



Race Bank Offshore Wind Farm

Preliminary Assessment of timbers recovered from
HO1-HO2-001, HO1-HO2-009, GO1-HO1-006 and HO1-HO2-031



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March 2017



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Contents

Summary	ii
Acknowledgements.....	iii
1 INTRODUCTION.....	1
2 AIMS AND OBJECTIVES	1
3 METHODOLOGY.....	1
3.1 Timber assessment.....	1
4 ASSESSMENT OF TIMBERS.....	2
4.1 Position	2
4.2 Archaeological assessment.....	3
HO1-HO2-001 – WA04	3
HO1-HO2-009 – WA05	3
GO1-HO1-006 – WA06	4
HO1-HO2-031 – WA07	4
WA08	4
4.3 Dendrochronology	5
4.4 Discussion.....	5
5 CONCLUSIONS AND RECOMMENDATIONS	5
6 REFERENCES.....	6

Figures

- Figure 1: Location map.
Figure 2: Large area of linear features.



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Summary

Wessex Archaeology was commissioned by DONG Energy to undertake a preliminary assessment of possible ship's timbers recovered by grab during the clearance of obstructions within the impact zone for the proposed inter-array cable routes of the Race Bank Offshore Wind Farm.

This report comprises of the preliminary assessment of four groups of possible ship's timbers. The establish the archaeological significance of the timbers.

The assessment led to the conclusion that the timbers are unlikely to be functional ship's timbers or displayed no identifying or diagnostic features as such. Each of the timbers was in a poor condition, having lost much of the original surface and exposure on the seabed has lead to marine growth and burrowing by marine organisms. Minimal evidence was found for wood working having taken place on the timbers, although many may have been split and cut to length.

Dating of the timbers remains unknown, samples were taken from two of the timbers for possible future dendrochronology dating, if warranted.

At present, the timbers are considered to have low archaeological significance, with no evidence for timber joinery and limited, speculative indication of preparation of the surfaces, and provide no tangible archaeological evidence.



Race Bank Offshore Wind Farm

Preliminary Assessment of timbers recovered from HO1-HO2-001, HO1-HO2-009, GO1-HO1-006 and HO1-HO2-031

Acknowledgements

This assessment was commissioned by DONG Energy, Environment & Consents. Wessex Archaeology is grateful to Red 7 Marine for the careful recovery and storage of the timbers while assessment was made, and to Ian Renshaw, Steve Start and Lee McIntyre for their assistance with the project.

The preliminary assessment of the timbers, recording and report writing was undertaken by Tom Harrison. Nicola Mulhall for the identification of the marine bivalve. The figures were produced by Kitty Foster. The project was managed for Wessex Archaeology by Toby Gane.



Race Bank Offshore Wind Farm

Preliminary Assessment of timbers recovered from HO1-HO2-001, HO1-HO2-009, GO1-HO1-006 and HO1-HO2-031

1 INTRODUCTION

- 1.1.1 Wessex Archaeology (WA) was commissioned by DONG Energy to carry out the preliminary assessment of four groups of timbers (**WA04**, **WA05**, **WA06** and **WA07**) recovered during the clearance of obstructions for the preparation for the inter-array cable installation for the Race Bank Offshore Wind Farm.
- 1.1.2 The four groups of timbers were recovered by grab during the clearance of targets HO1-HO2-001, HO1-HO2-009, GO1-HO1-006 and HO1-HO2-031 within the impact zone of the inter-array cable route between wind turbine generators (WTGs) GO1, HO1 and HO2.
- 1.1.3 The discovery of the timbers was reported to Wessex Archaeology through the offshore renewables protocol for archaeological discoveries (ORPAD) (Crown Estate 2014) on 6 March 2017. The timbers were transported to Red 7 Marine's storage facility at Old Hall Farm, Dereham and stored on behalf of the client to allow Wessex Archaeology to visit the facility to record the timbers.
- 1.1.4 After the timbers were fully documented, timber sampling took place on the largest of the timbers, HO1-HO2-009, in order to inform this assessment, and allow for potential dendrochronological analysis, should this be considered necessary.

2 AIMS AND OBJECTIVES

- 2.1.1 The aim of this assessment is to establish the archaeological significance of the timbers **WA04**, **WA05**, **WA06** and **WA07** recovered from HO1-HO2-001, HO1-HO2-009, GO1-HO1-006 and HO1-HO2-031.
 - *Produce a detailed archaeological record of the timber **WA04**, **WA05**, **WA06** and **WA07**;*
 - *Assess the possibilities for worked timbers, specifically relating to vessel construction;*
 - *Characterise the finds and develop conclusions on the period and state of preservation in order to assess the archaeological significance.*

3 METHODOLOGY

3.1 Timber assessment

- 3.1.1 All fieldwork procedures and standards complied with the relevant guidance by the Chartered Institute for Archaeologists (CIfA).



- 3.1.2 The detailed survey of the timbers was carried out on 10 March 2017. This consisted of:
- A measured survey of the timbers;
 - A drawn record of the main views and features;
 - A photographic record of general views and details; and
 - A photographic record conducive to photogrammetric reconstruction.
- 3.1.3 Due to the size and weight of the timbers **WA05** only the three exposed sides were photographed. The smaller timbers could be easily manoeuvred and all sides were photographed and recorded visually.
- 3.1.4 Three groups of timbers had been reported to Wessex Archaeology. An additional target find HO1-HO2-031 (**WA07**) was also recovered and examined. A group of timber fragments was also examined (**WA08**), these timbers are a mixture of fragments from all four of the targets.
- 3.1.5 As dating timbers recovered without context based on particular features is often not conclusive, it was agreed by the client to carry out a program of sampling for potential future dendrochronological analysis.
- 3.1.6 The timber sampling was carried out by Red 7 Marine on 10 March 2017. The samples were cut from the two larger timbers from **WA05** and cut using a chainsaw under the supervision of Wessex Archaeology. The samples were selected on the basis of the potential number of rings and presence of sapwood. The sampling process was documented by photographs.

4 ASSESSMENT OF TIMBERS

4.1 Position

- 4.1.1 The coordinates of the positions of the timbers is given in the table below:

Table 1: Coordinates of the targets (ETRS89 UTM31N), provided by DONG

ID	Easting	Northing
WA04 – HO1-HO2-001	357108	5905988
WA05 – HO1-HO2-009	357092	5906065
WA06 – GO1-HO1-006	357090	5906235
WA07 – HO1-HO2-031	357079	5906272
WA08	-	-

- 4.1.2 The coordinates are known for the targets reported through the ORPAD form. **WA07** was not reported through the protocol. The collection of mixed fragments is from a combination of **WA04**, **WA05**, **WA06** and **WA07** and was recorded under the number **WA08**.



4.2 Archaeological assessment

HO1-HO2-001 – WA04

- 4.2.1 The target find consists of two timbers, one measuring 1640 x 300 x 180 mm and the other measured 800 x 440 x 400 mm. The timber may be oak, but has not been assessed by a specialist.
- 4.2.2 Both timbers are in poor condition, the wood is very soft and brittle, with large pieces flaking away from the core timber. The outer surface of both timbers appears to have been lost, in places down to the heartwood.
- 4.2.3 The larger of the two timbers has an apparent systematic line of treenail holes running along its length. On closer inspection, these 'treenail' holes were created by a wood boring bivalve, the shells from which were found within three out of the five holes. One was removed as a sample, upon closer inspection it is believed to be *Zirfaea crispate*, a shallow water species commonly found in UK waters.
- 4.2.4 The smaller of the two timbers shows signs of exposure, with approximately 60% of one surface showing signs of gribble boring and the remains of marine growth.
- 4.2.5 Neither of the timbers has a conclusively worked surface or any evidence for fixings such as treenails.

HO1-HO2-009 – WA05

- 4.2.6 The target consisted of three timbers, the two largest measuring 2140 x 560 x 330 mm and 2100 x 340 x 370 mm, the heartwood of the timber remains slightly offset from centre in both. The third of the timbers is smaller and may be a fragment from the larger two and measures 570 x 320 x 330 mm. The timber may be oak, but has not been assessed by a specialist.
- 4.2.7 All three timbers are in poor condition, the wood is very soft and brittle, with large pieces flaking away from the core timber. The outer surface of both timbers appears to have been lost.
- 4.2.8 The section of the longer timber appears hexagonal at one end and may have been worked to achieve this shape, although no conclusive evidence for this was noted. At the same end of the timber is a possible scarf joint, with a recess possibly cut into the timber, although the underside of the 'scarf' joint is badly damaged, this damage may be the reason behind its shape. The opposite end of the timber was very rough and showed signs of a break with frayed timbers covering the outer surface. The section of this opposing end was very rough although the upper face may have been tangentially cut to prepare two flat surfaces. Due to the amount of timber lost to the outer surface it was not possible to see a clear surface.
- 4.2.9 The second of these larger timbers had similar characteristics with the section showing two flat surfaces meeting at a right angle with the natural curve of the timber for the remainder. One face had a relatively clear section and appeared to be a smooth flat surface. The other tangential face however has been entirely lost leaving a rough, uneven and frayed surface.
- 4.2.10 The outer surface of the third timber has again mostly been lost, with small exposed areas with signs of gribble and marine growth. The timber is a radially cut from which the heartwood has been lost, leaving a concaved strip running its length. One face is a flat surface with a ridge running through the middle, this may be intentional working, but there is no evidence for any fastenings.



