1374 | -6.5307 |
| 6 | 51.0751 | -6.5780 |
| 7 | 51.0451 | -6.6242 |
| 8 | 51.1315 | -6.2431 |
| 9 | 51.1370 | -6.4820 |
| 10 | 51.1640 | -6.1400 |
| 11 | 51.4000 | -6.3670 |
| 12 | 51.3663 | -6.1652 |
| 13 | 51.2417 | -6.2343 |
| 14 | 51.2182 | -6.2539 |
| 15 | 51.5276 | -6.0805 |
| 16 | 51.1930 | -6.6857 |
| 17 | 51.1923 | -6.4546 |
| 18 | 51.3556 | -6.5204 |
| 19 | 51.4537 | -6.2331 |
| 20 | 51.2115 | -6.1387 |

| SAMPLER | SEDIMENT TYPE | PENETRATION DEPTH | SURFACE AREA (m2) | SAMPLE VOLUME (litres) |
|---|---|---|---|---|
| Grab - Shipek | Soft/Fine grained | <10cm | 0.04 | <3 |
| Box Corer | Soft to consolidated | 30-40cm | 0.25 | >3 |
| Multi-corer | Mud | ~40cm | $\pi (0.1)^2$ * # cores | >5 |
| Vibrocorer | Sand, Gravel/Tills | 1-5m | $\pi (0.09)^2$ | >5 |

Scope of works

Please provide a full description of all proposed works including: Sequence of works (mobilisation, marine works, site remediation (if required)) Estimated timing of works (duration, working hours, day/night, plus contingency) Plant, machinery or vessel required Estimated quantities (removals, deposits, construction materials)

Outline of Work for QUEST November Survey 2024

We propose a 6-day survey on the RV Tom Crean including 2 days (48 hours) for mobilisation and demobilisation with 24-hour operations, where possible, to maximise ship-time use. Adequate personnel have been allocated to undertake this level of activity. Similarly, relevant expertise has been included to execute the programme. The main activities and equipment include:

• Day grab and coring equipment for sediment sampling;
• Deployment of Unisense MiniChamber Lader System;
• Hull-mounted multibeam echosounder (MBES) and sub-bottom profiler acquisition;

Study Areas for characterising soft sediments, quantifying carbon stock levels, assessing anthropogenic impacts on sediments has been identified from existing data. A Study Area has been identified in the Celtic Sea encompassing UK waters (See attached document with map).

Schedule of works

Day 1
● Mobilise in Cork Harbour (Republic of Ireland)

Days 2-3
● Leave Port, travelling to the first Primary Study Area outside Cork and the south coast of Ireland.
● We propose a day schedule of deployment of the Unisense MiniChamber Lander System coupled with sediment sampling at targeted locations within the Primary Study Area. The deployment of the Unisense MiniLander System is expected to take approximately 3 hours at each site.
● We propose a night schedule of acquiring geophysical data at targeted locations of known trawling intensity. Starting in the evening this would include;
♣ Perform SVP dip at site and undertake Marine Mammal Observation (MMO) activities.
♣ Regional and detailed MBES and pinger survey across the site, as dictated by site conditions (8 hours approximately overnight).

Days 4-6
● Transit to Study Area in the Celtic Sea (The Smalls Fishing Ground).
● Transit to the second Primary Study Area in the Celtic Sea (The Smalls Fishing Ground).
● Upon completing the second core transect, we propose a day schedule of deployment of the Unisense MiniChamber Lander System coupled with sediment sampling at targeted locations within the Primary Study Area. The deployment of the Unisense MiniLander System is expected to take approximately 3 hours at each site.
● We propose a night schedule of acquiring geophysical data at targeted locations of known trawling intensity. Starting in the evening this would include;
♣ Perform SVP dip at site and undertake MMO activity
♣ Regional and detailed MBES and pinger survey across the site, as dictated by site conditions (8 hours approximately overnight).

Day 7-8
● Transit home to Cork
● De-mobilise in Cork.

EQUIPMENT FOR SURVEY

Multi-Beam Echosounder
We propose using the EM2040 multi-beam echosounder onboard the RV Tom Crean as it offers high-quality MBES data.

Sub-bottom Profiler
We propose using the Knudsen 3260, with Coda acquisition, onboard the RV Tom Crean

Sampling
We propose using the existing box corer, vibrocorer, gravity corer and day grab sampling equipment available from the Marine Institute

Unisense MiniChamber Lander System
We will utilise the Unisense MiniChamber Lander System available from the Agri-Food and Biosciences Institute. The Unisense shallow water instruments can be deployed to up to 300 meters depth and can stay deployed for up to a month, depending on the temporal resolution of measurements. The instruments are controlled online via cables from a PC on a ship or run by an autonomous program until retrieved. The MiniChamber Lander is a lightweight unit for shallow water benthic chamber measurement of multiple parameters, including shallow water sediment chamber studies and measurements for O2, H2, N2O, NO, pH, H2S and Redox.

