Application for Consent to conduct
Marine Scientific Research

Date: _05/08/13_

1. General Information

1.1 Cruise name and/or number: **Sediment Transport Assessment, Irish North Coast**

1.2 Sponsoring Institution(s):	
Name:	Marine Institute
Address:	Rinville, Oranmore, Co. Galway
Name of Director:	Dr. Peter Heffernan

1.3 Scientist in charge of the Project:	
Name:	Dr. Sara Benetti
Country:	Northern Ireland
Affiliation:	University of Ulster
Address:	University of Ulster School of Environmental Sciences Cromore Road Coleraine Co.Derry BT52 1SA Northern Ireland
Telephone:	+44(0)28 70123113
Fax:	+44(0)2871324911
Email:	s.benetti@ulster.ac.uk
Website (for CV and photo):	http://www.science.ulster.ac.uk/envsci/-People

1.4 Entity(ies)/Participant(s) from United Kingdom involved in the planning of the project:	
Name:	Dr. Rory Quinn and Will Evans (PhD Student)
Affiliation:	University of Ulster
Address:	University of Ulster School of Environmental Sciences Cromore Road Coleraine Co.Derry BT52 1SA Northern Ireland
Telephone:	+44 (0) 2870 124884 (Quinn) +44 (0)28 70321041 (Evans)
Fax:	+44 (0)2871324911
Email:	rjquinn@ulster.ac.uk evans-w@email.ulster.ac.uk
Website (for CV and photo):	http://www.science.ulster.ac.uk/envsci/-People

2. Description of Project

2.1 Nature and objectives of the project:
Recent programmes in Irish and UK coastal waters such as Irish National Seabed Survey (INSS), Integrated Mapping For the Sustained Development of Ireland's Marine Resources (INFOMAR) and Joint Irish Bathymetry Survey (JIBS) have created very high-resolution data sets which have revealed a wide variety of sedimentary bedforms. These bedforms typically display geometrical characteristics consistent with migration. Multibeam Echosounder (MBES) data, while excellent at detailing these geometrics at high accuracy, can only provide a single snapshot of bathymetry. The result is that any rate or direction of migration may only be assumed (Van Landeghem et. al., 2012). The relationship between these geometric characteristics and rates of migration have been contested in recent years based on evidence from time-lapse surveys. Given the high diversity and density of bedform types, high-energy hydrodynamic regime and multi-disciplinary interest, the JIBS / INSS data sets present an excellent opportunity to carry out sediment transport assessment via repeat MBES. As a result, a ship time grant has been awarded to University of Ulster by the Marine Insitiute Ireland to carry out such a repeat survey. While this application covers the two sites in UK waters, there are an additional two sites in Irish waters. Several key objectives for the survey have been defined. • To repeat survey selected areas of the JIBS and INSS data sets with MBES for evidence of bathymetric change. • To relate any change in bathymetry to previous surveys, allowing assessment of sediment transport in the areas. • To ground truth MBES data using sediment grabs to aid classification of backscatter data. This will also supplement the low-resolution ground truth data in the area. • Biology included in sediment samples will also be collected and preserved for identification at a later date. It is intended that these specimens along with MBES and sediment samples will feed into another PhD project at University of Ulster and may also be incorporated into undergraduate level teaching. • To provide experience for undergraduate students aboard, increasing their knowledge of sea going operations and survey methods.

2.2 If designated as part of a larger scale project, then provide the name of the project and the Organisation responsible for coordinating the project:
This survey forms part of a PhD project undertaken by Will Evans, assessing sediment transport on the North Irish Shelf and will also provide additional data for ongoing research into the JIBS dataset within Univeristy of Ulster. Findings from this PhD are expected to enable better management of the offshore environment in this area including habitat mapping, offshore engineering, and coastal zone management. Several papers will also be produced in international marine science journals.

2.3 Relevant previous or future research projects:
2010-11 Heritage Council INSTAR Project: Archaeological applica tions of the JIBS data - Investigator(s): Quinn, R., Forsythe, W., Plets, R. and Westley, K., Bell, T., Benetti, S., McGrath, F., Robinson, R. 2010 NI Environment Agency Project: Habitat mapping of the Skerries/Causeway proposed Marine SAC Investigator(s): Quinn, R., Plets, R.

2.4 Previous publications relating to the project:

Plets, R, Clements, A, Quinn, R and Strong, J (2012) Marine substratum map of the Causeway Coast, Northern Ireland. Journal of Maps, 8 (1). pp. 1-13.

Westley, K, Quinn, R, Forsythe, W, Plets, R, Bell, T, Benetti, S, McGrath, F and Robinson, R (2011) Mapping Submerged Landscapes Using Multibeam Bathymetric Data: a case study from the north coast of Ireland. International Journal of Nautical Archaeology, 40 (1). pp. 99-112.

