



**The  
future of  
heritage**



## Archaeological Experts - Offshore Professionals

Trident Archäologie is a leading independent archaeology and heritage company. We are the Rostock-based EU branch of the global leader in the provision of heritage services, Wessex Archaeology. Our business area is underwater archaeology, mainly in coastal and offshore areas, but also in rivers and lakes.

Employing over 320 staff internationally, our specialists help clients to manage the impacts of change and development to the historic environment on sites of all scales across the globe.

With over 15 years as a marine archaeology service provider, we have a wealth of experience helping clients achieve their project goals. We have worked on hundreds of sites – from wreck recoveries in offshore schemes to sunken ancient landscapes beneath the sea.

We provide a complete range of desk-based, field-based and technical services to help understand, manage and maximise heritage assets. We understand the nuances, constraints and opportunities associated with heritage, working with statutory authorities, clients and stakeholders to find effective and pragmatic solutions.

Visit our website at [www.trident.eu.com](http://www.trident.eu.com)

### Facts and figures



**Global heritage company**



**15 years' experience**



**320 expert staff**



**Unrivalled range of services**

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# Our vision

**We want everyone to understand and appreciate the intrinsic value of heritage for its social, economic and cultural benefits, and help our customers to protect archaeological heritage in the most efficient and effective way.**

## Our Mission

We recognise that we have a responsibility to serve both our commercial and community customer groups to the best of our ability, and we use creative combinations of techniques to find an innovative solution that works both for our clients and the historic environment.

## Complex Problems Creatively Solved

We champion sustainable development that ensures all risks to our shared heritage are effectively mitigated. Our experience and knowledge help our clients achieve successful planning outcomes, engage communities and stakeholders, and enhance the value of national historical assets.

As one of the most experienced commercial archaeological teams globally we are ready to deliver every project from the smallest assessment to the largest and most challenging schemes.

## Our Core Values

We have a code of seven core values that unites our staff across all projects, departments and offices. These core values were developed by and for our employees, embodying the key traits that we live by as we carry out our commercial and social aims:

- **Collaborative behaviour**
- **Authenticity and ethics**
- **Applied knowledge**
- **Customer focus**
- **Reliability and resilience**
- **Communicating passion**



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# Our people

Trident Archäologie has assembled a team with considerable experience in understanding, managing and maximising the value of heritage assets.



## Ralph Behr

### General Manager

Ralph is a marine archaeologist and certified project manager. His educational background from universities in Edinburgh and Bamberg includes a M.A. in archaeology plus an accreditation as scientific diver. Ralph holds and maintains the most important certification for project managers worldwide, the PMP (Project Management Professional) by the Project Management Institute, in addition to other certifications in PRINCE2 and ITIL.



## Paul Baggaley

### Director

Paul has extensive experience in the offshore sector as a marine geophysicist and as part of our Executive Management Team, leading and developing the technical and service teams within the company group, including Geoservices, IT, Quality and Compliance teams. He is a visiting lecturer for MSc in Marine Archaeology at Flinders University in Adelaide and formerly held the same role at the University of Southern Denmark in Esbjerg.



## Paul Sealey

### Director

Paul is responsible for the smooth running of the accounts team and our interaction with clients and suppliers. He ensures that all financial requirements are met. Paul qualified as an accountant back in 1988 with Deloitte and has held several senior roles in various sectors since then.



## Bas Coolen

### Business Development Manager

Bas is trained in Business administration and has an extensive network with local authorities, marine service companies and engineering firms as well as legislative authorities in the field of heritage in north-western Europe. He also runs the Dutch branch office of Trident Archäologie.



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# Our services

Delivered by over 320 staff from an impressive range of disciplines.



