TRITON KNOLL
OFFSHORE WIND FARM

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Triton Knoll's approach to archaeology

The onshore work for the Triton Knoll Offshore Wind Farm has led to exciting and significant archaeological discoveries which has helped to create a picture of how communities in Lincolnshire used to live. We are delighted to be able to share some of this information with you, and provide the opportunity to see some of the discovered artefacts with your own eyes.

The Triton Knoll onshore construction work involves routing high voltage electrical cables over a 60km stretch, from the Bicker Fen substation near Boston, to the landfall site north of Anderby Creek. These will provide power generated by the offshore wind farm to the substation, which will then be distributed into homes and businesses.

With an infrastructure project of this size, there are a number of factors which must be taken into consideration so the impacts can be mitigated, and to ensure the project is causing as minimal disruption as possible. Archaeology is one of these considerations. Over the past three years, Triton Knoll and its principle onshore contractor, J Murphy & Sons Ltd, have been working hard to ensure the Lincolnshire archaeology has been preserved by record along the full stretch of the cable route.

Together with the specialist supply chain partners, Allen Archaeology and Headland Archaeology, the project has carried out a series of archaeological assessments, excavations, and has carefully managed any archaeological remains uncovered from the Lincolnshire soil. All of this work is important to ensure the archaeological sites and finds are identified and preserved.

Wood planks found at the top of a large pit

Roman pottery found during the removal of topsoil

Roman burial of a young woman

Excavation of a large post-medieval brick lined pit

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Archaeological process

From identifying an excavation site, to discovering a Bronze Age axe head, there are a number of important steps that need to be followed to preserve the archaeology by record on an infrastructure project of this size and scale. Following the project securing consent, a programme of archaeological surveys and investigations have taken place as described below.

Geophysical survey being carried out on the Lincolnshire coast

1 Geophysical survey

In 2017, one of our specialist archaeological contractors, Allen Archaeology, carried out a geophysical survey along the full 60km onshore cable route. A geophysical survey uses sensing instruments to create a map of subsurface archaeological features and identify any traces of human activity in the soil.

Unlike other archaeological survey methods, geophysical surveys are non-intrusive and were undertaken by Triton Knoll to avoid disturbing the Lincolnshire land. The survey identified evidence of Lincolnshire salt-making, large ditches associated with water management and areas of human settlement.

2 Trial trenching

Trial trenching is a digging technique used to understand the presence, condition and date of any archaeological remains under the ground. Once the results of desk-based research and the geophysical survey had been analysed, the archaeological team plotted areas along the cable route to start digging trial trenches. This would help to identify any archaeological sites and ensure measures could be put in place to preserve them.

In total, 350 separate trial trenches were dug. Any small finds were collected and soil samples were sent to a specialist for investigation – the evaluation revealed evidence of Iron Age and Roman salt-making practices, and settlements dating back to the Roman and medieval periods. It also indicated evidence of medieval field systems, and former marshland areas.

3 Excavations

An excavation is the exposure, processing and recording of archaeological remains. During 2018 and so far in 2019, excavations have been carried out in areas along the cable route highlighted by the trial trenching evaluation as having the greatest archaeological significance. So far, the excavations have confirmed evidence of Roman settlements and a possible prehistoric round barrow.

A round barrow is a mound of earth and/or stone raised over a grave or burial ground. It is circular in feature, and the earliest artefacts identified suggest this was created by people of Britain during the Bronze Age.
The image below shows the archaeological team in action excavating the site.

An excavated mortaria vessel

Working shot of the team excavating a potential prehistoric round barrow

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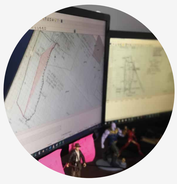
Archaeological process

The processing of environmental finds

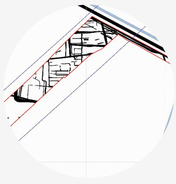
4 Post-excavation

Following an excavation, all of the archaeological finds are taken away to be appropriately cleaned, labelled, bagged and sent off to specialists for further analysis. All of the recovered soil samples are also sent to a specialist to write up a report on the findings.

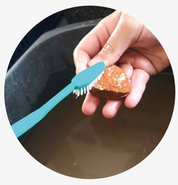
During the analysis, pottery will usually provide a good indication of how old a feature is, while the environmental analysis will give an indication of what the landscape might have looked like. The information from all of the specialist reports is then collated and used to tell the whole story of the archaeological site, with the aid of digitised plans and section drawings.



GIS digitisation of site plans and sections.



Digitised plan of one excavated area showing Roman enclosures and settlement activity.



Even the smallest pieces get a thorough wash before being labelled and sent off to the relevant specialist.

A near intact Roman mortaria vessel cleaned up post-excavation. This would have been used for grinding or mixing foods including herbs and spices.