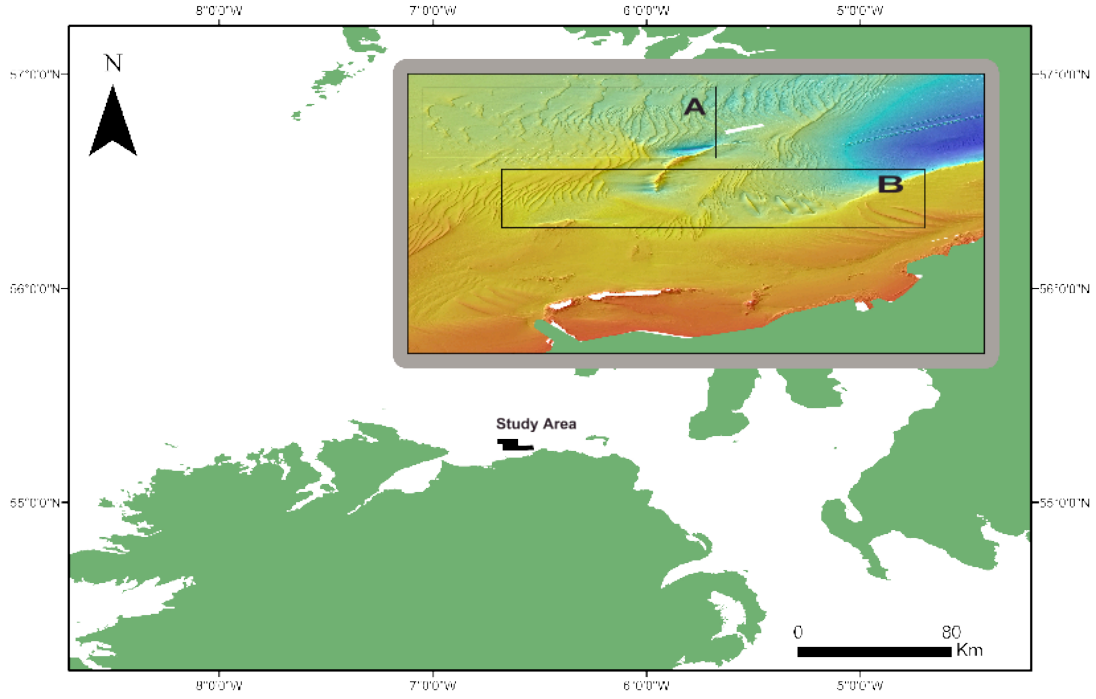
Quinn, R and Boland, D (2010) The role of time-lapse bathymetric surveys in assessing morphological change at shipwreck sites. Journal of Archaeological Science, 37 (11). pp. 2938-2946.

McDowell, L, Knight, J and Quinn, R (2007) Mesoscale changes in present-day nearshore surface sediments and bedform dynamics off the north coast of Ireland. In: Coastal and Shelf Sediment Transport. (Eds: Balson, PS and Collins, MB), The Geological Society of London, pp. 103-116. ISBN 9781 86239 217 5

Van Landeghem, K.J.J., Baas, J.H., Mitchell, N.C, Wilcockson, D. and Wheeler, A.J. (2012) Reversed sediment wave migration in the Irish Sea, NW Europe: a reappraisal of the validity of geometry-based predictive modelling and assumptions. Marine Geology 295-298, pp. 95-112

3. Geographical Areas

3.1 Indicate geographical areas in which the project is to be conducted (with reference in Latitude and longitude in decimal degrees, including coordinates of cruise/track/way points/sampling stations). Please provide coordinates in a separate excel spreadsheet.



The MBES survey will be conducted at the study area indicated in Figure 1. This area has been sub divided into two areas of specific interest.

A)
Area A is a disused dump-site for dredged material from Port of Derry and Lough Foyle navigation channels. Investigation into sediment transport at this site is aided by a previous repeat survey carried out by University of Ulster. On completion of this survey, MBES data from 2007, 2009 and 2013 will be utilised to guage sediment flux in this area. There is significant variation in bedform type in area A, as well as pronounced scouring around a rocky outcrop, allowing for a variety of sediment transport indicators to be assessed. This outcrop has been included to act as a datum point with which to compere successive surveys. Working depths in area A range from 40m to 75m. Approximately 15 stations will be selected within this area for sediment sampling.

B)
This area also contains high variability of bedform type, including 18m high trochoidal waves designated of special interest by the Northern Ireland Environment Agency. It is hoped that the high number of sediment waves in this location will increase chances of observing wave crest migration in the 6 years since this area was last surveyed. As above, rocky outcrops have been included to mitigate against errors due to navigational inaccuracies when comparing datasets. Depths within area B range from 30m to 90m.

3.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical Areas of the intended work and, as far as practicable, the location and depth of sampling Stations, the tracks of survey lines, and the locations of installations and equipment.
The aim of the Multibeam sonar is to achieve 100% coverage within survey sites identified. Tracklines will be dependant on tidal and weather conditions at the time of survey. Depths of all sampling stations will be shallower than 100m water depth. The location of these stations will be subject to features identified within the acoustic backscatter obtained from the Multibeam Sonar. A Day grab will be used as the primary sampling equipment, with other types of grab available for use in the event of quipment malfunction or poor sample recovery.

