

Legend

- 2018 Sample Locations
- Redbarn Route
- Claycastle Route
- Ballinwilling route

Bathymetry (m LAT)

High : 1.41

Low : -3.12083

0 200m

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PROJECT TITLE

Celtic Interconnector project

FIGURE TITLE

Geotechnical Site Investigations

Claycastle

| | | | | |
|--------------------|------------------|-------------------|-------------------|-------------------|
| DRAWN BY | MJG (UoS) | PROJECT NO | 17758 | FIGURE NO. |
| CHECKED BY | MW | DATE | 25/01/2019 | 2 |
| APPROVED BY | xx | SCALE@A3 | 1:5,000 | |

Ballinwilling

3.9. BW2-BH3

At 1.5 - 2.0m (-2.0 to -2.5m LAT) the geology is described (by Next Geosolutions) as a 'red (2.5Y 4/8) CLAY with frequent plant remains (wood) and pockets of gravel. Plant remains are intact. Gravel is fine to medium, rounded'. This deposit may be comparable to the deposit recorded by IAC Archaeology (2018: 3.2.1; Plate 1) in BW2-BH1 where a 'very loose brown slightly clayey silty fine to medium sand with occasional medium to coarse sub-rounded gravel and occasional stains of organic matter' was encountered at 5.5-10.9m (1.23 to -4.17m LAT). Although this deposit was noted in the field it was, unfortunately, not recovered in the borehole and therefore no physical samples were retained to permit geo-archaeological assessment (Fig. 3).

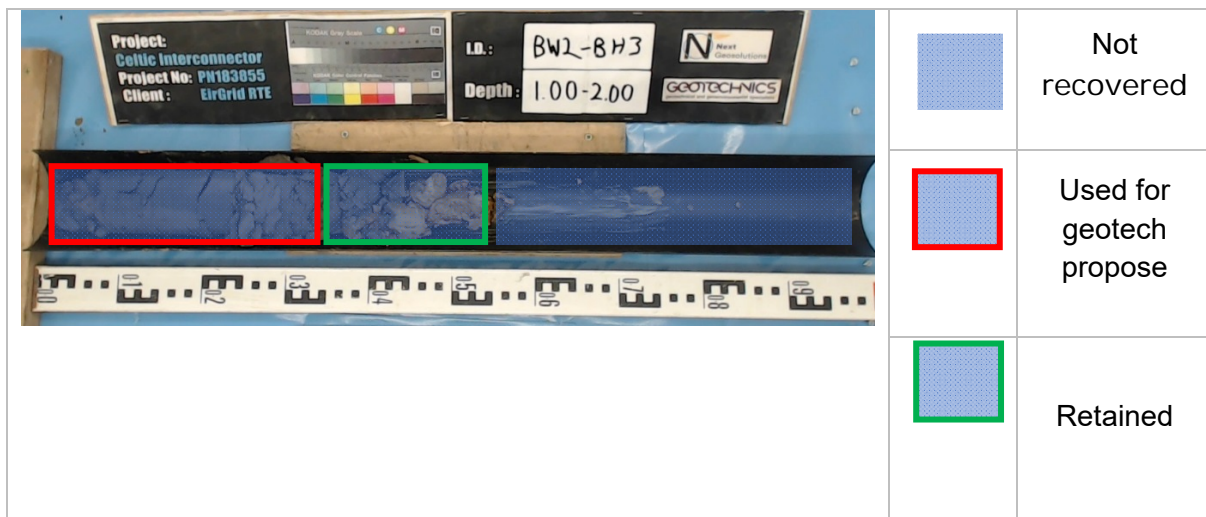


Figure 3 Samples from BW2-BH3 (from Next Geosolutions)

Redbarn

RB-CPT_VC-1

- 3.10. The geological description noted the presence of a thin peat recorded at 3.3 - 3.5m (-6.4 to -6.6m LAT) overlying probable Till. The core photographs, however, do not show the presence of a peat horizon. Next GeoSolutions account for this discrepancy by stating that the only organic matter encountered was related to smears of clayey organic matter on the walls of the SPT sampler (Figure 4). The core was therefore deemed to have no geo-archaeological potential.



Figure 4 Samples from RB-CPT-VC-1 (from Next Geosolutions)

Claycastle

CL-BH1

- 3.11. At 4.5 - 6.0m the geological description (supplied by Next Geosolutions) was of a 'dense dark brown (7.5YR 3/4) to black (10 YR 2/1) slightly gravelly, slightly sandy PEAT with frequent decayed plant material'. This peat deposit is part of the submerged forest located on the foreshore (Cotswold Archaeology 2018b) and was monitored by IAC Archaeology (2018; 3.4.1).
- 3.12. All the material from 4.5 - 5.0m in Shelby tube P4 was used for geotechnical testing purposes; the only retained sample from 5.0 - 5.45m consisted of a deposit described as sands with organic matter within SPT4. There was no sample recovery at 5.5 - 6.0m, but the next sample recovered, at 6.0m, contained no evidence of peat, thus providing a maximum potential depth for the base of the peat (of 6m) and a thickness of up to 1.5m (Fig. 5).



Figure 5 Samples from CL-BH1 (from Next Geosolutions)

CL-BH2

3.13. This core was taken adjacent to the known exposure of the submerged forest and was also encountered in CL-TP2 (see IAC 2018). The recorded sequence was:

- 0.00 - 0.90m: Loose brown (10YR 5/3) gravelly slightly silty fine to medium SAND. Gravel is fine to coarse and sub-angular to sub-rounded of various lithologies;
- 0.90 - 1.50m: Grey silty sand with pockets of silt with rare spongy pseudo-fibrous peat and pseudo-fibrous spongy plant and wood remains. Intense organic odour;
- 1.50 - 3.40m: Very loose grey (2.5Y 5/1) to olive brown (2.5Y 4/4), slightly silty fine to coarse organic SAND with amorphous and fibrous peat;
- 3.40 - 6.50m: Very soft grey (2.5Y 5/1) to greenish grey (GLE Y1 5/1) slightly sandy silty CLAY. Between 4.50 - 5.00m a band of slightly gravelly slightly sandy clayey silt, and at 6.00m a light grey (10YR 7/2) slightly gravelly very sandy very silty CLAY. Gravel is fine to coarse, sub-rounded to sub-angular of mudstone.

3.14. The adjacent core (**CL-TP2**) confirmed that the peat deposit was between 0.25m and 1.80m, overlying sand with shell fragments. This could indicate that the peat represents an extension of the peat over previous riverine / marine sand deposits and could therefore potentially provide a useful Late Holocene sea level index point

(SLIP). There was no sample retention of the peat deposits suitable for geo-archaeological recording.

CL-BH3

3.15. A further extension of the submerged forest was recorded, with a possible basal palaeosol preserved at the base of the sequence. The geological description (supplied by Next Geosolutions) for the section of interest, 8.3 - 9.1m (-7.9 to -8.7m LAT), was:

- 8.30 - 8.50m: Black (10YR 2/1) spongy clayey fibrous PEAT;
- 8.50 - 8.80m: Firm grey (2.5 5/1) soft (12 kPa) very gravelly very sandy CLAY with blocks of pseudo-fibrous spongy plant remains;
- 8.80 - 9.10m: Reddish brown (2.5YR 4/3) slightly silty slightly clayey very gravelly fine to medium SAND. Gravel is fine to coarse, sub-rounded to rounded meta-sandstone (low grade) quartz and flint.

3.16. The samples from this core that were available for the depths of interest were limited to 8.20 - 8.50m and 8.80 - 9.00m (Fig. 6); the remainder were either destructively tested or not retained. The core photos do not show a distinct peat horizon; Next GeoSolutions confirmed that the only rare evidence of spongy clayey fibrous peat was encountered at about 8.3m.

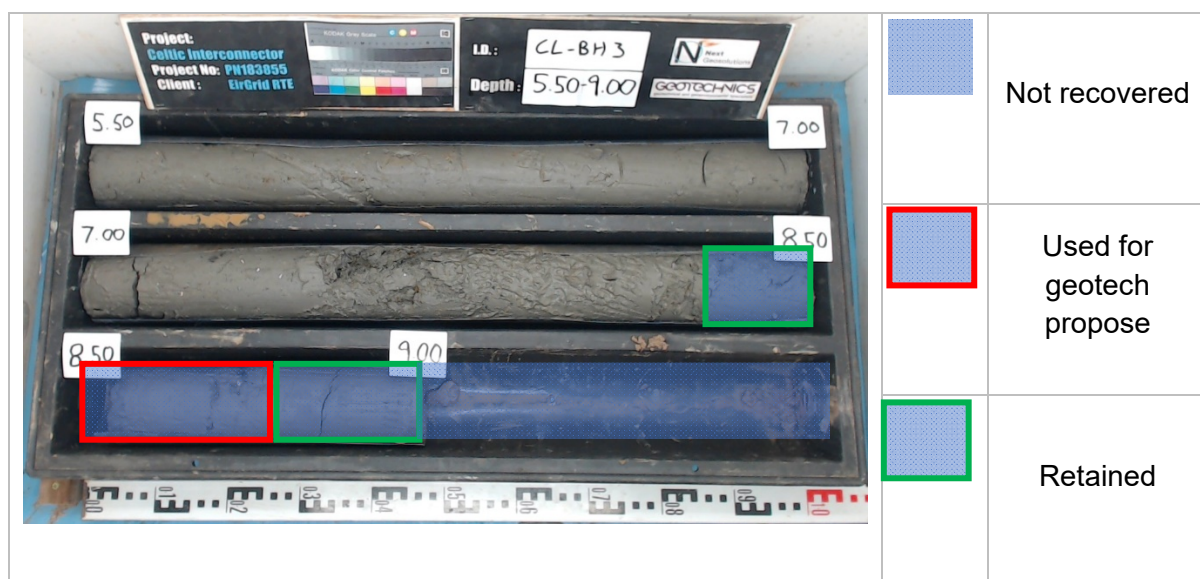


Figure 6 Samples from CL-BH3 (from Next Geosolutions)

CL-CPT_VC-1A

3.17. The geological logs recorded clays with shells and occasional organic matter at 1.6 - 5.5m (-4.0 to -7.9m LAT). Next GeoSolutions confirmed that there was no evidence of peat present and only occasional evidence of amorphous organic matter was highlighted. This core appears to contain a series of clays representing estuarine deposits (Fig. 7). Core **CL-CPT_VC-1**, immediately adjacent to this vibrocore, contained a similar sedimentary sequence.

