Ministry of Transport

Espoo consultation response report

October 2014

Transboundary environmental impact assessment of the Fehmarnbelt Fixed Link

Contents

Summary

This report constitutes and documents the result of the Danish Espoo Consultation Process of the transboundary environmental impact assessment (EIA) for the Fehmarnbelt Fixed Link performed by the Danish Ministry of Transport and the Danish Espoo Point of Contact, the Danish Nature Agency. The Fehmarnbelt Fixed Link is subject to a transboundary EIA according to the Espoo Convention on Environmental Impact Assessment in a Transboundary Context and EU Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

The Fehmarnbelt Fixed Link is a joint Danish and German transport infrastructure project across the Fehmarnbelt planned as an immersed tunnel. The Danish Espoo Consultation of the Baltic Sea countries including Germany and Norway as potential affected Parties has been performed in accordance with the Espoo Convention during the period from 28 June to 4 October 2013.

Overview of Respondents
During the Danish Espoo Consultation Process comments on the consultation material were received from seven nations, of which Norway, Finland, Lithuania, Poland, and the Russian Federation had no remarks.

Comments to the Danish Espoo Consultation documentation were received from Sweden and Germany. The respondents from Sweden represent public authorities of which a few had comments only related to environmental issues of the transboundary EIA. The respondents from Germany include a few public authorities and organizations whereas the majority are from private stakeholders.

According to Article 6 of the Espoo Convention, comments received during the Danish Espoo Consultation Process will be taken into account in the development of the final decision of the Fehmarnbelt Fixed Link.

Espoo Consultation Subjects
Consultation comments received during the Danish Espoo Consultation from Swedish and German authorities and public bodies as well as from private German stakeholders are related to the following subjects:

- Espoo Process
- Espoo Documentation
- Alignments and Alternatives
- Technical Description
- Monitoring Programme
- Assessment Methodology
- People and Human Health
- Hydrography
- Water Quality
- Sediment and Seabed Forms
- Benthic Fauna
- Fish Ecology
- Commercial Fishery
- Marine Mammals
- Birds
- Migrating Bats
- Recreation and Tourism
- Raw Materials and Waste
- Air Quality and Climate
- Ship Traffic and Navigation
- Cumulative Impacts

This Danish Espoo Consultation Response Report presents comments received in the Danish Espoo Consultation Process. Comments are followed by responses given by the Danish Party of origin.

The Danish Ministry of Transport and the state owned Femern A/S has carefully assessed all comments received during the Danish Espoo Consultation and they will, where relevant, be incorporated into the project design and further planning of the project.

According to the Espoo Convention, the consulted affected Parties will be notified of the final decision on the Fehmarnbelt Fixed Link.

1 Introduction

This report constitutes and documents the outcome of the Danish Consultation Process of the transboundary environmental impact assessment (EIA) for the Fehmarnbelt Fixed Link (Danish Espoo Consultation Response Report) performed by the Danish Ministry of Transport and the Danish Espoo Point of Contact, the Danish Nature Agency.

The Fehmarnbelt Fixed Link (hereafter "the Project") is a joint Danish and German transport infrastructure project across the Fehmarnbelt (Figure 1.1).

Figure 1.1 The Fehmarnbelt Region

The Danish Espoo Consultation Process of the Baltic Sea countries including Germany and Norway as potential affected Parties is performed in accordance with the Espoo Convention on Environmental Impact Assessment in a Transboundary Context (hereafter "the Espoo Convention" or "the Convention") and, as required, without undue delay after completion of the Danish national EIA documentation.

The Danish Espoo Consultation was performed from 28 June to 4 October 2013.

Comments on the Danish Espoo Consultation documentation were received from Sweden and Germany, while Norway, Finland, Lithuania, Poland and the Russian Federation had no remarks.

A German Espoo Consultation Process will be performed by the relevant German authority as a part of the German national Plan approval process.

The Fehmarnbelt Fixed Link has been planned in accordance with the 2008 Treaty between the Kingdom of Denmark and the Federal Republic of Germany for a fixed link across the Fehmarnbelt (hereafter "the State Treaty").

The Kingdom of Denmark is responsible for the planning, construction, and operation of the Fehmarnbelt Fixed Link. In order to carry out this task the government of Denmark has established the company Femern A/S, which is 100% owned by the Danish State, represented by the Danish Ministry of Transport.

Femern A/S is on behalf of the Danish Ministry of Transport, conducting the investigations, planning, and design in relation to the establishment of the Fehmarnbelt Fixed Link.

The Danish Nature Agency is the Danish Espoo authority and responsible for giving information about the legal requirements of the Espoo Convention and the EU Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

The final decision and approval of the Project in Denmark is to be granted as a Construction Act passed by the Danish Parliament.

The Fehmarnbelt Fixed Link has been planned as a consequence of Denmark and Germany recognizing that the transport infrastructure between the two states should be improved in order to promote the European and regional transport of goods and people. A fixed link across the Fehmarnbelt would lead to an appreciable improvement in the transport of goods and people between the two countries and also between continental Europe and Scandinavia.

Furthermore, the two countries wishes to strengthen the transport links between the two states and thereby create the necessary conditions for a more intensive cultural and economic cooperation to the benefit of the European Union, the two states, and the regions bordering the Fehmarnbelt.

A Fehmarnbelt Fixed Link will promote rail traffic between Germany and Denmark and also between continental Europe and Scandinavia and strengthen the integration and vitality in the regions as well as promote competition and development in the regions.

The fixed link across the Fehmarnbelt will extend to stretch across the 18 kilometers wide Fehmarnbelt between the Danish island of Lolland and the German island of Fehmarn in the western part of the Baltic Sea. It is planned as an immersed tunnel based on investigations of different technical solutions in terms of e.g. technical construction risks, construction investments and environmental factors.

The Fehmarnbelt region is demarcated as the northern part of Germany, the eastern part of Denmark and the southern part of Sweden (Figure 1.1). The region has a population of just under 9 million, ap-

prox. 1.2 million in the Swedish part, approx. 2.5 million in the Danish part and approx. 5.2 million in the German part.

The Fehmarnbelt Fixed Link covers areas on Lolland (Denmark), Fehmarn (Germany) and a marine area (Denmark and Germany). The project crosses the national border between Denmark and Germany.

Construction works will take place within the national jurisdictions of both countries.

1.1 Reading guide

The Danish Espoo Consultation Response Report includes comments received during the Consultation Process as well as responses to those comments from the Danish Party of origin. The report is divided into chapters according to the possible affected Party and, where relevant, further divided into authorities and private stakeholders including NGO's. This structure allows each potentially affected Party to easily obtain an overview of the comments and responses related to their country or institution. In each chapter the comments are organized by topic and follow the structure of the Espoo Report. The specific content of each chapter is described in detail below.

Chapter 2 presents the legal basis for the Espoo Consultation Process and includes a presentation of the documentation and processes performed thus far. An overview of respondents in the Danish Espoo Consultation Process is also provided.

In addition, Chapter 2 describes the scope of the Espoo Consultation Process for the Fehmarnbelt Fixed Link, including the delimitation of transboundary EIA elements and topics.

Chapters 3 to 5 present the issues raised by every specific comment received in the Danish Espoo Consultation Process, but is not an accurate word-by-word rendering. Comments are followed by responses given by the Danish Party of origin.

Comments were received from only two countries, Sweden and Germany. Consequently, the chapters are compiled as follows:

- Chapter 3: comments from Swedish authorities
- Chapter 4: comments from German authorities
- Chapter 5: comments from private German stakeholders.

In each chapter, the comments are organized according to topic as described below:

Espoo process
Comments related to the general aspects of the Danish Espoo Consultation Process, including correspondence with national EIA processes, correspondence between the Danish and German parts of the Espoo and EIA processes, and the language of available project reports.

General issues
Comments related to the technical baseline of the Fehmarnbelt Fixed Link as well as other fundamental

aspects of the environmental assessments, such as investigated alternatives and alignments and the monitoring programme.

Transboundary impacts
Comments related to the EIA as well as the assessed environmental components themselves. In the Fehmarnbelt Fixed Link the term “component” is used about the subjects of the assessment as e.g. water quality or marine mammals. The topics follow the order of the corresponding environmental assessment of components in Chapter 7 of the Espoo Report. The present report only includes components mentioned in the comments received during the Danish Espoo Consultation Process.

In each chapter, individual comments are presented in a box followed by responses provided by the Danish Party of origin. The responses focus on transboundary environmental impacts as well as on the correlation between components. Where relevant, any consequences with regard to further development of the project as a result of the comments received during the Danish Espoo Consultation Process are described.

2 Espoo Consultation

This chapter outlines the legal framework for carrying out the Danish Espoo Consultation Process for the Fehmarnbelt Fixed Link including correspondence with national EIA processes in Denmark and Germany. The Danish Espoo Consultation documentation is presented as well as an overview of the Danish Espoo Consultation Process.

At the end of the chapter, an overview of the respondents is presented, along with the principles for delimiting the scope of the Danish Espoo Consultation Response Report.

2.1 Legal framework

2.1.1 The Espoo Convention

The Fehmarnbelt Fixed Link is subject to a transboundary EIA according to the Espoo Convention on Environmental Impact Assessment in a Transboundary Context and EU Directive 2011/92/EU as the Fehmarnbelt Fixed Link can potentially impose transboundary environmental impacts.

The Espoo Convention's primary aim is to prevent, mitigate and monitor environmental damage by ensuring that explicit consideration is given to transboundary environmental factors before a final national decision is made as to whether to approve a project.

In addition, the objective of the Espoo Convention is the identification and communication of potential transboundary impacts to stakeholders via the application of an impact assessment.

Parties of origin
According to Article 3 of the Espoo Convention, the Parties of origin are responsible for the content and acknowledgement of receipt of notifications, and for the exchange of relevant information to/from the potentially affected countries.

For a transnational project such as the Fehmarnbelt Fixed Link, both Denmark and Germany are Parties of origin.

In Denmark, the Danish Ministry of Environment is responsible for the above-mentioned exchange of relevant information to and from the potentially affected countries in connection with the Danish Espoo Consultation Process.

Possible Affected Parties
According to Article 3 of the Espoo Convention, Germany and Denmark must notify possible affected Parties. In relation to the Fehmarnbelt Fixed Link, the possible affected Parties, apart from Denmark and Germany, could be countries around the Baltic Sea, Sweden, Poland, Finland, Estonia, Latvia, Lithuania, the Russian Federation and Norway.

Furthermore, since the Fehmarnbelt Fixed Link is a transnational project, the Parties of origin (Denmark and Germany) are also considered possible affected Parties.

2.1.2 National Environmental Impact Assessment

According to the Treaty from 2008 between the Kingdom of Denmark and the Federal Republic of Germany, the necessary approval procedures for the part of the fixed link across the Fehmarnbelt that is situated on German territory shall be carried out according to German law and according to Danish law for the part of the fixed link across the Fehmarnbelt that is situated on Danish territory.

Because of the legislative and administrative differences in the requirements for the EIA documentation in Denmark and Germany, it has been decided to prepare two individual sets of EIA documentation, one for the Danish EIA procedure and one for the German EIA procedure. Both the Danish and the German EIA's describe and assess the environmental impacts for the entire project and both are based on the same environmental data.

In Denmark the EIA is presented in one document, the Danish VVM report (Vurdering af Virkninger på Miljøet). The VVM report describes the immersed tunnel and alternative technical solutions, and assesses the immersed tunnel, including design optimisation and mitigation and compensation measures. The complete VVM documentation including background reports can be found at http://vvmdocumentation.femern.com/. The public hearing of the Danish VVM report has been carried out simultaneously with the Danish Espoo Consultation.

In Germany the EIA is presented in two documents, the UVS (Umweltverträglichkeitsstudie) and the LBP (Landschaftspflegerischer Begleitplan). The UVS assesses the immersed tunnel, a bored tunnel solution and a cable-stayed bridge. The LBP focuses solely on the immersed tunnel with a more detailed planning status. On the basis of an impact and compensation balance the LBP defines mitigation and compensatory measures as well as other arrangements for the equalisation of the impacts of the project on the environment. The UVS and LBP can be found at http://pfv.femern.com/.

Due to different laws, guidelines and practices on assessing impacts with and without design optimisation and mitigation and compensation measures, the assessments in the VVM/UVS/LBP can have different nuances. However, the conclusions of the VVM are similar to the conclusions of the UVS and the LBP together.

2.2 The Espoo documentation

The Espoo Report constitutes the Fehmarnbelt Fixed Link documentation for the Danish Espoo Consultation Process, focusing on transboundary environmental impacts, including a summary of these (hereafter 'Espoo Report').

The Espoo Report is prepared to serve the objectives and comply with the requirements of the Espoo Convention.

Focusing on the Espoo Convention, the Espoo Report does not replicate all of the detailed material that is required in the national EIA's (such as national legislative provisions and detailed country-specific baseline descriptions), and is focused instead on providing sufficient background information, including baseline data, for facilitating the identification of transboundary impacts. The assessment includes design optimisation as well as mitigation and possible compensation measures. As the focus is on the

transboundary impacts, the conclusions therefore have different nuances compared to the national EIA reports.

According to the Espoo Convention on Environmental Impact Assessment in a Transboundary Context The Party of origin shall provide, an opportunity to the public in the areas likely to be affected to participate in relevant EIA procedures regarding proposed activities and shall ensure that the opportunity provided to the public of the affected Party is equivalent to that provided to the public of the Party of origin.

The Espoo Report is written in English and as a courtesy its summary (hereafter 'Summary Report') is translated into German, Polish, Finnish, and Swedish.

