JULIANNA ODONOGHUE
ARCHAEOLOGICAL SERVICES

Project: Galway Harbour Extension

Title: Brief of Evidence

Written by: Julianna O'Donoghue B.A (hons.), MIAI

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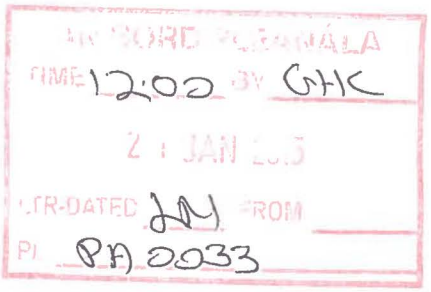

Address: Julianna O'Donoghue Archaeological Services, 61 Lady's Cross, Clonakilty, Co. Cork.
Web: www.jodas.ie **Email:** info@jodas.ie **Phone:** (023) 8858707 / (086)3844831

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1 Professional Qualifications and Experience

1.1 Qualifications

My name is Julianna O'Donoghue.

I hold an honors degree (B.A.) in Archaeology from University College Cork. I am a qualified commercial diver HSE & HSA Parts III and IV. I am also fully qualified to hold licences from the Department of Arts, Heritage and the Gaeltacht for all types of archaeological excavations as well as detection device surveys, archaeological dive surveys and underwater excavations. I am a full member of the Institute of Archaeologists of Ireland. I am currently the principal Archaeologist at Julianna O'Donoghue Archaeological Services.

1.2 Experience

I have fifteen years of experience in commercial archaeology in Ireland, twelve of which have been spent working as a Maritime Archaeologist. My experience on underwater and inter-tidal cultural heritage sites includes the undertaking of impact assessments, recording, monitoring, excavation and conservation management plans. I have worked on a broad range of archaeological sites dating from the prehistoric period to the post – medieval industrial era.

I undertook the diving component for the archaeological chapter of the EIS on behalf of *Laurence Dunne Archaeology* and I am also co-author of the chapter.

2 Scope of the Archaeology Section, Chapter 13.2

The aim of Chapter 13.2 was to determine the presence of known archaeological sites that may be affected by the proposed development; to assess the potential for discovering previously unrecorded archaeological remains during the construction stage, and to assess the impact of the proposed development site on the known and potential unknown terrestrial and underwater archaeology. This brief relates specifically to the underwater archaeological element of the EIS.

The EIS included a comprehensive desktop study; an overall site inspection and wider associated field work; a geophysical survey and a subsequent associated dive truthing survey.

2.1 Desktop survey

Extensive documentary and cartographic sources were examined in order to establish an archaeological and historical context for the proposed development.

2.2 Site Inspection:

The entire proposed development site and its environs including the shoreline was visited and examined by two senior licensed maritime archaeologists.

2.3 Aerial Photography

A variety of low and high altitude aerial photography vertical and oblique was examined. Infra-red aerial imagery undertaken by the Marine Institute was also examined as well as the aerial ortho-images from the National Monuments web site.

2.4 Geophysical Surveys

Side-scan sonar and magnetometer surveys were undertaken by Landscape and Geophysical Services across the entirety of the underwater area of the proposed site. The geophysical surveys were undertaken with due regard to the specifications for carrying out geophysical surveys for archaeological purposes, compiled by the Underwater Archaeology Unit of the Dept. of Arts, Heritage and the Gaeltacht. Following the submission of the geophysics report, consultation took place between Laurence Dunne Archaeology and the Underwater Archaeology Unit and a strategy for a follow up dive truthing survey was agreed.

2.5 Dive Survey

Based on the results of the geophysical surveys the proposed development site was the subject of a licensed archaeological dive truthing survey and licensed metal detection survey. All of the anomalies identified as potentially archaeological in the nature in the geophysics report as well as a sample of

those identified as geological or mooring blocks were included in the dive truthing survey. The dive truthing survey was undertaken in 2011 by a five person team. A surveying engineer was engaged to confirm the precise locations of the anomalies using a DGPS with 8mm accuracy. Conditions were calm and sunny which enabled precise anchorage over each of the anomalies. A circular dive search encompassing a diameter of 20m was undertaken at each anomaly.