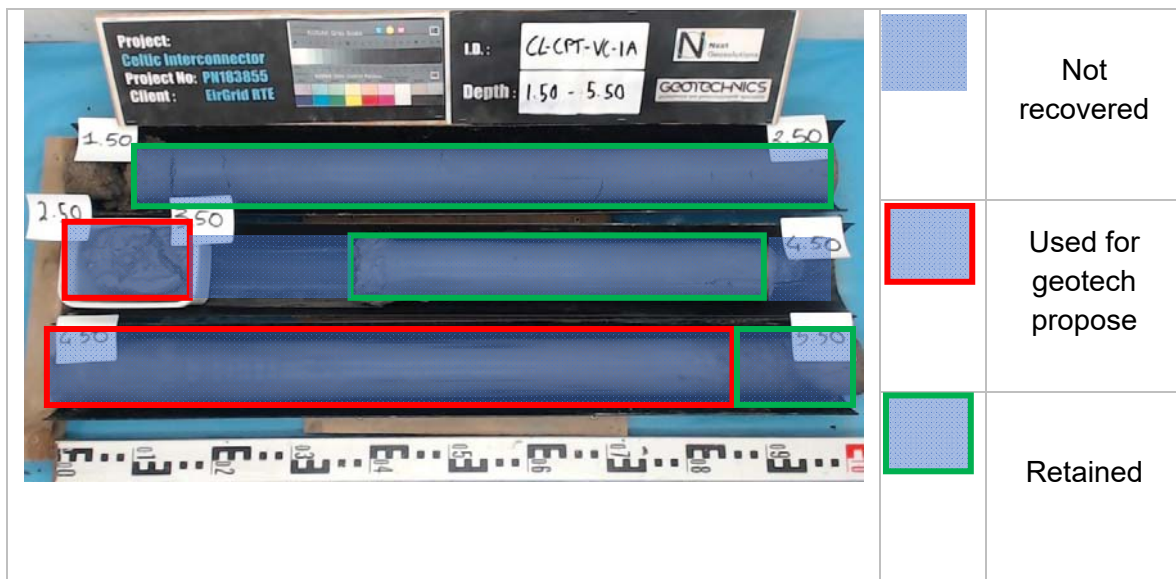


Figure 7 Samples from CL-CPT_VC-1A (from Next Geosolutions)

3.18. The desk-based assessment, and updated descriptions from Next GeoSolutions, resulted in the identification of four core sections from Claycastle beach where sediment was retained that might hold palaeo-environmental potential:

- CL-BH1: 5.00-5.45m;
- CL-BH3: 8.20-9.00m;
- CL-CPT-VC1A 1.6-2.5m; and 3.50-4.50m

3.19. These cores sections were sent to Cotswold Archaeology for geo-archaeological recording (below).

4. GEO-ARCHAEOLOGICAL RECORDING

- 4.1. The geo-archaeological assessment followed Historic England (2015) guidelines, with descriptions according to Hodgson (1997) including sediment type, depositional structure, texture and colour. Interpretations regarding mode of deposition, formation processes, likely environments represented, and potential for palaeo-environmental analysis were also noted. The results have been tabulated and are presented below (Tables 2, 3 & 4). As all the samples had been sub-sampled, there was little available information regarding sedimentary structures (bedding, laminations, etc) or stratigraphic boundaries. A photographic record of the samples, including key stratigraphic features, has been made to supplement the sedimentary descriptions.

5. RESULTS

- 5.1. Geoarchaeological descriptions of the samples from each of the four core samples are provided below.

CL-BH1: 5.00 - 5.45m

- 5.2. A single bulk sample was obtained and confirmed the presence of a woody peat. The elevation of the peat suggests it is probably an onshore extension of the submerged forest deposits encountered on the foreshore and observed in CL-BH2 and CL-TP2 (see IAC Archaeology 2018). The sample may be suitable for an assessment of the waterlogged plant remains but would be of little use for other techniques such as pollen as the sample only represents a single bulk sample.

Table 2 Geo-archaeological description of CL-BH1

| Depth in core | Depth (m LAT) | Description | Interpretation |
|---------------|-----------------|---|----------------|
| 5.00 - 5.45m | -1.67 to -2.12m | 10YR 1/1 peat, some fibrous ?root remains and also small wooden ?twigs. | Peat |

CL-BH3: 8.20 - 9.00m

- 5.3. The core sections available represent an estuarine deposit overlying a probable Late Pleistocene Glacial Till. The estuarine deposit was only sampled between 8.20 - 8.50m but contained distinct laminations which may relate to rhythmite deposition within a saltmarsh or mudflat environment. Broken shell could point towards the nearby presence of a channel with higher flow rates leading to the deposition of broken shell during periods of flooding. The base of the sequence, which could

indicate a transgressive surface, was not sampled. The core, however, might have palaeo-environmental potential for understanding the environment of deposition associated with the deposits at 8.20 - 8.50m, especially if the organic material within the core is suitable for radiocarbon dating.

Table 3 Geo-archaeological description of CL-BH3

| Depth in core | Depth (m LAT) | Description | Interpretation |
|---------------|-----------------|--|-----------------------|
| 8.20 - 8.50m | -5.57 to -8.87m | 10YR 7/3 No mottles silty clay, finely laminated, stoneless, broken shell at 8.28 and 8.43m, 1-2%, organics, slightly laminated but not full core width, at 8.28, 8.33, 8.37, 8.43, 8.46, 8.51 and 8.57m. Base not reached | Estuarine deposit |
| 8.50 - 8.80m | -8.87 to -9.17 | GAP | |
| 8.80 - 9.00m | -9.17 to -9.37 | 10YR 5/4 1-2% fine mottle, very dense (?over consolidated) 10YR 6/6 clay, finely laminated, sub-rounded to rounded / tabular stones, 10-40mm, very slightly stony, no shell, no organics, base not reached | Possible Glacial Till |

CL-CPT-VC1A 1.60 - 2.50m and 3.50 - 4.50m

- 5.4. The top and base of the 1.60 - 2.50m section was not marked, so it is assumed that the coarser sand-rich horizon is the top of this core section. This is supported by the fact that the underlying Shelby sample is composed of clay with no sand inclusions.
- 5.5. The core contained a long estuarine sequence, although the base of this sequence was not reached. The coarsening of the grain size in the core suggests a transition towards a higher energy environment and the proximity of channels and / or the littoral zone. The basal clays are likely to represent intertidal environments.
- 5.6. The presence of intact bivalve molluscs in this deposit suggests a low energy environment and could also be diagnostic, relating to establishing the indicative elevation of this deposit, as well as providing good potential for radiocarbon dating.
- 5.7. Overlying organics are likely to reflect saltmarsh or reedbed deposits. Some organics could be dated if deemed appropriate taphonomically (i.e. not roots). This core

provides the potential to date the change in estuarine conditions which might provide a palaeo-landscape context for the onshore submerged forest.

- 5.8. If dating is successful, this core could also provide a sea level record if coupled with foraminifera, diatom and pollen assessments.

Table 4 Geo-archaeological description of CL-CPT-VC1A

| Depth in core | Depth (m LAT) | Description | Interpretation |
|----------------|-------------------|--|-------------------|
| 1.60 - 1.625m | -4.01 to -4.035m | 10YR2/1 No mottles, sandy silt loam, stoneless, small shell (<5mm), 1-2%, no visible organics, Abrupt boundary to: | Estuarine deposit |
| 1.625 - 1.685m | -4.035 to -4.095m | 10YR4/1 No mottles, sandy clay, rounded tabular stones, slightly stoney, up to 15mm, bivalve shell (up to 8mm), 2%, no visible organics. Sharp boundary to: | Estuarine deposit |
| 1.825 - 2.50m | -4.095 to -4.91m | 10YR4/1 No mottles, silt loam, stoneless (very rare), broken bivalve shell, 1.75, 2.26 and 2.38m. fine organics present at 2.14, 2.20m, with vertical rooting between 2.33-2.42m. Base not reached | Estuarine deposit |
| 2.50 - 3.50m | -4.91 to -5.91m | GAP | |
| 3.50 - 4.50m | -5.91 to -6.91m | 10YR 5/1 no mottles, clay, stoneless, intact bivalves up to 25mm, both horizontal and vertical orientation, but not articulated, 3.60-3.66 and 3.77m, 1% small organic at 3.52 and 3.75m. Base not reached | Estuarine deposit |

6. PALAEO-ENVIRONMENTAL POTENTIAL

- 6.1. The three cores subjected to geo-archaeological recording display good potential for understanding the Holocene palaeo-landscape of the Claycastle area. Onshore and offshore cores confirm the presence of estuarine deposits, which correlate with the channel area identified previously in the assessment of the marine geophysical survey data. The submerged forest deposits appear to extend from their intertidal exposures up to the location of **CL-BH1** and may be up to 1.6m in thickness.

6.2. Both the peat and estuarine deposits have the potential to provide material suitable for radiocarbon dating. Coupled with assessments of waterlogged plant remains, molluscs, pollen, diatoms and foraminifera, these cores could provide an important insight into the timing of marine transgression and regression in this area of southeast Ireland.

6.3. The geotechnical samples from **CL-CPT-VC1A** and **CL-BH3** provide sufficient material for an assessment of the changing sedimentary sequence. The sample from **CL-BH1** (coupled with **CL-BH2**) demonstrate the extent of the submerged forest but provide insufficient material for palaeo-environmental assessment.