4. Methods and means to be used

4.1 Particulars of vessel:	
Name:	R.V. Celtic Voyager
Type/Class:	100 A1 Research Vessel, LMC
Nationality (Flag State):	Irish
Identification Number (IMO/Lloyds No.):	
Owner:	Marine Institute
Operator:	P&O Maritime Services
Overall length (meters):	31.4
Maximum draught:	4m
Displacement/Gross Tonnage:	340
Propulsion:	Wärtsilä UD25M5 (626 kW),
Cruising & maximum speed:	<= 10 knots
Call sign:	EIQN
INMARSAT number and method and capability of communication (including emergency frequencies):	GMDSS A class, E-mail. Mini M SAT C and GSM 00 353 91 423396 / 00870 763066755 00870-764687325 / 764687326
Name of Master:	Philip Baugh/Colin McBrearty
Number of Crew:	7
Number of Scientists on board:	8 max

4.2 Particulars of Aircraft:	
Name:	NA
Make/Model:	

Nationality (flag State):	
Website for diagram & Specifications:	
Owner:	
Operator:	
Overall Length (meters):	
Propulsion:	
Cruising & Maximum speed:	
Registration No.:	
Call Sign:	
Method and capability of communication (including emergency frequencies):	
Name of Pilot:	
Number of crew:	
Number of scientists on board:	
Details of sensor packages:	
Other relevant information:	

4.3 Particulars of Autonomous Underwater Vehicle (AUV):	
Name:	NA
Manufacturer and make/model:	
Nationality (Flag State):	
Website for diagram & Specifications:	
Owner:	
Operator:	
Overall length (meters):	
Displacement/Gross tonnage:	
Cruising & Maximum speed:	
Range/Endurance:	
Method and capability of communication (including emergency frequencies):	
Details of sensor packages:	
Other relevant information:	

4.4 other craft in the project, including its use: NA

4.5 Particulars of methods and full description of scientific instruments to be used(for fishing gear specify type and dimension)		
Types of samples and Measurements:	Methods to be used:	Instruments to be used:
Acoustic Survey	Hull mounted acoustic survey equipment.	Multibeam sonar and Pinger
Sediment Grain size samples	Grab samples	Day Grab, Shipek Grab, Hamon Grab, Box Grab.
Biological Samples	Grab Samples	Day Grab, Shipek Grab, Hamon Grab, Box Grab

4.6 Indicate nature and quantity of substances to be released into the marine environment:
No substances will be released into the marine environment.

4.7 Indicate whether drilling will be carried out. If yes, please specify:
No drilling will be carried out.

4.8 Indicate whether explosives will be used. If yes, please specify type and trade name, Chemical content, depth of trade class and stowage, size, depth of detonation, frequency of Detonation, and position in latitude and longitude:

No explosives will be used.

5. Installations and Equipment

Details of installations and equipment (including dates of laying, servicing, method and Anticipated timeframe for recover, as far as possible exact locations and depth, and Measurements):
NA

6. Dates

6.1 Expected dates of first entry into and final departure from the research area by the research vessel and/or other platforms:
26/09/13 to 01/10/13
6.2 Indicate if multiple entries are expected:
Multiple entries are not expected and will only occur due in the event of adverse weather conditions.

7. Port Calls

7.1 Dates and Names of intended ports of call:
Lisahally, Co. Londonderry. Secondary port incase of adverse weather – Belfast, Co. Antrim,

7.2 Any special logistical requirements at ports of call:
No logistics are required.

7.3 Name/Address/Telephone of shipping agent (if available):
NA

8. Participation of the representative of the coastal State

8.1 Modalities of the participation of the representative of the coastal State in the research Project:
Chief scientist.

8.2 Proposed dates and ports for embarkation/disembarkation:
Embarkation 26/09/13 – Killybegs, Co.Donegal, Ireland. Disembarkation 01/10/13 – Lisahally, Co. Londonderry, Northern Ireland.

9. Access to Data, Samples and Research Results

9.1 Expected dates of submission to coastal State of preliminary report, which should include The expected dates of submission of the data and research results:
Preliminary report will be available early 2014.

9.2 Anticipated dates of submission to the coastal State of the final report:
Report finalised and journal article ready for submission by mid 2014.

9.3 Proposed means for access by coastal State to data (including format) and samples:
Staff and students and University of Ulster (UK) will have immediate access to data and samples. Acoustic data and samples will be stored at University of Ulster and will be available upon request.

9.4 Proposed means to provide coastal State with assessment of data, samples and Research results:
The data collected as part of this scientific investigation will provide the basis for papers in peer-reviewed marine science journals. Data will also be made available to Government Agencies if requested.

9.5 Proposed means to provide assistance in assessment or interpretation of data, samples And research results:
Assistance in interpretation of data will be provided by staff, postgraduate and undergraduate students at University of Ulster (UK).

9.6 Proposed means of making results internationally available:
Intention to publish results in marine science journals.

10. Other permits Submitted

10.1 Indicate other types of coastal state permits anticipated for this research (received or Pending):
none

11. List of Supporting Documentation

11.1 List of attachments, such as additional forms required by the coastal State, etc.:
none

Signature:

Contact information of the focal point:
Name:
Country:
Affiliation:
Address:
Telephone:
Fax:
Email: