

## Bornholm Energy Island, Export Cable Transects: Extended Archival Control

Marie Jonsson, Viking Ship Museum, 4 April 2022.

Energinet wants to construct two offshore wind farms in the Baltic Sea off the coast of Bornholm and has asked the Viking Ship Museum to prepare this archival inspection of the current project area insofar as cultural-historical interests on the seabed are concerned. This verification covers only the transects for the export cables running between the wind farms and Bornholm (see map, Appendix 1).

The following source groups are used in the archival control:

- *Finds and Ancient Monuments*: national archaeological database
- Danish Maritime Authority's Register of Wrecks
- Previous marine archaeological surveys conducted by the Viking Sea Museum in the area
- *Geological desk study, Bornholm Windfarm cable transects* from GEUS
- *Joint reporting database* from the precursor of the Agency for Culture and Palaces

### Cultural-historical objects:

The representativeness of the registrations in the Finds & Ancient Monuments (Table 1, Appendices 1 and 2) is in some cases quite poor, as most finds registered are old observations and testimony, only a few of which are correctly positioned. For the same reason, many of them are technically positioned at so-called 'administrative area points': i.e. they are centroids of Danish Maritime Safety Administration's named sections of Danish territorial waters.

Accordingly, this catalogue containing 36 objects (wrecks and registration of shipwreck data) should primarily be seen as testimony to the frequency of ship founderings in the area as a whole and not as a reliable mapping of actual wreckage sites within and outside the construction area, respectively.

No objects have been registered at an administrative area point in the export cable transects. The closest, situated in Danish waters area 401754, is outside the transects. The first 16 objects in the catalogue are located onshore (see map, Appendix 2) and provide a good picture of what to expect in the form of cultural-historical remains on this section of the Bornholm coast. However, these are not described in further detail here as they are outside the Viking Ship Museum's sphere of responsibility.

Ten of the items concern wrecks or objects attributable to the disaster when 14 Swedish warships foundered in Sose Bay on 4–5 December 1678 because they had come too close to the coast during a snow storm (Appendix 2). Wrecks that may originate from this disaster have been found and objects have been salvaged, including two silver cups from the foundered ships.

The Danish Maritime Authority's Register of Wrecks lists three wrecks within the transects, but these are all from the modern era and are of little archaeological interest at the moment. Two of them are also registered in Finds and Ancient Monuments:

- 401754-238: *Luna*, fishing vessel, foundered 1952
- 401754-249: Unknown vessel, foundered 1942

According to the database, the latter, *Atlantis-R37*, has been removed.

The joint reporting database of the Agency for Culture and Palaces includes reports from fishermen and others showing the location of potential wrecks, but the positions have not been studied in more detail. One of them is registered in Finds and Ancient Monuments:

- 401754-285: Unknown wreck, sunk in 1942

The export cable transects follow in part the installation and anchor corridor used for the Baltic Pipe gas pipeline, for which the Viking Ship Museum has been responsible for the geoarchaeological and archaeological investigations prior to the installation of the pipelines. In addition to the verified cultural-historical objects registered in the Agency for Culture and Palaces' Register *Finds and Ancient Monuments*, a number of anomalies were found which, upon visual inspection, turned out to be scrap or of natural origin. It will be possible to use the information from these surveys in a future geoarchaeological analysis to avoid identifying or investigating objects that have already been studied.

**Topographic potential for traces of Palaeolithic settlement and activity:** The project area extends all the way to the shore. A possibly flooded Palaeolithic terrain can be found intact at sites throughout the transect (Jensen & Bennike, 2021, p. 58ff). During the screening of sonar anomalies in the Baltic Pipe project, several tree trunks and stumps were been documented in the area at depths down to 35 metres (Jonsson, 2022, pp. 12ff). The trunks at 35 metres are not rooted, but some of the trunks found at depths between 21 and 31 metres are. When the water was shallower than it is today, the shores of Rønne Bank have potentially been attractive for settlement in a hunter-gatherer economy, even though the area was only habitable for short periods of time. Obviously, these short periods were long enough for forests of large trees to have spread into the area near the coastline, providing the prerequisites for people to have been interested in settling here.