7. RECOMENDATIONS

7.1. Palaeo-environmental assessment should be undertaken on material from cores **CL-CPT-VC1A** and **CL-BH3**. An assessment of the waterlogged plant remains, and molluscs would identify material suitable for radiocarbon dating. Pollen, diatoms and foraminifera should also be assessed from each core. The proposed sampling strategy for each core is provided in Tables 5 and 6, with total number of samples per technique provided in Table 7

Table 5 Proposed sampling for CL-BH3

| Depth in core | Depth (m LAT) | Description | Proposed Sampling |
|---------------|-----------------|--|-----------------------------------|
| 8.20 - 8.50m | -5.57 to -8.87m | 10YR 7/3 No mottles silty clay, finely laminated, stoneless, broken shell at 8.28 and 8.43m, 1-2%, organics, slightly laminated but not full core width, at 8.28, 8.33, 8.37, 8.43 and 8.46m. Base not reached | 2P, 2D, 2F, 2WL, 1C ¹⁴ |
| 8.50 - 8.80m | -8.87 to -9.17m | GAP | |
| 8.80 - 9.00m | -9.17 to -9.37m | 10YR 5/4 1-2% fine mottle, very dense (?over consolidated) 10YR 6/6 clay, finely laminated, sub-rounded to rounded / tabular stones, 10-40mm, very slightly stony, no shell, no organics, base not reached | No sampling |

P = Pollen; D = Diatoms; F = Foraminifera; WL = Waterlogged plant remains and molluscs; C¹⁴ = radiocarbon

Table 6 Proposed sampling for CL-CPT-VC1A

| Depth in core | Depth (m LAT) | Description | Proposed Sampling |
|----------------|-------------------|---|-----------------------------------|
| 1.60 - 1.625m | -4.01 to -4.035m | 10YR 2/1 No mottles, sandy silt loam, stoneless, small shell (<5mm), 1-2%, no visible organics, Abrupt boundary to: | 1P, 1D, 1F, 1WL |
| 1.625 - 1.685m | -4.035 to -4.095m | 10YR 4/1 No mottles, sandy clay, rounded tabular stones, slightly stoney, up to 15mm, bivalve shell (up to 8mm), 2%, no visible organics. Sharp boundary to: | 1P, 2D, 1F, 1WL |
| 1.825 - 2.50m | -4.095 to -4.91m | 10YR 4/1 No mottles, silt loam, stoneless (very rare), broken bivalve shell, 1.75, 2.26 and 2.38m. fine organics present at 2.14, 2.20m, with vertical rooting between 2.33 - 2.42m. Base not reached | 2P, 3D, 3F, 2WL, 1C ¹⁴ |
| 2.50 - 3.50m | -4.91 to -5.91m | GAP | |
| 3.50 - 4.50m | -5.91 to -6.91m | 10YR 5/1 no mottles, clay, stoneless, intact bivalves up to 25mm, both horizontal and vertical orientation, but not articulated, 3.60 - 3.66m and 3.77m, 1% small organic at 3.52 and 3.75m. Base not reached | 3P, 3D, 3F, 3WL, 1C ¹⁴ |

P = Pollen; D = Diatoms; F = Foraminifera; WL = Waterlogged plant remains and molluscs; C¹⁴ = radiocarbon

Table 7 Proposed total number of samples for assessment

| Technique | Number of samples |
|--|-------------------|
| Waterlogged plant remains and molluscs | 9 |
| Pollen | 9 |
| Diatoms | 11 |
| Foraminifera | 10 |
| Radiocarbon dating | Up to 3 |

7.2. The palaeo-environmental assessment of the core samples will aim to:

- Establish the range of freshwater, brackish and marine deposits recorded;
- Determine the preservation of different ecofacts;
- Establish the age of the organic deposits / shells;
- Establish the potential for determining SLIPs from the sediments; and
- Establish any evidence for human activity in the sedimentary record

7.3. The submerged forest deposits at Claycastle should be subject to further investigation. A short campaign of hand-auguring across the beach, by suitably qualified specialists, might prove beneficial to better understand the nature of the peat deposits by a) establishing the depth of the peat deposits across the site, and b) possibly identifying the extent of the deposits. Further archaeological investigation could also be undertaken if there were any further project-specific site investigations in this area. This could take the form of a watching brief, together with palaeo-environmental sampling, during cable installation.

Palaeo-environmental assessment methodology

7.4. A brief outline of the methods to be employed during the palaeo-environmental assessment is provided below. The proposed specialists are listed in Table 8.

Table 8 Proposed specialists for geoarchaeological stage 3 assessment

| Technique | Specialist / supplier |
|--|---------------------------------|
| Diatom | ████████ Natural History Museum |
| Foraminifera | ████████ L-P Archaeology |
| Pollen | ████████ COARS |
| Waterlogged plant remains (WPR) including assessment of presence of insect remains | ████████ Cotswold Archaeology |
| Mollusc | ████████ Cotswold Archaeology |
| Radiocarbon dating | SUERC |

Diatom

- 7.5. Diatom samples will be prepared using the standard technique of Plater et al. (2000). Identifications will be made with reference to Hendy (1964) and van der Werff & Huls (1958–1974).

Foraminifera

- 7.6. Foraminifera assessments will follow Historic England (2011) guidance for environmental archaeology. Samples will be air-dried, and a standard volume sample of sediment will be passed through a 63µm mesh sieve in water. Foraminiferid tests and other items of palaeo-ecological interest will be extracted under low-power microscopy. Tests will be identified to species level by comparison to a reference collection and brief notes made about condition of preservation. Any ostracods encountered in these samples will be collected, quantified and stored for subsequent identification by a specialist, if required, during Stage 4 Analysis. The assessment will include a full statement of potential and recommendations for any further analysis or archiving / disposal.

Pollen

- 7.7. Standard preparation procedures will be used (Moore *et al.* 1991). 2cm³ of sediment will be processed from each sample, with a Lycopodium spike added (two tablets from batch 3862) to allow the calculation of pollen concentrations (Stockmarr 1971). All samples will undergo the following treatment: 20 mls of 10% potassium hydroxide (KOH) (80°C for 30 minutes); 20mls of 60% hydrofluoric acid (HF) (80°C for 120 minutes); 15 mls of acetolysis mix (80°C for 3 minutes); stained in 0.2% aqueous solution of safranin and mounted in silicone oil following dehydration with tert-butyl alcohol. Due to the highly minerogenic nature of some of the samples additional sieving and decanting will be undertaken between the KOH and HF stages, along with an extended period of 10% hydrochloric acid (HCL) dissolution of the calcareous sediments.
- 7.8. Pollen counting will be undertaken at a magnification of x400 using a Nikon SE transmitted light microscope. Determinable pollen and spore types will be identified to the lowest possible taxonomic level with the aid of a reference collection kept at COARS, University of Southampton. The pollen and spore types used are those defined by Bennett (1994; Bennett et al. 1994), with the exception of Poaceae which will follow the classification given by Küster (1988), with plant nomenclature ordered according to Stace (2010). The pollen assemblage will be calculated as % total land

pollen (TLP). The TLP sum will exclude aquatics and pteridophytes, which will be calculated as % + Group. A TLP sum of 100 grains will be sought for the pollen assessment.

Waterlogged plant remains

- 7.9. Assessment of the waterlogged plant remains entails scanning of the unsorted flots and residues under a x10-x40 stereo-binocular microscope and the recording of presence and relative abundance of waterlogged plant remains. Preliminary identifications of dominant taxa are recorded and tabulated following the nomenclature of Stace (2010).

Mollusc

- 7.10. The flots and residues are assessed by scanning under a x10 – x40 stereo-binocular microscope to provide some information about shell preservation and species representation. The numbers of shells and the presence of taxonomic groups are quantified and tabulated. Nomenclature is according to Anderson (2005) and habitat preferences according to Kerney (1999).

Radiocarbon Dating

- 7.11. Wherever possible, identifiable short-lived terrestrial plant macrofossils suitable for dating (following Bayliss *et al.*, 2008: xi) will be used. Alternatively, marine molluscs may be dated if intact and showing little evidence of reworking. Dates will be calibrated against the IntCal13 Northern Hemisphere radiocarbon curve (Reimer *et al.* 2013) using OxCal 4.3 (Bronk Ramsey, 1995, 2001) and quoted as calibrated years before present (BP) using the maximum intercept method (Bayliss *et al.* 2008). Date ranges are quoted using the 2 σ calibrated range, with end points rounded outwards to 10 years (Mook 1986).
- 7.12. To conclude, nothing has yet been found at these sites that would prevent the cable coming ashore at any of these locations. Although the peat deposits on Claycastle beach have archaeological / palaeo-environmental potential, nothing has yet been discovered that could not be mitigated through further archaeological site investigation.

8. REFERENCES

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Celtic Interconnector

Volume 3D2 – Appendix 15C

Cork Beaches Archeological Monitoring Report

June 2021



Co-financed by the European Union
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Tionscadal Éireann
Project Ireland
2040



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**ARCHAEOLOGICAL MONITORING
AS PART OF THE
CELTIC INTERCONNECTOR PROJECT,
CLAYCASTLE & SUMMERFIELD/
CLONARD EAST/ BALLYCRENANE,
COUNTY CORK
LICENCE NUMBER: 18E0322/ 18R0118**

**ON BEHALF OF
COTSWOLD ARCHAEOLOGY MARINE**

FORESHORE LICENCE: FS006811

LICENCEE:



DECEMBER 2018

ABSTRACT

Irish Archaeological Consultancy Ltd has prepared this report on behalf of Cotswold Archaeology Marine (for Eirgrid), to present the results of archaeological monitoring of site investigations associated with the Celtic Interconnector Project. Three potential cable route options were investigated in County Cork at Redbarn Beach (Clonard East townland), Claycastle Beach (Claycastle and Summerfield townlands) and Ballinwilling Strand (Ballycrenane townland). The works were undertaken by Tim Coughlan of IAC Ltd under licence 18E0322/ 18R0118 and in association with Foreshore Licence FS006811.

No features or artefacts of archaeological significance were identified at Claycastle Beach, Ballinwilling Strand or Redbarn Beach during the monitoring of excavations or metal detection.

At Claycastle Beach, it is clear that the remains of a submerged landscape potentially dating to the Holcene, survives beneath the beach. Exposed elements of this landscape were avoided by the site investigation works. However, the organic layer, which contains the remains of tree roots and plant remains, does extend beneath the sand across the full width of the beach and has the potential to contain archaeological features or artefacts, although no specific features or artefacts were identified during monitoring. Should Claycastle Beach be chosen as the preferred cable landfall location, further archaeological assessment will be required.

Once a location and design for the cable has been confirmed, further archaeological assessment and mitigation measures may be required in advance of the development. The assessment should take into account the results of all archaeological investigations to date at the landfall point that is eventually selected.

No further archaeological mitigation is deemed necessary as part of this phase of site investigations.

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1 INTRODUCTION

1.1 GENERAL

The following report details the results of a programme of archaeological monitoring and metal detection undertaken at three locations in County Cork during site investigations associated with the assessment of cable route options that will form part of the proposed Celtic Interconnector Project. The monitoring was undertaken by Irish Archaeological Consultancy Ltd, on behalf of Cotswold Archaeology Marine for Eirgrid under licences 18E0322 and 18R0118. Archaeological monitoring is being carried out in association with Foreshore Licence FS006811.

Monitoring follows on from an archaeological impact assessment that was prepared by [REDACTED] of Cotswold Archaeology Marine on behalf of Eirgrid (2018).

Archaeological monitoring ‘involves an archaeologist being present in the course of the carrying out of developments’ and has been defined as being carried out ‘so as to identify and protect archaeological deposits, features or objects which may be uncovered or otherwise affected by the works’ (Department of Arts, Heritage, the Gaeltacht and Islands, 1999b).



FIGURE 1: Location of proposed cable routes

1.2 THE DEVELOPMENT

The future development will consist of the laying of a cable route within a foreshore area as part of the proposed Celtic Interconnector Project. Three cable route options are currently under consideration and full design detail is not available.

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 GENERAL

In 2017 Cotswold Archaeology undertook archaeological assessments (non-intrusive marine and foreshore surveys) to the west of Youghal, County Cork at Claycastle and Redbarn beaches. This included a re-assessment of a previously assessed site at Ballinwilling Strand. The aim was to assess and to map the extent of archaeological remains at these three potential landfall locations as part of the proposed Eirgrid Project.

The foreshore assessments included walkover, hand-held metal detector, and geophysical (electrical conductivity) surveys at Claycastle and Redbarn beaches and a walkover survey on the previously assessed beach (Ballinwilling Strand). The marine archaeological assessment comprised a review of offshore geophysical survey data collected over the proposed route corridors in Irish territorial waters by Next Geosolutions Group, out to the 12 nautical mile (nm) territorial limit.

These assessments were undertaken by Cotswold Archaeology in collaboration with Coastal and Offshore Archaeological Research Services (COARS), University of Southampton (who undertook the offshore geophysical analysis) and Headland Archaeology Ltd who undertook the foreshore geophysical survey and assessment.

The three locations involved in this project are located at Ballinwilling Strand (Ballycrenane townland), Claycastle Beach (Claycastle and Summerfield townlands) and Redbarn Beach (Clonard East townland), County Cork. These sites would have ideal locations for domestic activity throughout the prehistoric period and medieval period, with easy access to coastal resources.

2.2 BALLINWILLING STRAND

Ballinwilling Strand is the most south-westerly site of the potential cable options. There is one recorded monument located in proximity to the proposed route, which consists of a recorded *fulacht fia* (CO089-076) (Figure 2). *Fulachta fia* or burnt mounds are the most commonly identified sites of prehistoric date, generally dating to the Bronze Age. These sites consist of a horse-shoe shaped mound of charcoal-rich material and heat-affected stones, often found in association with a trough or troughs. They are usually located in close proximity to a water source or in a marshy area and used heated stones to heat water within the trough. Many of these sites have been heavily disturbed by later agricultural activities and as a result survive only as an irregular spread of heat-affected stones and charcoal. While they have been traditionally interpreted as sites used for cooking (O’Kelly 1954), others have suggested they may represent other activities such as brewing, dyeing or bathing (Quinn and Moore 2009). It is more likely that no single function can be attributed to these sites with each site requiring an individual interpretation. The SMR file for the *fulacht fia* (CO089-076) close to the proposed cable route states that the site was “levelled in late 1960s”.

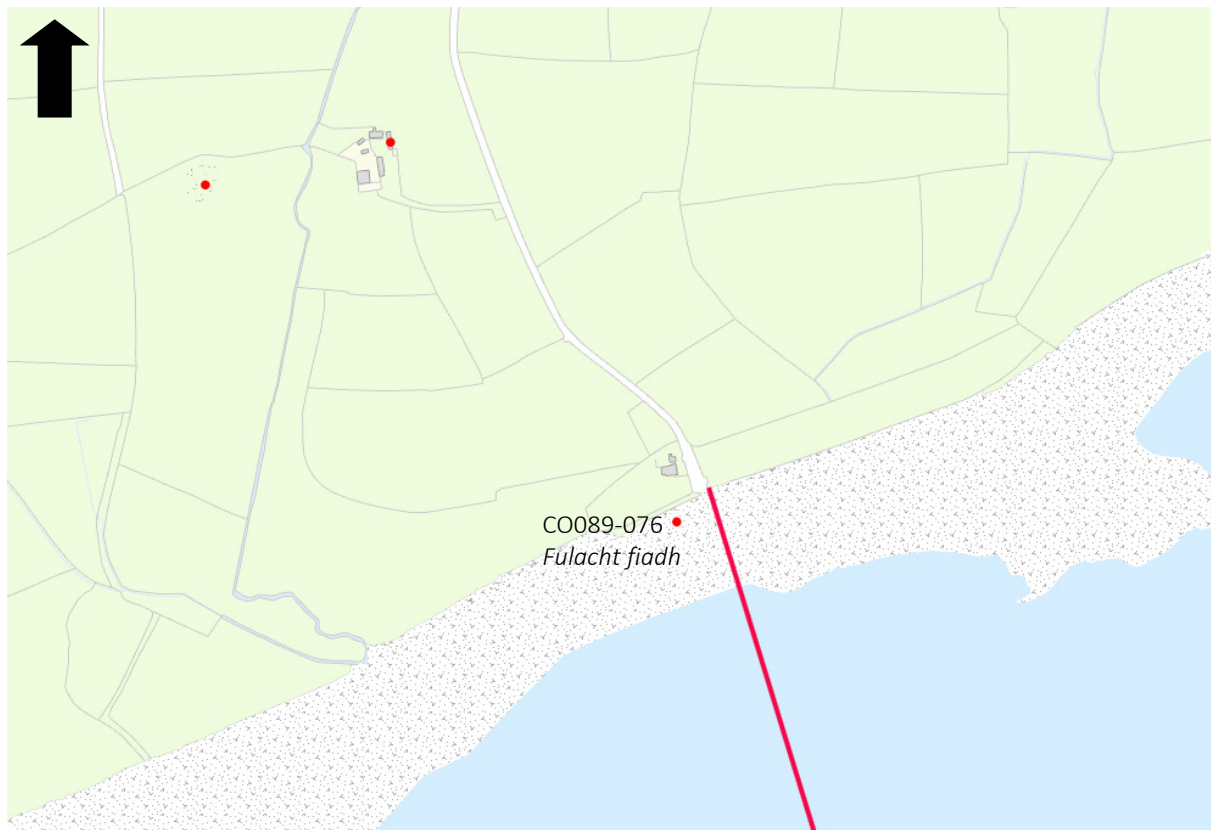


FIGURE 2: Extract from archaeology.ie showing the location works at Ballinwilling Strand

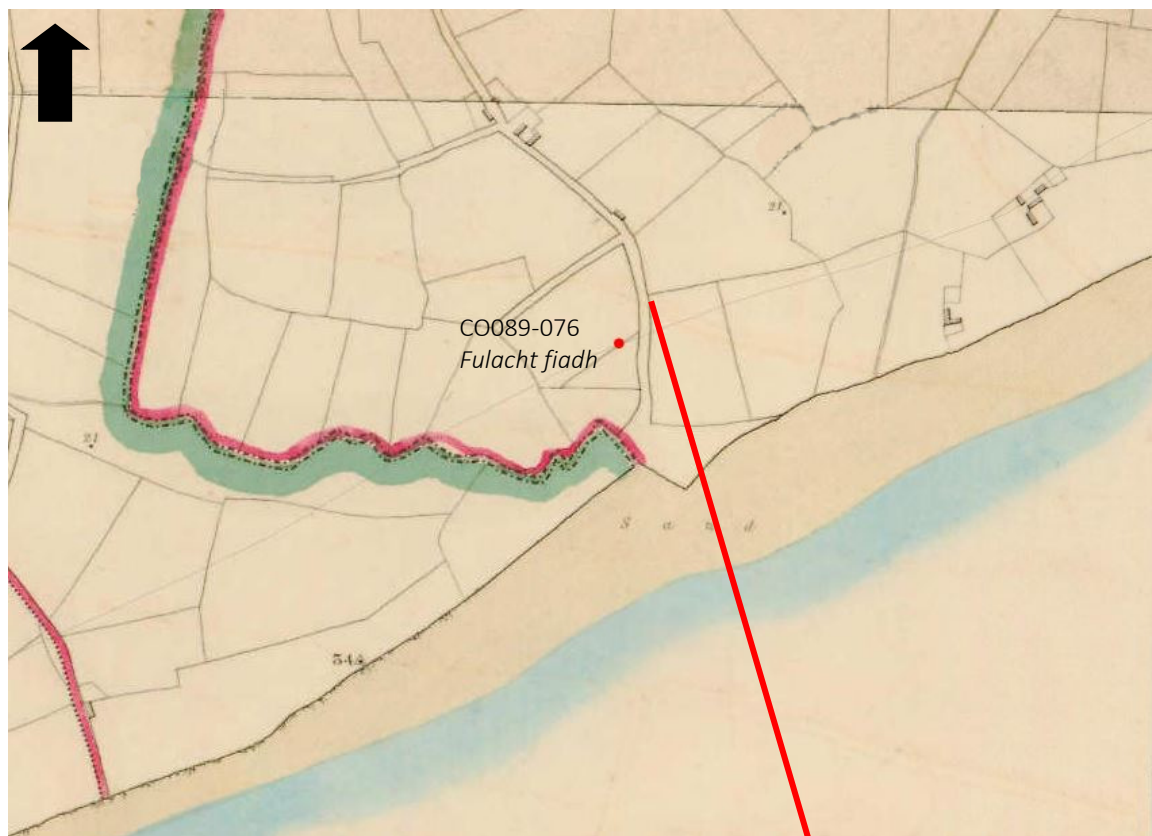


FIGURE 3: Extract from the first edition OS map (1845), showing the location of CO089-076

The remains of sea defences, concrete breakwaters and groynes along the edge of Ballinwilling Strand comprise low value heritage assets. In addition, the 51 responses from the metal detector survey on Ballinwilling Strand appear to relate to buried casual losses of objects on the beach and are not considered of any heritage significance (Headland Archaeology 2015).