4.2.11 There are some signs of exposure, with small areas having been bored by gribble and marine growth. The timbers are covered in circular indentations and tunnels, again created by wood boring bivalves and a sample was collected from the smaller of the three timbers. The holes were probed to dismiss the possibilities of treenails, from those tested depths ranged from 20 – 100 mm and diameters ranging from 8 – 54 mm and c.80% still contained the *Zirfaea crispate* shell.

4.2.12 Both larger timbers from this find number were sampled for dendrochronology, with a 50-60 mm section being taken from approximately 500-600 mm into the timbers length. The instability of the timbers was demonstrated while undertaking this sampling, with the timber sample splitting into three sections.

GO1-HO1-006 – WA06

4.2.13 A single timber that had been split along its length. One section measured 840 x 220 x 300 mm, the other was 740 x 170 x 140 mm. The timber may be oak, but has not been assessed by a specialist.

4.2.14 The timber was radially split and still included part of the heartwood and possible traces of bark of on the outer surface. The radial split was not straight which may be evidence for a natural break and the outer surface was still round with possible bark remains.

4.2.15 On this surface, there were two rectangular recesses, one measured 40 x 50 mm and the other 30 x 70 mm. Neither of these showed any signs of being intentionally worked, although this cannot be dismissed.

4.2.16 On one end of the timber there was a half sectioned hole or burrow, this may have been created by one of the bivalves or may be a possible treenail hole, the hole diameter is estimated as 44 mm.

4.2.17 The outer surface had signs of exposure with gribble, marine growth and there were wood boring bivalves present within burrows.

HO1-HO2-031 – WA07

4.2.18 A single unreported timber measuring 430 x 210 x 110 mm. The timber was a radially cut timber representing approximately 10-15% of the radius with part of the heartwood remaining. The timber may be oak, but has not been assessed by a specialist.

4.2.19 The timber was in poor condition, being very soft and crumbling. The timber had an exposed face with evidence of marine growth. There are several circular holes present and again each of these can be associated with the wood boring bivalves, one of the tunnels is seen in section and it curves along its length.

WA08

4.2.20 An additional polypropylene bag of timber fragments was found at the storage location and the timbers were all fragments that have become detached from the timbers described above. It was unclear which timber fragment was associated with specific timbers, so they were photographically recorded as a separate find.

4.2.21 There was a total of 23 timber fragments ranging from 180 to 700 mm in length. These timbers were in a similar condition to the larger examples, the wood being very soft and crumbling. The majority also showed evidence of marine growth, gribble and wood boring bivalves. Of the 23 fragments, two displayed interesting features.



- 4.2.22 One fragment, measuring 240 x 110 mm, featured a circular hole in its centre measuring 42 mm in diameter. The timber was very thin, at a maximum of 50 mm, so only represented a sample of the hole. Next to this there was another hole which has been sectioned by the break. It is unclear whether these holes were created for treenails or by bivalves.
- 4.2.23 The second timber of interest measured 260 x 110 x 55 and featured a small recess cut into one end. The recess was cut in at right angles and both faces of the cut were flat and showed no signs of damage such as fraying. The recess measured 28 mm into the timber and 80 mm to the edge of the break.

4.3 Dendrochronology

- 4.3.1 Samples were taken from the two larger timbers from HO1-HO2-009 (**WA05**) for possible future dendrochronological analysis.
- 4.3.2 The timber samples are yet to be assessed by the Nottingham Tree-Dating Laboratory (NTRDL) and it be not be considered necessary nor the samples suitable for dendrochronological analysis