It cannot be ruled out that there are well-preserved traces of activity from the past in the area, as it was rapidly flooded on two occasions. It is possible to use geophysical and geotechnical methods to determine whether the Palaeolithic (Early Stone Age) terrain is intact, ablated or overlaid with deposits to such an extent that it is not endangered by (all of) the planned construction works and, in so doing, upgrade and elaborate on the well-founded presumption.

## Conclusion

- 1) There is a well-founded assumption that archaeological sites, protected by the Danish Museum Act, exist in the project area, it is expected that a preliminary marine archaeological study will be required prior to the initiation of construction in the area.
- 2) A geophysical (and possibly geotechnical) investigation campaign should be carried out as this can form the basis for a geoarchaeological analysis of the area's potential content of ancient monuments, which would be a far more accurate basis for subsequent, preliminary marine archaeological studies than archival information alone. A geophysical/geotechnical study campaign of this nature should be designed in collaboration with the Viking Ship Museum to ensure that the data collected complies with a standard that enables the data to be used in the subsequent archaeological analysis.

## English summary

Energinet is planning the construction of two offshore windfarms off the coast of Bornholm in the Baltic Sea. Energinet has requested the Viking Ship Museum in Roskilde to perform an archival screening of the archaeological interests in the area. The screening shows that there are a number of wrecks and records of ships having foundered in the area (Tables 1 and 2), including the remains of the 15 ships that sank during a snowstorm in 1678. Further, there is a potential for Palaeolithic remains in the shallower parts (Appendix 2). The export cable corridor follows the pipeline route of Baltic Pipe for some part, an area which the Viking Ship Museum has investigated, the results of which can be used in the forthcoming data screening (see map, Appendix 1).

The Museum proposes that further investigations be conducted.

## List of references

Jensen, J.B. & Bennike, O. 2021: *Geological desk study, Bornholm Windfarm cable transects. Geological seabed screening in relation to possible location of cable transects.* Copenhagen

Jonsson, M. 2022: *Baltic Pipe. Screening of geophysical data and target inspections for the proposed Baltic Pipe gas pipeline: anchor corridor, Danish sector of the Baltic Sea.* Roskilde

Thomsen, M.H. 2020: *Baltic Pipe, Danish Baltic sector: Screening of geophysical data and target inspections.* Roskilde.

Table 1. Objects registered in *Finds and Ancient Monuments* within the export cable transects.

Place no.	Locality	Type of facility	Dating	
<b>Objects on land</b>				
060205	176	Hoard	Bronze Age	
060205	177	Hoard	Stone Age	
060205	23	Round barrow	Prehistory	
060205	24	Cremation grave (unspecified type)	Bronze Age	
060205	24	Settlement, unspecified subgroup	Stone Age	
060205	31	Cremation patch	Iron Age	
060205	12	Round barrow	Prehistory	
060205	15	Round barrow	Prehistory	
060205	16	Round barrow	Prehistory	
060205	244	Coin finds	Undated	
060205	253	Individual finds	Stone Age	
060205	268	Coin finds	Middle Ages	
060205	442	Animal bone	Undated	
060205	496	Individual finds	Stone Age	
060305	108	Menhir	Prehistory	
060305	107	Burial site	Historical times	
<b>Objects in water</b>				
401754	9	Hearth	Prehistory	Hearth. Travel text, 1879: On the slope of this plot, the same kind of hearths are found [as sb.no. 19].-
401754	12	Hearth	Prehistory	Hearth. Travel text, 1879: In the slope facing the sea, there are a number of unique black spots which are not fire patches, but probably former hearths. The contents are firm black soil, heavily mixed with pieces of charcoal, but without traces of burnt bones, pottery shards or similar. A number of stones made brittle by fire are always found at the bottom. On all sides of the black charcoal-mixed mass, except from the top, the area is delimited by a light-brown edge which seems to be burnt clay. Around the kettle-shaped recess, which serves as a hearth, there has probably been packed clay to prevent the recess from cracking, and this clay paste gradually hardened and solidified. In so doing, the kettle-shaped recess has turned into a kind of pot in which a small fire, protected from the winds, could be lit. The era from which these hearths originate cannot be determined. They vary in size. The smallest of them have a diameter of at least 2–4 feet and are roughly just as deep.
401754	16	Individual finds	Historical times	Individual find. Areas with finds reported by calypso diver have not been verified. Possibly originates from stranded or foundered Swedish ships, 1678–1679.
401754	20	Wreck	Recent times	Wreck. Wreck bottom reported by calypso diver. Possibly originates from stranded or foundered Swedish ships, 1678–1679.

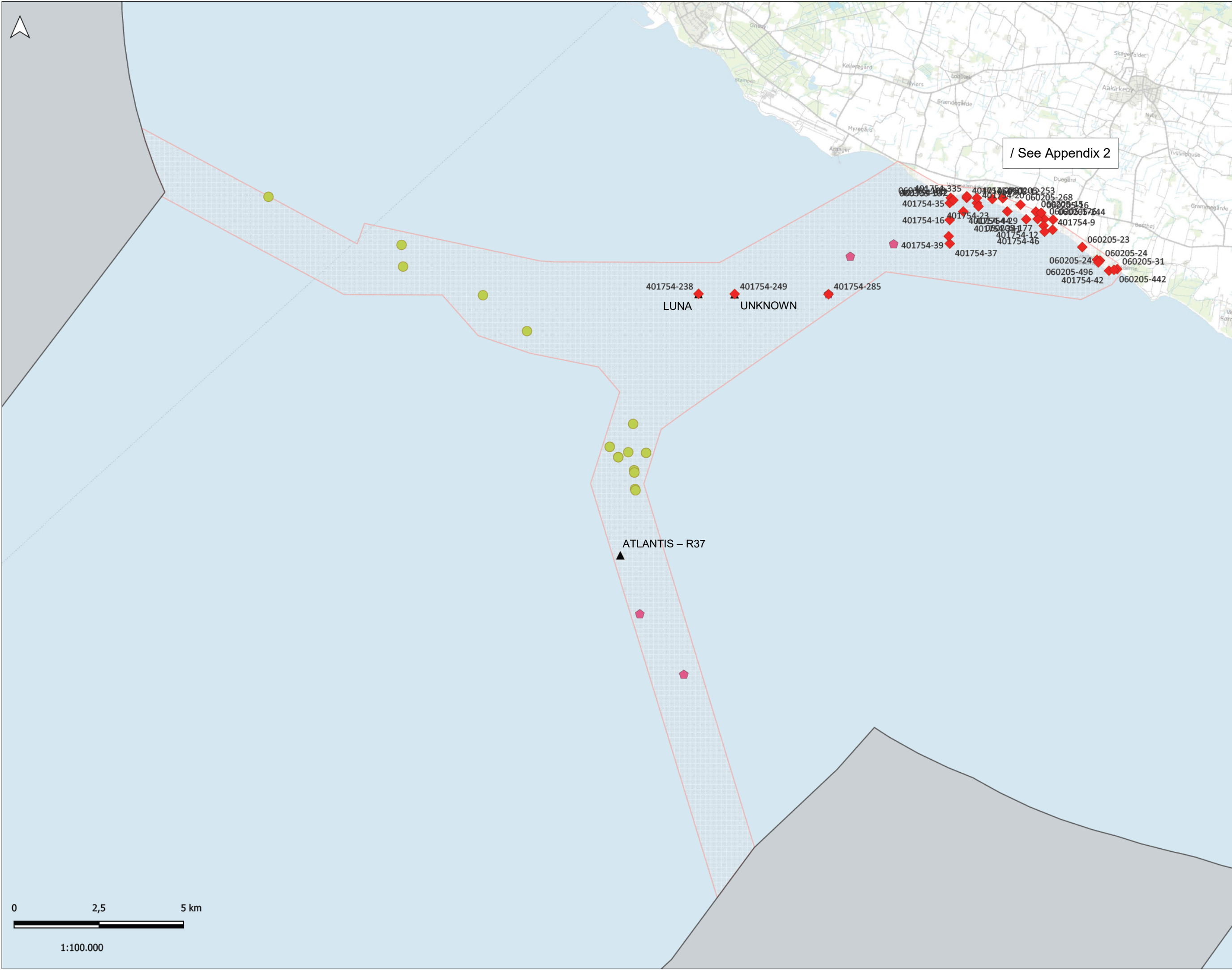
401754	23	Wreck	Recent times	Wreck bottom, visually inspected in 1981. Possibly originates from stranded or foundered Swedish ships, 1678–1679.
401754	27	Coin finds	Historical times	Coin find. 1, coin find and pewter dish. Possibly originates from stranded or foundered Swedish ships, 1678–1679. 2, Find of calliper-rule in bronze/brass in 1.5–2 metres of water, 400–500 metres east of Sose Odde.
401754	29	Individual finds	Historical times	Individual find. Objects fished up from wreck bottom off of Lille Bakkegård. Registered at Bornholms Museum. Possibly originates from stranded or foundered Swedish vessels, 1678–1679.
401754	31	Individual finds	Historical times	Individual find. Objects fishing from wreckage off the mouth of Lille Å stream. Registered at Bornholms Museum. Possibly originates from stranded or foundered Swedish vessels, 1678–1679.
401754	35	Wreck	Recent times	Wreck. Wreck bottom with musket balls. Possibly originates from stranded or sunken Swedish vessels, 1678–1679.
401754	37	Wreck	Recent times	Wreck. Wrecks reported by calypso diver, not verified. Possibly originates from one of several Swedish vessels stranded or foundered in 1678–1679.
401754	39	Wreck	Recent times	Registration of foundering data, year 1858-08-01 Text: Stranded near Rønne on a masked skerry, the so-called Blakgrund, roughly 1/4' from shore. The vessel is assessed as a wreck. The cargo is salvaged and sold at an auction with wreckage and fittings. The fittings were salvaged.
401754	42	Port	Middle Ages	Port. 1067–1635 Text: YES: In 1886, Jørgensen reported that it was customary to have fish stalls at the site. It is possible to find pottery shards, lumps of charcoal, iron nails, etc., in ploughed up material. Today, a privately owned place of call. Mentioned in sources in 1603. Medieval fishing stalls were found in the area. Existing harbour renovated from 1972 to 1980. Original harbour and place of call for Aakirkeby during the Middle Ages. First mentioned in 1603. Served as an independent customs office for a while. Medieval stall ruins, Stone Age and Iron Age burial sites, menhirs and coastal ramparts have been found around the harbour. Outright harbour facilities built around the turn of the century, the total refurbishment of which began in 1972 and was completed in 1980.
401754	44	Settlement, unspecified subgroup	Prehistory	Settlement. Scuba-divers have observed a hearth set in stone with burnt pieces of charcoal. There are reportedly flint and burnt bones, too. No findings have been collected. The locality is roughly 260–300 m SSE of Sose Odde in 1.5–2 metres of water.

401754	46	Wreck	Recent times	Schooner Call name: ANNE MARIE Salvaged: No Date of departure: 13-5-1897 Destination: Copenhagen Construction site: Świnoujście Home port: Rønne, Denmark Cargo: 72.5 tonnes of clayey soil Displacement type: Gross register tonnage Displacement: 56 Materials: oak Reinforcement: no Year foundered: 1897 Registration of foundering data Date: 1897-05-13 Other archives: SUS 1897/25 (Maritime inquiry, Nexø 01-071897) Text: Foundered, filled, became wreckage, Munkerup (Aaker Parish).
401754	238	Wreck	Recent times	Fishing vessel Call name: LUNA H 55 Salvaged: Unknown Home port: Helsingør, Denmark Reinforcement: no Year foundered: 1952-11-05
401754	249	Wreck	Recent times	Registration of foundering data Date: 1942-10-16 Source: ECS 1464/1942 Text: Unknown vessel sunk.
401754	285	Wreck	Recent times	Registration of foundering data, 1942. Text: Wreck sunk.
401754	335	Individual finds	Historical times	Individual find. Two large silver cups containing three silver spoons and handle, guard, and ferrule from sword found during scuba-diving.
401754	341	Individual finds	Iron Age	Individual find Dated from 175 to 1066. A rotating mill (girder) made of granite was found in roughly 1.5 metres of water, roughly 100 metres the west measured from the coast off of Pæregård.
401754	342	Individual finds	Recent times	Individual find. Submitted calliper rule from the Sose Bugt shipwreck in 1674. D1780/2005. Calliper rule, possibly, 1600s (1674)

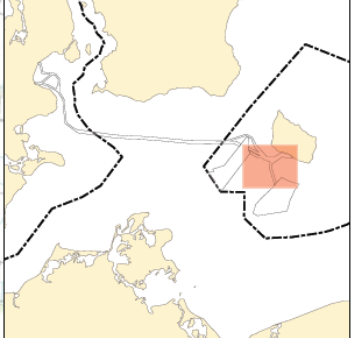
Table 2. Total overview of registered wrecks and teams with coordinates in ETRS89/UTM zone 33N (EPSG 25833)

Source	System no.	Place no.	Locality no.	X	Y
Finds and Ancient	325	060205	176	492020,0743	6098826,491
Finds and Ancient	326	060205	177	491826,0757	6098828,498
Finds and Ancient	378	401754	9	492266,0603	6098509,483
Finds and Ancient	381	060205	23	493141,0349	6097998,452
Finds and Ancient	382	060205	24	493577,0178	6097623,437
Finds and Ancient	384	060205	24	493663,0164	6097599,434
Finds and Ancient	390	060205	31	494172,0038	6097346,416
Finds and Ancient	421	060205	12	490485,1084	6099416,545
Finds and Ancient	423	060205	15	491774,0845	6099045,499
Finds and Ancient	424	060205	16	491930,0822	6099012,494
Finds and Ancient	1666	060305	108	489258,1207	6099450,589
Finds and Ancient	123190	060305	107	489292,1171	6099363,588
Finds and Ancient	136328	060205	244	492278,072	6098809,482
Finds and Ancient	138037	060205	253	490795,1069	6099441,534
Finds and Ancient	141273	401754	12	492000,0668	6098630,492
Finds and Ancient	141802	060205	268	491316,0956	6099248,516
Finds and Ancient	150221	401754	16	489229,097	6098800,592
Finds and Ancient	150222	401754	20	490029,1078	6099300,562
Finds and Ancient	150223	401754	23	490079,1035	6099200,561
Finds and Ancient	150224	401754	27	489729,1162	6099450,572
Finds and Ancient	150225	401754	29	490929,0908	6099050,53
Finds and Ancient	150226	401754	31	490029,1135	6099450,562
Finds and Ancient	150699	401754	35	489229,1154	6099300,591
Finds and Ancient	150703	401754	37	489229,0715	6098100,594
Finds and Ancient	151001	401754	39	489199,0797	6098318,594
Finds and Ancient	151555	401754	42	493929,0033	6097300,425
Finds and Ancient	152669	401754	44	489629,1021	6099050,577
Finds and Ancient	154637	401754	46	492029,0596	6098450,492
Finds and Ancient	186793	401754	238	481812,1698	6096616,274
Finds and Ancient	186848	401754	249	482878,1637	6096613,277
Finds and Ancient	187033	401754	285	485649,1478	6096603,285
Finds and Ancient	197346	401754	335	489733,9811	6099498,412
Finds and Ancient	201868	060205	442	494077,5885	6097324,772
Finds and Ancient	214591	401754	341	491486,9966	6098819,233
Finds and Ancient	219713	401754	342	489335,9396	6099384,787
Finds and Ancient	244201	060205	496	493615,8089	6097545,305
	Type of find	ID number			
Joint reporting database	SIKHOLD	3979		486293,2251	6097713,817
Joint reporting database	SIKHOLD	3980		487572,8298	6098081,784
Joint reporting database	SIKHOLD	11692		485650,3857	6096604,096
Joint reporting database	SIKHOLD	18487		480077,8843	6087157,317
Joint reporting database	SIKHOLD	18488		481377,748	6085370,111
	Object ID	Wreck ID	Name		
Danish Maritime	2248	2441	ATLANTIS – R37	479502,9147	6088903,22
Danish Maritime	1859	1646	UNKNOWN	482876,0498	6096613,385
Danish Maritime	937	372	LUNA	481810,2691	6096616,968





# Appendix 1



- Sources:
- Baltic Pipe
  - Finds and Ancient Monuments
  - Danish Maritime Authority's Register of Wrecks
  - Joint reporting database

- Administrative data
- Wind farm
  - Export cable transect

Data supply, WMS  
Graphics display card, subdued

Contains data from The Danish Agency for Data Supply and Efficiency

## Bornholm Energy Island, export cable transects

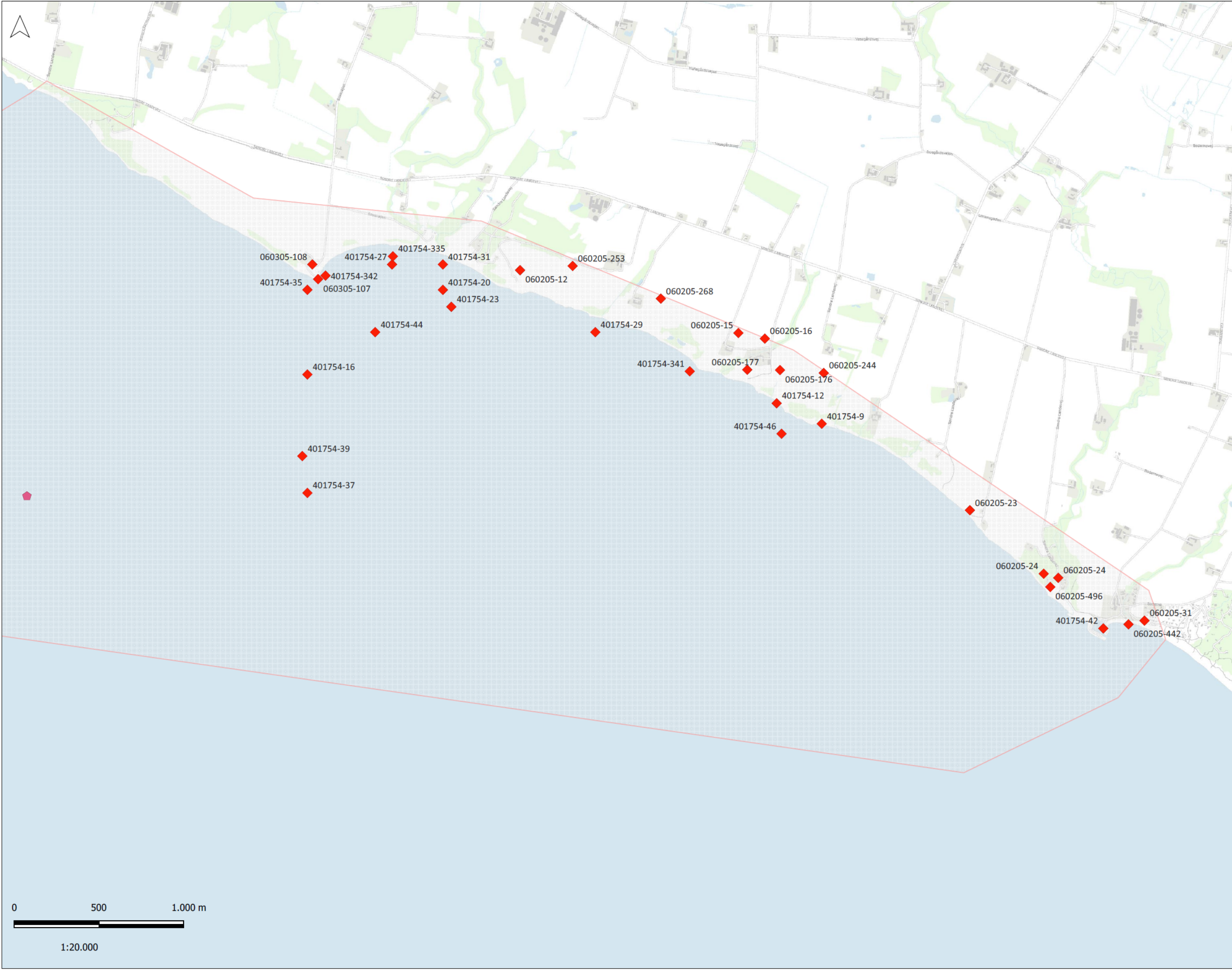
Objects from the various sources

File no.	VIR 2937
Initials	MEJ
System	ETRS89 / UTM zone 33N
Date	05/04/2022



Vindeboder 12, DK-4000 Roskilde  
www.vikingskibsmuseet.dk  
Tel.: +45 46 300 200





## Appendix 2

### Sources:

- Findings and Ancient Monuments
- Joint reporting database

### Administrative data

- Export cable transect

### Data supply, WMS

Graphics display card, subdued

Contains data from The Danish Agency for Data Supply and Efficiency

### Bornholm Energy Island, export cable transects

Objects from Archaeological Sites at Landfall Bornholm

File no.	VIR 2937
Initials	MEJ
System	ETRS89 / UTM zone 33N
Date	05/04/2022



Vindeboder 12, DK-4000 Roskilde  
www.vikingskibsmuseet.dk  
Tel.: +45 46 300 200