The first edition map of 1845 shows that a level of coastal erosion has taken place in the past c. 170 years. The recorded *fulacht fia* was formerly located further inland than the plotted position of the monument today (Figure 3).

There are no recorded ship wrecks located within the vicinity of the proposed foreshore site investigation works.

2.3 CLAYCASTLE BEACH

At Claycastle Beach, the Cotswold Archaeology assessment identified extensive areas of exposed peat with associated remains of tree trunks and roots (Figure 4). The geophysical survey may have detected these remains as extending under the beach sand both landward and seaward. This was assessed as being of high significance. An eroded and heavily encrusted circular object (possibly a pot), lying half exposed in the intertidal zone, was also identified. It could, possibly, be the fossilised remains of a hollowed-out trunk but this seems less likely as the other wooden remains associated with the peat do not appear fossilised. This was also assessed as being of high significance. The remains will be avoided with an exclusion zone.



FIGURE 4: Extract from the Cotswold Archaeology assessment showing potential archaeological remains at Claycastle Beach

There are no recorded monument or recorded ship wrecks located in proximity of the proposed site investigation works at Claycastle Beach. A review of the historic

mapping has shown that whilst some coastal erosion has taken place since the 19th century, it does not appear to be at the same scale as Ballinwilling Strand.

2.4 REDBARN BEACH

At Redbarn Beach a line of upstanding stones, running east-west and standing up to 0.4m high were noted during the Cotswold Archaeology survey (2018), which appear to be the remains of earlier sea defences. These were assessed as being of medium significance. A total of 24 individual buried metal finds were noted, which appear to represent casual losses are of very low archaeological significance. A total of 57 readings were noted on the metal detector, which appeared to be aligned in three rows on a northeast-southwest alignment over an area of c 60m x 300m. These buried magnetic anomalies appeared to correlate with a sub-surface depression identified in the geophysical survey and were assessed as being of medium significance. These areas have been excluded from works and are shown on Figure 5.

There are no recorded monument or recorded ship wrecks located in proximity of the proposed site investigation works at Redbarn Beach. A review of the historic mapping has shown that whilst some coastal erosion has taken place since the 19th century, it does not appear to be at the same scale as Ballinwilling Strand.

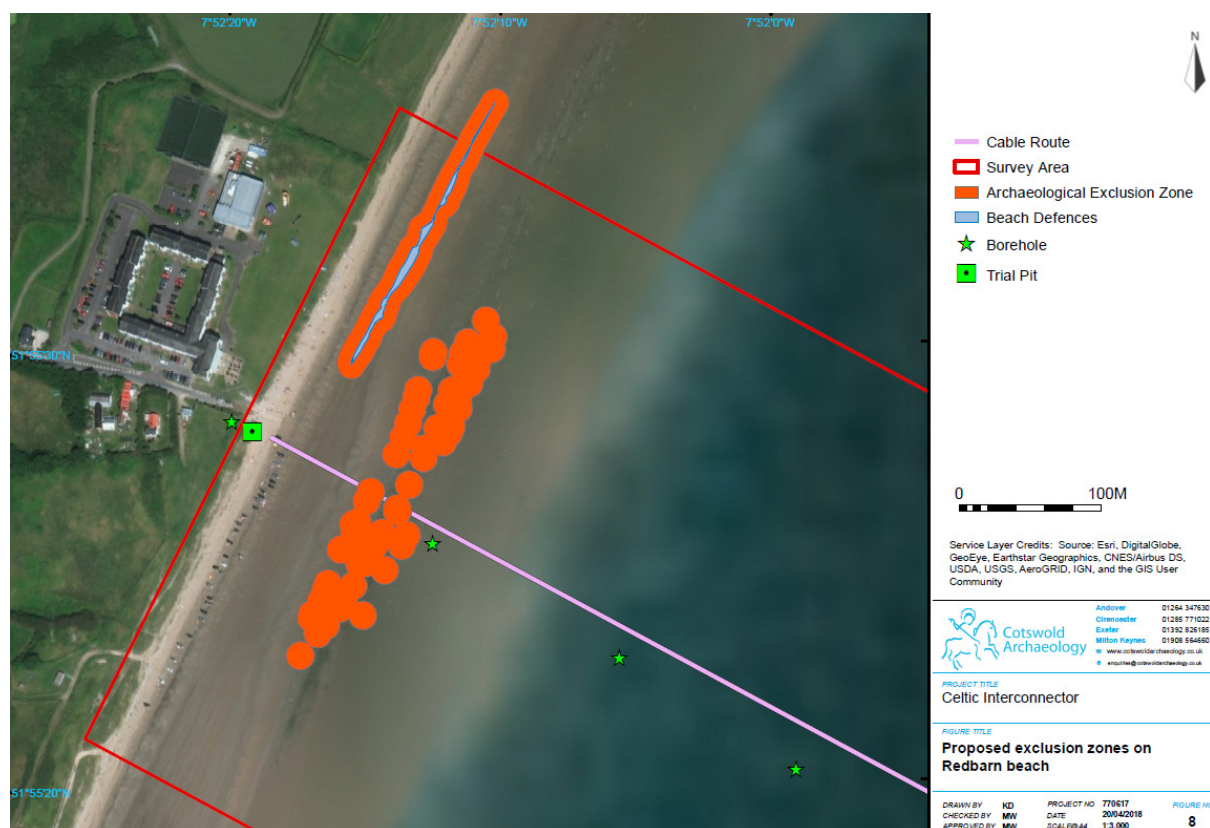


FIGURE 5: Extract from the Cotswold Archaeology assessment showing potential archaeological remains at Redbarn Beach

3 ARCHAEOLOGICAL MONITORING

3.1 GENERAL

Archaeological monitoring of site investigations took place at three potential landfall sites for the Celtic interconnector project: Ballinwilling Strand, Redbarn Beach and Claycastle Beach. Two boreholes and two test pits were monitored at each beach and metal detecting was carried out during the course of the site investigation works.

The maximum depth below surface for boreholes and trial pits was up to 21m and 3.6m respectively. The dimensions of the trial pits varied between 2m x 5.5m whilst boreholes were 165mm in diameter. Following excavation the trial pits were backfilled using only native materials while the boreholes were backfilled using pellet bentonite (compactonite).

The equipment used during the works consisted of the following:

- Borehole – PSM-8G Hydraulic Drilling Rig
- Trial Pit – 21 tonne tracked excavator
- Metal Detector – Garret EuroAce

| SI CODE | LOCATION | ITM EASTINGS | ITM NORTHINGS | MAX. WIDTH | MAX. LENGTH | MAX. DEPTH |
|---------|---------------|--------------|---------------|------------|-------------|------------|
| BW2-BH1 | Ballinwilling | 570265 | 5746647 | 165mm | 165mm | 21m |
| BW2-BH2 | Ballinwilling | 570282 | 5746588 | 165mm | 165mm | 20m |
| BW2-TP1 | Ballinwilling | 570276 | 5746622 | 3m | 5.5m | 2m |
| BW2-TP2 | Ballinwilling | 570308 | 5746478 | 3.5m | 4.5m | 1.9m |
| RB-BH1 | Redbarn | 577581 | 5753228 | 165mm | 165mm | 20m |
| RB-BH2 | Redbarn | 577683 | 5753162 | 165mm | 165mm | 20m |
| RB-TP1 | Redbarn | 577557 | 5753240 | 2m | 5m | 3m |
| RB-TP2 | Redbarn | 577621 | 5753202 | 2m | 5m | 3m |
| CL-BH1 | Claycastle | 578396 | 5754300 | 165mm | 165mm | 20m |
| CL-BH2 | Claycastle | 578440 | 5754248 | 165mm | 165mm | 20m |
| CL-TP1 | Claycastle | 578387 | 5754308 | 2.5m | 5m | 3m |
| CL-TP2 | Claycastle | 578432 | 5754258 | 2m | 5m | 3.6m |

3.2 RESULTS FROM BALLINWILLING STRAND

Archaeological monitoring of boreholes and test pits took place at Ballinwilling Strand intermittently between 23rd of May 2018 and the 29th of May 2018 (Figure 6). The stratigraphy observed in each borehole or test pit is described below.