4.4 Discussion

- 4.4.1 A total of eight reported timbers were recorded and an additional 23 fragments photographed. Overall the condition of the timbers was very poor, the timbers had been kept damp while being stored by the contractor, but the timbers were still clearly waterlogged. The timbers structure had lost much of its strength, with small pieces crumbling away and larger fragments falling away. Most the timbers showed signs of exposure prior to their recovery with evidence of marine growth, gribble and the wood boring bivalve *Zirfaea crispate*, the latter being responsible for the numerous holes seen covering them. A few examples suggest that they have been radially and tangentially split to create flat surfaces.
- 4.4.2 This may suggest possible preparation shaping took place, but there is no convincing evidence that the timbers have been worked beyond this stage if at all. The most likely evidence for timber working comes from the additional fragments, one of which has a small recess that is the most likely candidate for although still not conclusive. Overall the timbers are unlikely to represent ship's timbers, they may show very minimal signs of wood working possibly in the form of surface preparation but with a high-level degradation of the surfaces present, this is unconvincing.
- 4.4.3 It is possible that the timbers may be from part of a submerged forest, as they were recovered from a large area of as yet uninvestigated linear anomalies. However, there is no definitive evidence to support this, with no evidence of branches, roots or tree stumps yet recovered.

5 CONCLUSIONS AND RECOMMENDATIONS

- 5.1.1 The archaeological evidence suggest that the timbers recovered are not part of a ship's structure, with no conclusive evidence of any worked faces or fastenings seen on any of the timbers.
- 5.1.2 The timbers are considered unlikely to represent a ship's structure but the quantity of timber discovered may suggest that a cargo has been lost or alternatively re-distributed across the site by high impact post-depositional interference such as trawling. There is the possibility

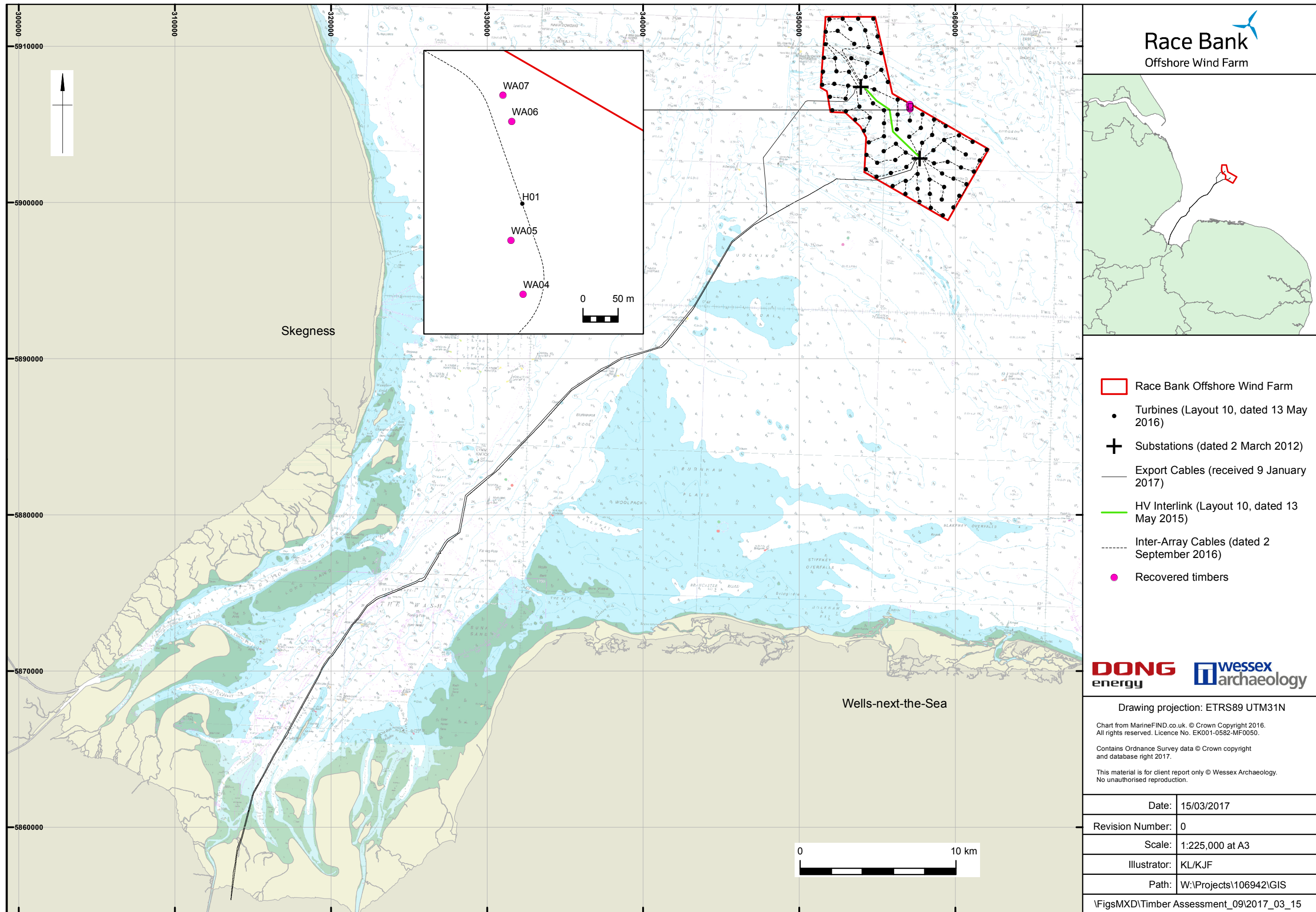


of the remains being part of a submerged remnant landscape (forest), but with no evidence for other similar palaeoenvironmental material yet recovered, this is again speculative.

- 5.1.3 The poor condition of the timbers and damage caused by marine organisms suggests that the timbers have been at least partially exposed on the seabed for a period of time.
- 5.1.4 The timbers have a low level of archaeological significance and it is recommended that they can be discarded.

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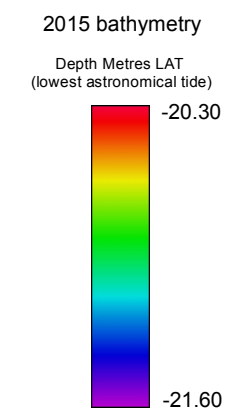


Location map

Figure 1

Race Bank
Offshore Wind Farm

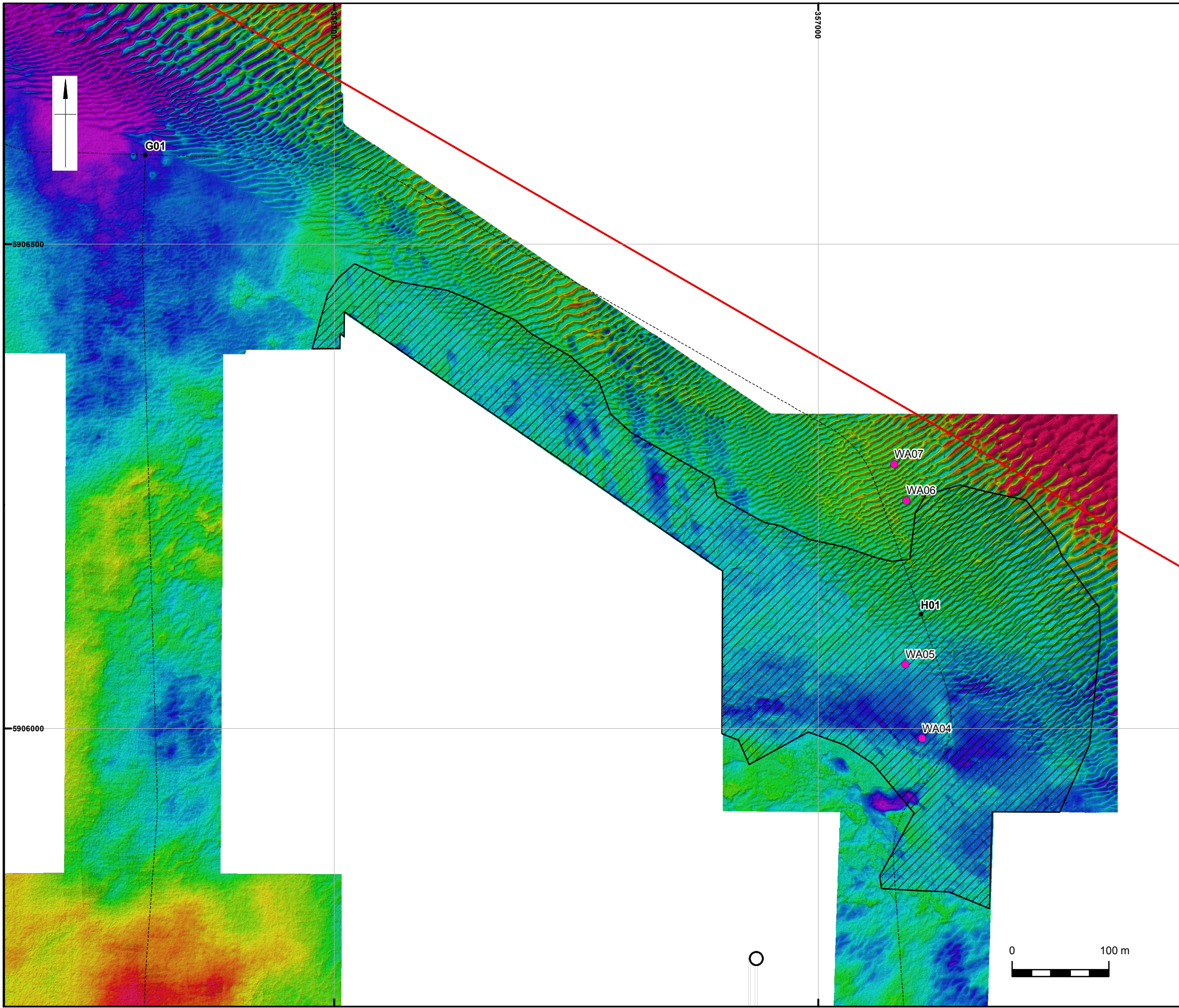
- Race Bank Offshore Wind Farm
- Turbines (Layout 10, dated 13 May 2016)
- Inter-Array Cables (dated 2 September 2016)
- Area of linear features
- Recovered timbers



