

**APPLICATION FOR THE CONSENT TO CONDUCT MARINE SCIENTIFIC  
RESEARCH IN AREAS UNDER NATIONAL JURISDICTION OF THE UNITED  
KINGDOM**

Date:

**1. General information**

**1.1 Cruise name and/or number:**

**1.2 Sponsoring institution:**

**Name:** Marine Institute

**Address:** Galway Technology Park  
Parkmore Business Park West  
Galway  
Ireland

**Name of Chief Executive:** Dr. Peter Heffernan

**1.3 Scientist in charge of the project:**

**Name:** Gerry Sutton

**Address:** Coastal and Marine Resources Centre, Haulbowline Naval Base, Cobh, Co.Cork.  
Ireland.

**Telephone:** 00353 (0)214703113;

**Telefax:**

**1.4 Scientist(s) from UNITED KINGDOM involved in the planning of the project**

**Name(s):** Roger Hickman and Richard Fletcher.

**Address:** Geoscience Wales Ltd, No. 1 Conwy Business Centre, Junction Way, Llandudno  
Junction, Conwy, LL31 9XX, UK

**1.5 Submitting officer:**

**Name and address:** Carol Maloney  
Galway Technology Park  
Parkmore  
Galway

**Country:** Ireland

**Telephone:** 00 353 91 730400

**Telefax:** 00 353 91 730465

**2. Description of project (Attach additional pages as necessary)**

## 2.1 Nature of objectives of the project:

The main objective of this work is to conduct regional scale assessments of marine aggregate resource potential and collect additional marine environmental data. This work will be carried out as part of a joint academic/industry project entitled Irish Sea Marine Aggregates Initiative (IMAGIN). This is a two year project funded under the INTERREG 111a programme which aims to deliver baseline information and a policy recommendations in relation to the future development of marine aggregates in Irish and Welsh waters of the Irish Sea.

## 2.2 Relevant previous or future research cruises:

This work follows on from a previous cruise undertaken in the western part of the Irish Sea during early July 05. It also complements other survey work being conducted under the INTERREG framework within the HABMAP and MESH projects.

## 2.3 Previously published research data relating to the project:

Data collected by the Geological Survey of Ireland (GSI), British Geological Survey (BGS), and published in the 1:250,000 scale seabed sediment maps is of particular relevance to this project as are a number of other research surveys and commercial route surveys carried out in the South Irish Sea over the past 30 years. These include *inter alia* the following:

1. BELDERSON, R.H. 1964. Holocene sedimentation in the western half of the Irish Sea.
2. EDEN, R.A., DEEGAN, C.E., RHYS, G.H., WRIGHT, J.E and DOBSON, M.R. 1973. Geological investigations with a manned submersible in the Irish Sea and off western Scotland 1971. Report number 73/2. Institute of Geological Sciences. 27 pp.
3. TAYLOR-SMITH, D. In press. Geotechnical studies in Tremadog Bay. Proc. Geol. Ass. WINGFIELD, R.T.R. 1987. Giant sand waves and relict periglacial features on the sea bed west of Anglesey. Proceedings of the Geologists Association, Vol.98, Pt.4, pp.400-404.
4. MAX, M.D., HARRIS, C.H., GEOGHEGAN, M.A., CATHCART, G.S., NI CHONCHUIR, M.E. and FAHY, C.J. 1976. A preliminary report on the recent sedimentation on the sea floor immediately to the east of Dublin. Geological Survey of Ireland Report Series, RS 76/1 (Marine Geology).
5. Pendlebury, D. C. 1974. The recent sediments and shelly fauna (including foraminifera) of the Malin Sea. PhD Thesis, University of Wales (Unpublished)
6. Davies, H. C. 1984. The Quaternary Geology of the Malin-Hebridean Sea Area. PhD Thesis, University of Wales (Unpublished)
7. Davies, H. C., Dobson, M. R. and Whittington, R. J. 1984. A revised seismic stratigraphy for Quaternary deposits on the inner Continental Shelf west of Scotland between 58°30' N and 57°30' N. Boreas, Vol 73B, pp1 207-316.
8. Lamplugh, G.W. 1903. The Geology of the Isle of Man Mem Geol Surv Gt Br H M S O.
9. Smith, B. 1930. Borings through the Glacial drifts of the northern plain of the Isle of Man Summ Prog. Geol Surv Gt Br for 1930 H M S O.
10. Garrard, R.A. 1977. The sediments of the South Irish Sea and Nymphen Bank area of the Celtic Sea In TQHIS.
11. Synge, F.M. 1977. The coasts of Leinster (Ireland) In TQHIS
12. HARRIS, C. R., 1980. Recent sediment distribution in Dublin Bay and its approaches. Journal of Earth Sciences. Royal Dublin Society. Vol.3. pp.41 - 52. HARVEY, J.G. 1966. Large sand waves in the Irish Sea. Marine Geology, Vol.4,