**Advice & Consultancy**



**Geophysical Interpretation**



**Marine Fieldwork**

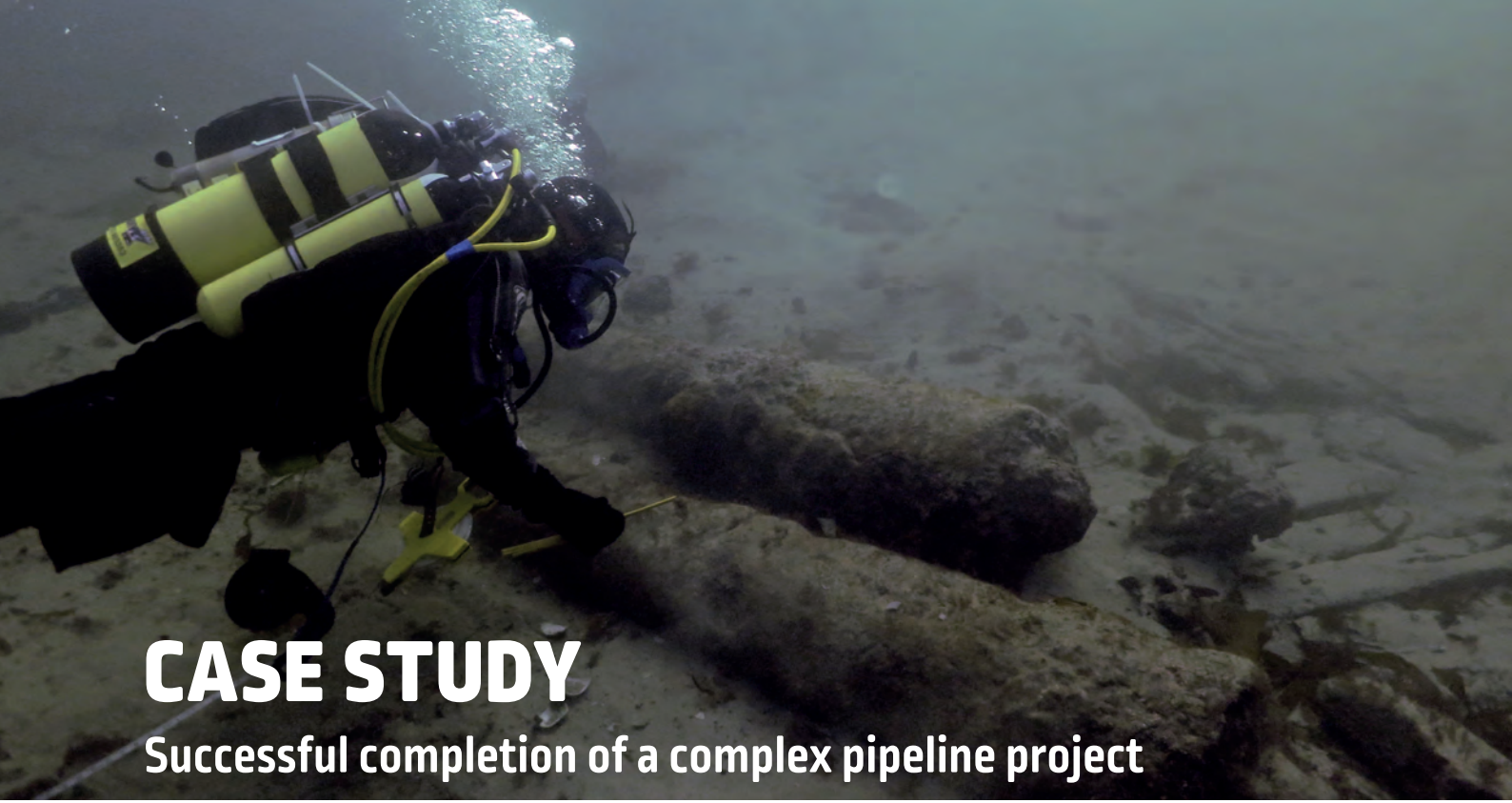


**Supervision & Monitoring**



**Analysis & Publication**





# CASE STUDY

## Successful completion of a complex pipeline project

**Client:** Landesamt für Kultur und Denkmalpflege Mecklenburg-Vorpommern

**Scope:** Full assessment of a pipeline route and strategy for mitigation measures

We were commissioned by the Landesamt für Kultur und Denkmalpflege Mecklenburg-Vorpommern, Germany, to prepare a full archaeological assessment of a pipeline route between landfall near Lubmin to the edge of German territorial waters.

Numerous associated projects were undertaken between 2016 and 2019, including geophysical assessments of multibeam echosounder, sidescan sonar, magnetometer data and a palaeolandscapes assessment by our geoarchaeological department. It also included an assessment over part of the Boddenrand flats where the Swedish blockade ship barrier from 1715 is situated.

The project deliverables included recommendations of high potential areas for dive investigations, of which a high percentage were confirmed by divers as features of archaeological interest.

Our Coastal & Marine Team participated in the subsequent relocation of two shipwrecks from the Swedish ship barrier to an underwater depot in a safe distance from the pipeline route. They also completed other mitigation measures, such as protection of archaeological sites with geotextiles and sandbags.

All tasks were completed on schedule before the installation works started.





# CASE STUDY

## Wreck recovery at the Ostwind 2 cable route

**Client:** 50Hertz Transmission GmbH

**Scope:** Documentation and recovery of a medieval shipwreck on short notice

The grid connection project Ostwind 2 of the transmission system operator 50Hertz connects the Baltic Sea wind farms Arcadis Ost 1 and Baltic Eagle to the German extra-high voltage grid. During our supervision of the preparatory dredging work, a wooden shipwreck was identified whose features indicated a medieval date. The wreck was located keeled-over on one of the cable routes.