Acoustic Doppler Current Profiler
We propose to deploy A TRDI 600 kHz Workhorse Sentinel ADCP (depth rated to 200 m) at each survey

area to profile changes in current speed throughout the water column. The ADCP is housed within TRDI Workhorse Sentinel ADCP Seabed Gimballed Frame with a Sonardyne LRT, pop-up buoy and rope canister that can be acoustically released for recovery. Communication with the ADCP is with a Sonardyne LRT Command Unit with Dunking Transducer. The ADCP will be deployed through the ships A-frame. Near the ADCP, a weight will be deployed and attached by chain to the ADCP. Attached to the weight is a Dan buoy with a winky light and radar reflector. In addition, a navigation warning will be issued. Discussions are expected with the Marine Institute regarding use of existing ADCP equipment. Alternatively, one is housed at University College Dublin.

Access and working areas

Please provide details of access to the site and working areas. This should include: Attached map of the access/egress route and working areas (annotated aerial image and/or OS map) Predicted plant/vehicle movements Storage areas for plant, equipment and materials (if required) Risks to navigation

n/a

Environmental mitigation

Please list appropriate mitigation measures to minimise impacts on the marine environment these may include: Pollution prevention and control procedure (guidance available on the NetRegs website) Spill response kits Minimise plant traffic Designated access and egress routes Storage of materials (fuel, chemicals, construction waste) Biosecurity (guidance available at http://www.snh.gov.uk/docs/A1294630.pdf)
Note: To assist you, the following mitigation statements will be used as conditions within the licence. By signing this method statement you will be agreeing to adhere to these restrictions. If you are unable to do this, the application will not qualify as Band 1. All equipment, temporary structures, access tracks, waste and/or debris associated with the works will be removed on completion of the works. Bunding, storage facilities and spill kits will be employed to contain and prevent the release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment. Plant, vehicles and machinery will not be refuelled on the foreshore. Coatings and treatments will be suitable for use in the marine environment and are used in accordance with best environmental practice. All equipment, materials, machinery and PPE used will be in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing non-native species into the marine environment. In the event of removal of any sensitive species or habitat designated by NRW under Schedule 7 of the Environment (Wales) Act 2016, no further removals will occur at that location or within 20m of that location.
Please list your bespoke mitigations here:

n/a

Additional information

Please list any additional information that may help with the application: Consents/permissions required List of plans or drawings attached to method statement Emergency procedures Contact details

n/a

## Materials of the project

| Description of materials to be deposited seaward of Mean High Water Springs (MHWS) (Please tick all that apply) |
| --- |
| Other (please provide a description of materials):<br>n/a |

| Delivery method of materials to site<br><br>If sea delivery, details of vessels to be used with a chart of proposed route and transhipment area is required. If delivery is by vehicle, the details about the proposed access route are required. Please indicate if you are providing details in a separate file. |
| --- |
| n/a |

| Will the works involve removals seaward of MHWS? |
| --- |
| No |

| Description of objects/materials to be removed seaward of MHWS, including quantities to be removed. |
| --- |
| n/a |

## Additional information

| Please provide the following: |
| --- |
| You must include a suitably scaled extract of an Ordnance Survey Map or Admiralty Chart with location of project complete with north arrow and scale |

| Please upload these below |
| --- |
| • File: Proposed_Welsh_Licence_Map.pdf - Download<br>• File: Supplementry Info.pdf - Download<br><br>**Please list below all supporting documents that have been submitted with this application.**<br>Information regarding the equipment to be used and the vessel |

## Statutory powers

| Does the applicant have statutory powers to consent any aspect of the project? e.g. coast protection authority, dredging powers, statutory undertakers |
| --- |
| No |

## Public register

Is there any information contained within or provided in support of this application that you consider should NOT be included on the Public Register on the grounds that its disclosure:

| | Yes | No |
|---|---|---|
| **Would be contrary to the interest of National Security?** | | X |
| **Would prejudice to an unreasonable degree you, or some other person's commercial interest or those of a third party?** | | X |

## Application fee

Please provide the method of payment

BACS

**Reference number (not BACS remittance no.)**
PRCAPPUCD07082024

## Declaration

I declare that to the best of my knowledge and belief that the information given in this application form and supporting documentation is true.

WARNING: It is an offence under the Marine and Coastal Access Act 2009, under which this application is made, to fail to disclose information or to provide false or misleading information. This could invalidate any licence granted.

| | |
|---|---|
| **Name** | Mark Coughlan |
| **Date** | 7th August 2024 |
| **Position in company** | Assistant Professor |

If you would like a copy of your completed form, please add your preferred email address below:

mark.coughlan@ucd.ie