pp.49-55.
13. FOLK. R.L and WARD. W.C. 1957. Brazos River Bar: A study in the significance of grain size parameters. Journal of Sedimentary Petrology.. Vol.27, No.1. pp.3-26.
14. STRIDE. A.H.. 1963. Current swept sea floors near the southern half of Great Britain. Q.J.Geol.Soc. 11 9, 1 75-1 99.
15. CASTON, V.N.D. 1965, Localised sediment transport and submarine erosion in Tremadog Bay, Northern Wales, Marine Geol., Vol.3, pp.401-410.
16. BELDERSON. R.H. and STRIDE. A.H. 1966. Tidal current fashioning of a basal bed. Marine Geology. 4. 237-257.21 JAMES. J.W.C.. 1 988. Cardigan Bay with parts of Waterford. Mid Wales and Borders. Sea Bed Sediments, BGS 1:250000 Series.
17. MOORE, J.R. 1968. Recent sedimentation in northern Cardigan Bay, Wales. Bull. Brt. Mus. (Nat. Hist.) Mineral., Vol.2, pp.21-131.
18. DOBSON, M.R. 1969. The oblique asdic and its use in an investigation of a marine high Marine Geology., Vol.2, pp.147-163.
19. HAYNES, J.R. and DOBSON, M.R. 1969. Physiography, foraminifera and sedimentation in the Dovey Estuary (Wales). Gaol. J., Vol.6, pt.2, pp.21 7-256.
20. BELDERSON, R.H., KENYON. N.H. and STRIDE, A.H., 1970, Holocene sediments on the continental shelf west of the British Isles. In: The geology of the eastern Atlantic continental margin.2. Europe. BGS Report No.70/14. 157-170.
21. KENYON. R.H.. 1970. The origin of some transverse sand patches in the Celtic Sea. Geol Mag. 107. 389-394.
22. DOBSON, MR., EVANS, W.E. and JAMES. K.H. 1971. The sediment on the floor of southern Irish Sea. Marine Geology., Vol.11. pp.27-69.
23. DOBSON, M.R., EVANS, W.E. and JAMES, K.H. 1971. The sediment on the floor of the southern Irish Sea. Marine Geol., Vol.11, pp.27-69.
24. JONES, A.S.G. 1971. A textural study of marine sediments in a portion of Cardigan Bay (Wales). j. Sed. Pet., Vol.41, pp. 505-51 6.
25. BELDERSON.R.H..KENYON.N.H..STRIDE.A.H.and STUBBS. A. R.. 1972. Sonographs of the sea floor. Elsevier. 1 85pp
26. Mitchell, G F., Penny, L.F., Shotton, F.W., and West, R.G. 1973. A correlation of the Quaternary deposits in the British Isles. Geol Soc. Special Report No.4: The Quaternary
27. Evans, D. 1973. A shallow seismic survey of Lough Swilly and Trawbreaga Bay, County Donegal.Proc. R. Ir. Acad., Vol. 73B, pp. 207- 216.
28. MARINE SCIENCE LABORATORIES 1976. Geotechnical mapping of the sea bed: final report. (Mcnaí Bridge: University College of North Wales). NERC Contract No. F60/4/22.
29. Pendlebury, D. C.and Dobson, M. R. 1976. Sediment and micro faunal distributions on the eastern Malin Sea, as determined by side scan sonar and sampling. Scott. J. Geol., Vol. 11, pp. 315-332.
30. Kidson 1977 Some problems of the Quaternary of the Irish Sea In 'The Quaternary History of the Irish Sea' (TQHIS) Eds Kidson and Tooley 1977 Geol Jour Special Issue No 7 Seel Ho Press. Liverpool.
31. Bowen, D O 1977 The coast of Wales. In TQHIS.
32. Huddart, D, Tooley, M.J., and Carter, P.A. 1977. The coasts of north-west England. In TQHIS.