3 Receiving Environment

The study area is encompassed within an extremely rich, diverse archaeological area - terrestrially and underwater. Geographically, the proposed development site abuts the south- easternmost limits of Galway City in the littoral zone. A little to the north of Galway is Lough Corrib, the largest lake in the Republic of Ireland, from which the River Corrib issues into the sheltered inner waters of Galway Bay. People have lived, fished, hunted, farmed and traded here for over six millennia attracted to its rich natural environment that has been an immense source of sustenance. Testament to this are the numerous monuments, shipwrecks and artefacts that have been recorded, excavated and found in the waters of the bay, harbour, river and lake as well as along its shorelines.

Of the 82.89 hectares proposed for development, 54.82 hectares relate to underwater areas where an estimated 1.8 million cu meters of sediment will be dredged.

4 Impacts

There are no recorded archaeological monuments within the proposed development site. The dredging of sediment during the construction stage will directly impact upon any features, deposits or objects of potential archaeological significance which may be hidden in the sediment.

There are six historic shipwreck listings in proximity to the proposed development site dating between 1750 and 1887. The locations given are: *Galway River; Renmore Point; New Dock Galway; Blown out of dock and driven on shore Galway Bay;* and *Entrance to Loughataille*. In addition to these, there are at least eighty two shipwrecks recorded in the Shipwreck Inventory of

Wrecks for Galway Bay whose precise location is for the most part unknown or general i.e. *off Mutton Island; Hare Island / Mutton Island;* and *1/4 mile NE of Mutton Island.*

The comprehensive archaeological geophysics and subsequent dive investigation surveys did not detect any of the listed wrecks or any other unknown shipwreck or indeed any archaeological feature or artefact.
It is most likely that much of the fabric of the majority of these wrecks and cargoes were salvaged around the date of their demise as the water levels in these areas are shallow. However, it is also possible that coherent wreck sections of these vessels and associated artefacts from them may be contained within the underlying sediment. Potential shipwreck material was recently recovered by divers during the raising of a submerged yacht. The recovered objects comprise a heavily eroded and shipworm infested amorphous fragment of timber and a left scapula of an adult cow. Given, that the sediment within the proposed development site will be entirely removed by dredging works at the Construction Phase, any concealed remains, including unrecorded shipwrecks, features or artefacts will be directly impacted.

5 Mitigation Measures

5.1 Archaeological Testing of wreck material

Presently, the amorphous nature of the recent finds recovered by divers represents a potential wreck site that warrants an underwater archaeological investigation. The location of the recovered material identified by the divers will be subjected to targeted test excavation in order to establish the precise nature, and context of the material. Should coherent remains of a historic vessel be uncovered during the archaeological testing further mitigation measures may be necessary including full excavation of the wreck. It should be noted that shipwrecks over 100 years old are protected under the National Monuments Act.

5.2 Archaeological Monitoring

All dredging works in the proposed development site shall be archaeologically monitored under licence by experienced maritime archaeologists with a proven track record in equivalent, similar type work. A detailed monitoring strategy will be agreed between the appointed archaeologist, the Underwater Archaeology

Unit of the National Monuments Service and the National Museum of Ireland. This will include agreement on an appropriate finds retrieval strategy, the number of personnel, communication policy and reporting of potential finds. An archaeological dive team shall remain on stand-by for the duration of the dredging operations.

5.3 Discovery of Archaeological Material

In the event of archaeological material, wreckage, timbers or other artefacts being recorded in the course of the monitoring, the dredging will be suspended in the immediate area to allow the archaeologist to recover and record any such material. The recovered items shall be placed in temporary wet storage tanks provided on the dredger.

In the event that the dredging operations impacts on a possible archaeological site, then the dredger will be moved to a different area while the standby archaeological dive team is mobilised to undertake an initial assessment of the material. This initial assessment will determine the nature, extent and significance of the archaeological remains. Based on the results of the initial assessment, further archaeological mitigation measures will be agreed upon with the National Monuments Service and the National Museum of Ireland. These mitigation measures may involve further investigative, targeted test excavations and / or potentially full excavation.

Suitable artefact storage facilities shall be in place prior to the commencement of dredging operations. This will include the placement of small tanks on board the dredging vessel and a larger storage facility nearby on land for the storage and processing of artefacts retrieved during the dredging operations. Provision will be put in place for the full recording, analysis and long term conservation of artefacts recovered during the project.