3.2.1 BW2-BH1

| DEPTH | DESCRIPTION |
|----------|---|
| 0–1.5m | Made ground- gravelly anthropogenic soils which were not recovered by pushing sampler. |
| 1.5–4.5m | Brown slightly silty clay of medium to high compaction, with occasional coarse sub-rounded and sub-angular gravel below 3m. The clay became very compacted after 3.5m |

| | |
|------------|--|
| | (Plate 1). |
| 4.5–5.5m | Very highly compacted brown slightly sandy clay. |
| 5.5–10.9m | Brown slightly clayey silty fine to medium sand of loose compaction with occasional medium to coarse sub-rounded gravel and occasional stains of organic matter (Plate 1). |
| 10.9–11.8m | Light greyish smooth lightly orange stained medium grained limestone. |
| 11.8–13.9m | Brown slightly clayey silty fine to medium sand of loose compaction, becoming slightly gravelly below 12.3m. |
| 13.9–21m | Light grey with smooth lightly orange stained medium grained limestone (Plate 2). From 18.6m evidence of small quantities of very loose gravelly sandy silt was noted externally on the core barrel. There was no recovery from 18.6m. This may represent a cave filled with loose material. |



FIGURE 6: Location of site investigation works at Ballinwillling Beach (possible route of cable is shown in orange)

3.2.2 BW2-BH2

| DEPTH | DESCRIPTION |
|-------|--|
| 0–2m | Brown slightly silty gravelly fine to medium sand of loose compaction. Increasing gravel content with depth. |
| 2–20m | Light greyish smooth lightly orange stained medium grained limestone with low grade metamorphosis. From 16.9m to 17.9m evidence of small quantities of loose sandy clay was noted externally on the core barrel and on the limestone. There was no recovery from 16.9m and 17.9m. Possibly representing a cave filled with loose material. |

3.2.3 BW2-TP1

Test pit BW2-TP1 was excavated using a 21-tonne track machine. The test pit measured 3m (w) x 5.5m (l) x 2m (d) (Plate 3).

| DEPTH | DESCRIPTION |
|----------|--|
| 0–0.7m | Brown slightly silty and very sandy gravel with frequent inclusions of sub-rounded to sub-angular stones. Sand is medium to coarse. |
| 0.7–1.6m | Dark grey slightly clayey silty medium to coarse sand with sub-rounded to sub-angular stones to brown slightly clayey sandy silt becoming more gravelly with depth. |
| 1.6–2m | Brown slightly clayey sandy gravel with inclusions of sub-rounded to sub-angular stones becoming weathered limestone from 2m. Trial pit stopped at 2m due to presence of bedrock . |

3.2.4 BW2-TP2

Test pit BW2-TP2 was excavated using a 21-tonne track machine. The pit measured 3.5m (w) x 4.5m (l) x 1.90m (d) (Plate 4).

| DEPTH | DESCRIPTION |
|--------|---|
| 0–1m | Brown slightly silty gravelly fine to coarse sand of loose compaction. |
| 1–1.9m | Brown slightly silty very sandy gravel with frequent inclusions of sub-rounded to subangular stones. Sand is medium to coarse. At 1.5m it was noted that there was frequent presence of weathered sub-angular limestone rocks (up to 0.3m deep) becoming weathered limestone from 1.9m. Trial pit stopped at 1.9m due to presence of the bedrock. |

No features or deposits of archaeological significance were identified during monitoring of the boreholes and trial pits at Ballinwilling Strand. The deposits recorded are all geological in nature. Furthermore, no items of archaeological significance were discovered during the course of metal detecting.



PLATE 1: Example of upper samples taken from BW2-BH1



PLATE 2: Showing a sample of the limestone taken from BW2-BH1



PLATE 3: BW2-TP1, facing east



PLATE 4: BW2-TP2 during excavation, facing east

3.3 RESULTS FROM REDBARN BEACH

Archaeological monitoring of boreholes and test pits at Redbarn Beach took place intermittently between the 23rd of May and the 31st of May 2018 (Figure 7). The stratigraphy observed in each borehole or test pit is described below.

3.3.1 RB-BH1

| DEPTH | DESCRIPTION |
|---------|--|
| 0–3m | Brown slightly gravelly fine to coarse sand of loose compaction becoming slightly silty and slightly gravelly below 0.5m. |
| 3–5.3m | Greyish brown silty clay of high compaction becoming very highly compacted brown slightly sandy silty clay from 4.30m and from 5.15m becoming silty fine sand. |
| 5.3–20m | Light greyish smooth lightly orange stained medium grained limestone (Plate 5). Medium bed of silty clay between 5.8m and 6.2m. Low grade metamorphosis below 16.5m. |

3.3.2 RB-BH2

| DEPTH | DESCRIPTION |
|------------|---|
| 0–0.4m | Brown slightly gravelly fine to medium sand of loose compaction with occasional water rolled stones to dark grey very gravelly fine to coarse sand, also of loose compaction. |
| 0.4–1.75m | Very highly compacted greyish brown slightly silty sandy clay. |
| 1.75–2.45m | Pale brown slightly gravelly very clayey medium to coarse sand of loose compaction. Gravel content increasing with depth. |
| 2.45–4.1m | Loosely compacted gravel and water rolled stones. Gravel and rolled stones are sub-angular to angular of limestone and meta-sandstone (low grade). Gravel is medium to |

| DEPTH | DESCRIPTION |
|---------|---|
| | coarse. Some sandy clay matrix. |
| 4.1–20m | Light grey fine-grained limestone (low grade metamorphism). White dolomite veins cross cutting cores. Purplish pink clay infill in joints. Increasing low grade metamorphosis with depth. |



FIGURE 7: Location of site investigation works at Redbarn Beach (possible route of cable is shown in orange)

3.3.3 RB-TP1

Test pit RB-TP1 was excavated with a 21-tonne track machine. The test pit measured 2m (w) x 5m (l) x 3m (d) (Plate 6).

| DEPTH | DESCRIPTION |
|----------|--|
| 0–0.8m | Brown gravelly fine to medium sand with occasional rounded stone of loose compaction. |
| 0.8–1.4m | Brown slightly gravelly silty fine to medium sand of loose compaction. |
| 1.4–3m | Highly compacted grey brown slightly sandy silty clay becoming very highly compacted with occasional inclusions of gravel and stones. Trial pit completed at 3m. |

3.3.4 RB-TP2

The excavation of RB-TP2 was carried out with a 21-tonne track machine. The test pit measured 2m (w) x 5m (l) x 3m (d) (Plate 7).

| DEPTH | DESCRIPTION |
|----------|---|
| 0–0.2m | Brown silty fine to medium sand of loose compaction. |
| 0.2–2.2m | Highly compacted greyish brown mottled grey sandy clay with occasional inclusions of sub-rounded to sub-angular stones. |
| 2.2–3m | Moderately compacted brown mottled red brown slightly gravelly slightly sandy silt. Trial pit completed at 3m. |

No features or deposits of archaeological significance were identified during monitoring of the boreholes and trial pits at Redbarn Beach. The deposits that were recorded were all geological in nature. Furthermore, no items of archaeological significance were discovered during the course of metal detecting.



PLATE 5: Limestone sample from drilling RB-BH1



PLATE 6: RB-TP1 facing southeast



PLATE 7: RB-TP2 facing west

3.4 RESULTS FROM CLAYCASTLE BEACH

Archaeological monitoring of boreholes and test pits at Claycastle Beach took place intermittently between the 24th of May and the 30th of May 2018 (Figure 8). The stratigraphy observed in each borehole or test pit is described below.

3.4.1 CL-BH1

| DEPTH | DESCRIPTION |
|--------|--|
| 0–4.5m | Brown gravelly fine to coarse sand with occasional water rolled stones of loose compaction. |
| 4.5–6m | Dense brown sandy silt with frequent presence of plants remains and small pieces of wood of loose to moderate compaction. These deposits have the potential to represent significant paleo-environmental remains and may be associated with the area of exposed peat and tree root remains identified at the beach (Walsh 2018). |
| 6–8m | Grey slightly clayey silty fine to medium sand of loose compaction. |
| 8–20m | Red slightly gravelly silty fine to medium sand with occasional water rolled stones of loose compaction. Gravel is fine to coarse, sub-rounded to subangular of mudstone. |

3.4.2 CL-BH2

| DEPTH | DESCRIPTION |
|----------|---|
| 0–0.9m | Brown slightly silty gravelly fine to medium sand of loose compaction. Gravel is fine to coarse and sub angular to sub-rounded of sandstone. |
| 0.9–1.5m | Brown sandy silt throughout fen peat (Plate 8) of loose compaction. There was visible plant remains and wood roots. These deposits have the potential to represent significant paleo-environmental remains (potentially from the Holocene) and may be associated with the area of exposed peat and tree root remains identified at the beach to the WNW of BH 2 (Walsh 2018). |
| 1.5–3.4m | Very loose to loose grey very silty fine to medium sand. |

| DEPTH | DESCRIPTION |
|---------|--|
| 3.4–6m | Grey to brown very sandy silt. |
| 6–7.5m | Light grey silty fine to medium sand with occasional gravel and water rolled stones of loose compaction. Gravel is fine to coarse, sub-rounded to subangular of sandstone. |
| 7.5–20m | Red slightly gravelly silty fine to medium sand with occasional water rolled stones of loose compaction. Gravel is fine to coarse, sub-rounded to subangular of sandstone and mudstone. Gravel content increases with depth. |



FIGURE 8: Location of site investigation works at Claycastle Beach (possible route of cable is shown in orange)

3.4.3 CL-TP1

Test pit CL-TP1 was excavated by a 21-tonne track machine. The test pit measured 2.5m (w) x 5m (l) x 3m (d) (Plate 9).

| DEPTH | DESCRIPTION |
|----------|--|
| 0–2.3m | Brown slightly gravelly fine to coarse sand with occasional stones and shell fragments of loose compaction. Becoming gravelly sand below 1.9m. |
| 2.3–2.6m | Grey very silty fine to coarse sand with occasional shell fragments of loose compaction. |
| 2.6–3m | Dense brown sandy silt within fen peat of loose and moderate compaction. Frequent presence of spongy plant and wood remains. These deposits have the potential to represent significant paleo-environmental remains (potentially from the Holocene) and may be associated with the area of exposed peat and tree root remains identified at the beach to the south of TP1 (Walsh 2018). Trial pit completed at 3m. |

3.4.4 CL-TP2

Test pit CL-TP2 was excavated by a 21-tonne track machine. The test pit measured 2m (w) x 5m (l) x 3.6m (d) (Plate 10).

| DEPTH | DESCRIPTION |
|-----------|--|
| 0–0.25m | Brown slightly gravelly fine to coarse sand with occasional stones of loose compaction. |
| 0.25–1.8m | Loose to medium dense brown sandy silt within fen peat. Frequent presence of wood roots and preserved organic matter such as tree leaves and sedges. These deposits have the potential to represent significant paleo-environmental remains (potentially from the Holocene) and may be associated with the area of exposed peat and tree root remains identified at the beach to the west of TP2 (Walsh 2018). |
| 1.8–3.6m | Grey very silty fine to medium sand with occasional shell fragments to grey sandy fine to medium silt of loose compaction. Trial pit completed at 3.6m. |

The site investigations at Claycastle revealed that organic remains associated with a submerged landscape have not only been exposed by the action of the tides on the beach (Walsh 2018) but also survive beneath the sands. It is probable that further deposits will be exposed by tidal action in the future. Whilst no specific features or artefacts of archaeological significance were identified during the course of the works, the layer of organic remains has the potential to contain archaeological features, deposits or artefacts of significance. Should Claycastle Beach be chosen as the preferred cable landfall location, further archaeological assessment will be required.