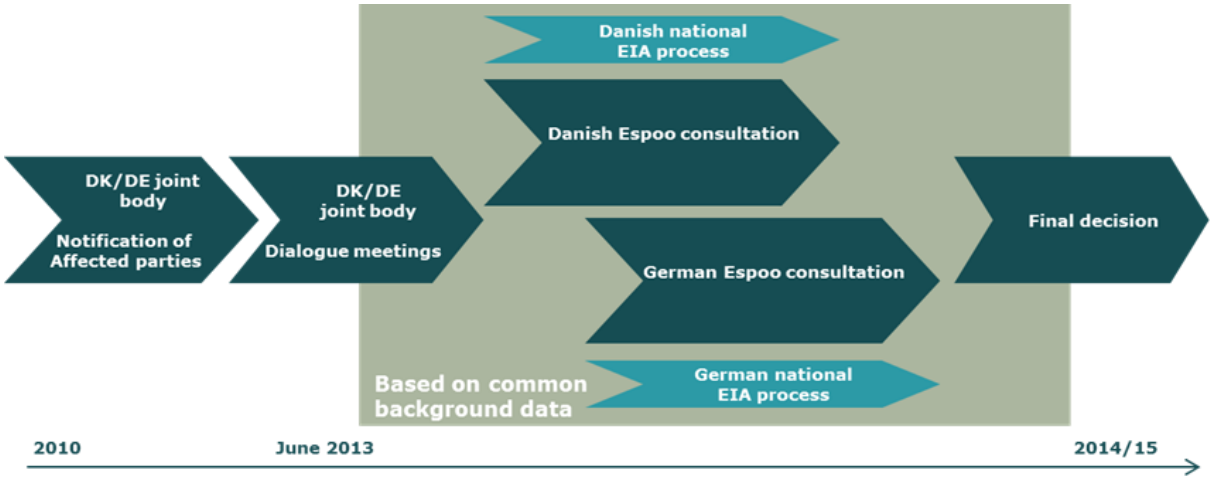
2.3 The Espoo Process

2.3.1 Background

The Fehmarnbelt Fixed Link has a large number of both local and regional stakeholders. As a result, Femern A/S has conducted hearings and consultations, as well as supplied the local communities with information about the project in order to involve all relevant parties and stakeholders in the further development of the project. Femern A/S will continue these information activities (e.g. newsletters) while the Project is being further developed.

Hearings and consultations are being performed in line with legal requirements and, in addition, other means of information have been used, including web information, local meetings and participation in conferences. An overview of the hearing and consultation process is presented in figure 2.1.

Figure 2.1 Flow diagram showing the Espoo process and parallel national EIA processes



2.3.2 Notification

By letter of 21 June 2010 and according to Article 3 of the Espoo Convention Denmark notified of the Danish project to construct and operate a fixed link across the Fehmarnbelt between Germany and Denmark crossing the Exclusive Economic Zone (EEZ) and the territorial waters of Germany and Den-

mark, respectively. The notified countries are Sweden, Poland, Finland, Estonia, Latvia, Lithuania, the Russian Federation and Norway.

Denmark received response from Finland, Germany, Norway, Poland, and Sweden, who indicated their wish to participate in the Espoo procedure. Denmark has also received comments on the scope of the EIA from these countries.

Estonia, Latvia and Lithuania have answered that they would like to be informed.

The notification comments are published on the Femern A/S website, www.femern.com.

Comments from notified Parties have been evaluated and taken into account, and are addressed in the Espoo Report, where relevant.

2.3.3 Dialogue meetings

In the pre-consultation period, dialogue meetings concerning the Danish Espoo Consultation Process of the Fehmarnbelt Fixed Link were offered to Espoo Points of Contact in countries of potentially affected Parties. Only Poland and Sweden expressed interest for such a meeting. Consequently, dialogue meetings were held in these countries on 12 June and 20 June 2013, respectively.

At the meetings the principles of the technical design and construction of the immersed tunnel were presented by Femern A/S, while a representative from the Danish Nature Agency described the formal Espoo consultation process in Denmark.

2.3.4 Danish Espoo Consultation

In June 2013, Femern A/S finished the preparation of an EIA for the Fehmarnbelt Fixed Link to be used in the Danish national hearing procedure consisting of an EIA report (VVM in Danish), a summary report and an appendix with visualizations of the project during construction and operation.

Danish Consultation of Espoo Report of the Fehmarnbelt Fixed Link was performed in accordance with articles 4 and 5 of the Espoo Convention on Environmental Impact Assessment in a Transboundary Context and with the EU Directive 2011/92/EU. The Espoo Report containing the transboundary environmental impacts assessment together with a summary in English was sent to the interested affected Parties identified in the notification 28 June 2013. A summary in Swedish, Polish, Finnish, and German was subsequently sent to the interested affected Parties 12 July 2013.

The material was sent from the Danish Espoo Point of Contact to the national Espoo points of contact or other Party designated as the official Espoo point of contact for the specific project (e.g. in the German federal state Schleswig-Holstein the authority Landesbetrieb Straßenbau und Verkehr, LBV-SH).

The designated point of contact conducted the national distribution of the Espoo documentation material.

The consultation period of 14 weeks was closed on 4 October 2013.

Overview of Respondents
Comments on the Danish Espoo Consultation documentation were received from Sweden and Germany.

The Swedish respondents represent public authorities, of which a few had comments only related to environmental issues. The respondents from Germany include a few public authorities and organisations, but the majority are private stakeholders. In addition a collection of 603 signatures was received from German private stakeholders.

An overview of received comments during the Danish Espoo Consultation Process is presented in Appendix 1. The names of public authorities and bodies are provided, whereas private respondents remain anonymous.

Further Process with Danish Consultation Comments
This Danish Espoo Consultation Response Report is prepared by Danish Ministry of Transport and the state owned company Femern A/S. The Danish Nature Agency has provided information regarding the legal requirement of the Espoo Convention.

According to Article 6 of the Espoo Convention, comments received during the Danish Espoo Consultation Process are to be taken into account in the final decision making process on the Fehmarnbelt Fixed Link, together with the outcome of the national EIAs and the notification process.

All comments received from possible affected Parties during the Danish consultation period are therefore considered in the present report and will, where relevant, be incorporated into the project design and/or further planning.

2.3.5 Final Decision

According to the State Treaty from 2008 between the Kingdom og Denmark and the Federal Republic of Germany, the necessary approval procedures for the part of the fixed link across the Fehmarnbelt that is situated on German territory shall be carried out according to German law and according to Danish law for the part of the fixed link across Fehmarnbelt that is situated on Danish territory.

In Denmark, approval will be granted as a Construction Act passed by the Danish Parliament.

In Germany, approval will be granted by the German approval authority, the Landesbetrieb für Verkehr und Straßenbau, Schleswig-Holstein, Betriebssitz Kiel (LBV-SH).

According to Article 6 in the Espoo Convention, the consulted affected Parties will be provided with the final decision on the Fehmarnbelt Fixed Link when it is available, together with the reasoning and considerations upon which it is based.

2.3.6 Delimitation of Espoo Consultation Scope

The purpose and focus of the Espoo Process is to prevent, reduce and control significant adverse transboundary environmental impacts from proposed activities as described in the Espoo Convention. There-

fore, the content of the Espoo Report as well as the present Danish Espoo Consultation Response Report is delimited to consider only environmental impacts with a transboundary effect.

A number of comments to the Danish Espoo Consultation Process from German stakeholders concern issues and impacts that are local in nature (i.e. not transboundary). Project-specific environmental impacts originating from local activities on e.g. Fehmarn will be addressed in the national German plan approval process, where more comprehensive documentation provided by Femern A/S will be available on the subjects concerned.

Comments regarding overall legal framework of the Fehmarnbelt Fixed Link are to some extent addressed in Chapter 2 of the present Danish Espoo Consultation Response Report, and further information can be found on http://www.femern.com/.

To limit the scope of the Danish Espoo Consultation Response Report to a transboundary context, the following principles have been applied:

- Comments concerning a technical design feature of the project that does not result in a potential transboundary impact are considered outside the scope of the report.

- Comments concerning a potential impact from the project that is local in nature and does not give rise to indirect potential transboundary impacts are considered to be outside the scope of the report.

- Comments concerning aspects of the legal framework of the Fehmarnbelt Fixed Link other than the Espoo Process are considered outside the scope of the report.

The responses to the Danish Espoo Consultation Process that have been assessed to be outside the scope of the Espoo Consultation Process are not addressed in the Danish Espoo Consultation Response Report.

However to provide the reader with an overview, these are listed at the end of each chapter when relevant.

3 Swedish Consultation Comments

The Espoo Point of Contact in Sweden, the Swedish Environmental Protection Agency (Naturvårdsverket), received comments from 11 Swedish public institutions during the Danish Espoo Consultation Process.

Of these, the following six institutions had no comments on the consultation documentation:

- Sveriges meterologiska och hydrologiska institut (Swedish Meteorological and Hydrological Institute)
- Riksantikvarieämbetet (the Swedish National Heritage Board)
- Myndigheten för samhällsskydd och beredskap (Swedish Civil Contingencies Agency)
- Boverket (The Swedish National Board of Housing, Building and Planning)
- Sveriges Geologiska undersökning (the Geological Survey of Sweden)
- Kustbevakningen (the Swedish Coast Guard)

Specific comments on the Danish Espoo Consultation documentation were provided by the following five Swedish institutions:

- Havs och Vattenmyndigheten (the Swedish Agency for Marine and Water Management)
- Sjøfartsverket (the Swedish Maritime Administration)
- Trafikanalys (Transport Analysis)
- Trafikverket (Swedish Transport Administration)
- Trelleborgs Kommun (Trelleborg Municipality)

No comments were received from private Swedish stakeholders during the Danish Espoo Consultation Process for the Fehmarnbelt Fixed Link.

The comments received from Sweden during the Danish Espoo Consultation Process can be divided into two topics: general issues in the Espoo documentation and the transboundary environmental impact assessment.

Comments from the above institutions as well as responses from the Danish Party of origin are presented in this chapter.

3.1 General Issues

Comments from Sweden on general issues of the Danish Espoo Consultation Process relates only to the content of the monitoring programme planned by Femern A/S.

3.1.1 Monitoring Programme

Monitoring of Sediment Spill

Comments from Swedish stakeholders

- The Swedish Havs och Vattenmyndigheten presuppose that monitoring of sediment deposition caused by the Fehmarnbelt Fixed Link will be carried out in order to ensure that threshold values given in the Espoo Report are not exceeded and that no significant transboundary impacts will occur, as assessed in the Espoo Report.

- It is also presupposed that mitigation measures will be applied, if the monitoring indicates exceedence of expected impacts.

Response from the Danish Party of origin

Femern A/S acknowledges the comment given by The Swedish Havs och Vattenmyndigheten, and fully agrees on the importance of monitoring sediment spill during construction of the Fehmarnbelt Fixed Link.

Chapter 8 in the Espoo Report describes the overall objectives of the monitoring programme for the Fehmarnbelt Fixed Link. Femern A/S will further develop the monitoring programme, and the monitoring programme will be agreed with relevant Danish and German authorities before the start of construction.

Monitoring of Fish Including Cod

Comments from Swedish stakeholders

- The Swedish Havs och Vattenmyndigheten emphasize the importance of monitoring populations of fish, especially cod, in the Baltic Sea in order to ensure that the impact from the Fehmarnbelt Fixed Link is minimised according to the assessments of the Espoo Report.

Response from the Danish Party of origin

Femern A/S acknowledges the comment given by The Swedish Havs och Vattenmyndigheten on the monitoring of populations of fish in Fehmarnbelt during construction of the Fehmarnbelt Fixed Link.

As assessed in Chapter 7.6 of the Espoo Report, disturbances as well as visible and measurable temporary increases in suspended sediment loads in the water column are expected only in Fehmarnbelt. Temporary disturbances during the construction period, together with the permanent loss of seabed for land reclamation areas and tunnel portals, are assessed in the Espoo Report to cause insignificant transboundary impacts on fish ecology in the Baltic Sea and adjacent marine areas. It is therefore expected that basic living and recruitment conditions will be intact during the construction and operation of the project.

Chapter 8 in the Espoo Report describes the overall objectives of the monitoring programme for the Fehmarnbelt Fixed Link. Femern A/S will further develop the monitoring programme, and the monitoring programme will be agreed with relevant Danish and German authorities before the start of construction.

EU Marine Strategy Directive

Comments from Swedish stakeholders

- The Swedish Havs och Vattenmyndigheten considers that the monitoring programme should be planned to control effects of the Fehmarnbelt Fixed Link in relation to compliance with the EU Marine Strategy Framework Directive. In particular, the following descriptors of the Directive should be monitored: biological diversity, marine food webs, physical damage to sea-floor integrity, and changes in hydrographical conditions (no. D1, D4, D6, D7 in the Directive).

Response from the Danish Party of origin

The EU Marine Strategy Directive has been implemented in both German and Danish legislation, establishing goals for good environmental conditions in German and Danish marine waters. First generation marine strategies have been developed in both countries, comprising guidelines on how to monitor the objectives.

The national EIA documentation presented in Denmark and Germany specifically addresses and assesses the potential impact on the 11 descriptors of the Directive. On the basis of these assessments it can be concluded that none of the temporary impacts in Fehmarnbelt are expected to conflict with, hinder or delay the possibility to reach good environmental conditions in all parts of the Baltic Sea.

The descriptors of marine environmental quality outlined by the Directive are planned to be monitored and documented as part of the general national monitoring programmes in Denmark and Germany.

3.2 Transboundary Environmental Impact Assessment

Comments received from Sweden to the transboundary EIA concerned the following components:

- Water quality
- Fish ecology
- Air quality and climate
- Ship traffic and navigation

The following sections outline the comments received and responses given by the Danish Party of origin.

3.2.1 Water Quality

Comments from Swedish stakeholders

- It is stated by Trelleborg Kommun that construction of the Fehmarnbelt Fixed Link may cause changes in the water exchange and sediment dispersion in the Baltic Sea. Trelleborg Kommun stresses that it is therefore important to describe and assess how these changes as well as the dredging activities may affect the water quality in the Baltic Sea.

