

# VikingLink

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## Viking Link Supplementary Information for cie MER

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# Contents

1	INTRODUCTION .....	3
1.1	Overview.....	3
2	SEDIMENT MODELLING.....	3
2.1	Commission Advice .....	3
2.2	Boulder Clay .....	3
2.3	Revised Assessment.....	4
2.4	Storm Events .....	5
3	IMPACTS ON NOORDKROMP.....	5
3.1	Commission Advice .....	5
3.2	Impact Assessment on Noordkromp .....	6
3.3	Installation Phase .....	6
3.4	Operations Phase.....	6
3.5	References .....	6
4	HARBOR PORPOISE .....	7
4.1	Commission Advice .....	7
4.2	Viking Link Response .....	7
5	OCCURRENCE OF PALAEOLITHIC AND MESOLITHIC FINDS .....	8
5.1	Commission Advice .....	8
5.2	Viking Link Response .....	8

# 1 Introduction

## 1.1 Overview

- 1.1.1 The draft advice of the EIA Commission regarding the Viking Link project was received in November 2017.
- 1.1.2 At the meeting between Viking Link and the EIA Commission, held on 23<sup>rd</sup> November 2017 in Utrecht, several issues were discussed and it was agreed that Viking Link should submit answers to the questions posed by the Commission. Such information would be used by the Commission to generate its final advice to the permit authorities.
- 1.1.3 In each case, the Viking Link response matches the relevant Commission advice / request.

# 2 Sediment Modelling

## 2.1 Commission Advice

- 2.1.1 In their draft advice, The Committee recommends to supplement the data regarding the distribution of sediment during the burial of the cables with:
  - information that better substantiates that it concerns representative calculations, or
  - make new calculations that are representative for specific soil structures from Klaverbank and for the used construction methods;
  - an assessment of the consequences of the long-term sediment cover of the present flora and fauna where both the existing habitats and the possibly affected habitat type H1170, Reefs of the open sea, is taken into account.

## 2.2 Boulder Clay

- 2.2.1 At the meeting, the Commission questioned whether the seabed composition used for the modelling was representative of the Klaverbank soils, especially the existence of boulder clay.
- 2.2.2 In response, Viking Link presented geophysical survey information over the entire section of the cable route within the Klaverbank (approximately 19 km).
- 2.2.3 This information, which is attached to this note, shows the seabed strata within this section of the Klaverbank, together with the positions and content of the sediment cores.
- 2.2.4 The information confirms that the seabed strata comprise either “Silty fine SAND with subordinate GRAVEL”, and sometimes “Loose sandy SILT” overlying “CLAY with rare SAND layers”. The top

of the “CLAY with rare SAND layers” layer is never exposed and lies between 2.5m and 6m below the mudline everywhere in the Klaverbank area. As such, there is no likelihood of a release of predominantly boulder clay, although in the seabed samples indicated approximately 5% composition of boulder clay.

## 2.3 Revised Assessment

- 2.3.1 The NCEA’s draft advice requested a revision to the sediment impact assessment in the event that the sediment composition originally modelled was not representative of the sediment composition through the full depth of cable burial.
- 2.3.2 The sediment composition originally modelled was based on analysis of surface grab samples collected during the benthic surveys.
- 2.3.3 The maximum estimated trench depth, as stated in the sediment study, will be 1.3 m if jetting is used or 2 m if ploughing is used.
- 2.3.4 The evidence presented in Section 2.2 demonstrates that surface sediments in the Klaverbank are representative of sediments in at least the top 2.5 m of the soil column. The layer of boulder clay (“CLAY with rare SAND layers”) will not be disturbed by either potential trenching technique (jetting or ploughing).
- 2.3.5 In light of this, we recommend that the sediment study previously submitted remains valid. There is no additional information or uncertainty which would justify additional or revised analysis at this stage.

### 2.3.6 Sediment cover

- 2.3.7 An assessment of the consequences of the long-term sediment cover was presented in section 9.3 of the Environmental Statement. The Commission have raised queries on the settlement of sediment up to a depth of 1mm occurring outside the stated 10m buffer and to the potential resulting effects to organisms through reduction in light levels.
- 2.3.8 Settlement of sediment to a level greater than 1mm depth will occur within a 10m buffer around the cable corridor (Intertek, 2016). Sediment settlement may extend outside of this buffer but only in very small amounts (<1mm), which are considered to have minimal ecological effect.
- 2.3.9 Within the Klaverbank SCI, the video surveys of the cable route show a veneer of fine sediment already present across the seabed, demonstrating the presence of slightly silted cobble reef. It is considered that additional very small amounts of sediment (<1mm) will have a limited effect on the existing habitat. The flora and epifauna described from coarse ground on the Klaverbank SCI are reasonably tolerant of up to 5cm of sediment for a period of up to 28 days (Hiscock, 2003; Budd, 2008). The settlement of 1mm of sediment will have limited effects on the light levels within an environment already covered in a small layer of sediment. Additionally the seabed video surveys did not report the presence of any photosynthetic organisms (e.g. algae) on the cobble

reef and it is considered that a small increase in sediment levels for a short duration would not adversely affect any organisms with light-receptive organs.