33. Thomas, G.S.P. 1977. Some problems of the Quaternary of the Isle of Man In TQHIS
34. Pantin, H.M. 1977. Quaternary sediments from the northern Irish Sea. In TQHIS
35. Pantin, H.M. 1978. Quaternary sediments from the north-east Irish Sea, Isle of Man to Cumbria Bull. Geol Surv. Gt Br, No 64. H M S O
36. Evans, D., Kenolty, N., Dobson, N. E. and Whittington, R. H. 1979. The geology of the Malin Sea. Rep. Inst. Geol. Sci., No. 79/15.
37. Peacock, J. D. 1981. Scottish late-glacial marine deposits and their environmental significance. In Meale, J. and Flenley, J. The Quaternary in Britain, pp. 222-236. Pergamon.
38. JAMES, J.W.C. AND WINGFIELD, R.T.R. 1987. Aspects of the sea bed sediments in the southern Irish Sea. Proceedings of the Geologists Association., Vol.98. Pt.4, pp.404-406.
39. B G S 1982, Isle of Man Sheet 54 N-06'W 1:25 000 Series Solid Geology.
40. STRIDE, A.H.. (ed.). 1982. Offshore tidal sands. Chapman Hall. 222pp.

### 3. Methods and means to be used

#### 3.1 Particulars of vessel

**Name:** Celtic Voyager

**Nationality:** Irish

**Owner:** Marine Institute

**Overall length:** 31.4m

**Maximum draught:** 3.8m

**Net tonnage:** 340 tonnes

**Propulsion:** Wartsila UD25m5 (626kw)

**Cruising speed:** 9.5 knots

**Call sign:** EIQN

**Method and capability of communication –**

**Name of master:** Captain Philip Baugh/ Ciaran Flanagan

**Number of crew:** 8

**Number of scientists on board:** 8

**3.2 Aircraft or other craft to be used in the project:** N/A

### 3.3 Particulars of methods and scientific instruments

Types of samples and data	Methods to be used	Instruments to be used
Shallow seismic profiles	Deployed from research vessel on selected survey lines	Towed catamaran boomer source and 8 element acoustic streamer
Bathymetry and acoustic backscatter	Complete seabed coverage along batches of adjoining survey lines	Multibeam Echosounder Simrad EM 1002.
Surficial sediment samples	Deployed overside on occasional basis	Shipek Grab
Hydroacoustic sediment classification	Logs and analyses data from hydrographic sounder	Echoplus connected to Simrad EA 400.
Sound velocity profiles	CTD profiler	TBC
Side-scan sonar records	Towed fish	TBC
Magnetometer readings	Towed fish	TBC

### 3.4 Indicate whether harmful substances will be used:

No

### 3.5 Indicate whether drilling will be carried out:

No.

### 3.6 Indicate whether explosives will be used

No

## 4. Installations and equipment

Details of installations and equipment (dates of laying, servicing, recovery, exact locations and depth):

A benthic tide gauge will be deployed within the area defined by the listed survey envelope bounding coordinates. Precise coordinates will be forwarded at the earliest opportunity.