PLATE 8: A peat sample taken during drilling of CL-BH2



PLATE 9: CL-TP1 during excavation, facing southeast



PLATE 10: CL-TP2, showing exposed peat deposits, facing southeast

3.5 CONCLUSIONS

No features or artefacts of archaeological significance were identified at Ballinwilling Strand or Redbarn Beach during the monitoring of excavations or metal detection. The deposits that were recorded were all deemed to be geological in nature.

At Claycastle Beach, it is clear that the remains of a submerged landscape survives beneath the beach. An archaeological assessment undertaken in 2018 (Walsh) illustrated that portions of this landscape have been exposed by tidal action and these areas were avoided by the site investigation works. However, the organic layer, which contains the remains of tree roots and plant remains, does extend beneath the sand across the full width of the beach (as indicated during a geophysical survey by Headland Archaeology). The deposit may represent the remains of a Holocene environment and as such, has the potential to contain archaeological features or artefacts, although nothing of specific significance was identified during monitoring. Should Claycastle Beach be chosen as the preferred cable landfall location, further archaeological assessment will be required.

Once a location and design for the cable has been confirmed, further archaeological assessment and mitigation measures may be required in advance of the development. The assessment should take into account the results of all archaeological investigations to date at the landfall point that is eventually selected.

No further archaeological mitigation is deemed necessary as part of this phase of site investigations.

4 REFERENCES

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Walsh, M. 2018 *Celtic Interconnector Project: Marine archaeological impact assessment for proposed ground investigation surveys*. Unpublished report by Cotswold Archaeology Marine

CARTOGRAPHIC SOURCES

Ordnance Survey maps of County Cork, 1845, 1899

ELECTRONIC SOURCES

www.excavations.ie – Summary of archaeological excavation from 1970–2017.

www.archaeology.ie – DoCHG website listing all SMR sites with aerial photographs

www.osiemaps.ie – Ordnance Survey aerial photographs dating to 1995, 2000 & 2005 and 6-inch/25-inch OS maps.

APPENDIX 1 SMR/RMP SITES WITHIN THE SURROUNDING AREA

| | |
|------------------------------|--|
| SMR NO.: | C0089-076 |
| RMP STATUS: | Yes |
| TOWNLAND: | Ballycrenane |
| PARISH: | Cloyne |
| BARONY: | Imokilly |
| I.T.M.: | 601382/568183 |
| CLASSIFICATION: | Fulacht fia |
| DIST. TO DEVELOPMENT: | Adjacent to potential cable route at Ballinwilling Strand |
| DESCRIPTION: | In marshy area close to Garryvoe beach. Levelled in late 1960s. Butt-trimmed leaf-shaped flint flake (L 0.08m; Wth 0.03m; max. T 0.01m; NMI reg. no 1972:354) found in spread of burnt material after reclamation (Cherry 1990, 50). |
| REFERENCE: | www.archaeology.ie |

APPENDIX 2 LEGISLATION PROTECTING THE ARCHAEOLOGICAL RESOURCE

PROTECTION OF CULTURAL HERITAGE

The cultural heritage in Ireland is safeguarded through national and international policy designed to secure the protection of the cultural heritage resource to the fullest possible extent (Department of Arts, Heritage, Gaeltacht and the Islands 1999, 35). This is undertaken in accordance with the provisions of the *European Convention on the Protection of the Archaeological Heritage* (Valletta Convention), ratified by Ireland in 1997.

THE ARCHAEOLOGICAL RESOURCE

The *National Monuments Act 1930 to 2014* and relevant provisions of the *National Cultural Institutions Act 1997* are the primary means of ensuring the satisfactory protection of archaeological remains, which includes all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes. A National Monument is described as ‘a monument or the remains of a monument the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto’ (National Monuments Act 1930 Section 2). A number of mechanisms under the National Monuments Act are applied to secure the protection of archaeological monuments. These include the Register of Historic Monuments, the Record of Monuments and Places, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites.

OWNERSHIP AND GUARDIANSHIP OF NATIONAL MONUMENTS

The Minister may acquire national monuments by agreement or by compulsory order. The state or local authority may assume guardianship of any national monument (other than dwellings). The owners of national monuments (other than dwellings) may also appoint the Minister or the local authority as guardian of that monument if the state or local authority agrees. Once the site is in ownership or guardianship of the state, it may not be interfered with without the written consent of the Minister.

REGISTER OF HISTORIC MONUMENTS

Section 5 of the 1987 Act requires the Minister to establish and maintain a Register of Historic Monuments. Historic monuments and archaeological areas present on the register are afforded statutory protection under the 1987 Act. Any interference with sites recorded on the register is illegal without the permission of the Minister. Two months notice in writing is required prior to any work being undertaken on or in the vicinity of a registered monument. The register also includes sites under Preservation Orders and Temporary Preservation Orders. All registered monuments are included in the Record of Monuments and Places.

PRESERVATION ORDERS AND TEMPORARY PRESERVATION ORDERS

Sites deemed to be in danger of injury or destruction can be allocated Preservation Orders under the 1930 Act. Preservation Orders make any interference with the site illegal. Temporary Preservation Orders can be attached under the 1954 Act. These

perform the same function as a Preservation Order but have a time limit of six months, after which the situation must be reviewed. Work may only be undertaken on or in the vicinity of sites under Preservation Orders with the written consent, and at the discretion, of the Minister.

RECORD OF MONUMENTS AND PLACES

Section 12(1) of the 1994 Act requires the Minister for Arts, Heritage, Gaeltacht and the Islands (now the Minister for the Culture, Heritage and the Gaeltacht) to establish and maintain a record of monuments and places where the Minister believes that such monuments exist. The record comprises a list of monuments and relevant places and a map/s showing each monument and relevant place in respect of each county in the state. All sites recorded on the Record of Monuments and Places receive statutory protection under the National Monuments Act 1994. All recorded monuments on the proposed development site are represented on the accompanying maps.

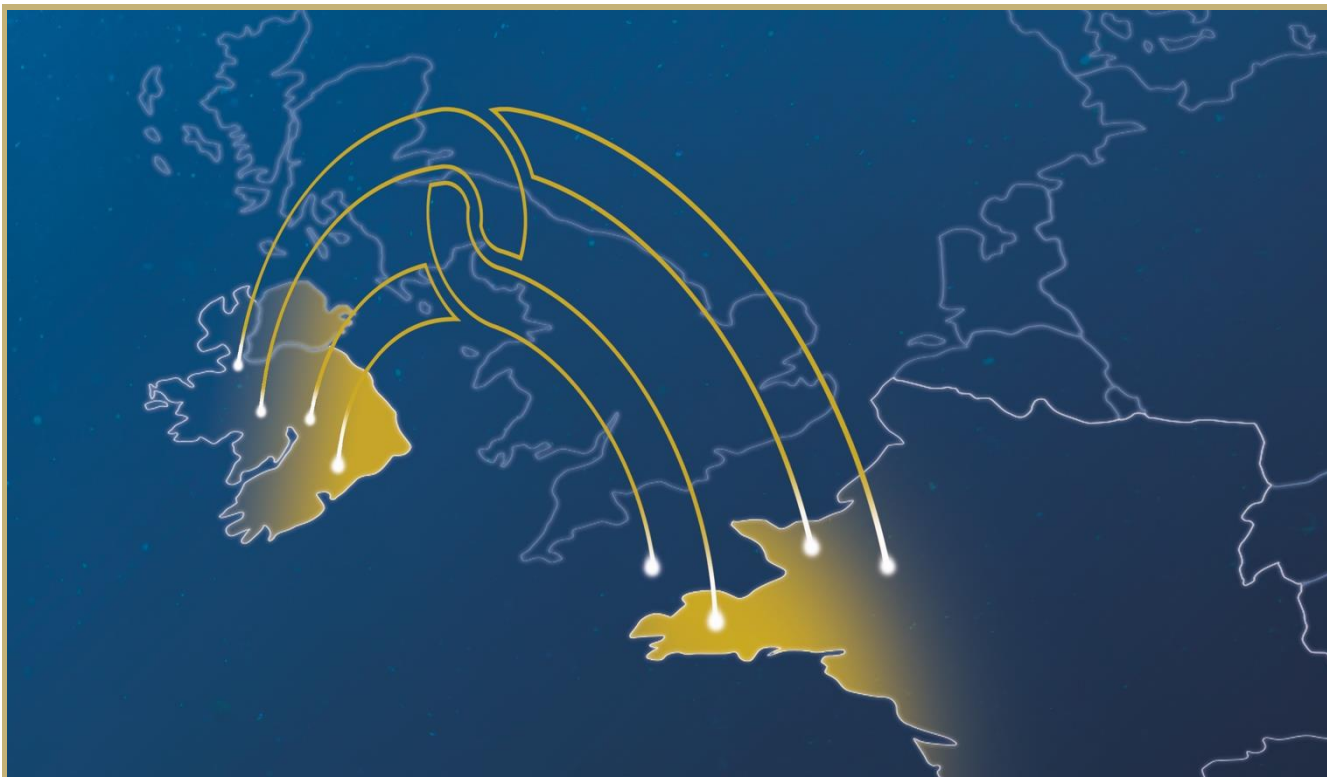
Section 12(3) of the 1994 Act provides that ‘where the owner or occupier (other than the Minister for Arts, Heritage, Gaeltacht and the Islands) of a monument or place included in the Record, or any other person, proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such a monument or place, he or she shall give notice in writing to the Minister of Arts, Heritage, Gaeltacht and the Islands to carry out work and shall not, except in case of urgent necessity and with the consent of the Minister, commence the work until two months after giving notice’.