## 2.4 Storm Events

- 2.4.1 The potential impact from increased suspended sediment and smothering, was assessed in section 9.3 of the Environmental Statement and was not considered to alter the reference situation of benthic receptors and an impact score of '0' was assigned to this potential impact.
- 2.4.2 This conclusion was reached due to:
- Existing levels of sediment deposition already present along the cable route;
  - The minimal area that sediment deposition would affect; and
  - The taxa present are found throughout northern European waters in areas of higher turbidity.
- 2.4.3 In addition to these points Newell *et al.*, (1998) also suggest that winter storms obliterate tracks within a few months on the Klaverbank in the Dutch sector of the North Sea, therefore it is reasonable to assume that the small levels of deposit could be reworked by storm events in winter months. The point that storm events can rework seabed sediment was also noted within Klein *et al.*, (1999)<sup>1</sup> who estimated that during a storm event, sediment up to medium sand was mobilised in 60m water depth at the northern slope of the Dogger Bank.
- 2.4.4 Therefore in the context of the Environmental Statement, it is considered that the short duration, low frequency, reversibility and relatively low extent of any increase in suspended sediment and smothering associated with the Project will not alter the reference situation for benthic receptors,

# 3 Impacts on Noordkromp

## 3.1 Commission Advice

- 3.1.1 The draft advice indicates that "*According to the Committee, it is incorrectly concluded that the cable only cuts through areas with low densities of the Noordkromp. Several publications show that the Noordkromps' most important habitats will be cut through by the cable. The Committee considers it important to assess to what extent the project disrupts this protected species.*
- As a supplement to the EIA, the Committee advises to describe the effect the construction of the electricity connection has on (the habitat of) the Noordkromp and the effects from existing*

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<sup>1</sup> Klein, H., Honig, P. & Frohse, A. 1999. Currents and near-bottom suspended matter dynamics in the central north sea during stormy weather - results of the pipe'98 field experiment. Deutsche hydrographische Zeitschrift 51, 47-66.

*activities, on the basis of the most up-to-date information and to assess to what extent this has consequences for the design of the plan.”*

### **3.2 Impact Assessment on Noordkromp**

- 3.2.1 Arctica islandica is a long-lived species, typically between 40 and 125 years in the Baltic Sea and North Sea, with only sporadic larval recruitment (Tyler-Walters & Sabatini, 2017). This species of bivalve lives buried in the sediment but is vulnerable to physical damage and abrasion such as that caused by heavy fishing gear (OSPAR Commission, 2008) and therefore is also likely to suffer damage from cable-laying activities. The site-specific surveys only found a single juvenile individual of Arctica islandica (Fugro, 2016) but a comprehensive survey of the Dutch Continental Shelf (Witbaard et al., 2013) indicates that the Viking Link cable will pass through some important areas for this species.

### **3.3 Installation Phase**

- 3.3.1 Permanent loss of habitat: any areas of fine sediment that are covered by rock placement will be lost to inhabitation by Arctica islandica but these areas are considered to be so small as to have no effect on the overall population.
- 3.3.2 Temporary habitat disturbance & physical disturbance, crushing and abrasion: Arctica islandica can tolerate some shell damage but repeat damage can lead to death and mortalities of 20% have been recorded in the track of a 12m beam trawl (OSPAR Commission, 2008). A crude estimate of population using maps in Witbaard et al. (2013) gives a figure of 1.7 billion individuals in Dutch waters, and based on an area 10m wide (based upon cable route clearance in the project description) and a 20% mortality it is estimated that 25,000 individuals would suffer mortality owing to installation of the cable. This figure constitutes just over a thousandth of one percent of the population and therefore is considered a “0” score for this potential impact.
- 3.3.3 Disturbance to contaminated sediment: as per general assessment of benthic habitat
- 3.3.4 Hydrocarbons or chemical spills: as per general assessment of benthic habitat