## 5. Geographical areas

5.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude):

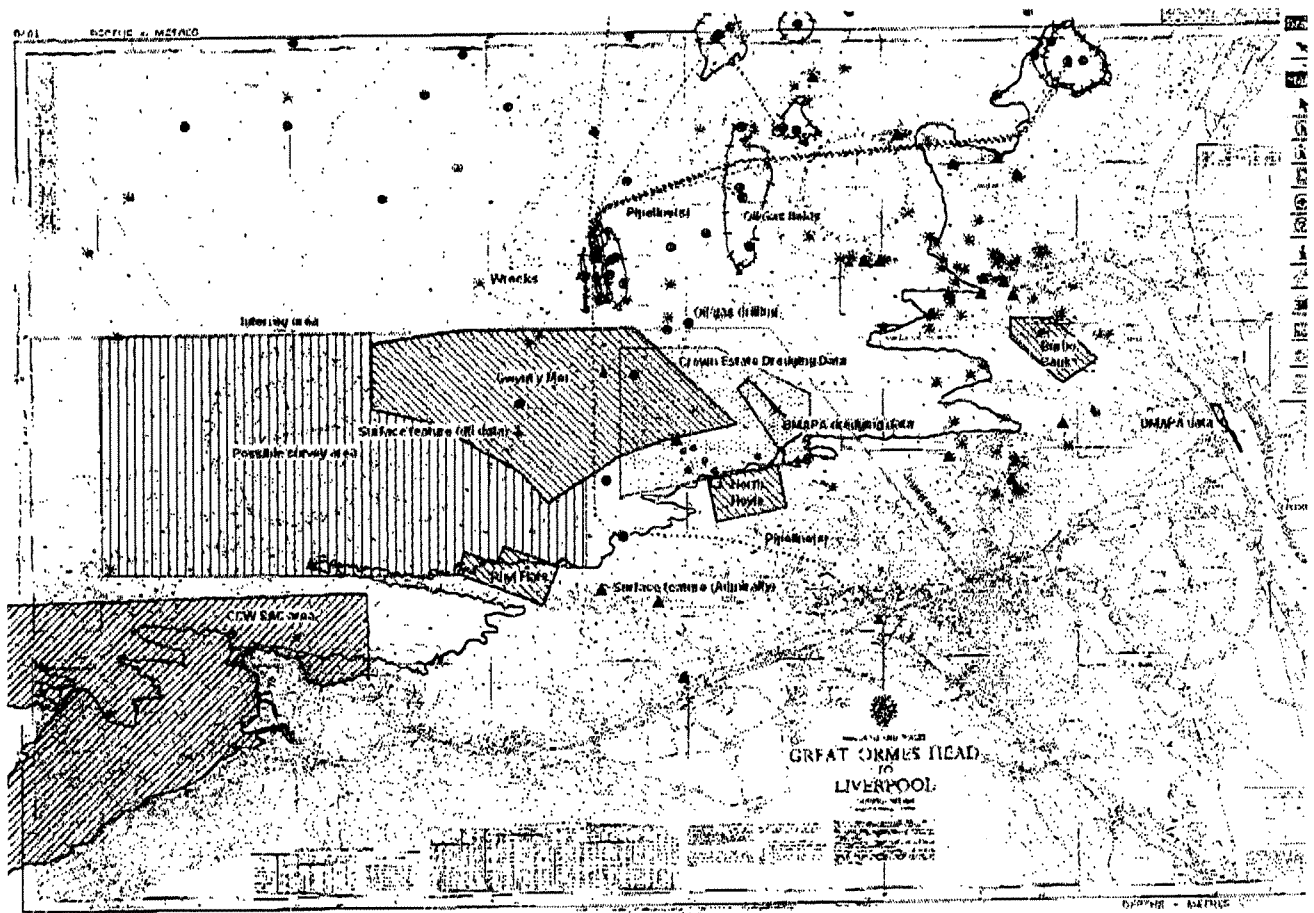
The proposed survey area "envelope" is within the rectangle defined by

53deg 30' N / 3deg 35' W / 53deg 23' N / 4deg 00' W

but excluding the areas of overlap with the north part of the Rhyl Flats windfarm site and the Gwynt-y-Mor windfarm application area.