Drawing projection: ETRS89 UTM31N

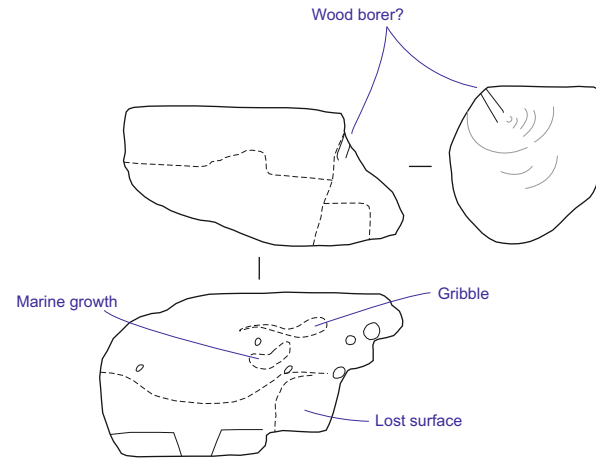
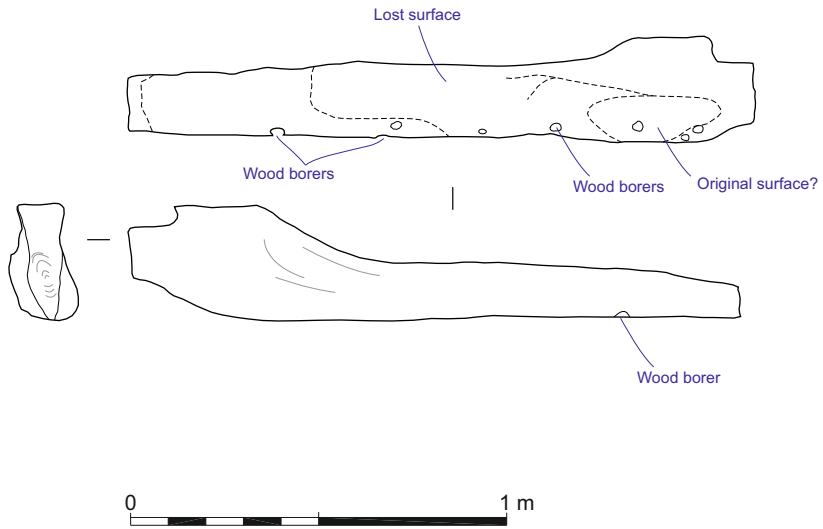
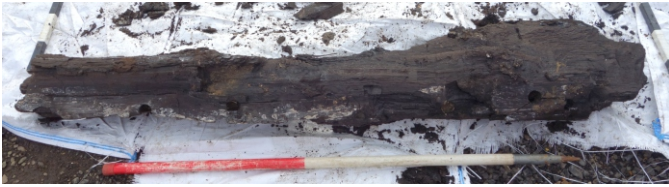
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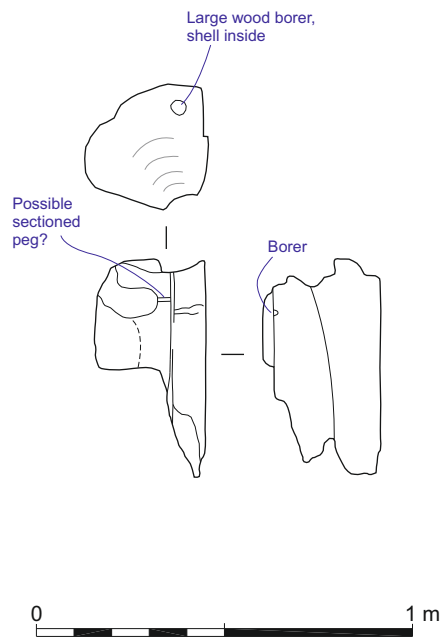