Response from the Danish Party of origin

In agreement with the comment from Trelleborgs Kommun, it is assessed by Femern A/S that pressures from the Fehmarnbelt Fixed Link with potential impacts on water exchange in the Baltic Sea as well as on water quality and sediment dispersion are of high importance. Therefore, comprehensive baseline investigations of water quality have been carried out and presented along with the national EIAs.

In Chapters 7.4 and 7.5 of the Espoo Report on hydrography and water quality, respectively, the impacts from, inter alia, project structures and dredging activities are described and assessed.

The modelling studies showed that the marine structures of the immersed tunnel will not have any significant impact on the stratification of the waters in the Fehmarnbelt or the Central Baltic Sea which could potentially affect water quality. Furthermore, it was concluded in the Espoo Report that dredging activities will not give rise to impacts on water quality in terms of increased nutrient release or toxic concentrations of heavy metals or persistent organic pollutants.

Impacts from increased turbidity of the water caused by dispersed sediment are assessed in the Espoo Report Chapter 7.6 on sediment and seabed morphology. It is concluded that the plumes from the marine works at the fixed link site are local, and no impacts are expected from Denmark and Germany into the transboundary waters.

In order to document and control the impacts on water quality from the Fehmarnbelt Fixed Link, a monitoring programme will be planned by Femern A/S and carried out in the construction phase as well as during part of the operational phase. The objective of the programme is to ensure that potential impacts from the project will be in adequate compliance with the assessments of the EIA and Espoo Report as well as the requirements in the national and international legal framework, e.g. the European Water Directive.

3.2.2 Fish Ecology

Comments from Swedish stakeholders

- The Swedish Havs och Vattenmyndigheten stress that a barrier effect from the construction phase of the tunnel may impact fish migrating to Swedish waters, and increased turbidity of the water may potentially impact recruitment of e.g. cod in Swedish waters.

- Furthermore, it is stressed that the footprint of the project itself may also potentially impact the area for spawning and nursery, which may affect fish in Swedish waters.

- Havs och Vattenmyndigheten finds it of particular importance to minimize the impact on cod, and to follow up on the impact in a monitoring programme. It is noted that the construction period is relatively long and that the existing population of cod is already impaired in the Baltic Sea.

Response from the Danish Party of origin

Femern A/S has carried out comprehensive baseline studies on distribution of fish populations and fish ecology in connection with preparation of the EIA.

In Chapter 7.11 of the Espoo Report the impacts of different project pressures, including land reclamations, changes in the hydrographical regime, sediment spill, noise and vibrations, have been assessed for the most important fish species. The importance of fish species was based on protection level and ecological importance.

Concerning cod, temporary land reclamation will lead to a medium impairment of spawning, egg-larvae drift and feeding for cod in the near zone (500 m distance from the footprint of the project). The possible direct transboundary effects are mainly caused by sediment plumes and re-suspension of material in the Mecklenburg and Arkona Bights, where a medium level of sedimentation is expected for the first three years of the construction period. During operation, the physical structures in the Danish near zone are expected to cause a medium impairment of cod feeding; and due to land reclamation there is a small, but less severe loss of cod nursery in both the German near zone and the Danish near zone.

According to the Espoo Report Femern A/S has assessed that an insignificant impact may occur in Swedish waters on the fish species herring, cod and whiting, whereas other species are not expected to experience a transboundary impact from the project.

In order to control and ensure that the potential impact from the construction of the immersed tunnel will be in compliance with the assessments of the Danish Espoo and EIA documentation as well as national and international legislation, a monitoring programme will be planned and carried out. For further information see Section 3.2.2.

3.2.3 Air Quality and Climate

Comments from Swedish stakeholders

- A comment from the Swedish Trafikanalys relates to the impact of changes in freight traffic caused by the Fehmarnbelt Fixed Link. It is stressed that the project can be expected to impact the mode of transport far away from the project area. Therefore, at least the environmental assessment of global impacts should be based on a larger investigation area than the one applied in the assessment of local and regional environmental assessments.

Response from the Danish Party of origin

A larger investigation area was employed in the assessment of the impact of the Fehmarnbelt Fixed Link on greenhouse gas emissions than generally for environmental components. Emissions have been calculated based on an analysis of changes in the traffic within an influence area covering Scandinavia and most of Northern Europe. The full model is described in the report 'Fehmarn Belt Forecast 2002'.

The overall assessment of traffic impacts on climate concluded that an immersed tunnel will result in a reduction of greenhouse gas emissions in the operation phase (reference year 2025) with regard to traffic. This result thus includes changes in long-distance traffic patterns caused by the Project, mainly due to expected shorter transport routes for freight, transfer of freight transport from lorries to trains and possible closure of the ferries between Rødby and Puttgarden.

3.2.4 Ship Traffic and Navigation

Comments from Swedish stakeholders

- The Swedish Sjøfartsverket comments that it is of great importance to secure ship traffic and safety to and from the Baltic Sea through Fehmarnbelt. Disturbance of ship traffic should be minimized, even if it may impact the time schedule or construction cost of the project in a negative way. Sjøfartsverket thereby agrees with the Vessel Traffic Service (VTS) and coordination centre for construction vessels planned by Femern A/S.

- The Swedish Trafikverket comments that ship traffic in as well as to and from Swedish waters must not be affected by the construction or the operation of the immersed tunnel.

Response from the Danish Party of origin

As described in the Espoo Report chapter 7.23, the construction of an immersed tunnel involves a number of marine activities, which will affect the ship traffic and navigation in the Fehmarnbelt. All non-construction ship traffic will be maintained throughout the construction period; i.e. commercial traffic on the T–route through Fehmarnbelt, ferry traffic across the Fehmarnbelt, commercial traffic on main navigational routes in the western part of Fehmarnbelt, and additional traffic with smaller ships in the area (local commercial ships, fishing boats and pleasure crafts).

In order to uphold and secure navigational safety in the Fehmarnbelt area during construction of an immersed tunnel Femern A/S has in collaboration with German and Danish maritime authorities established a maritime coordination group. The risk control options include a temporary Vessel Traffic Service (VTS) system and guard ships in connection with each offshore work area, as well as safety zones around work areas and a work vessel coordination (WVC) centre.

On the basis of these considerations and the plan for construction activities prepared by Femern A/S, disturbance of ship traffic through Fehmarnbelt will be minimized, navigational safety will be secured and passage will be maintained throughout the entire construction period for the immersed tunnel.

4 German Consultation Comments – Authorities

In Germany the Espoo Point of Contact in relation to the Fehmarnbelt Fixed Link is Landesbetrieb Straßenbau und Verkehr, Schleswig-Holstein, Betriebssitz Kiel (LBV-SH) on behalf of the Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit, BMUB.

The Danish Espoo Point of Contact has received a total of seven responses from German authorities during the Danish Espoo Consultation Process.

Four of these had no comments on the Espoo Documentation and considered the project and the assessment to be sufficient. The respondents were:

- Der Ministerpräsident des Landes Schleswig-Holstein, Staatskanzlei (the Minister-President, State Chancellery)
- Archäologisches Landesamt (Archaeological State Office of Schleswig-Holstein)
- Kreis Ostholstein (the County of Ostholstein)
- Wasser- und Schifffahrtsverwaltung des Bundes, WSV (Waterways and Shipping Administration of the Federal Government)

Specific comments on the Espoo documentation were received from the following three German authorities:

- Ministerium für Energiewende, Landwirtschaft, Umwelt, und ländliche Räume, MELUR (Ministry of Energy, Agriculture, the Environment and Rural Areas Schleswig-Holstein)
- Stadt Fehmarn
- A joint comment from 16 municipalities in Ostholstein

The comments from German authorities on the Danish Espoo Consultation focused on the execution of the Espoo Process, the Espoo Consultation documentation and the language of the reports, aspects of the technical description and other general issues of the Espoo Report as well as a number of components in the transboundary EIA.

4.1 The Espoo Process

Some of the comments from German authorities received during the Danish Espoo Consultation Process relate to the Espoo Procedure and the legal requirements of the Espoo Consultation Process as well as the content and language of the Espoo documentation. The specific comments given by the Stadt Fehmarn and 16 municipalities in Ostholstein are outlined below.

4.1.1 The Danish Espoo Process

Comments from German authorities

- Stadt Fehmarn comments that the time frame of the Espoo Consultation is not sufficient to make a critical review of the Espoo Report.

- Stadt Fehmarn furthermore comments that the results of the Espoo Process should be evaluated before conduction of the national EIA Process in order to take the results of the Espoo consultation into consideration in the national Danish approval process.

- The municipalities in Ostholstein stress that holding only one public meeting, which was in Denmark, is not in compliance with the principle of reciprocity and equality of the Espoo Process.

Response from the Danish Party of origin

The Danish Espoo Consultation Process of the potentially affected Parties from construction and operation of the Fehmarnbelt Fixed Link was performed without undue delay after finalisation of the Danish national EIA documentation as required by the Espoo Convention (Article 5).
All comments received in the Danish Espoo Consultation Process will be considered by the Ministry of Transport and taken into account where relevant in the further development of the project as required by the Espoo Convention.

The competent Danish Espoo authority, the Danish Nature Agency is of the conviction that the current consultation is in compliance with the Espoo Convention and EU requirements.
Furthermore the Danish Nature Agency is convinced that all affected parties can be considered to have had the opportunity to participate in the Danish Espoo process. Furthermore, a consultation period of more than eight weeks is in compliance with Danish legal practice. The actual consultation period of the Fehmarnbelt Fixed Link was 14 weeks.

The initial Espoo notification process of the Fehmarnbelt Fixed Link, where countries of potentially affected Parties were offered an opportunity to participate in the Espoo Process, was conducted jointly by Germany and Denmark in 2010 (see Chapter 2). Taking the notification comments into account, the Danish Espoo Consultation documentation was sent in June 2013 to the national Espoo Points of Contact of potentially affected Parties who expressed interest in participating in the Espoo Consultation Process during the notification period. The Espoo Consultation documentation thereafter was distributed to national stakeholders in accordance with the Espoo Convention.

In the pre-consultation period, dialogue meetings concerning the Espoo Process of the Fehmarnbelt Fixed Link were offered to Espoo Points of Contact in countries of potentially affected Parties. Only Sweden and Poland expressed interest in such a meeting. Consequently, meetings were held in Sweden and Poland on 20 June and 12 June 2013, respectively.

In the Espoo consultation letter sent to national Espoo Points of Contact, it was announced that a public meeting with participation of the Danish Ministry of Transport, Femern A/S and the Danish Ministry of Environment would take place on Lolland on 29 August 2013 in relation to consultation of the Danish

EIA. The public meeting was conducted in Danish, but interpretation from Danish to German was provided at the meeting.

The Danish Espoo Documentation – Language

Comments from German authorities

- Stadt Fehmarn states that in the Summary Report there is only a short outline of the project description, of the planning process and the alternatives, and only the results of the transboundary environmental impacts are displayed. There is no description of the assessment method and evaluation. This is stressed not to be sufficient for a complete opinion on the Espoo Consultation by Stadt Fehmarn, and the reservation is taken that a German translation of the Espoo Report will be provided.

- Municipalities in Ostholstein comment that it is not possible for the German public (affected citizens, cities and municipalities, environmental organizations, etc.) to participate in the Espoo Consultation Process or to make an equivalent assessment of the EIA report with the present language barriers, because only a 62-page summary is available in German. According to § 9b in the German EIA legislation, the Espoo documents should also be available in German.

Response from the Danish Party of origin

The complete original Espoo Report is available in English. A non-technical summary of the Espoo Report is available in English, German, Polish, Swedish, and Finnish.

All background documentation is in English and is presented along with the Danish EIA documentation (see Section 2.1.2).

The Danish Nature Agency has informed that neither the Espoo Convention nor the EIA Directive contains any provisions of to what extent the relevant environmental impact documentation for the transboundary public participation has to be translated into the official language. The Danish national law does not constitute any translation requirement of the affected Parties either.

The Party of origin is therefore convinced that the documentation provided in the Danish Espoo Consultation Process meets the legal requirements.

The national EIAs are prepared in national languages e.g. the Danish EIA is in Danish, and the complete and detailed EIA documents for the German process is, as required by German law, in German language. The documentation is made available to the public during consultation of the German plan approval documentation.

The Danish Espoo Documentation – Content

Comments from German authorities

- It is stated by Stadt Fehmarn that the environmental components investigated are not plausible and do not correspond to the components specified by German EIA legislation.

Response from the Danish Party of origin

In 2010 Femern A/S presented a Scoping Report for the Fehmarnbelt Fixed Link. The purpose of the Scoping Process was to determine the framework for the content, scope and area of the studies in Denmark and Germany. The methods and other relevant subjects relating to the Environmental Impact Statement were described and agreed on with the competent authorities.

The content of the Scoping Report and thereby the environmental conditions to be included in the baseline investigations and the subsequent EIA were proposed by Femern A/S and the Schleswig-Holstein State Agency for Road Construction and Transport, Lübeck Office (LBV Lübeck). The content was approved by the competent Danish and German authorities as well as presented to the environmental organizations in Germany and the public in Denmark, who all participated in deciding on the framework of the assessment.

It is the opinion of the Party of origin that the investigated environmental components included in the Espoo Report are in compliance with the legal requirements of both Denmark and Germany.

4.2 General Issues

A number of comments received from German authorities during the Danish Espoo Consultation Process concern the technical description of the immersed tunnel as well as the assessment of alternative technical solutions.

These subjects, which form the basis for the transboundary impact assessments of environmental components, are addressed in the present section.