After conducting dives to clarify the find situation, we were able to provide the complete infrastructure for the excavation and start the recovery work on the site within just five days. Photogrammetric documentation and a full recovery of the shipwreck was then completed after only seven days.

The ship's timbers were transported to the State Office for Culture and Monument Preservation Mecklenburg-Western Pomerania depot, where they were measured and documented in full detail with laser scanners. An initial analysis of the oakwood used indicated that the wreck was a clinker-built merchant ship constructed in the first half of the 15th century in southwest Sweden.

The subsequent scientific assessment provided further details about the appearance and use of the vessel and allowed for a three-dimensional digital reconstruction of the hull.





# CASE STUDY

## Norfolk Boreas reveals 8000-year-old secrets

**Client:** Royal Haskoning DHV, on behalf of Vattenfall

**Scope:** Geophysical and geoarchaeological assessment of a large wind farm site

We did a geophysical assessment of a large (approximately 725 km<sup>2</sup>) wind farm area in the southern North Sea, located about 72 km from the coast of Norfolk. The assessment comprised sidescan sonar, multibeam echosounder, magnetometer and sub-bottom profiler data sets. The work was accomplished through the following objectives:

- assess the provided geophysical data to identify, locate and characterise any yet unrecorded marine sites of archaeological potential,
- confirm the presence of known marine sites of archaeological potential and to comment on their apparent character,
- identify any buried palaeolandscape features of possible archaeological potential,
- compare all results with previous assessments in the area, and
- provide recommendations for archaeological mitigation where necessary.

Numerous geological features of archaeological potential were identified, leading to follow-on geoarchaeological assessments, including sediment recording, palaeoenvironmental analyses, C-14 and optical stimulated luminescence dating. We recovered evidence from more than 8000 years ago, when Doggerland was flooded by rising seas.

The project results have been approved by both client and regulator and were eventually presented at the Prehistoric Society Europa Conference in 2018.





# CASE STUDY

## Assessment of the transnational interconnector “NeuConnect”

**Client:** AECOM Ltd

**Scope:** Geophysical and desk-based assessment for a transnational interconnector

We provided offshore archaeological services for the pre- and post-submission phases of NeuConnect Interconnector routed from the Thames Estuary to Wilhelmshaven through UK, Dutch and German territorial waters and associated marine planning jurisdictions.

The project required detailed knowledge of marine planning processes in all jurisdictions and close engagement with national Curators and Regulators to ensure the fulfilment of all legal requirements from landfall to landfall.

Thousands of line kilometres of geophysical datasets from sidescan sonar, multibeam echosounder, magnetometer, and sub-bottom profiler, plus hundreds of geotechnical logs were archaeologically assessed. These were integrated with national maritime heritage records from across all national jurisdictions, to assess known and potential maritime archaeology, aircraft archaeology and seabed prehistory assets along the route.

Our work enabled embedded mitigation to support avoidance of archaeological sites, honing the cable route at the earliest stages of the project, reducing construction phase risk and facilitating streamlined cultural heritage management ready for post-consent phases.