The water depths within the survey "envelope" range from 10m - 38m.

5.2 Attach chart(s) at an appropriate scale showing the geographical areas of the intended work and, as far as practicable, the positions of intended stations, the tracks of survey lines, and the locations of installations and equipment.



Proposed survey area is that outlined in red box with vertical black hatching. In general priority will be given to generating survey coverage towards the eastern end of this area.

## 6. Dates

**6.1 Expected dates of first entry into final departure from research area of the research vessel:**

The vessel will be in the survey area for 4/5 days between Sept 1<sup>st</sup> and Sept 14<sup>th</sup> 2005.

**6.2 Indicate if multiple entry is expected: This may be required depending on weather and other operational conditions**

## 7. Port calls

**7.1 Dates and names of intended ports of calls in UNITED KINGDOM:**

An optional port call may be made at Hollyhead depending on logistical and/or weather factors arising during the survey.

**7.2 Any special logistical at ports of call:**

**7.3 Names/ Address / Telephone of shipping agent (if available)**

## 8. Participation

8.1 Extent to which UNITED KINGDOM will be able to participate to be represented in research project:

UK project partners Geoscience Wales will be able to participate actively in this survey.

8.2 Proposed dates and ports for embarkation / disembarkation:

Dublin or Howth 1<sup>st</sup> Sept – 14<sup>th</sup> Sept 05.

## 9. Access to data, samples and research results

9.1 Expected dates of submission to UNITED KINGDOM preliminary reports which should include the expected dates of submission of the final results:

Preliminary survey reports will be available within two months of completion date. Final results are expected by Mid 2007.

9.2 Proposed means for access by UNITED KINGDOM to data and samples:

UK project partners GSW will be in possession of data and samples. These will be available publicly upon application after the project is completed in 2007.

9.3 Proposed means to provide UNITED KINGDOM with assessment of data, samples and research results or provide assistance in their assessment or interpretation:

UK project partners GSW will be in receipt of all data and samples, they will also be assisting directly with data interpretation and assessment.

9.4 Proposed means of making research results internationally available:

Data products in the form of GIS layers and scientific publications and written reports will be publicly available after the completion of the project in 2007.

## 10. Scientific Equipment

**COMPLETE THE FOLLOWING TABLE-  
SEPARATE PAGE FOR EACH COSTAL STATE:**

Marine mapping will be performed using the EM1002S multibeam echo sounder, sub bottom profiler and the EA400 echo sounder coupled with the ECHO plus Acoustic Ground Discrimination System. A magnetometer and side scan sonar will also be towed. A boomer will also be deployed in key areas though not necessarily on each and every survey line. Ground-truthing of the acoustic data will be achieved by using grabs (shipek). At least one benthic tide gauge, and two shore based gauges will be deployed and throughout the survey programme CTD dips will be carried out. Water sediment concentration will be measured. It is possible that some seabed sediment monitoring equipment may be deployed on the seabed, possibly in conjunction with the benthic tide gauges.

INDICATE YES OR NO

LIST SCIENTIFIC WORK BY FUNCTION Eg: MAGNETOMETRY: GRAVITY DIVING SEISMICS BATHYMETRY SEABED SAMPLING TRAWLING ECHO SOUNDING WATER SAMPLING U/W TV MOORED INSTRUMENTS TRAWLING ECHO SOUNDING WATER SAMPLING	Water column including sediment sampling of the Seabed	Fishes research within fishing limits	Research concerning the natural resources of the continental shelf or its physical characteristics	DISTANCE FROM COAST		
				Within 12nms	Between 12-200nms	(Continental shelf work only)  Beyond 200nm but within the continental margin
WATER SAMPLING	Yes/limited		Yes limited	Yes	Yes	<u>No</u>
PROFILING INSTRUMENTS	Yes/sound velocity		Yes/sound velocity	Yes	Yes	<u>No</u>
ABOVE WATER OPTICS AND PHOTOGRAPHY	no		no	No	NO	<u>No</u>

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(On behalf of the Principle Scientist)

Dated -----