Under the National Monuments (Amendment) Act 2004, anyone who demolishes or in any way interferes with a recorded site is liable to a fine not exceeding €3,000 or imprisonment for up to 6 months. On summary conviction and on conviction of indictment, a fine not exceeding €10,000 or imprisonment for up to 5 years is the penalty. In addition, they are liable for costs for the repair of the damage caused.

In addition to this, under the *European Communities (Environmental Impact Assessment) Regulations 1989*, Environmental Impact Statements (EIS) are required for various classes and sizes of development project to assess the impact the proposed development will have on the existing environment, which includes the cultural, archaeological and built heritage resources. These document’s recommendations are typically incorporated into the conditions under which the proposed development must proceed, and thus offer an additional layer of protection for monuments which have not been listed on the RMP.

THE PLANNING AND DEVELOPMENT ACT 2000

Under planning legislation, each local authority is obliged to draw up a Development Plan setting out their aims and policies with regard to the growth of the area over a five-year period. They cover a range of issues including archaeology and built heritage, setting out their policies and objectives with regard to the protection and enhancement of both. These policies can vary from county to county. The Planning and Development Act 2000 recognises that proper planning and sustainable development includes the protection of the archaeological heritage. Conditions relating to archaeology may be attached to individual planning permissions.



Celtic Interconnector

Volume 3D2 – Appendix 15D

Geoarchaeological Assessment of Auger and Test Pit Logs

June 2021



Co-financed by the European Union
Connecting Europe Facility



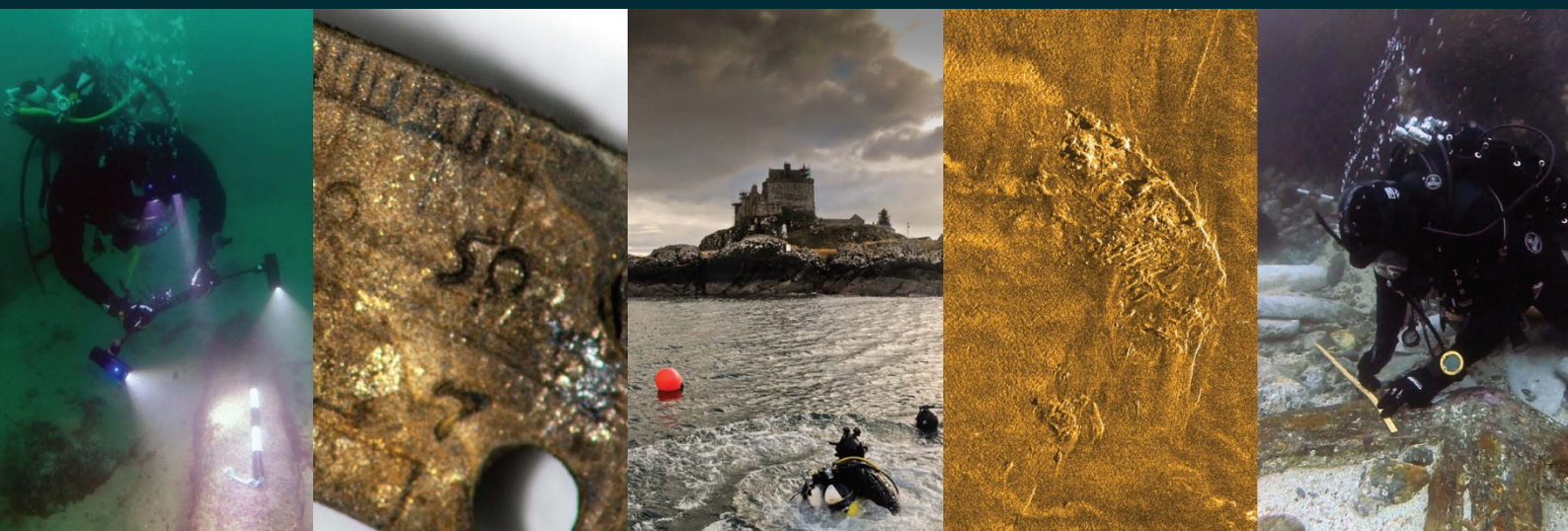
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Celtic Interconnector Project

Claycastle beach, Youghal, Co. Cork, Ireland
Geoarchaeological assessment of auger and test pit logs



for
EirGrid plc

19E0278 Final Report

CA Project: 770617

CA Report: 770617_02

May 2019






Final Report 19E0278

Celtic Interconnector Project

Claycastle beach, Youghal, Co. Cork, Ireland
Geoarchaeological assessment of auger and test pit logs

CA project: 770617

CA report: 770617_02

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SUMMARY

Project name: Celtic Interconnector project

Cotswold Archaeology (CA) was commissioned by EirGrid plc to investigate the nature and extent of the peats found exposed in the inter-tidal zone at Claycastle beach, Youghal, Co. Cork, Ireland. The peats were investigated using a hand auger and hand-dug test pit logs and the results underwent geoarchaeological assessment. This assessment was carried out in order to understand the extent and the depth of the buried peat deposits, to recover any material which might be of archaeological significance, and to enhance our understanding of the nature of the deposit.

Apart from the exposed areas, the peat is overlain by a fine to coarse sand which becomes more coarse and gravelly with depth. The thickness of the overlying sand ranges from 0.05m to c. 2.70m with the depth of sand coverage increasing on the landward side of the beach. The peat was recorded primarily in the area to the west of the proposed cable route but was not encountered in the north-east of the survey area. The presence of peat in this area, however, cannot be discounted as it may be more deeply buried, although the observation of sand lying directly over the grey sand, which is found below the peat elsewhere on the beach suggests that the peat may be absent from these areas.

The peat deposits recorded in the auger cores range in thickness from 0.85m to 1.20m. According to previous investigations, the thickness of the peat across the site varies from 0.40m (CL-TP1) to 1.45m (CL-TP2). The peat does not appear to extend beyond the most seaward locations investigated during this survey.

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1. INTRODUCTION

Outline

- 1.1. Cotswold Archaeology (CA) was commissioned by EirGrid plc to undertake a geoarchaeological hand auger survey at one of the proposed landfall locations for the Celtic Interconnector project (henceforth 'the project'). The survey was conducted at Claycastle beach (Claycastle and Summerfield townlands), Youghal, Co. Cork from 7 to 10 May 2019. The survey was undertaken in collaboration with Caitríona Moore of Archaeology and Built Heritage who was the licensee (licence no. 19E0278).

Aims and objectives

- 1.2. The aims of this hand auger survey were:
- to investigate the extent and the depth of the buried peat deposits in the intertidal zone at Claycastle beach,
 - to recover any material which might be of archaeological significance,
 - to enhance our understanding of the nature of the deposit.
- 1.3. This report presents the results of a geoarchaeological assessment carried out on eight auger cores and 33 small test pits, the latter excavated by hand as the sand was too unstable to support an auger core.

2. PREVIOUS RESEARCH

- 2.1. Walkover surveys conducted on the beach identified extensive areas of exposed peat with associated remains of tree trunks and roots. The foreshore geophysical survey appeared to detect the peat deposits extending under the beach sand both landward and seaward (see Cotswold Archaeology 2018).
- 2.2. Previous environmental research, conducted in 2001 by J. L. Delahunty (2002), focused on the peat deposits. Two core samples were taken from Ballyvergan Marsh and from Youghal Strand in order to investigate historical changes in local vegetation. The Youghal Strand Core (SC) was extracted within the area of interest, at 51° 56.020 N; 07° 51.545 W. The SC revealed almost two metres of peat deposit above sediments consisting of grey silt. The peat deposit was radiocarbon (¹⁴C) dated and the deepest peat from the core was dated to c. 4555 years before

present (BP) (3488-3242 BC OxCal). Dates obtained from the SC were calibrated by using the OxCal 4.3 program with 95% probability (OxCal 2019; Table 1).

Table 1 Strand core (SC) 14C data (Delahunty 2002 fig. 3, appendix B).

| Depth | Date C14 BP / ID | Date OxCal. 95% | Period |
|-------|------------------|-----------------|-------------------|
| 12cm | 1920±35 N45297 | 2-210 AD | Iron Age |
| 86cm | 3115±35 N45298 | 1488-1281 BC | Middle Bronze Age |
| 120cm | 3870±34 N45296 | 2768-2210 BC | Early Bronze Age |
| 180cm | 4555±35 N45295 | 3488-3241 BC | Early Neolithic |

- 2.3. The pollen diagram for the SC suggests that at Youghal the landscape was covered by woodland that formed more than 5,000 years ago amid a freshwater ecosystem inland of the Atlantic Ocean. The changing climate had a significant impact on the woodland cover; around the first century A.D., the landscape was possibly affected by flooding. Consequently, the local woodlands were submerged, and a brackish environment was created northward into the low-lying land (Delahunty 2002, 88).

3. METHODOLOGY

- 3.1. To fulfil the project aims, 20 locations (four locations along five transects running landward to seaward) were proposed for the hand auger survey (Cotswold Archaeology 2018). Owing to the specific nature of the intertidal zone (very loose sand/gravel sediments), the proposed auger locations had to be moved and adapted in order to obtain suitable locations for the survey. To establish the exact extent of the peat deposit, 20 additional test pits (TPs) were dug in randomly-chosen positions between the previously proposed transects. Most of the TPs were situated c. 10m to the north-west of the area of exposed peat to establish the presence of the peat deposit under the beach sand (see Figs 1 & 2).
- 3.2. The auger survey was conducted using a standard hand-operated Dutch auger with 1m long extension rods. Hand augering was conducted in eight locations (**CL4001**, **CL4002**, **CL4003**, **CL4005**, **CL4007**, **CL4011**, **CL4012**, and **CL4024**). Unsuccessful attempts were made in numerous other locations but were aborted owing to the instability of the sand. The sediment recovered was laid out and