# CASE STUDY

## Survey of the earliest bridge in Scotland

**Client:** Historic Environment Scotland (HES)

**Scope:** Survey, record and assess the remains of a medieval bridge

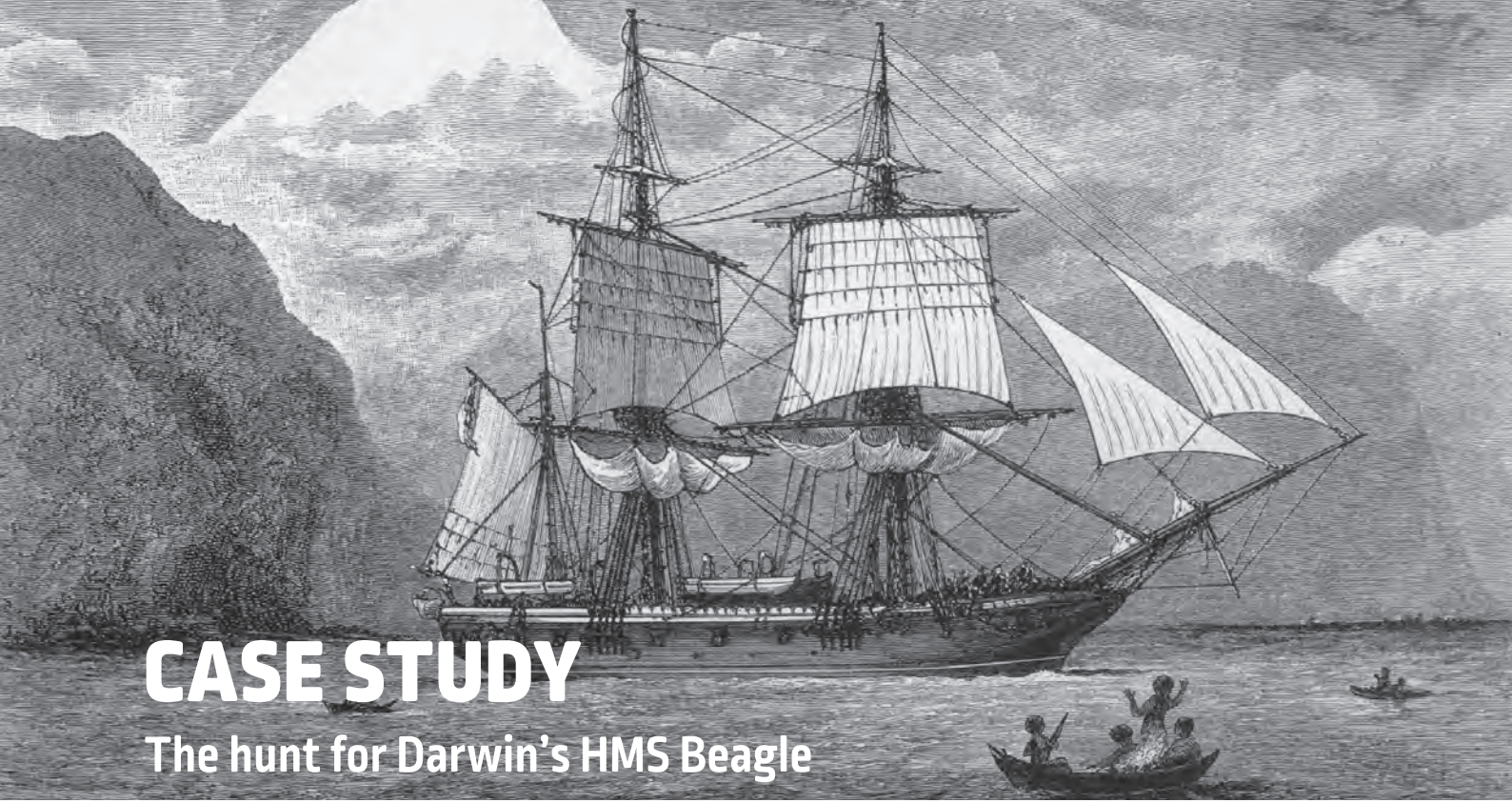
Over two years, local volunteers pieced together fragments of information about Ancrum Bridge in the River Teviot, Scottish Borders, after finding a mention of it in a local document dated to 1674. Our experts accelerated the project after it was granted funding by Historic Environment Scotland.

Using research and analysis of UAV imagery, we were able to locate the remains of the bridge submerged in the river below the current structure from 1784. A photogrammetric survey, a total station survey, close visual inspection and photography, and timber sampling for dendrochronological analysis were then undertaken in July 2020.

The foundation was likely built in the mid-1300s and formed part of a four arched masonry bridge. One timber likely predates the 14th century construction of the bridge, and may have been reused from a previous earlier bridge on the site.

These foundations represent the earliest scientifically dated in situ bridge remains in Scotland. The bridge may have played a pivotal role within the history of Scotland, carrying the Via Regia (The King's Way) on its way from Edinburgh to the border, and representing one of the few- and for long periods possibly the only- permanent crossing existing on the Teviot in the medieval period.





# CASE STUDY

## The hunt for Darwin's HMS Beagle

**Client:** Historic England, Rochester Council

**Scope:** Geophysical survey and UAV survey to find Darwin's famous ship

Our company group was commissioned by Historic England to investigate the area thought to be the last resting place of the HMS Beagle, ahead of the bicentenary of the vessel's launch in May 2020. The project aims to hunt for the remains of the illustrious ship, which transported Charles Darwin to South America and circumnavigated the globe twice.

Experts from our Geophysics team employed three main techniques: magnetometry, ground penetrating radar and an aerial survey by UAV (drone) to survey the mud flats of the River Roach, where the Beagle spent its final days.

Multispectral UAV survey is an innovative technique which involves flying a drone fitted with a special camera which captures red, green, infrared and near-infrared light to create a Normalised Difference Vegetation Index (NDVI). This looks at the health of plant life to build a picture of any buried remains, using the principle of differential growth- buried features affect vegetation growth above ground, much like the way cropmarks are formed in dry weather.

The survey work has allowed us to confirm the location of the original mud dock where HMS Beagle spent her last days, a key objective of the project. Work continues.



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For more information please go to

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