### **3.4 Operations Phase**

- 3.4.1 Disruption caused by electromagnetic fields: as per general assessment of benthic habitat
- 3.4.2 Disruption caused by heating from cables: as per general assessment of benthic habitat
- 3.4.3 Maintenance activities: as per general assessment of benthic habitat

### **3.5 References**

- 3.5.1 Tyler-Walters, H. & Sabatini, M. 2017. Arctica islandica Icelandic cyprine. In Tyler-Walters H. and Hiscock K. (eds) Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. Available from: <http://www.marlin.ac.uk/species/detail/1519>

- 3.5.2 OSPAR, 2008. Case Reports for the OSPAR List of threatened and/or declining species and habitats. OSPAR Commission, London. Publication Number 358/2008.
- 3.5.3 Witbaard, R., Lavaleye, M.S.S, Duineveld, G.C.A. & Bergman, M.J.N. 2013. Atlas of the Megabenthos (incl. small fish) on the Dutch Continental Shelf of the North Sea. NIOZ Report 2013-4.

## 4 Harbor Porpoise

### 4.1 Commission Advice

- 4.1.1 The Commission notes that Table 9.2 of Annex II provides guidelines based on British and German recommendations to reduce impacts on Harbor Porpoise. Whether these measures will be included in the EEZ is unclear. In the case of relevant underwater noise, the Commission recommends that these measures are applied for the entire route.

### 4.2 Viking Link Response

- 4.2.1 Viking Link confirms that the pre-installation surveys will adopt the UK standards for geophysical surveys as follows:
- Viking Link will require that the appointed installation contractor follows Sections 7 and 8 of the 'DRAFT JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys' (JNCC 2016), appropriate to sub-bottom profiling and multi-beam and echo-sounder surveys respectively, unless the FINAL guidance is issued which will take precedence. In particular:
    - Establishing a 500m mitigation zone for marine mammal observation.
    - Provide marine mammal observers to implement the JNCC guidelines.
    - Undertake pre-survey search - On-board MMO will scan the waters surrounding the vessel for 30 minutes before operations start to determine whether any marine mammals are within 500m of the survey equipment.
    - Where possible, according to the operational parameters of the equipment concerned, its acoustic energy output shall commence from a lower energy start-up and thereafter be allowed to gradually build up to the necessary maximum output over a period of at least 15 minutes, with the duration from the start of the soft start until the start of the survey line being a maximum of 25 minutes.
    - If the device cannot be ramped up then it shall be switched on and off in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output.

- 4.2.2 In addition, Rijkswaterstaat indicated that there are no equivalent Dutch standards, and that projects in Dutch waters tended to adopt the UK standards

# 5 Occurrence of Palaeolithic and Mesolithic finds

## 5.1 Commission Advice

5.1.1 The Commission advice is that “*the archaeological interests including the possible occurrence of archaeological objects that are not detected in advance are sufficiently included in the EIA. The EIA, however, does not estimate the concentration of possible occurrence of bones from large pleistocene mammals. Such an estimate is easy to make by consulting fishermen who regularly fish in this area. This type of observations can provide important indications for whether or not paleolithic and mesolithic findings such as stone tools and bone-made objects can occur along with these bone concentrations. Within this area the EIA contains large knowledge gaps. The Committee therefore recommends to create a more detailed archaeological guidance. This means that when finding this type of objects it should be described how the guidance will be scaled up and in what form.*

## 5.2 Viking Link Response

5.2.1 It is standard practice to have management plans to control how contractors work in the offshore environment, and these plans include an Unforeseen Archaeology Plan, which specifies how objects found on the seabed should be treated.

5.2.2 In addition, the draft Waterwet Permit contains the following text on “Historically Important Archaeological Finds” (Directive 5), which requires:

- *If during the execution of the activities objects, traces or remnants are found that may be reasonably perceived to be of historical, archaeological or scientific interest, the location of the find must be marked and communicated to the water management authority.*
- *The find must be reported without undue delay to the Director of the Dutch Cultural Heritage Agency [Rijksdienst voor het Cultureel Erfgoed] - Strategy and International Affairs Department. Reports can also be transmitted to the Coast Guard Centre.*
- *The permit holder shall take measures to prevent further impairment of any existing or discovered objects as far as possible.*
- *Based on the findings from the archaeological survey, as stated in Directive 3, the water management authority may impose additional measures to preserve archaeological monuments, including measures to preserve archaeological assets on site, an excavation or the provision of archaeological support for the works.*

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