5 Archival

After the excavation report has been completed and the finds have come back from the specialists, everything is safely packaged up and sent to an archive for future storage. Some of the finds may eventually be available for the public to view within a museum. In this instance, the archive will be stored at The Collection in Lincoln.

Multiple finds from the excavation

Bone pin found within the fill of a ditch

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Roman Salt Production in Lincolnshire

Salt has been produced in Lincolnshire for over 4,000 years, with evidence of small-scale industry from as early as the Bronze Age. The farmland we see today was once rich coastal marshland perfect for making salt, an essential resource for the preservation of meat and fish in all pre-industrial settlements. Along the onshore route of the Triton Knoll project, one of our specialist contractors, Headland Archaeology (UK) Ltd, uncovered evidence of salt production dating from the later Iron Age to the Roman period, roughly the 2nd century AD.

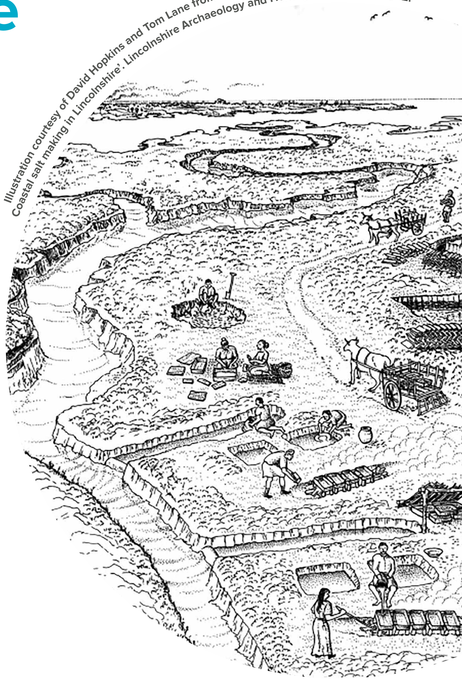

Illustration courtesy of David Hopkins and Tom Lane from 'Mineral from the Marshes: Coastal salt making in Lincolnshire', Lincolnshire Archaeology and Heritage Reports Series 12.

How do you 'make' salt?

The process of salt making followed a few simple steps that turned seawater into salt crystals:

1. Seawater would flow through natural channels in the marshes at high tide and was siphoned off into smaller man-made channels.
2. The salt water was then collected within 'tanks'; pits dug into the clay. This allowed any impurities (dirt, stones etc.) to settle at the bottom, leaving pure brine at the top.
3. This brine was put into ceramic containers and propped up over a fire that heated and evaporated the seawater, leaving a crust of salt that could be raked out and collected.

What evidence did we find?

Salterns
At several locations, we found traces of Roman salt production sites called salterns mounds. These indicate that by this period the production of salt was a major industry in the region. These thick spreads of burnt material contained the waste material from salt production. Within these spreads were fragments of ceramic containers and their pedestals used to prop them over the fire. These ceramics are known as Briquetage.

Briquetage
Over 10,000 pieces of briquetage were found during the excavations consisting of fragments of structural remains (hearths or ovens), containers, and supports. The supports were crudely made by forming the clay by hand into cylinders. Some of the pieces we've found even have Roman fingerprints left on them from when they were formed!

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Rural Roman Settlement in Lincolnshire

Evidence of the edges of rural Roman settlement were found along the cable route, many of which appear to have been established to be close to the salt industry in the area. We uncovered Roman field boundaries, houses, refuse pits, ovens and kilns from the 3rd/4th centuries AD, which all provide us with a glimpse into Roman life in Lincolnshire. The charred plant remains that were found within the ditches, kilns and pits, and pottery left behind, revealed people in this area had access to goods from markets across the Roman empire.

The analysis of the plant remains found coriander seeds in a possible cooking pit. Non-native plants like coriander were introduced to Britain during the Roman period, presumably coming from southern Europe or north Africa. The ongoing analysis of the plant remains will help us to build a picture of what was being produced and consumed at this time. One of the most exciting features found was a kiln or oven; its contents are currently being analysed in our lab. A complete miniature beaker or jar was found at the base this feature.

The pottery found was a mix of local and imported wares including Samian ware. This type of pottery can be thought of as high-end tableware and shows that the people here were fairly wealthy and had access to higher status imported goods. Other types of Roman pottery encountered on site include more utilitarian greyware and burnished greyware.

Miniature beaker at the base of a kiln

Roman burial of a young woman

Rural Roman Death in Lincolnshire

Three burials were discovered beside one of the Roman settlements. After careful analysis in the lab, we were able to determine that these were the remains of a female adult, a young adult and a child. The female was between 30-34 years old when she died and was buried in a wooden coffin, a symbol of status in the 2nd century AD. The burial contained 24 hobnails, short nails with thick heads that were used to increase the durability of the soles of footwear, indicating she was buried wearing shoes.

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