Large area of linear features

Figure 2

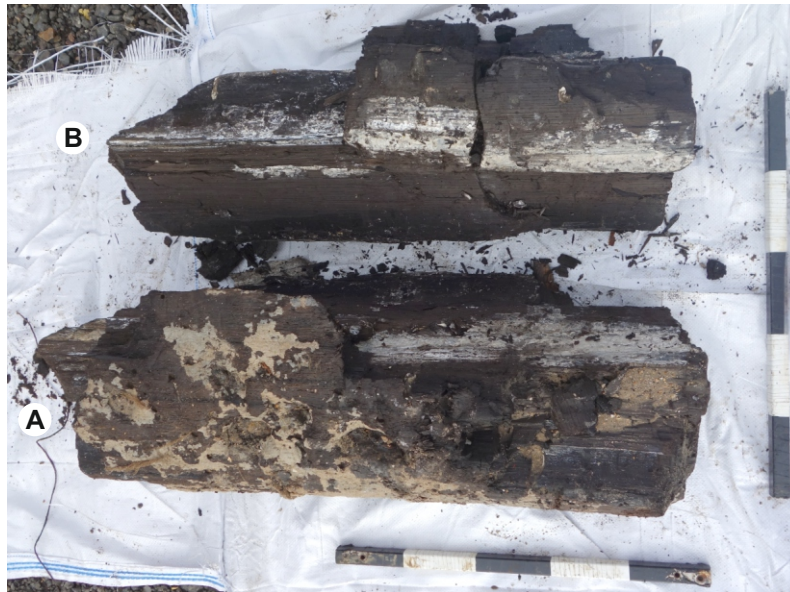
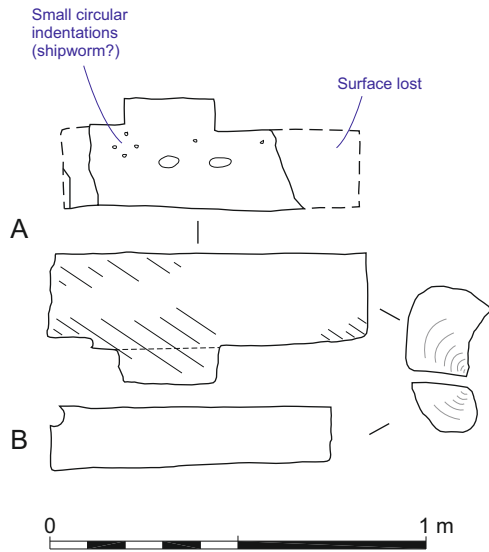