4.2.1 Technical description

Two German authorities (Ministerium für Energiewende, Landwirtschaft, Umwelt, und ländliche Räume – MELUR) and Stadt Fehmarn raised comments concerning the technical description of the immersed tunnel. The comments relate to the establishment of the land reclamation areas, the technical solution and the economic basis for the general construction cost estimates as outlined below.

Tunnel protection layer

Comments from German authorities

- MELUR states that according to German legislation the protection layer cannot be treated as a mitigation measure if it is part of the technical design of the project which impacts the environment.

Response from the Danish Party of origin

The protection layer on top of the immersed tunnel is a technical installation to protect the tunnel, which is designed with an environmental optimization in order to prevent (mitigate) impacts on the marine environment.

The English expression environmental optimization is translated to the German ‘Ausgleichsmaßnahme’ in the German Espoo summary, which is mitigation measure in English. The implementation of mitigation measures and environmental optimizations in the assessment of the Project varies between coun-

tries, and therefore a definition of methodology was decided initially for the Fehmarnbelt Fixed Link. In the Project the Danish definition and use is adopted, which means that mitigation measures and environmental optimizations are included in the technical project and the assessments. Therefore, environmental optimization of the design of the protection layer in order to mitigate the impact of the tunnel trench on the marine environment to some degree forms the basis for the assessment.

However, Femern A/S is fully aware that there is a different precedence for the applied methodology of EIAs in Denmark and Germany. This is part of the reason for conducting two parallel plan approval processes in Denmark and Germany respectively. The EIA documentation presented in the German plan approval process will thereby follow the German methodology.

Land reclamation areas

Comments from German authorities

- Stadt Fehmarn comments on the deposition of sediment in the land reclamation areas of Denmark and Germany, respectively, and asks whether there is a contract specifying the amount of sediment to be exchanged between Denmark and Germany.

Response from the Danish Party of origin

Construction of the land reclamation areas is described in the Espoo Report Section 5.5. The land reclamation areas use the excess sediment from the dredging of the tunnel trench. Based on the project description and the plan approval processes in Denmark and Germany, respectively, it is presupposed by Femern A/S that the use of the dredged sediment will be specified in the permits given by the Danish and German authorities, respectively.

Construction cost estimate

Comments from German authorities

- Stadt Fehmarn states that the estimated construction cost given in 2008 prices should be adjusted to current price levels.

Response from the Danish Party of origin

The construction cost estimate of the Fehmarnbelt Fixed Link is continuously developed in parallel with the development of the project design. The construction cost estimate is, however, converted to 2008 prices, which is the year when the planning stage budget was given in the Planning Act of the Fehmarnbelt Fixed Link.

4.2.2 Alternatives

Comments from German authorities

- Stadt Fehmarn request a presentation of how construction risks, construction costs and environmental factors are weighted and evaluated in relation to each other in the comparison of the different technical alternatives is requested.

Response from the Danish Party of origin

The methodology for selecting the preferred technical solution for the Fehmarnbelt Fixed Link is outlined in Chapter 6 of the Espoo Report.

Initially four technical solutions were compared, e.g. two bridge alternatives and two tunnel alternatives. On the basis of these, a preferred bridge solution and a preferred tunnel solution were selected.

Subsequently, the selected bridge solution (a cable-stayed bridge) and the selected tunnel solution (an immersed tunnel) were compared with respect to a number of parameters. The immersed tunnel was selected by Femern A/S as the preferred technical solution.

The comparisons of alternatives were carried out based on the following factors: 1) environment, 2) navigational safety, 3) safety and emergency response, 4) technical risks, 5) time schedule and 6) cost. A detailed qualitative evaluation of each factor is presented in the Espoo Report, and arguments for and against each alternative are provided.

According to German formal requirements regarding the assessment of alternatives, a weighted comparison has been carried out by Femern A/S and is presented in the German plan approval documentation ('Erläuterungsbericht' and 'Allgemeinverständliche Zusammenfassung).

Despite the different presentation of the evaluation of alternatives in the Danish and German plan approval documentation, the underlying analyses are identical, and the conclusions are the same.

4.3 Transboundary Environmental Impact Assessment

Comments received from German authorities during the Danish Espoo consultation with regard to the methodology of the EIA and the assessment of individual components is presented below.

4.3.1 Assessment Methodology

Comments from German authorities

- MELUR states that in the Summary Report the term 'temporary' is used with regard to impacts on benthic fauna, which will be re-established after 5 to 22 years. According to German nature conservation policy, an impact lasting for more than five years is long-term or permanent, and thereby in principle significant. Such impacts require compensation measures in the ratio 1:1.

Response from the Danish Party of origin

Femern A/S appreciates the constructive dialogue with the German MELUR and acknowledges the difference in assessment methods applied in Denmark and Germany.

The Danish method as applied by Femern A/S is described in Chapter 7.2 of the Espoo Report. The assessment of an impact as either temporary or permanent depends on the duration of the impact. In general, impacts lasting the entire lifespan of the project are defined as permanent.

It is the opinion of Femern A/S that the applied method, which in addition to a systematic approach includes case-by-case expert judgements based on comprehensive baseline data and scientific

knowledge, results in environmentally sound conclusions, especially in consideration of the high environmental complexity of the Fehmarnbelt Fixed Link.

For information, the environmental assessments presented in the documentation for the plan approval process in Germany will follow the legal requirements concerning methodology for the German EIA process. On German territory Femern A/S plans to compensate for permanent losses to an extent that will ensure the ecological sustainability of the relevant environmental component in accordance with German Law.

4.3.2 Water Quality

Comments from German authorities

- Stadt Fehmarn states that the Summary Report does not describe possible local impacts on water quality in Fehmarnbelt that may affect bathing water quality and tourism on Fehmarn.

Response from the Danish Party of origin

As described in Chapter 7.5 of the Espoo Report, a range of sub-components and indicators of water quality are applied in the transboundary EIA of the Fehmarnbelt Fixed Link.

During the construction phase the dredging and land reclamation activities might affect the quality of the transparency of the water along minor parts of the coast, which might affect areas for leisure and tourism.

However, the assessment shows that impairment on water quality on the Danish side will only cause insignificant transboundary impacts on water quality on the German side, and vice versa.

Since most impacts on water quality along the coasts are of local origin, these will be described in more detail in the national EIA processes.

4.3.3 Sediment and Seabed Forms

Comments from German authorities

- Stadt Fehmarn states that sediment plumes caused by dredging of the tunnel trench will result in exceedence of threshold values of water turbidity on the German side. Investigation results and mitigation measures are required for impacts on the environment as well as on tourism on Fehmarn.

Response from the Danish Party of origin

As described in the Espoo Report Chapter 7.6, transportation, erosion and deposition of spilled sediment during dredging are determined by the hydrodynamic conditions. In periods with rough weather, large waves and strong currents, the sediment will be kept in suspension and travel with the flow; whereas in periods with calm weather the sediment will settle on the seabed.

The sediment will continue being re-suspended and re-deposited until it reaches a location where the hydrodynamic forces, waves and currents are so weak that the sediment cannot be re-suspended.

The spreading of spilled sediment for the entire dredging operation has been simulated in a set of numerical models developed for the Fehmarnbelt Fixed Link studies including hydrodynamic models, wave models, and models simulating spreading of spilled sediment.

In the Espoo Report the dispersion of visible sediment plumes, exceedence of threshold values and final deposition of sediment is described in detail. The results show, that visible plumes (> 2 mg/l) are limited to areas not far from the dredger itself. Along the coast of Fehmarn the excess concentration only exceeds 2 mg/l for less than 1% of the time at a few monitoring stations.

Except for the period where the dredger is actually dredging in the nearshore zone, the high concentration events will occur when the hydrodynamic conditions are rough and natural re-suspension is high. This means that at least part of the time where the visibility limit is exceeded by excess concentration it is simultaneous with natural re-suspension events. It is therefore concluded that it will be hard to detect a visual difference in the appearance of the water, and thus the impact of dredging is considered insignificant for the concentration of suspended sediment along the coast of Fehmarn.

The project design presented in the Espoo Report is based on technically reasonable optimizations of project works including a dredging plan for the Fehmarnbelt Fixed Link minimizing sediment spills to marine waters. Based on this, as well as on the conclusions of the Espoo Report, Femern A/S assesses, that further mitigation measures are not relevant concerning sediment spill. If major changes to the dredging plans occur, it will be necessary to ascertain that the possible impacts have not changed seriously, primarily regarding the expected impacts in German and Danish waters.

4.3.4 Fish Ecology

Comments from German authorities

- Stadt Fehmarn states that although the Espoo Report assessed that the migration of fish will be insignificantly affected by the project, plausible argumentation regarding the specific impact of the construction and operation of the immersed tunnel on marine fauna (fish) is requested.

Response from the Danish Party of origin

A comprehensive baseline study on the ecology of fish species in the Fehmarnbelt and surrounding waters was carried out by Femern A/S consultants. Based on these investigations an EIA concerning transboundary impacts on fish ecology is presented in Chapter 7.11 of the Espoo Report.

In total, 57 different fish species were registered during the mapping of fish communities in the area. The coast along Fehmarn had 43 species and was the most species-diverse area. Many fish species uses the Fehmarnbelt area as a transit area.

Based on an environmental screening a number of species are selected based on ecological importance or protection level and included in the transboundary EIA. In the Espoo Report a detailed assessment of the impact on the selected individual fish species and their ecological stages is given for five identified project pressures:

- Land reclamations (permanent or temporary loss of habitats)

- Changes in the hydrographical regime
- Sediment spill
- Noise and vibrations
- Changes/impairments of fish habitats (indirect pressures)

The Espoo Report concludes that impacts from the construction and operation of the immersed tunnel only have insignificant transboundary impacts on fish ecology in the Baltic Sea and adjacent marine areas.

During construction of the Fehmarnbelt Fixed link a minor theoretical impairment of the migration of herring, cod and whiting might affect the stocks in Norway, Sweden and Poland due to a temporary barrier effect caused by dredging of the tunnel trench and immersing the tunnel elements as well as sediment plumes and re-suspension of material.

The impact on migrating herring, cod, and whiting are assessed in the Espoo Report to be temporary and most probably very small and therefore insignificant for Swedish, Polish and Norwegian waters as well as in Danish and German waters.

4.3.5 Commercial Fishery

Comments from German authorities

- Stadt Fehmarn considers whether the insignificant impact on fish ecology described in the Espoo Report will affect the local fishermen at Fehmarn.

Response from the Danish Party of origin

The transboundary impacts on commercial fishery are assessed in Chapter 7.12 of the Espoo Report.

Of the pressures affecting the commercial fish species, it is anticipated that sediment spill is the pressure which will have the most impact. During immersed tunnel construction, excess suspended sediment during the first two years will at times be considerable in small, local areas. This will primarily impact the fisheries by causing the most sensitive fish species (cod, herring, sprat, whiting, horse mackerel, salmon, sea trout and garfish) to either flee from or avoid impacted areas that overlap with the different fisheries.

In the Espoo Report it is concluded that in general, the impacts from the immersed tunnel pressures such as land reclamations, noise and vibrations, and hydrographical changes that cause commercial fish species to flee from or avoid an area used by the fisheries in the Fehmarnbelt are only minor or insignificant in all cases on a local scale.

Local impacts will occur mainly on pound net and gill net fishing along the coast of Lolland. These local impacts and possible mitigation measures are described in detail in the national Danish EIA process.

4.3.6 Birds

Comments from German authorities

- Stadt Fehmarn states that although the Espoo Report maintains that the migration of birds will be insignificantly affected by the project plausible argumentation regarding the specific impact of the construction and operation of the immersed tunnel on birds is requested.

Response from the Danish Party of origin

More than 200 bird species have been observed during the baseline investigations in the Fehmarnbelt. The transboundary EIAs of Chapter 7.14 of the Espoo Report focuses on bird species where a local impact has been identified, and hence a possible transboundary impact may occur. In the assessments, any significant impact on bird populations from the immersed tunnel is regarded as transboundary, because most of the bird species present in the Fehmarnbelt use the whole area of Fennoscandia and the western part of the Russian Federation during their life-cycle

Three different methods were used to quantify the degree of habitat changes and displacements of birds. For an estimation of the consequences of habitat impacts on Common Eider, an individual-based model (IBM) has been developed. For an estimation of the consequences for other species of water birds, GIS-analyses have been undertaken between the distribution models and the affected relevant components. Finally, impacts for species for which limited data were available were assessed qualitatively.

The significance of the transboundary impacts on birds has been assessed using the 1% criteria, i.e. an impact is significant if it affects more than 1% of the biogeographical population of a given bird species and thereby a number of birds of international relevance.

The assessments of the impacts on each species and from each project pressure are described in detail in the Espoo Report.

In conclusion, there will be impacts on Common Eider and Red-breasted Merganser for the first two winters of the construction period, within the investigation area, due to sediment spill, which leads to reduced light in the water column. This impact is expected to cause a displacement to other foraging areas. The food availability is not affected significantly.

Furthermore, it is estimated that Eurasian Widgeon, Pochard, Tufted Duck and Common Eider will be displaced due to disturbances from service vessels and marine works during construction. This is less than 1% of the bio-geographical population of all four species, and there are no transboundary impacts outside German and Danish territories on these species.

For the Red-breasted Merganser about 0.5% of the bio-geographical population will be displaced from the project area due to increased water turbidity. This is assessed as being an impairment of minor severity.

In the dredging areas of Kriegers Flak and Rønne Banke, given the broad front migration of water birds at the site, collision risks of migrating water birds with the dredging vessel can be expected to be at a low level with no impact on the populations passing the sites.

In conclusion, there will be no transboundary impacts on migrating birds from the Fehmarnbelt Fixed Link. However, it is assessed that there will be insignificant transboundary impacts on Common Eider and a small number of non-breeding water birds such as Eurasian Wigeon, Pochard and Tufted Duck.

4.3.7 Recreation and Tourism

Comments from German authorities

- Stadt Fehmarn states in relation to water quality and sediment spill, that the potential impacts may have a negative effect on bathing water quality and tourism on Fehmarn. Impacts on tourism causing economic losses are stressed to require compensation measures.

Response from the Danish Party of origin

The importance of recreational bathing on Fehmarn is recognised in Chapter 7.19 of the Espoo Report. Tourism is an important income-generating activity on Fehmarn and in 2008 the island alone had more than 3.8 million holiday visitors for overnight stays. Fehmarn has 24 beaches, whereof most are located on the southern part of the island.

In the impact assessment sedimentation in the water column is addressed as a project pressure, which impacts the bathing water quality in the construction phase. As described in the present report section 4.3.3, visible plumes (> 2 mg/l) are limited to areas not far from the dredger itself. Along the coast of Fehmarn the excess concentration only exceeds 2 mg/l for less than 1% of the time at a few stations. Periods with limited visibility because of increased sediment concentration will mostly be simultaneous with natural re-suspension events, and it will therefore be hard to detect a visual difference in the appearance of the water. In the Espoo Report the effect of dredging is therefore assessed to be insignificant for bathing water quality.

The overall conclusion of the Espoo Report concerning the transboundary impact on recreation and tourism is that during construction, the project pressures will not cause any significant transboundary impacts. Furthermore, no impacts are expected during operation.

4.3.8 Air Quality and Climate

Comments from German authorities

- Stadt Fehmarn states that the assumptions about the closure of the Scandlines ferries in the operation phase of the immersed tunnel and the change of freight traffic from road to rail are speculative. Stadt Fehmarn stresses that the ferries will continue operation and that predictions about the freight traffic are impossible.

- Stadt Fehmarn comments that the construction of the Fehmarnbelt Fixed Link will produce 2 million tons of CO_2 more than the 0-alternative. How the CO_2 emissions will affect the island of Fehmarn cannot be assessed on the basis of the available Espoo documents.

Response from the Danish Party of origin

The development of the traffic prognosis for the Fehmarnbelt Fixed Link was described in Section 4.2.3 of this report, and more detail is available in Chapter 7.22 of the Espoo Report and in the Forecast 2002

presented by the Fehmarnbelt Traffic Consortium. Three scenarios for the future operation of the Rødby-Puttgarden ferries are included in the analyses:

0-alternative 2025: A scenario without a fixed link, but where the ferries still are operating

Traffic scenario 2025: An operating tunnel and discontinued ferry service between Rødby and Puttgarden

Traffic scenario 2025/50 %: An operating tunnel with ferries. It is assumed that ferries and the tunnel will share an equal distribution of the traffic in 2025

The three scenarios including a scenario with a discontinued ferry service are presented equally in the analysis.

Concerning the construction phase of the immersed tunnel, it is estimated that the total CO_2 emission will be approximately 2 million tons. CO_2 is a greenhouse gas that affects the global climate. From the point of emission the gas disperses in the atmosphere. The impact is considered global because the spreading is determined by atmospheric air currents, etc. The emission of CO_2 during the construction of the immersed tunnel is therefore assessed to have no local impact on the island of Fehmarn.

4.3.9 Ship Traffic and Navigation

Comments from German authorities

- Stadt Fehmarn considers that a description of the investigation method and a reasonable argumentation for the assessment of the impacts on ship traffic and navigation are lacking in the Espoo documentation.

Response from the Danish Party origin

The baseline investigation of ship traffic in the Fehmarnbelt was, as described in Chapter 7.23 of the Espoo Report, mainly based on a GPS-based system for the tracking of ships, denoted as the Automatic Identification System (AIS), which is a system mandatory for ships above 300 Gross Tonnage (GT). Other data sources include radar data, registrations from the Kiel Canal, registrations from Great Belt Vessel Traffic Service System (VTS), near miss reports from Great Belt VTS, and accident registrations and interviews.

The results showed that traffic in the Fehmarnbelt consists mainly of general cargo ships, tankers and container ships. In 2010, a total of 38,000 ships sailed on the T-route through the Fehmarnbelt. On average this amounts to slightly more than 100 ships per day. There is a slight majority in westbound ships passing through the Fehmarnbelt. On average, 54 westbound ships and 49 eastbound ships pass through the Fehmarnbelt each day.

Calculations on present and future ship traffic scenarios in the Fehmarnbelt have been estimated and researched for the period from 2020 – 2030 in order to assess the possible impacts on ship traffic and navigation from an immersed tunnel during construction. These calculations show that the traffic in the Fehmarnbelt area is expected to rise to between 70,000 to 80,000 passages in year 2030, depending on the general growth of the countries around the Baltic Sea.

Furthermore, a quantitative risk analysis has been carried out in order to illustrate the effect of the risk reducing measures in the construction phase.

The assessment of possible transboundary impacts from the Fehmarnbelt Fixed Link on ship traffic and navigation has been performed on the basis of the above analyses, and a detailed impact assessment is given in the Espoo Report concerning transboundary impacts including impacts from activities on Danish territory with an effect on German territory. Local impacts on ship traffic and navigation in German waters will be presented in the German national plan approval procedure.

It is the opinion of Femern A/S that the assessments of transboundary ship traffic and navigational impacts presented in the Espoo documentation are based on the best possible data basis and constitutes the best possible estimation of the construction and operation phase scenarios.

4.3.10 Cumulative Impacts

Comments from German authorities

- Stadt Fehmarn states that the upgrade of the fixed link across Fehmarnsund is missing in the assessment of cumulative impacts.

Response from the Danish Party of origin

In Chapter 7.24 of the Espoo Report the potential for cumulative impacts arising from an immersed tunnel in conjunction with other projects in the Baltic Sea is considered. These impacts include cumulative impacts from projects in the countries of origin (Germany and Denmark) of the immersed tunnel and other planned offshore projects/activities of third Parties.

When several planned activities/projects within the same geographical area have an impact on environmental factors at the same time, cumulative impacts may occur. As described in the Espoo Report, the selection of planned projects to be included in the assessment of cumulative impacts was defined to have to meet at least one or more of the following criteria:

The project/activity has to be localised within the same geographical area as the immersed tunnel or in its vicinity

The planned project/activity will have some of the same types of environmental pressures as an immersed tunnel

The planned project will overlap with the construction phase or, in case of marine habitats, overlap with a phase of rehabilitation after the construction phase

The planned project/activity will cause permanent impacts during operation – or construction

According to the information of Femern A/S an upgrade of the fixed link across Fehmarnsund was neither decided nor planned at the time of preparing the transboundary environmental impact assessment, and this is still the case. Therefore, it was not within the framework of the cumulative impact assessment of the Espoo Report to include an upgrade of the fixed link across Fehmarnsund.

4.4 Consultation comments outside the scope of the Espoo Consultation

An overview of issues raised by German authorities, which are considered to be outside the scope of the Danish Espoo Consultation, is presented below. These comments will not be further addressed in the present report.

Stadt Fehmarn raised a question in relation whether changes in the network of local roads, including construction of new roads on Fehmarn are sufficient. Stadt Fehmarn states this will be addressed more detailed in the German plan approval process.

Stadt Fehmarn states whether a potential movement of recreational activities away from Fehmarn because of impacts from the project will cause losses for the tourism business. Furthermore it is stated that compensation measures for such losses are required.

5 German Consultation Comments – Private stakeholders

During the Danish Espoo consultation, comments were received from a number of private German stakeholders (listed anonymously in Appendix 1). The comments received and responses from the Danish Party of origin are presented in this chapter.

The comments relate to the procedures and legal requirements of the Danish Espoo consultation process, to the general basis of the Fehmarnbelt Fixed Link as well as to the specific assessments of transboundary environmental impacts.

As stated in Section 2.1 (Reading Guide), the main topic of every comment is presented, but not by an accurate word-by-word rendering, followed by response from the Danish Party of origin.

5.1 The Espoo Process

Comments from private German stakeholders related to the Danish Espoo Consultation Process concern both the execution of the Danish Espoo Process and the involvement of the German public as well as the formal requirements and content of the Danish Espoo Consultation documentation.

5.1.1 Strategic Environmental Assessment

Comments from private German stakeholders

- It is questioned if a Strategic environmental assessment (SEA) of the Fehmarnbelt Fixed Link should have been undertaken.

Response from the Danish Party of origin

The project has not been subject to a separate SEA. However, the Danish Environmental Impact Assessment (EIA) satisfies the requirements in the Strategic Environmental Assessment Directive (EU directive 2001/42/EC of the European parliament and of the council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment) in regards to the content of a SEA.

5.1.2 Execution of the Danish Espoo

Comments from private German stakeholders

- It is stated that participation in the Espoo process by the German public is complicated due to non-compliance of the Danish Espoo consultation procedure with the EIA directive 2011/92/EU, especially Article 7, paragraph 5, which states that implementation (on transboundary impacts) shall enable the public concerned in the territory of the affected Member State to participate effectively in the environmental decision-making procedures.

- It is stated that the Danish Espoo consultation procedure is not in compliance with the Espoo Convention, especially Article 2, paragraph 6, which states that the opportunity provided to the public of the affected Party is equivalent to that provided to the public of the Party of origin.

- It is suggested that the Danish Espoo process must be suspended due to non-compliance with the legal framework for the Espoo consultation.

- It is stated that the Danish Espoo process does not comply with German EIA legislation and German implementation of the Espoo Convention.

- It is stated that a consultation period of one month is considered too short for citizens in Ostholstein to gain insight in the presented Espoo documentation.

- It is stated that it is difficult for the German public to participate in the Espoo process meetings because they are held in Danish. A meeting on German territory is requested.

- It is stated that the project area also includes the federal states of Hamburg and Mecklenburg-Vorpommern and that these areas should also be included in the Espoo consultation process.

Response from the Danish Party of origin

It is the opinion of the competent Danish Espoo authority, the Danish Nature Agency, that the current Danish Espoo Consultation is in compliance with the Espoo Convention and EU requirements.

The Danish Espoo Consultation is prepared according to, and follows the legal requirements established by, the Espoo Convention, EU Directive 2011/92/EU. Due to the legislative and administrative differences in the requirements for EIA documentation in Denmark and Germany, it has been decided to prepare two individual sets of EIA documentation, one for the Danish EIA Procedure and one for the German EIA procedure. According to the Espoo Convention the Espoo Consultation has to be undertaken without undue delay after completion of the Danish national EIA documentation, which has been the case.

It is the opinion of the Danish Nature Agency that all affected Parties can be considered to have had the opportunity for an effective and equivalent participation in the Espoo process (cf. the Espoo Convention Article 2 and EU Directive 2011/92/EU Article 7).

In accordance with the Espoo Convention, the Danish Espoo documentation was sent to the national Espoo Points of Contact on 28 June 2013. It is the responsibility of the national Espoo Points of Contact to distribute the documentation to national stakeholders and facilitate the national consultation process.

The public consultation of the Danish Espoo process took place from 28 June to 4 October 2013. The Danish Espoo documentation is available on the website (www.femern.com). For further details about the Espoo process see Chapter 2 of the present report.

In spring 2013 pre-consultation dialogue meetings concerning the Danish Espoo Consultation Process were offered to all potentially affected Parties, and meetings were accordingly held in Sweden and Poland.

In the Espoo consultation letter sent to national Espoo Points of Contact, it was announced that a public meeting with participation of the Danish Ministry of Transport, Femern A/S and the Danish Ministry of

Environment would take place on Lolland on 29 August 2013 in relation to consultation of the Danish EIA. The public meeting was conducted in Danish, but interpretation from Danish to German was provided at the meeting.

There have been no requests for public meetings from the German Espoo points of contacts prior to or during the Espoo consultation process conducted by Denmark.

Notwithstanding the above, a comprehensive public participation will take place in the course of the German plan approval procedure.

5.1.3 Espoo Documentation

A number of comments from private German stakeholders relate to the written language of the documentation presented for the Danish Espoo Consultation Process as well as the content of the Espoo Report.

Comments relating to specific environmental components are addressed in the respective parts of Section 5.3, whereas comments with a more general focus are presented in this section.

Comments from private German stakeholders

- It is stated that involvement of the German public regarding the project is complicated by the fact that the Espoo Report is written in English and only the Espoo Summary is available in German. It is stressed that the language of the Espoo consultation documentation is not in compliance with the Espoo Convention and German EIA legislation.

- Stakeholders suggest that the full Espoo documentation must be available in German.

- Stakeholders question why the English documents prevail in cases of doubt or deviations between the translations to other languages.

- It is stated that the German summary of the Espoo Report does not allow for a sound review by the German public.

- It is stated that the argumentation for the environmental impacts described in the Espoo Summary is insufficient. The respondents stress that with insufficient documentation it is not possible to evaluate the assessments made in the Espoo Summary.

- It is stated that the Espoo Report does not give information on the Danish legal framework that must be applied in the preparation of the EIA.

A detailed technical description with a construction plan for the project as required in the German plan approval process is requested.

Response from the Danish Party of origin

The documentation presented for the Danish Espoo Consultation Process has been delineated and prepared according to the requirements established by the Espoo Convention and in accordance with the

implementation in EU and Danish national legislation. Further information about the Danish Espoo Consultation Process can be found in Chapter 2 of the present report.

As explained in Section 4.1 of the present report, the competent Danish authority, the Danish Nature Agency, has informed that there are no formal requirements in the Espoo Convention and EU directives that documentation used in the Espoo consultation process should be translated into national languages.

The objective of the Espoo Summary is to present a summary of the proposed project and the results of the potential transboundary environmental impacts associated with the Fehmarnbelt Fixed Link. The full Espoo Report presents the investigations and the argumentation related to the transboundary EIA in greater detail.

The national EIAs of the Fehmarnbelt Fixed Link are prepared in national languages, and thus the EIA included in the application documents that LBV-Lûbeck and Femern A/S have prepared for the German plan approval process (Planfeststellungsverfahren) are, as required by German law, in the German language.

In addition and for information, further details on the technical description of the proposed project, the local environmental impacts and the environmental components assessed can be found in the national EIA documentation and background reports, which are available on www.femern.com.

With regard to the national translations of the Summary Report it is noted that in case of doubt between the original English text and the translations, the English version prevails. The reason for this is that the original Summary was prepared in English and for consistency this version served as the basis for translation into German, Polish, Finnish, and Swedish.

5.2 General Issues

A number of comments from private German stakeholders concern general issues of the Espoo Report in relation to the technical description of the immersed tunnel and the investigation of alignments and alternatives.

5.2.1 Technical Description of the Immersed Tunnel

Construction method for tunnel trench

Comments from private German stakeholders

- It is stated that use of trailing suction hopper dredgers alone and hydraulic transport of sediment to the land reclamation areas in pipes instead of transport barges could reduce sediment spill from construction of the immersed tunnel and increase navigational safety in the construction phase.

- It is stated that quality control of the material for backfilling the tunnel trench should be carried out in order to determine the amount of fine-grained sediment and reduce spill.

Response from the Danish Party of origin

Chapter 5 in the Espoo Report and Chapter 4 in the Espoo Summary provide a technical description of the Fehmarnbelt Fixed Link, including a detailed description of the planned immersed tunnel and the associated construction activities. The description is based on a conceptual design that forms the basis for the EIA.

Other dredging methods and equipment have been considered in the process of developing the plan approval documents. These methods, however, were not selected as the preferred method due to combined spill and operational considerations.

In order to control the amount of sediment spill during dredging and backfilling operations a monitoring programme will be developed by Femern A/S as described in Section 3.1.1 of the present report. In terms of navigational safety Femern A/S and the relevant authorities in Germany and Denmark have agreed on mitigation measures, including setting up a vessel traffic service (VTS) system to ensure the impact on shipping and navigation is minimal (see also Section 5.3.15 of the present report).

Tunnel protection layer

Comments from private German stakeholders

- It is stated that the thickness of the protection layer on top of the immersed tunnel may not be sufficient to protect the tunnel.

Response from the Danish Party of origin

A technical description of the tunnel protection layer is provided in Section 5.3 of the Espoo Report.

The technical assessment by Femern A/S shows that the thickness of the protection layer will be sufficient for protecting the tunnel elements.

Land reclamation areas

Comments from private German stakeholders

- It is stated that the new land areas should not be defined as reclamation areas but as areas of deposition lost by the sea. Furthermore, it is argued that the impact of the land reclamation areas stands in contrast to the mention of the areas in the Espoo Report as areas of biological and recreative value.

Response from the Danish Party of origin

Construction of the land reclamation areas is described in Chapter 5.5 of the Espoo Report. The land reclamation areas use the excess sediment from dredging of the tunnel trench. The land reclamation areas are identified as and constitute a main pressure from the project in terms of reclaiming sea bed area and affecting coastal morphology, and it is assessed as such in the Espoo Report (Chapters 7.6 and 7.7). According to the applied methodology, the impact assessment includes planned mitigation measures, which for the land reclamation areas are 1) beach nourishment to mitigate the impact of the reclamation areas on coastal morphology and 2) replacement habitats to mitigate the impact of other parts of the project on terrestrial habitats.

Coastal dike

Comments from private German stakeholders

- It is stated that it is unclear whether re-establishment of the coastal dike along the coast of Lolland is for coastal protection in general or solely to protect the immersed tunnel.

- It is stated that the Fehmarnbelt Fixed Link will be vulnerable towards potential future sea level rise and that a break in the existing coastal dike even 20 km away, will cause flooding of the tunnel.

Response from the Danish Party of origin

A technical description of the coastal dike of Lolland is provided in Section 5.4.1 of the Espoo Report.

The purpose of the existing dike along the coast of Lolland is to protect the existing land behind the dike against flooding. This dike will be cut through during the construction phase of the immersed tunnel and subsequently restored to a height of up to 6.25 m around the perimeter of the portal and ramp. This is an elevation and improvement of approximately 2 m compared with the existing dike. After reconstruction, the dike will serve the same purpose as before (coastal protection). Since the tunnel entrance will be part of the new landscape behind the dike, it will also be protected from the sea by the dike.

The elevated height of the dike around the tunnel portals together with the existing dike along the coasts of Lolland and Fehmarn provide sufficient coastal protection of the immersed tunnel also in the case of future scenarios of sea level rise. In addition, flood barriers can be established around the tunnel portals in the event of extreme storm surge.

Treatment and discharge of wastewater

Comments from private German stakeholders

- Comments have been raised in relation to water treatment planning of the Fehmarnbelt Fixed Link and the handling of rainwater, potential surplus water, and discharge of water and planning in case of pump failure and compliance with the European Water Directive.

Response from the Danish Party of origin

A technical description of the treatment and discharge of wastewater is provided in Section 5.4.1 of the Espoo Report.

A detailed plan for the treatment of rain and wastewater during construction and operation of the immersed tunnel will be developed by Femern A/S to be used in the national plan approval procedures. It is assessed by Femern A/S that all wastewater discharged will comply with German and Danish regulations concerning wastewater, which are transpositions of the EU Water Framework Directive into national environmental regulations.

5.2.2 Alignments and Alternatives Including the 0-Alternative

Alignments

Comments from private German stakeholders

- It is stated that not all possible alignment alternatives have been investigated, since a bored tunnel would not conflict with the ferry route and thereby could cross the ferry route.

Response from the Danish Party of origin

The investigation of different alignment alternatives for all technical solutions is described in Chapters 4 and 6 of the Espoo Report. The applied method consists of first identifying a project corridor based on an environmental sensitivity analysis and next identifying the preferable alignment on the basis of an alignment analysis. The purpose of the alignment analysis is to find the preferred location of the Fehmarnbelt Fixed Link, on the basis of a number of criteria, eg. technical, environmental, construction logistics and safety.

The identification of the alignment for the tunnel solution is subject to two limitations:

The ferry operation between Rødbyhavn and Puttgarden must be operable during the construction and operation phase.

The submarine cable, located below the seabed between Lolland and Fehmarn, must not be impacted.

In the alignment analysis four approaches on Lolland and Fehmarn were identified, providing 16 different combinations of alignment alternatives, including alternatives crossing the existing ferry route between Rødby and Puttgarden.

It is the opinion of Femern A/S that all relevant alignments for the Fehmarnbelt Fixed Link have been included in the assessment, and that an alignment of the immersed tunnel crossing the ferry route between Rødby and Puttgarden is not feasible.

Alternatives including the 0-alternative

Comments from private German stakeholders

- It is stated that a description of the method used for comparing the alternatives in terms of weighing and evaluating the chosen parameters including construction risks, investment and environmental factors is missing from the Espoo documentation.

- It is stated that the 0-alternative, representing the option of not implementing the project, has not been properly assessed.

Response from the Danish Party of origin

The method applied by Femern A/S in the evaluation of technical alternatives is described in Section 4.3.1 of the present report. The method was developed in compliance with German terms and conditions and includes a weighed comparison of alternatives as presented in the German plan approval doc-

umentation. It is assessed by Femern A/S that the applied method fulfils the formally prescribed requirements.

As required by the Espoo Convention and EU Directive 2011/92/EU, a 0-alternative is applied in the environmental assessment for comparison of the environmental consequences of the project. The 0-alternative that is used in the environmental assessment is defined by road and railway traffic in year 2025.

5.3 Transboundary Environmental Impact Assessment

5.3.1 Assessment Methodology

Comments from private German stakeholders regarding the assessment method applied in the Espoo Report concern the definition of mitigation measures as well as assessment regarding the EU Marine Strategy Directive.

Definition of mitigation measures

Comments from private German stakeholders

- It is questioned why the Danish and not the German EIA methodology has been applied in the Espoo report.

- It is stated whether a technical installation also can be a mitigation measure. The comments are related to the protection layer on top of the tunnel elements as well as the land reclamation areas, which are treated as both technical installations and mitigation measures for impacts on the environment.

- It is stated that the new land reclamation areas cause impacts on the coastlines of Lolland and Fehmarn and that mitigation measures are planned to reduce erosion. This is stressed to stand in contrast to the land reclamation areas themselves being treated as a mitigation measure for other impacts on the environment from the project.

Response from the Danish Party of origin

The definition and use of mitigation measures and environmental optimisations applied by Femern A/S in the EIA of the Fehmarnbelt Fixed Link follows the Danish methodology and is explained in Section 4.2.1 of the present report in relation to comments raised by German authorities.

In a project like the Fehmarnbelt Fixed Link it is not unusual that part of the project design can be planned to function as a mitigation measure while at the same time causing an impact on the environment that is mitigated or compensated by other measures. It is the opinion of Femern A/S that the use of dredged sediment to create new land areas with natural values along the coastlines of Lolland and Fehmarn represents an overall environmentally sound solution.

Femern A/S is fully aware that there is a different precedence for the applied methodology of EIAs in Germany. This is part of the reason for conducting two parallel plan approval processes in Denmark and

Germany respectively. The EIA documentation presented in the German plan approval process will thereby follow the German methodology.

Reference to the EU Marine Strategy Directive

Comments from private German stakeholders

- It is stated that the EU Marine Strategy Directive should be mentioned specifically and in addition that an initial assessment in relation to the goals of the Directive should be included in the Espoo Report.

- It is stressed that specific focus should be given to the indicator on biological diversity, which should be assessed in the Espoo Report according to German methodology.

Response from the Danish Party of origin

The EU Marine Strategy Directive has been implemented in both German and Danish legislation, stating and indicating goals for good environmental conditions in German and Danish marine waters. Femern A/S has prepared an assessment of potential impacts on basic conditions and goals concerning marine strategy descriptors, which are separately developed for Danish and German waters. Potential conflicts with the objectives in the national marine strategies have been thoroughly addressed in the assessment. The work has furthermore been carried out in recognition of the request in the European Directive to consider common responsibilities in neighboring marine waters.

The environmental assessment of the 11 indicators defined in the directive, including the indicator on biological diversity, has been integrated in the Danish Espoo Report as well as in the Danish national EIA documentation regarding, e.g., benthic flora and fauna.

5.3.2 People and Human Health

Comments from private German stakeholders

- It is stated that citizens and tourists close to the construction area (e.g. Puttgarden and Marienleuchte) may be affected by noise from the construction works, which can have an effect on human health. Noise from construction at night and on weekends is of particular concern.

- It is stated that people living in Neukirchen as well as Kreis Ostholstein, Storman and Hamburg may also be affected by the Fehmarnbelt Fixed Link from increased traffic, noise and reduced economical.

- It is stated that indirect impacts from the project may occur on human health due to consumption of contaminated fish or bathing in potentially polluted water.

Response from the Danish Party of origin

As described in Chapter 7.3 of the Espoo Report, two pressures from the Fehmarnbelt Fixed Link have been identified to have a potential impact on human health in Fehmarnbelt and the transboundary region. These are:

- Air pollution from construction machinery on Lolland and Fehmarn and offshore
- Noise from construction machinery on Lolland and Fehmarn and offshore.

Noise levels from different kinds of construction machinery used in the construction phase can only in the middle of Fehmarnbelt be of a transboundary nature. However, because of the distance, the noise will not be heard from far away (e.g. on Lolland and Fehmarn), and the only humans close to the middle of Fehmarnbelt will be construction workers.

A detailed assessment of local impacts on people and human health from noise generated during the construction and operation phases of the Fehmarnbelt Fixed Link is outside the scope of the Espoo Report but assessed in the national EIA documentation.

As presented in the Espoo Report most of the project pressures on people and human health in relation to an immersed tunnel are local.

Assessment of water quality and pollutants has not resulted in any significant transboundary impacts (reference to Section 4.3.2 and Chapter 7.5 of the Espoo Report). Therefore no project pressures on human health related to potential pollution of the water in Fehmarnbelt, including contamination of fish for consumption have been assessed relevant in a transboundary context by Femern A/S.

In order to minimise pollution during the construction phase an environmental management plan for the project and its activities on Fehmarn and Lolland will be drafted. The plan will take into account regulations for emissions to air, discharge to water bodies, handling and storage of waste and chemicals etc. In order to prevent health problems for residents and visitors caused by noise, vibrations and air pollution during the construction of the immersed tunnel, the production of tunnel elements will take place indoors, and mitigation measures regarding noise, dust and other air pollution will be in place.

5.3.3 Hydrography

Comments from private German stakeholders

- It is stated that a potential project impact on the hydrography, e.g., changes in the water exchange between the North Sea and the Baltic Sea, may affect salt and oxygen inflow and consequently water quality.

Response from the Danish Party of origin

As described in Chapter 7.4 of the Espoo Report, the marine structures of the Fehmarnbelt Fixed Link may affect the hydrographical conditions in the Baltic through two mechanisms:

Project structures potentially cause a blocking of the exchange flow between the North Sea and the Baltic, and thereby may impact the salinity and water quality in the Baltic.

Project structures potentially cause additional mixing between the lower (high salinity) and upper (low salinity) layers of water in Fehmarnbelt, and thereby may have an effect on the salinity and stratification in the Baltic.

The results of the transboundary EIA show that the blocking of the exchange flow with the Central Baltic Sea in the construction period is very small (probably not measurable) and similar to the permanent conditions after the construction period. This implies that there is no significant impact on the hydrography of the Central Baltic Sea from the immersed tunnel scenario during the construction period.

The modelling shows that the project has no impact on the salt flux through the Fehmarnbelt, in either the construction or the operation phase, and therefore no impact on the salinity of the Central Baltic Sea.

In the Espoo Report it is thereby concluded that the impact of the project on hydrography, including water level, water exchange, salinity, temperature and stratification of the Baltic Sea is insignificant.

5.3.4 Water Quality

Comments from private German stakeholders

- It is questioned how the suspended sediment spreading to the Arkona Basin may affect the water quality in the Darss area.

Response from the Danish Party of origin

As described in Chapter 7.5 of the Espoo Report, sediment suspended in the water during dredging activities may cause release of organic material (correlating with oxygen demand), nutrients and contaminants. These sub-components of water quality are included in the assessments of the Espoo Report and summarised below.

Regarding depression in oxygen level caused by suspended sediment, this may occur during the summer period of the first year of the construction period along Lolland's coast and where the dredging is most intense. But the impact from the construction phase will be very local and will not spread to transboundary areas in the Baltic Sea as eg. The Darss Sill or Kadetrennen.

Regarding nutrient release from suspended sediment during dredging activities is considered as very low in the Espoo Report (0.5 kg nitrogen per day and 2 kg phosphorus per day). The release rates are negligible compared to the natural nutrient demand by phytoplankton, and it is concluded that there will be no impacts on transboundary waters from the release of nutrients during dredging operations.

In terms of contaminants released from suspended sediment, the baseline investigations of the Fehmarnbelt Fixed Link showed that concentration of heavy metals in the sediment is generally below Danish, German and European standards. With an estimated release level of of heavy metals contained in the sediment during dredging operations, the concentrations are expected to be clearly below both national and European standards and it is highly unlikely that there will be any toxic impacts on the biota. For persistent organic pollutants (PAH's, PCB's, DDT, TBT, HCB) and their degradation products, risks for exceeding water quality criteria are even lower than for heavy metals. It is therefore concluded in the Espoo Report that release of contaminants from dredged sediment will not lead to toxic concentrations of heavy metals or persistent organic pollutants in the Fehmarnbelt area or in any transboundary waters.

It is therefore the opinion of Femern A/S that it is documented that the transport of suspended sediment to the Arkona Basin will have no impact on water quality in the Darss area.

5.3.5 Sediment and Seabed Forms

Sediment spill

Comments from private German stakeholders

- It is questioned how sediment deposition from dredging activities will disperse depending on different wind directions (western versus eastern wind direction), e.g., considering the Bay of Kiel and the Bay of Hohwacht.

- An assessment documenting the impact on sedimentation from the dredging of raw materials at Kriegers Flak and Rønne Banke is requested.

Response from the Danish Party of origin

As described in Chapter 7.6 of the Espoo Report, the impacts on sediment and seabed forms caused by the pressures of the Fehmarnbelt Fixed Link can basically be divided in two: impacts caused by the footprint and temporary structures and, impacts related to the sediment spill.

Transportation, erosion and deposition of spilled sediment during dredging are determined by the hydrodynamic conditions. In periods with rough weather, large waves and strong currents, the sediment will be kept in suspension and travel with the flow; whereas in periods with calm weather the sediment will settle on the seabed.

The sediment will continue being re-suspended and re-deposited until it reaches a location where the hydrodynamic forces, waves and currents are so weak that the sediment cannot be re-suspended.

The spreading of spilled sediment for the entire dredging operation has been simulated in a set of numerical models developed for the Fehmarnbelt Fixed Link studies including hydrodynamic models, wave models, and models simulating spreading of spilled sediment. The hydrographical year 2005 has been used as basis for the simulation of the spreading of the spilled sediment, since the year 2005 was a hydro dynamically representative year based on comparisons of the currents and wind. The results of the simulation therefore represent an average of the wind directions during an entire year, which are mostly western but also come from other directions to a smaller extent.

In the Espoo Report, the dispersion of visible sediment plumes, exceedence of threshold values and final deposition of sediment is described in detail, and the results show that the final resting places to the west are the Arkona Basin and the edges of the Bay of Mecklenburg while to the east sediment will mainly be deposited in the deeper waters in the Southern Lillebælt, between Als and Ærø. Eastern German waters as the Bay of Kiel and Hohwacht are assessed not to receive measurable amounts of suspended or deposited sediment from the construction area under the modelled wind conditions.

Similar simulation models regarding the dredging of sediment at Kriegers Flak and Rønne Banke have been carried out and are described in the Espoo Report. Here the modelling shows that the visible plumes are localised around the dredger and do not extend to the transboundary regions. This is mainly

due to the low fine sediment content of the sand deposits in both areas. Transboundary areas will not be affected by dredging in these areas.

Sand waves

Comments from private German stakeholders

- It is stated that impacts on sand waves may cause indirect impacts on benthic flora and fauna that are not fully documented in the Espoo Report.

- It is stated that the new land reclamation areas, the protection reefs and the entrance channel for the production facility will cause impacts on the seabed form sand waves. This is stressed to be in contrast to the temporary impacts on sand waves as assessed in the Espoo Report.

Response from the Danish Party of origin

Regarding the impact of the Fehmarnbelt Fixed Link on the seabed form sand waves, the assessment (of the Espoo Report) shows that approximately 5 ha of the temporarily impaired seabed is with the seabed form 'sand waves'. The permanent loss of seabed caused by the reclamation areas including the protection reefs has no impact on seabed forms of special importance for the seabed morphology in the Fehmarnbelt (e.g., sand waves).

As concluded in the Espoo Report, the impact on sand waves and seabed forms from dredging activities connected to the Fehmarnbelt Fixed Link and the resulting sediment deposition is assessed to be insignificant, and impaired seabed forms are expected to fully recover to their baseline conditions following the construction phase.

Regarding the benthic flora and fauna, the detailed assessment of local impacts on the seabed form sand waves and associated communities of benthic flora and fauna shows that the temporary impairment of sand waves will have no impacts on benthic flora and fauna in the Fehmarnbelt. The communities associated with sand waves naturally adapt to highly dynamic seabed conditions caused by, e.g., shifting currents and periodically high sediment transport rates, which also characterise the existing conditions. Transboundary effects from impacts on sand waves on benthic flora and fauna are thus not expected.

Barrier effect in the seabed

Comments from private German stakeholders

- It is stated that the Fehmarnbelt Fixed Link may cause a potential barrier effect on the natual dynamics of the seabed in Fehmarnbelt.

Response from the Danish Party of origin

As assessed in the Espoo Report, seabed materials will deposit in the alignment area after construction and the natural geomorphology of the alignment area will be re-established.

The immersed tunnel is assessed not to be of any hindrance or create any kind of barrier to continued natural seabed dynamics in Fehmarnbelt.

5.3.6 Benthic Fauna

Comments from private German stakeholders

- It is stated that there is not information in the Espoo Report about to what depth of the sea bed the benthic investigations have been carried out.

- It is emphasized that the effect of a potential barrier effect of the immersed tunnel on benthic fauna has not been described in the Espoo Report.

Response from the Danish Party of origin

As described in Section 5.3.5 of the present report, it is assessed by Femern A/S that the immersed tunnel will not create a barrier effect for seabed dynamics in Fehmarnbelt.

Benthic infauna in the alignment area of the Fehmarnbelt Fixed Link in average reaches some decimeters into the seabed depending on the stability of the seabed, its materials and oxygen conditions. Following the construction of the tunnel, the benthic infauna communities will recover in the alignment area together with the regeneration of the seabed.

As concluded in the Espoo Report, the impact from the footprint of the Fehmarnbelt Fixed Link on benthic fauna is assessed to be insignificant. This implies that the functionality of the benthic infauna ecosystem in the Fehmarnbelt will not be affected by the temporary disturbance of the seabed during the construction phase of the immersed tunnel.

5.3.7 Fish Ecology

Comments from private German stakeholders

- It is questioned how fish ecology will be affected by potential changes in hydrography as a result of the Fehmarnbelt Fixed Link.

Response from the Danish Party of origin

The impact on fish ecology has been extensively studied and described in Chapter 7.11 of the Espoo Report, and more detailed information is available in the background reports presented along with the Danish EIA documentation.

Potential changes in the hydrography of the Fehmarnbelt are among the project pressures included in the environmental assessment of fish ecology. In accordance with the remarks given in Section 4.3.4 and 5.3.3 of the present report, the impact from construction and operation of an immersed tunnel is assessed by Femern A/S to have an insignificant impact on the hydrography in the Baltic Sea, and thus no transboundary impacts are expected on fish ecology as a result of changes in the hydrographical regime.

5.3.8 Commercial Fishery

Comments from private German stakeholders

- It is emphasized that the Fehmarnbelt Fixed Link will have a potential negative impact on commercial fishery in Fehmarnbelt.

Response from the Danish Party of origin

The transboundary environmental assessment of commercial fishery is described in Chapter 7.12 of the Espoo Report and focuses on the different gear used, which include trawls, gill nets, pound nets and Danish seine nets.

Potential pressures related to commercial fishery will mainly occur during the construction phase and potentially cause avoidance responses and loss of fish habitats. These include sediment spill, noise and vibration in the construction phase as well as land reclamation and potential changes in the hydrological regime.

As described in detail in the Espoo Report, there are no significant impacts on trawl fishery, gill net fishery or seine net fishery in the Fehmarnbelt region during construction activities, operation or due to land reclamation of /footprint. Local impacts on pound net fishing will occur along the Danish coastline, but there will be no restrictions on the fishing activities in the transboundary region.

In general, the impacts from the immersed tunnel pressures such as land reclamations, noise and vibrations, and hydrographical changes that cause commercial fish species to flee from or avoid an area used by the fisheries in the Fehmarnbelt are only minor or insignificant in all cases on a local scale.

In conclusion, there are no transboundary impacts for commercial fishery due to an immersed tunnel. The impacts from construction and operation of the tunnel will be mainly temporary and local. Local impacts on commercial fishery are assessed and described in detail in the national Danish EIA.

5.3.9 Marine Mammals

Comments from private German stakeholders

- It is stated that changes in hydrography from the Fehmarnbelt Fixed Link may cause impacts on marine mammals, e.g., harbour porpoise.

- It is stated that Fehmarnbelt is an important corridor for migrating harbour porpoise as well as a feeding area and most likely also breeding area. It is emphasized that there are no investigations of the conservation status and migration patterns of harbour porpoise in the Espoo Report, and that it should be documented that this protected species is not affected by the project.

Response from the Danish Party of origin

The existing populations of harbour porpoise, grey seal and harbour seal have been analysed by extensive baseline investigations and assessments in relation to the Fehmarnbelt Fixed Link as described in Chapter 7.13 of the Espoo Report. Furthermore, the species are part of the designation basis for some Natura 2000 areas in the Fehmarnbelt and therefore also included as part of the appropriate assess-

ments described in Chapter 7.17 of the Espoo Report. More details about the investigations can be found in the background reports presented along with the Danish EIA documentation.

As described in the Espoo Report, five main pressures with a potential impact on marine mammals have been identified, including noise, habitat loss, habitat change, toxic chemicals and barrier effects.

Regarding hydrography, there is, as described in section 5.3.3, no significant transboundary impacts from the immersed tunnel scenario during the construction period, and hence no impacts are expected on harbour porpoise from changes in hydrography.

In relation to habitat loss (also including habitat structure change, siltation rate, and turbidity changes) the impact on harbour porpoise from construction and operation of an immersed tunnel is assessed to be insignificant. Using the most conservative scenario shows that, very few porpoises (1 - 2) will be affected by construction of the immersed tunnel.

No impacts on seals are expected, since the nearest haul-out site is 8.5 km from the alignment, and because the seals rarely cross the alignment area.

In terms of noise, the results of the worst case scenario show that the area disturbed by noise above the threshold value, and where minor behavioural changes are expected, constitutes approximately 13 km2, which is less than 0.3% of harbour porpoise habitat in the survey area. Therefore, the impact is assessed as insignificant at the population level.

In conclusion, the project is assessed by Femern A/S to have an insignificant impact on seals and porpoises as well as on their protection status in Danish and German waters. Consequently, no transboundary impacts on marine mammals as a result of the construction and operation of the Fehmarnbelt Fixed Link are expected.

5.3.10 Birds

Comments from private German stakeholders

- It is considered insufficient that the Espoo Report only focuses on five out of more than 200 bird species occurring in the Fehmarnbelt area.
- It is stated that the methodology applied in the assessment of birds is inadequate, especially concerning the assessment of impact areas and the use of death rates.
- Comments are furthermore given on the assessment of individual bird species.

Response from the Danish Party of origin

The Espoo Report focuses on bird species where a local impact has been identified in the national EIAs and hence a possible transboundary impact may occur.

It is the opinion of Femern A/S that the assessment of impacts from the Fehmarnbelt Fixed Link on birds is comprehensive and conforms to national methodologies and thereby creates a high degree of assurance.

A detailed description and assessment of local impacts on birds is presented in the national EIA documentation.

In compliance with the results from the scoping process, the method used in the EIA is based on species specific sensitivities towards all project pressures, e.g., the number and proportion of birds temporarily displaced from impairment zones. Both individual-based energetic ecological models and GIS-based analysis of species distribution models and impairment zones were used to assess thresholds for sustainable impacts. GIS-based analysis is a highly conservative approach, assuming a total displacement of sensitive birds from areas temporarily affected by, e.g., sediment spill and disturbance from construction activities.

More information on the assessment methodology on bird species can be found in section 4.3.6.

5.3.11 Migrating Bats

Comments from private German stakeholders

- It is stated that the Espoo Report should not only focus on migratory bats because impacts on non-migratory bats are also possible from the Fehmarnbelt Fixed Link.

- It is stated that not all potential pressures causing potential impacts on bats are included in the Espoo Report and that the assessment of impacts on bats should be based on quantitative results according to legislation on species protection. Low mortality rates are stressed to be enough to draw the exemption clause of species protection legislation.

Response from the Danish Party of origin

As described in Chapter 7.15 of the Espoo Report, the potential transboundary impacts from construction of an immersed tunnel are assessed for migrating bats in the Fehmarnbelt and transboundary region, while impacts on local bat populations on Lolland and Fehmarn are per definition not transboundary.