5.4 Archaeological Testing of Lagoons

The seabed deepening will be undertaken by a trailer suction hopper dredger and a back-hoe dredger that will redeposit the dredged sediment in constructed lagoons within the proposed development site where it will be left to dry. These dried lagoons shall be archaeologically tested to recover any potential

archaeological artefacts in the sediment. The archaeological testing shall involve a program of sieving and licensed metal detection thus maximising artefact recovery. A detailed testing methodology will be agreed between the appointed archaeologist, the Underwater Archaeology Unit of the National Monuments Service and the National Museum of Ireland.

6 Response to Submissions

6.1 Geophysical Survey

Concerns have been raised regarding the quality of the geophysical survey following the recent discovery of potential shipwreck material on the seabed within the proposed development site which did not manifest on the Geophysical Survey.

The geophysical survey was undertaken by Kevin Barton and Gavin Duffy, both very experienced geophysicists, with due regard to the specifications for carrying out geophysical surveys for archaeological purposes, compiled by the Underwater Archaeology Unit of the National Monuments Service. I was present during the geophysical survey and can confirm that the survey conditions were ideal and no technical difficulties were experienced.

The shipwreck referred to in the submission relates to material sighted by divers during the recovery of a submerged modern yacht. The timbers became exposed at 1m below the current seabed level when an air dredge was used to excavate sediment in order to release the keel of a modern yacht from the seabed. A timber vessel or section of vessel buried beneath 1m of sediment will not be detected in a sidescan sonar survey as it only creates an image what is resting on the seabed. Similarly a small amount of iron fixings, if present, may not present as an anomaly on the magnetometer survey because the ferrous content is low or degraded.

While no archaeological sites, features or objects were identified in the geophysical survey and associated dive truthing survey, the EIS determined that there is a potential for archaeological remains to exist within the sediment. The underwater archaeological mitigation measures as set out in the EIS, are best

practice in the industry in Ireland, and will satisfactorily cater for any archaeological material concealed in the sediment.

6.2 Munitions

Observations have been made regarding the potential for uncovering cannon shot during the dredging operations. All of the dredging operations shall be subject to licensed archaeological monitoring and the dredged sediment in the lagoons shall be archaeologically tested. Such mitigation measures employed in other marine construction projects (Dublin Bay, Cork Harbour and Inishbofin Harbour) have resulted in the archaeological recovery of a multitude of artefacts including several cannon shot.

6.3 Drowned Landscapes

Concerns have been raised with regard to the lack of consideration in the EIS for drowned or submerged landscapes and deposits.
While it is accepted that there is no direct mention of drowned landscapes in the Archaeology Chapter the historical background provided in Section 13.2.2.1 and 13.2.2.2 demonstrate that the full archaeological potential, monumentally and artefactually in the study area is entirely understood.

The submission states that extensive exposures of peat and ancient tree stumps are found intermittently between Spiddal and Blackrock in Galway City. Research indicates that at around 6000BP sea level in Galway Bay was approximately 3m lower than today's levels. While acknowledging this, it should be understood that recording submerged landscapes that are permanently underwater is entirely different to seasonal or storm exposures on the coastal fringe.

Chapter 6 of the EIS prepared by Daniel Duggan relates the results of the site investigation works. Amorphous or spongy peat and peaty silt ranging in thickness from just 5cm to 20cm was encountered at between -8.90mCD and -15.80mCD in localised areas within proposed dredge areas. The potential for uncovering a coherent submerged cultural landscape is considered low. However measures shall be in place during the construction stage to deal with the potential for recording archaeological remains including submerged cultural

landscapes. An archaeological monitoring strategy shall be agreed with the appointed archaeologist, the National Monuments Service and the National Museum. This will include archaeological monitoring of the dredging operations and a sampling strategy for paleo-environmental analysis.

7 Residual Impacts

It is possible that artefacts from a number of archaeological periods will be recovered from the marine sediment by the proposed mitigation measures.

8 Conclusion

There are no recorded archaeological monuments within the underwater area of the proposed development. A series of comprehensive archaeological mitigation measures shall be put in place in advance of the construction stage which will appropriately deal with any potential unrecorded archaeological remains concealed within the sediment.

It is possible that artefacts from a number of archaeological periods will be recovered from the marine sediment by the proposed mitigation measures. These artefacts will increase and enhance our current understanding and knowledge of the maritime archaeology of Galway. Furthermore, it is likely that these artefacts will most likely go on display in Galway City Museum as a visitor attraction and also as an important visible expression and understanding of the cultural maritime heritage of Galway.