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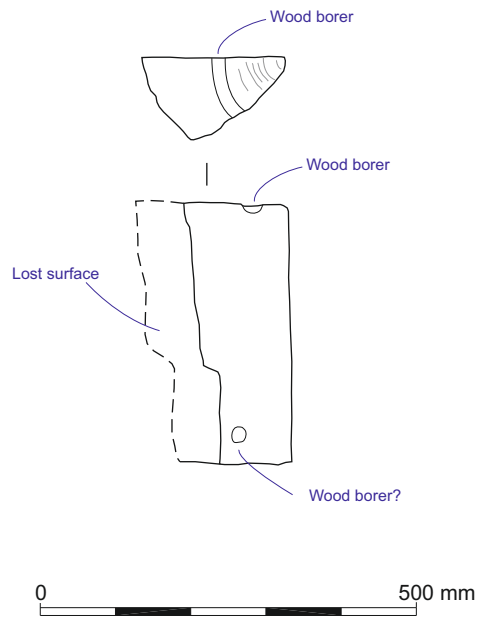
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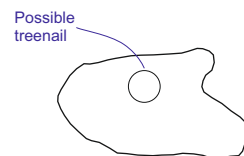
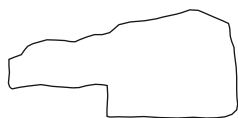
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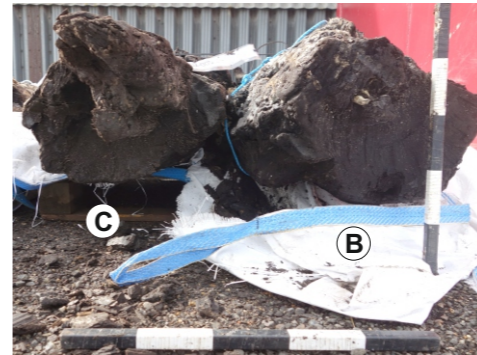
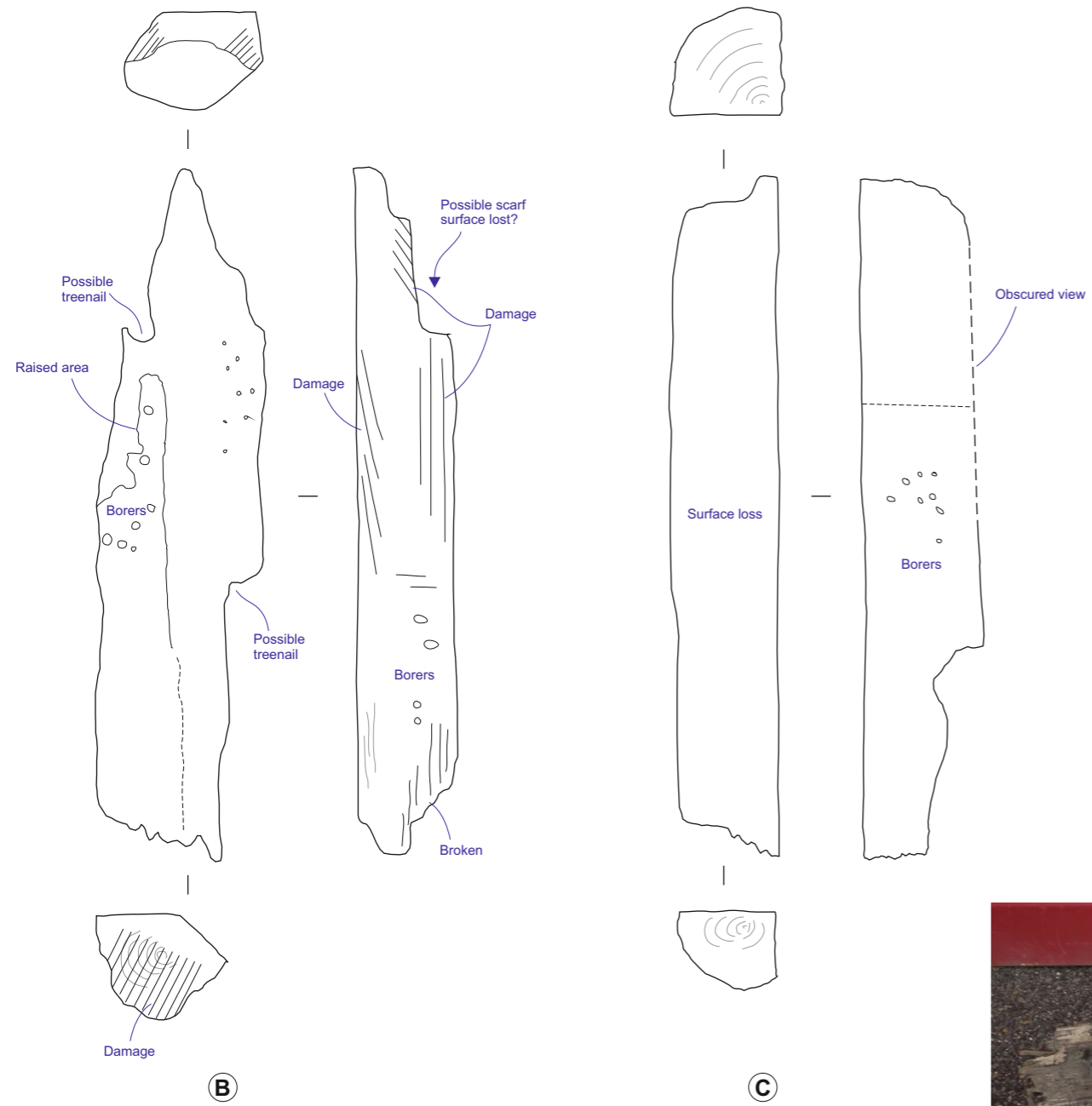
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