Potential project impacts on migrating bats have been assessed in the investigated ramp approach areas on Fehmarn and Lolland, which are considered to be the primary bat habitats in the project area. Furthermore, potential project impacts on bats migrating across Fehmarnbelt have been addressed, based on registrations of bats in a wider, near-coastal range on both Lolland and Fehmarn, including registrations of bats over water across the Fehmarnbelt.

A few migrating bat species are considered moderately sensitive to traffic-related collision risk, especially during the future operation phase of the Fehmarnbelt Fixed Link. Attention has been given by Femern A/S to mitigating such impacts in the project design. As assessed in the Espoo Report, the overall magnitude of impact on bat migration is insignificant in the Fehmarnbelt and no impacts are expected in the transboundary region.

Bats are strictly protected species according to the EU Habitats Directive, and all impact assessments have been carried out considering their specific protection status. The impact assessment of the Espoo Report clearly shows that project impacts on migrating bats in the ramp approach areas on Fehmarn

and Lolland and during their migration across the Fehmarnbelt are negligible and will not be in conflict with species protection status.

Thus, it is the opinion of Femern A/S that the Espoo Report is in full compliance with legal requirements regarding the assessment method prescribed for bats and that the results do not give rise to use of the exemption clause of the Habitats Directive (Article 6).

5.3.12 Recreation and Tourism

Comments from private German stakeholders

- It is stated that the bathing water quality in Fehmarnbelt may be affected by sediment plumes from the Fehmarnbelt Fixed Link, and that this will affect recreational interests and the tourism business.

- It is stated that the Espoo Report did not mention bathing in the Baltic Sea as a recreational activity.

- It is stated that if the impact area for "Recreation and Tourism" is the same as the assessment area for "Material Assets" (10 km from the tunnel trace), there will be impacts along the northern coast of Fehmarn from Westermarkelsdorf to Marienleuchte.

Response from the Danish Party of origin

As introduced in Chapter 7.19 in the Espoo Report, the main aspects of recreation and tourism which may be impacted by the Fehmarnbelt Fixed Link are beach tourism, recreational fishing and boating in all the Baltic Sea.

The description of the baseline include primary recreational areas in the Fehmarnbelt area located near the coastline, hereunder holiday houses, harbours and beaches.

Activities or project pressures from the Fehmarnbelt Fixed Link that may potentially impact recreation and tourism, including bathing in the Baltic Sea, are identified as the following:

- Habitat loss and changes of recreational habitats

- Physical and visual barrier effects of recreational areas and fragmentation of the landscape

- Air, noise and light pollution of recreational areas

- Sedimentation in the water column.

The overall conclusion of the Espoo Report concerning the transboundary impact on recreation and tourism is that during construction, the project pressures will not cause any significant transboundary impacts. Furthermore, no impacts are expected during operation.

Concerning suspended sediment from the dredging activities of the Fehmarnbelt Fixed Link, compared with background sedimentation events, excess frequency is largest along the coast of Lolland and inside

the Rødsand Lagoon. Along the coast of Fehmarn, the excess sediment concentration only exceeds 2 mg/l for less than 1% of the time. Except for the period where the dredger is actually dredging in the near shore zone, the high concentration events will occur when the hydrodynamic conditions are rough, and it will therefore be hard to detect a visual difference in the appearance of the water.

Further information about local impacts on recreation and tourism, bathing in the Baltic Sea in particular and implications for local tourism business are presented in the national Danish and German EIA documentation.

In response to the comment about the impact area of recreation and tourism compared with the impact area of material assets, Femern A/S considers that there has been a misunderstanding of the Summary Report.

As assessed in the Espoo Report, the project pressures identified as relevant in relation to impacts on material assets are all related to project area activities and existing material assets within or in the vicinity of the project area. Therefore no transboundary impacts on material assets beyond the German-Danish transboundary area are expected. The lineation of 10 km from the alignment is the border of the Local Zone defined in the methodology of the Espoo Report (Chapter 7.2) and not an impact area. Femern A/S would like to point out that the assessment of material assets cannot be compared with the assessment of recreation and tourism.

5.3.13 Raw Materials and Waste

Comments from private German stakeholders

- It is a concern on which basis it is assessed that the disposal of waste in both Germany and Denmark can be handled without problems.

Response from the Danish Party of origin

The handling of waste generated by the Fehmarnbelt Fixed Link is described in Chapter 7.21 of the Espoo Report. As described in the introduction of the chapter, all waste from the project is planned to be handled and disposed in accordance with applicable legislation in Denmark and Germany respectively.

Handling of waste is a national matter, and it is assessed and described in detail in the national EIAs.

On this basis, it is the assessment of Femern A/S that all waste from the Fehmarnbelt Fixed Link can be handled without significant environmental impacts and that the amount of waste will not exceed what can be handled locally and nationally.

5.3.14 Air Quality and Climate

A number of comments received during the Danish Espoo Consultation Process concern the impact of the project on air quality and climate as well as the traffic assumptions of the impact assessment with regard to climate.

Comments from private German stakeholders

- It is stated that in the traffic scenario used in the analysis of the impact of the Fehmarnbelt Fixed Link on climate the Jutland route for railway traffic should also be considered as an alternative.

- A comment considers the calculation of CO2 emission from concrete production for the Fehmarnbelt Fixed Link.

- It is stated that if vehicles use hybrid ferries to cross Fehmarnbelt instead of the Fehmarnbelt Fixed Link, the CO2 balance would be zero. It is stated that the basis for the traffic calculations; the basis for the CO2 analysis, which assumes that the ferry service between Rødby and Puttgarden will cease operation following the opening of the Fehmarnbelt Fixed Link; and the transfer of freight from road to rail are speculative.

- A concern is raised regarding the increase of the pollutants PM10 and NO2 above threshold values in a corridor of 200 m on both sides of the tunnel openings, and whether this extends to and includes the towns of Puttgarden and Marienleuchte.

Response from the Danish Party of origin

The order of the State Treaty is to plan and build a Fehmarnbelt Fixed Link. The Jutland route therefore does not need to be considered as an individual alternative, but is part of the zero-alternative for rail transport of freight.

Femern A/S has carried out detailed calculations of the emission of greenhouse gasses (GHG) defined as CO2 equivalents from construction and operation of the Fehmarnbelt Fixed Link. The results are presented in the Espoo Report and further detailed in the background report 'Greenhouse gas emission inventory', which is available together with the Danish EIA documentation. The calculations show that CO2 emission from the production of concrete in the construction phase equals app 830.000 ton which is 42% of the total GHG emission from the construction works.

As the basis for estimating the future GHG emission from the different alternatives, only reductions in GHG emission prescribed by agreed national or EU regulations are considered. Other voluntary reductions including hybrid ferries have for the reason of large uncertainty not been included in the calculations.

The comment regarding the basis of the CO2 analysis has also been raised by Stadt Fehmarn, and remarks in this regard can be found in Section 4.3.8 of the present report.

In the assessment of air quality in Chapter 7.22 of the Espoo Report it is concluded that with regard to PM10 and NO2 concentrations in the operation phase, dispersion calculations show that land around the tunnel opening and up to approximately 200 m away from the tunnel opening, will have elevated concentrations of these substances, which exceed the current air quality limit values for residential areas. However, there will be no permanent habitation, and the public will not have access to the outdoor area, where the concentration is above the threshold levels.

The towns of Puttgarden and Marienleuchte are situated approximately 1000 m and 500 m away from the tunnel portal, respectively, and the concentration of PM10 and NO2 will be below threshold levels and therefore not have an impact on human health in Puttgarden and Marienleuchte.

5.3.15 Ship Traffic and Navigation

Comments from private German stakeholders

- It is stated that the construction phase of the immersed tunnel will result in a barrier effect for ship traffic in the Fehmarnbelt.

- It is stated that the VTS system only has a consulting function and cannot provide binding instructions for ships. Furthermore, it is emphasized that due to potential language barriers the VTS system should not be used exclusively.

- It is questioned why a navigation simulation has been carried out only for the bridge alternative and not for the immersed tunnel.

- It is stated that there will be a potential doubling of the volume of ship traffic crossing Fehmarnbelt between Rødby and Puttgarden, and that this is considered to lead to an increased collision risk in the Fehmarnbelt, taking into account the east-to-west going traffic. It is stated that this may have unpredictable impacts on humans and the environment.

Response from the Danish Party of origin

As explained in Section 3.2.4 of the present report, Femern A/S confirms that throughout the entire construction period of the Fehmarnbelt Fixed Link, disturbance of ship traffic through Fehmarnbelt will be minimized, navigational safety will be secured and passage through Fehmarnbelt will be maintained at all times.

In Chapter 7.23 of the Espoo Report mitigation measures concerning navigational safety in the Fehmarnbelt in connection with the Fehmarnbelt Fixed Link are presented. In addition to the VTS system, other risk control options in the construction phase in order to reduce the possibility of collisions include guard ships in connection with each offshore work area, as well as safety zones around work areas and a work vessel coordination centre).

Femern A/S is fully aware of navigational safety in Fehmarnbelt during construction of the Fehmarnbelt Fixed Link and would like to emphasize that with the planned mitigation actions, the impact from construction of an immersed tunnel is assessed to have only an insignificant impact on ship traffic and navigation in the Fehmarnbelt, Kriegers Flak or Rønne Banke, and the transboundary region.

There will be no significant impacts on ship traffic during operation of an immersed tunnel.

Concerning the potential impacts from increased traffic across Fehmarnbelt due to construction vessels, a detailed analysis and assessment is presented in the Espoo Report. The main pressures are identified and calculations on present and future ship traffic scenarios in the Fehmarnbelt are estimated for the period from 2020 – 2030 in order to assess the possible impacts on ship traffic and navigation from an immersed tunnel during construction.

It is the opinion of Femern A/S that fully sufficient and realistic prognoses for the navigational situation in Fehmarnbelt during construction have been developed and adequate mitigation measures are planned in order to minimize these impacts.

5.3.16 Cumulative Impacts

Comments from private German stakeholders

- It is stated that an upgrade of the existing fixed link across Fehmarnsund is missing in the assessment of cumulative impacts.

Response from the Danish Party of origin

The comment regarding the possible inclusion of an upgrade of the fixed link across Fehmarnsund in the assessment of cumulative impacts was also raised by German authorities and remarks in this regard can be found in Section 4.3.10 of the present report.

5.4 Consultation comments outside the scope of the Espoo Consultation

An overview of issues raised by German private stakeholders that are considered to be outside the scope of the Danish Espoo Consultation Response Report is presented below. These comments will not be further addressed in the present report:

- Comments in relation to impacts on local business policy caused by local changes in workplaces.
- Comments in relation to update of macro-economic evaluation and estimation of the cost-benefit factor of the project.
- Comment in relation to project planning, for example the fact that invitation to tender for the construction of the Fehmarnbelt Fixed Link has been opened, before the granting of consent for the project.
- Comment in relation to compliance with the EU Tunnel Directive concerning tunnel safety and tunnel safety in general.
- Comment in relation to the justification of the project as e.g. a EU TEN-T priority project (The Trans-European Transport Networks).
- Comments in relation to German constitutional law and loss of property caused by the Fehmarnbelt Fixed Link.
- Comment in relation to process for designation of Natura 2000 protection areas in Germany.

Appendix 1

Overview of respondents in the Danish Espoo Consultation Process

No.	Nation	Respondent
1	Poland	Departament Ocen Oddzialywania na Srodowisko
2	Lithuania	Lietuvos Respublikos Aplinkos Ministerija
3	Norway	Ministry of the Environment of Norway
4	Russian Federation	Ministry of Natural Resources and Environment
5	Finland	Miljöministeriet
6	Sweden	Sveriges meterologiska och hydrologiska institut
6	Sweden	Riksantikvarieämbetet
6	Sweden	Myndigheten för samhällsskydd och beredskap
6	Sweden	Boverket
6	Sweden	Sveriges Geologiska undersökning
6	Sweden	Kustbevakningen
6	Sweden	Trelleborgs Kommun
6	Sweden	Havs och Vattenmyndigheten
6	Sweden	Sjöfartsverket
6	Sweden	Trafikanalys
6	Sweden	Trafikverket
6	Sweden	Naturvårdsverket
7	Germany	Ministerium für Energiewende, Landwirtschaft, Umwelt, und ländliche Räume des Landes Schleswig-Holstein (MELUR)
8	Germany	Archäologisches Landesamt Schleswig-Holstein
9	Germany	Stadt Fehmarn
10	Germany	Kreis Ostholstein
11	Germany	Wasser- und Schifffahrtsverwaltung des Bundes (WSV)
12	Germany	Gemeinde Großenbrode, Neukirchen, Heringsdorf, Göhl, Schashagen, Altenkrempe, Sierksdorf, Scharbeutz, Timmendorfer Strand, Ratekau, Lensahn, Damlos, Beschendorf, Stadt Neustadt in Holstein, Stadt Oldenburg in Holstein, Stadt Bad Schwartau
13	Germany	Private
14	Germany	Aktionsbündnis gegen eine Feste Fehmarnbeltquerung
15	Germany	Aktionsbündnis gegen eine Feste Fehmarnbeltquerung
16	Germany	Aktionsbündnis gegen eine Feste Fehmarnbeltquerung
17	Germany	Aktionsbündnis gegen eine Feste Fehmarnbeltquerung
18	Germany	Allianz gegen eine Feste Fehmarnbeltquerung
19 – 426	Germany	Private
427	Germany	Allianz gegen eine Feste Fehmarnbeltquerung
428	Germany	Allianz gegen eine Feste Fehmarnbeltquerung
429	Germany	NABU, Wasservogelreservat Wallnau
430	Germany	Der Ministerpräsident des Landes Schleswig-Holstein, Staatskanzlei